

**Digital Imaging & Editing
and
Digital & General Photography
Certified Digital Designer
Professional Certification Examination Review**



Within this presentation – We will use specific names and terminologies. These will be related to specific products, software, brands and trade names.

ADDA does not endorse any specific software or manufacturer.

It is the sole decision of the individual to choose and purchase based on their personal preference and financial capabilities.



the Examination

- Examination Contain at Total 325 Questions
- 200 Questions in Digital Image Creation and Editing
- Image Editing is applicable to all Areas related to Digital Graphics
- 125 Question in Photography Knowledge and History
- Photography is applicable to General Principles of Photography
- Does not cover Photography as a General Arts Program
- Examination is based on entry level intermediate employment knowledge
- Certain Processes may be omitted that are required to achieve an end result



the Examination

- Knowledge of Graphic and Photography Acronyms
- Knowledge of Graphic Program Tool Symbols
- Some Knowledge of Photography Lighting
- Ability to do some basic Geometric Calculations
- Basic Knowledge of Graphic History & Theory
- Basic Knowledge of Digital & Standard Film Cameras
- Basic Knowledge of Camera Lens and Operation
- General Knowledge of Computer Operation
- Some Common Sense

**This is the Comprehensive
Digital Imaging & Editing
Certified Digital Designer
Professional Certification Examination Review**



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Digital Imaging & Editing Section





the Profession

- It is about the world through vision and expression
- It is about how light and color can change the viewer's perception
- It is about images which can cause us to act or react
- It is about simple objects – manipulated to appear complex
- It is mental conception – transferred through visual effects
- It is about creating our own Master Pieces
- It is communicating ideas through visual applications
- **THIS is what we call DIGITAL IMAGES**



Graphic Acronyms

- **ADDA** **American Digital Design Association** **American Design Drafting Association**
- **CMYK** **Cyan, Magenta, Yellow and key BLACK** and often referred to as process color or four color
- **RGB** is an Additive Color Model in which **Red, Green and Blue** are added together in various ways to reproduce a broad array of colors.
- **LCD** **Liquid Crystal Display**
- **TIFF** **Tagged Image File Format** (Photos and Line Art) Adobe
- **JPEG** most commonly used method of Compression for photographic images – Compression can be adjusted from 1 - 10
- **LPI** Lines per Inch
- **EXIF** Exchangeable image file format



Some Acronyms

- **RAW**
Raw image format, contains **minimally processed data** from the image sensor of a digital camera or image scanner. Raw files are so named because they are not yet processed and ready to be used with a bitmap graphics editor or printed.
- **PNG**
Portable Network Graphics (PNG) is a **bitmapped image format** that employs lossless data compression. PNG was created to improve upon and replace the GIF format, as an image-file format not requiring a patent license
- **GIF**
The **Graphics Interchange Format (GIF)** is an **8-bit-per-pixel bitmap image format** that was introduced by CompuServe in 1987 and has since come into widespread usage on the World Wide Web due to its wide support and portability.
- **PPI**
Pixels per inch (PPI) or **pixel density** is a measurement of the resolution of a computer display, related to the size of the display in inches and the total number of pixels in the horizontal and vertical directions. This measurement is often referred to as dots per inch, though that measurement more accurately refers to the resolution of a computer printer. PPI may also be used to describe the resolution of an image scanner or digital camera; in this context, it is synonymous with samples per inch.



Acronyms

- **LAB** The coordinates of the **Hunter 1948 L, a, b color space** are *L*, *a*, and *b*
- **ACE** In computing, **ACE** is a **proprietary data compression archive file format** developed by Marcel Lemke, and later bought by e-merge GmbH. ACE offers superior compression compared to the ZIP file format, at the cost of a lower compression speed.
- **ICC** The **International Color Consortium** was formed in 1993 by eight industry vendors in order to create a universal color management system that would function transparently across all operating systems and software packages
- **CMM** **Color Matching Method / Color Management Module**. - is a software algorithm that adjusts the numerical values that get sent to, or received from, different devices so that the perceived color they produce remains consistent.
- **BMP** The **BMP file format**, sometimes called **bitmap** or **DIB file format** (for *device-independent bitmap*), **is an image file format used to store bitmap digital images**, especially on Microsoft Windows and OS/2 operating systems.



Acronyms

- **CIS** Contact Image Sensor - are a relatively recent technological innovation in the field of optical flatbed scanners that are rapidly replacing CCD's in low power and portable applications. As the name implies, CISs place the image sensor in near direct contact with the object to be scanned in contrast to using mirrors to bounce light to a stationary sensor, as is the case in conventional CCD scanners

- **OCR** **Optical character recognition**, usually abbreviated to **OCR**, is the mechanical or electronic translation of images of handwritten, typewritten or printed text (usually captured by a scanner) into machine-editable text

- **CMOS** **Complementary metal–oxide–semiconductor (CMOS)** (pronounced "see-moss", is a major class of integrated circuits. CMOS technology is used in microprocessors, microcontrollers, static RAM, and other digital logic circuits.

- **SPI** **Samples per inch (SPI)** is a measurement of the resolution of an image scanner, in particular the number of individual samples that are taken in the space of one linear inch. It is sometimes misreferred to as dots per inch, though that term more accurately refers to printing resolution. Generally, the greater the SPI of a scanner, the more detailed its reproduction of the scanned object.



Definitions

- **Cropping** **Cropping** refers to the removal of the outer parts of an image to improve framing, accentuate subject matter or change aspect ratio. Depending on the application, this may be performed on a physical photograph, artwork or film footage, or achieved digitally using image editing software.
- **Scaling** In computer graphics, **image scaling** is the process of resizing a digital image. Scaling is a non-trivial process that involves a trade-off between efficiency, smoothness and sharpness. As the size of an image is increased, so the pixels which comprise the image become increasingly visible, making the image appear "soft". Conversely, reducing an image will tend to enhance its smoothness and apparent sharpness.
- **Unsharp Masking** **Unsharp masking** is an image manipulation technique now familiar to many users of digital image processing software, but it seems to have been first used in Germany in the 1930s as a way of increasing the acutance, or apparent sharpness, of photographic images. The "unsharp" of the name derives from the fact that the technique uses a blurred, or "unsharp", positive to create a "mask" of the original image.

The unsharped mask is then combined with the negative, creating the illusion that the resulting image is sharper than the original. From a signal-processing standpoint, an unsharp mask is generally a linear or nonlinear filter that amplifies high-frequency components.



Definitions

- **Transparent** **Transparency** is possible in a number of graphics file formats. The term **transparency** is used in various ways by different people, but at its simplest there is "full transparency" i.e. something that is completely invisible. Of course, only part of a graphic should be fully transparent, or there would be nothing to see. More complex is "partial transparency" or "translucency" where the effect is achieved that a graphic is partially transparent in the same way as colored glass.

Since ultimately a printed page or computer or television screen can only be one color at a point, partial transparency is always simulated at some level by mixing colors.
- **Opaque** **Opacity** is the measure of impenetrability to electromagnetic or other kinds of radiation, especially visible light. In radiative transfer, it describes the absorption and scattering of radiation in a medium, such as a plasma, dielectric, shielding material, glass, etc. An opaque object is neither transparent (allowing all light to pass through) nor translucent (allowing some light to pass through). When light strikes an interface between two substances, in general some may be reflected, some absorbed, some scattered, and the rest transmitted (also see refraction).

An opaque substance transmits very little light, and therefore reflects, scatters, or absorbs most of it. Both mirrors and carbon black are opaque. Opacity depends on the frequency of the light being considered. For instance, some kinds of glass, while transparent in the visual range, are largely opaque to ultraviolet light. More extreme frequency-dependence is visible in the absorption lines of cold gases. In general, a material tends to emit light in the same proportions as it absorbs it.



Definitions

- **Blending** **Blend modes** in digital image editing are used to determine how two Layers are blended into each other. The default blend mode in most applications is simply to hide the lower layer with whatever is present in the top layer. However, as each pixel has a numerical representation, a large number of ways to blend two layers is possible. Note that the top layer is not necessarily called a "layer" in the application. It may be applied with a painting or editing tool.
- **Colorcast** A **colour cast** is a tint of a particular colour, usually unwanted, which affects the whole of a photographic image evenly. Certain types of light can cause film and digital cameras to have a colour cast. In general, the human eye does not notice the unnatural colour, because our eyes and brains adjust and compensate for different types of light in ways that cameras cannot. In film, colour casts can also be caused by problems in development. Improper timing or imbalanced chemical mixtures can cause unwanted casts.
- **Grain** **Film grain or granularity** is the random optical texture of processed photographic film due to the presence of small grains of a metallic silver developed from silver halide that have received enough photons.



Definitions

- **Overexposed**

This is an image that appears much too bright. The **highlights and colors are totally lost** and usually unrecoverable even by top software. Either the shutter speed was too long or the aperture was too wide
- **Underexposed**

Under exposure . A **picture which appears too dark** because insufficient light was delivered to the imaging system. Opposite of over exposure.
- **Pixels**

The **individual imaging element** of a CCD or CMOS sensor, or the individual output point of a display device. This is what is meant by the figures 640x480, 800x600, 1024x768, 1280x960 etc., when dealing with the resolution of a particular digicam. Higher numbers are best.
- **Histogram**

a histogram is a graphical display of tabulated frequencies. It shows what proportion of cases fall into each of several categories.

A histogram differs from a bar chart in that it is the *area* of the bar that denotes the value, not the height, a crucial distinction when the categories are not of uniform width
- **Noise**

Noise. Relates to pixels in your image that were misinterpreted. Normally occurs when you shoot a long exposure (beyond 1/2-second) or when you use the higher ISO values from 400 or above. It appears as random groups of red, green or blue pixels. Programs such as Neat Image can remove most noise from an image.



Definitions

- **Fill Flash** **Fill flash** is a photographic technique used to brighten deep shadow areas, typically outdoors on sunny days, though the technique is useful any time the background is significantly brighter than the subject of the photograph.

To use **fill flash**, the aperture and shutter speed are adjusted to correctly expose the background, and the flash is fired to lighten the foreground.

Most point and shoot cameras include a **fill flash** mode that forces the flash to fire, even in bright light.
- **Curves** In image editing, a **curve** is a **remapping of image tonality**, specified as a function from input level to output level, used as a way to emphasize colors or other elements in a picture
- **Image Pixel** Same as a Pixel
- **Bit – Depth** **Bit Depth. Refers to the color or grey scale of each individual pixel.** For example a pixel with 8 bits per color (red, green and blue), gives a 24 bit image. 24 bit resolution is 16.7 million colors



Definitions

➤ Resolution

Resolution. The quality of any digital image, whether printed or displayed on a screen, depends on its resolution, or the number of pixels used to create the image.

More, smaller pixels add detail and sharpen the edges.

- ~ Optical Resolution is an absolute number that the camera's image sensor can physically record.
- ~ Interpolated Resolution adds pixels to the image using complex software algorithms to determine what colour they should be.
- ~ It is important to note that interpolation doesn't add any new information to the image - it just makes it bigger!

➤ Color Balancing

Colour Balance. The accuracy with which the colours captured in the image, match the original scene.

➤ Brightness

Value of a pixel in a digital image giving its value of lightness from black to white, with 0 being black and 255 being white.



Definitions

➤ Darkness

A process by which the colors are adjusted either by the Sharpen Mode or by the Opacity of the Colors used. There are many methods used to remove the light source either from a single color or an entire image.

➤ Contrast

Contrast is the difference in visual properties that makes an object (or its representation in an image) distinguishable from other objects and the background.

In visual perception of the real world, contrast is determined by the difference in the color and brightness of the object and other objects within the same field of view.

Because the human visual system is more sensitive to contrast than absolute luminance, we can perceive the world similarly regardless of the huge changes in illumination over the day or from place to place.

➤ Low Contrast & High Contrast

For example, in the case of graphical computer displays, contrast depends on the properties of the picture source or file and the properties of the computer display, including its variable settings. For some screens the angle between the screen surface and the observer's line of sight is also important.

Contrast is also the difference between the color or shading of the printed material on a document and the background on which it is printed, for example in optical character recognition.



Definitions

- **Compressed** **Compression.** A Digital photograph creates an image file that is enormous. To enable image files to become smaller and more manageable cameras employ some form of compression such as JPEG. RAW and TIFF files have no compression and take up more space.
- **Decompressed** **Decompression.** Process by which the full data content of a compressed file is restored.
- **Hue** A term used to describe the complete range of colors of the spectrum. Hue is the component that determines just what color you are using. In gradients where you use a color model in which hue is a component, you can create some rainbow effects.
- **Saturation** The degree to which a color is undiluted by white light. If a color is 100 percent saturated, it contains no white light. If a color has no saturation, it is a shade of grey.



Definitions

- **Primary Color** **Primary colors** are sets of colors that can be combined to make a useful range (gamut) of colors. For human applications, three are often used; for additive combination of colors, as in overlapping projected lights or in CRT displays, the primary colors normally used are red, green, and blue. For subtractive combination of colors, as in mixing of pigments or dyes, such as in printing, the primaries normally used are magenta, cyan, and yellow.

Any choice of primary colors is essentially arbitrary; for example, an early color photographic process, autochrome, typically used orange, green, and violet primaries.

- **Secondary Color** is a color made by mixing two primary colors in a given color space. Examples (Red + Green = Yellow) (Green + Blue = Cyan) (Blue + Red = Magenta)

- **Tertiary color** is a color made by mixing one primary color with one secondary color, in a given color space such as RGB or RYB.



Unlike primary and secondary colors, these are not represented by one firmly established name each, but the following examples include some typical names.



Definitions

➤ Channel Mixer

One piece of information stored with an image.

For example, a true colour image has 3 channels, red, green and blue.

Another popular method of creating grayscale images from color is to combine channels through Channel Mixer. The Channel Mixer takes data from existing channels in the document and applies that data to the Output Channel of your choice.

➤ Grey Tones

Grey Level. This is the brightness level of a pixel representing its lightness from black to white.

It is usually defined as a value from 0 to 255, with 0 being black and 255 being white.

Grey Scale. A term used to describe an image containing shades of grey rather than colour.

Most commonly referred to as a black and white photograph.

Keeping in Mind the Human Eye can only see 20 shades of Grey.



Definitions

➤ Interlaced

a technique of improving the picture quality of a video signal primarily on CRT devices without consuming extra bandwidth. Interlacing causes problems on certain display devices such as LCDs .

Interlaced scan refers to one of two common methods for "painting" a video image on an electronic display screen (the second is progressive scan) by scanning or displaying each line or row of pixels.

This technique uses two fields to create a frame. One field contains all the odd lines in the image, the other contains all the even lines of the image.

A PAL based television display, for example, scans 50 fields every second (25 odd and 25 even). The two sets of 25 fields work together to create a full frame every 1/25th of a second, resulting in a display of 25 frames per second.



Definitions

➤ **Vector**

Vector graphics is the use of geometrical primitives such as points, lines, curves, and shapes or polygon(s), which are all based upon mathematical equations, to represent images in computer graphics.

Vector graphics formats are complementary to raster graphics, which is the representation of images as an array of pixels, as it is typically used for the representation of photographic images.

There are instances when working with vector tools and formats is best practice, and instances when working with raster tools and formats is best practice.

There are times when both formats come together. An understanding of the advantages and limitations of each technology and the relationship between them is most likely to result in efficient and effective use of tools.



Definitions

➤ Raster

In computer graphics, a **raster graphics** image or **bitmap**, is a data structure representing a generally rectangular grid of pixels, or points of color, viewable via a monitor, paper, or other display medium.

Raster images are stored in image files with varying formats (see Comparison of graphics file formats).

A bitmap corresponds bit-for-bit with an image displayed on a screen, generally in the same format used for storage in the display's video memory, or maybe as a device-independent bitmap.

Bitmap is technically characterized by the width and height of the image in pixels and by the number of bits per pixel (a color depth, which determines the number of colors it can represent).

The printing and prepress industries know raster graphics as **contones** (from "continuous tones") and refer to vector graphics as "line work".

➤ Blooming

Bloom (sometimes referred to as **light bloom** or **glow**) is a computer graphics effect used in computer games, demos and high dynamic range rendering (HDR) to reproduce an imaging artifact of real-world cameras.

The effect produces fringes (or feathers) of light around very bright objects in an image.



Definitions

➤ Additive Colors

An **additive color model** involves light emitted directly from a source or illuminant of some sort. The additive reproduction process usually uses red, green and blue light to produce the other colors.

Combining one of these additive primary colors with another in equal amounts produces the additive secondary colors cyan, magenta, and yellow.

Combining all three primary lights (colors) in equal intensities produces white. Varying the luminosity of each light (color) eventually reveals the full gamut of those three lights (colors). Computer monitors and televisions are the most common applications.

➤ Subtractive Colors

A **subtractive color model** explains the mixing of paints, dyes, inks, and natural colorants to create a range of colors, where each such color is caused by the mixture absorbing some wavelengths of light and reflecting others.

The color that an opaque object appears to have is based on what parts of the electromagnetic spectrum are reflected by it, or by what parts of the spectrum are not absorbed. Subtractive color systems start with white light.

Colored inks, paints or films placed between the viewer and the light source or reflective surface (such as white paper) *subtract* wavelengths from this white, and make a color. Conversely, additive color systems start with no light (black).

Light sources *add* wavelengths to make a color. In either an additive or a subtractive system, three primary colors are needed to match humans' trichromatic color vision (caused by the three types of cone cells in the eye).



Definitions

Spot Colors In offset printing, a **spot color** is any color generated by an ink (pure or mixed) that is printed using a *single run*.

The widely-spread offset printing process is composed of four spot colors: Cyan, Magenta, Yellow and Key (black) commonly referred to as CMYK. More advanced processes involve the use of six spot colors (hexachromatic process), which add Orange and Green to the process (termed CMYKOG).

The two additional spot colors are added to compensate for the inefficient reproduction of faint tints using CMYK colors only. However, offset technicians around the world use the term *spot color* to mean any color generated by a non-standard offset ink; such as metallic, fluorescent, spot varnish, or custom hand-mixed inks.

When making a multi-color print with a spot color process, every spot color needs its own lithographic film. All the areas of the same spot color are printed using the same film, hence, using the same .

The dot gain, hence the screen angle and , of a spot color vary according to its intended purpose.

Spot lamination and UV coatings are sometimes referred to as 'spot colors', as they share the characteristics of requiring a separate lithographic film and print run.



Definitions

Pantone Colors Pantone Inc. is a corporation headquartered in Carlstadt, New Jersey, USA.

The company is best known for its **Pantone Matching System (PMS)**, a proprietary color space used in a variety of industries, primarily printing, though sometimes in the manufacture of colored paint, fabric and plastics. On 23 August 2007, X-Rite Inc, purchased Pantone Inc for \$180 million.

The Pantone Color Matching System is largely a standardized color reproduction system. By standardizing the colors different manufactures in different locations can all refer to a the Pantone system to make sure colors match without direct contact with one another.

One such use is standardizing colors in the CMYK process. The CMYK process method of printing color by using four inks—cyan, magenta, yellow and black.

The vast majority of the world's printed material is produced using the CMYK process, and there is a special subset of Pantone colors that can be reproduced using CMYK. Those that are possible to simulate through the CMYK process are labeled as such within the company's guides.

However, most of the Pantone system's 1,114 spot colors cannot be simulated with CMYK but with 13 base pigments (15 including white and black) mixed in specified amounts



Definitions

➤ **Dither – Dithering**

a technique used in computer graphics to create the illusion of color depth in images with a limited color palette (color quantization). In a dithered image, colors not available in the palette are approximated by a diffusion of colored pixels from within the available palette.

The human eye perceives the diffusion as a mixture of the colors within it (see color vision). Dithering is analogous to the halftone technique used in printing.

Dithered images, particularly those with relatively few colors, can often be distinguished by a characteristic graininess, or speckled appearance

➤ **True Color**

Truecolor is a method of representing and storing graphical image information (especially in computer processing) in an RGB color space such that a very large number of colors, shades, and hues can be displayed in an image, such as in high quality photographic images or complex graphics.

Usually, truecolor is defined to mean at least 256 shades of red, green, and blue, for a total of at least 16,777,216 color variations. Equivalently, truecolor can refer to an RGB display mode that does not need a color look-up table (CLUT).



Definitions

- **Anchor Point** a stationary point or position of an object or graphic
- **EXIF** is a specification for the image file format used by digital cameras. The specification uses the existing JPEG, TIFF Rev. 6.0, and RIFF WAV file formats, with the addition of specific metadata tags.

The metadata tags defined in the Exif standard cover a broad spectrum:
 - ~ Date and time information. Digital cameras will record the current date and time and save this in the metadata.
 - ~ Camera settings. This includes static information such as the camera model and make, and information that varies with each image such as orientation, aperture, shutter speed, focal length, metering mode, and ISO speed information.
 - ~ A thumbnail for previewing



Definitions

- **Color Burn:** Looks at the color information in each channel and darkens the base color to reflect the blend color by increasing the contrast. Blending with white produces no change.
- **Linear Burn** Looks at the color information in each channel and darkens the base color to reflect the blend color by decreasing the brightness. Blending with white produces no change
- **Color Dodge** Similar to Screening, Color Dodge will always result in a lighter image—except the contrast will be turned waaaay up



General Information

G I F The **Graphics Interchange Format (GIF)** is an 8-bit-per-pixel bitmap image format that was introduced by CompuServe in 1987 and has since come into widespread usage on the World Wide Web due to its wide support and portability.

The format uses a palette of up to 256 distinct colors from the 24-bit RGB color space. It also supports animations and allows a separate palette of 256 colors for each frame. The color limitation makes the GIF format unsuitable for reproducing color photographs and other images with continuous color, but it is well-suited for more simple images such as graphics or logos with solid areas of color.

GIF images are compressed using the Lempel-Ziv-Welch (LZW) lossless data compression technique to reduce the file size without degrading the visual quality. This compression technique was patented in 1985.

Controversy over the licensing agreement between the patent holder, Unisys, and CompuServe in 1994 inspired the development of the Portable Network Graphics (PNG) standard; since then all the relevant patents have expired.



General Information

J P E G The name "JPEG" stands for **Joint Photographic Experts** Group, the name of the committee that created the standard. The group was organized in 1986, issuing a standard in 1992, which was approved in 1994 as **ISO 10918-1**. JPEG is distinct from MPEG (Moving Picture Experts Group), which produces compression schemes for video.

The JPEG standard specifies both the codec, which defines how an image is compressed into a stream of bytes and decompressed back into an image, and the file format used to contain that stream

In computing, **JPEG** (**pronounced JAY-peg**) is a commonly used method of compression for photographic images. The degree of compression can be adjusted, allowing a selectable tradeoff between storage size and image quality. JPEG typically achieves 10 to 1 compression with little perceivable loss in image quality.

JPEG is the most common image format used by digital cameras and other photographic image capture devices, and is the most common format for storing and transmitting photographic images on the World Wide Web.



General Information

T I F F Tagged Image File Format (abbreviated TIFF) is a file format for storing images, including photographs and line art.

It is now under the control of Adobe Systems. Originally created by the company Aldus for use with what was then called "desktop publishing", the TIFF format is widely supported by image-manipulation applications, by publishing and page layout applications, by scanning, faxing, word processing, optical character recognition and other applications.

Adobe Systems, which acquired Aldus, now holds the copyright to the TIFF specification.

TIFF has not had a major update since 1992, though several Aldus/Adobe technical notes have been published with minor extensions to the format, and several specifications, including TIFF/EP, have been based on the TIFF 6.0 specification.



General Information

RAW A **raw image file** (sometimes written **RAW image file**) contains minimally processed data from the image sensor of a digital camera or image scanner. Typically this is the maximum amount of information the sensor is capable of collecting and saving.

Raw files are so named because they are not yet processed and ready to be used with a bitmap graphics editor or printed. Normally, the image will be processed by a raw converter in a wide-gamut internal colorspace where precise adjustments can be made before conversion to an RGB file format such as TIFF or JPEG for storage, printing, or further manipulation.

Raw image files are sometimes called **digital negatives**, as they fulfill the same role as film negatives in traditional chemical photography: that is, the negative is not directly usable as an image, but has all of the information needed to create an image.

In addition to raw files from cameras, raw data from film scanners can also be referred to as digital negatives. Likewise, the process of converting a raw image file into a viewable format is sometimes called developing a raw image, by analogy with the film development.

Like a photographic negative, a digital negative may have a wider dynamic range or color gamut than the eventual final image format. The selection of the final choice of image rendering is part of the process of white balancing and color grading.



General Information

B M P The **BMP file format**, sometimes called **bitmap** or **DIB file format** (for *device-independent bitmap*), is an image file format used to store bitmap digital images, especially on Microsoft Windows and OS/2 operating systems.

Many graphical user interfaces use bitmaps in their built-in graphics subsystems; for example, the Microsoft Windows and OS/2 platforms' GDI subsystem, where the specific format used is the *Windows and OS/2 bitmap file format*, usually named with the file extension of .BMP or .DIB.

In uncompressed BMP files, and many other bitmap file formats, image pixels are stored with a color depth of 1, 4, 8, 16, 24, or 32 bits per pixel. Images of 8 bits and fewer can be either grayscale or indexed color.

An alpha channel (for transparency) may be stored in a separate file, where it is similar to a grayscale image, or in a fourth channel that converts 24-bit images to 32 bits per pixel.



General Information

L A B A *Lab* color space is a color-opponent space with dimension *L* for lightness and *a* and *b* for the color-opponent dimensions, based on nonlinearly-compressed CIE XYZ color space coordinates.

The coordinates of the **Hunter 1948 *L, a, b* color space** are *L*, *a*, and *b*. However, *Lab* is now more often used as an informal abbreviation for the **CIE 1976 (*L**, *a**, *b**) color space** (also called CIELAB, whose coordinates are actually *L**, *a**, and *b**).

Unlike the RGB and CMYK color models, *Lab* color is designed to approximate human vision. Because *Lab* space is much larger than the gamut of computer displays, printers, or even human vision, a bitmap image represented as *Lab* requires more data per pixel to obtain the same precision as an RGB or CMYK bitmap.

In the 1990s, when computer hardware and software was mostly limited to storing and manipulating 8 bit/channel bitmaps, converting an RGB image to *Lab* and back was a lossy operation. With 16 bit/channel support now common, this is no longer such a problem.

Additionally, many of the “colors” within *Lab* space fall outside the gamut of human vision, and are therefore purely imaginary; these “colors” cannot be reproduced in the physical world.

Though color management software, such as that built in to image editing applications, will pick the closest in-gamut approximation, changing lightness, colorfulness, and sometimes hue in the process.



General Information

PNG

Portable Network Graphic, or **PNG**, An extensible file format for the lossless, portable, well-compressed storage of raster images.

PNG provides a patent-free replacement for GIF and can also replace many common uses of TIFF, Indexed-colors, grey scales and truecolor. Images are supported, plus an optional alpha channel. Sample depths range from 1 to 16 bits.

PNG is designed for on-line viewing applications, such as the World Wide Web, so it is fully streamable with a progressive display option. PNG is robust, providing both full file integrity checking and simple detection of common transmission errors.

Also, PNG can store gamma correction and chromaticity data for improved color matching on heterogeneous platforms.



General Information

EPS

Encapsulated PostScript, or **EPS**, is a DSC-conforming PostScript document with additional restrictions intended to make EPS files usable as a graphics file format.

In other words, EPS files are more-or-less self-contained, reasonably predictable PostScript documents that describe an image or drawing, that can be placed within another PostScript document.

At a minimum, an EPS file contains a *BoundingBox* DSC comment, describing the rectangle containing the image described by the EPS file.

Applications can use this information to lay out the page, even if they are unable to directly render the PostScript inside.

EPS, together with DSC's Open Structuring Conventions, form the basis of early versions of the Adobe Illustrator Artwork file format.



General Information

Binary File – Data - Codes A **binary file** is a computer file which may contain any type of data, encoded in binary form for computer storage and processing purposes;

- ~ for example, computer document files containing formatted text.
- ~ Many binary file formats contain parts that can be interpreted as text; binary files that contain *only* textual data - without, for example, any formatting information - are called plain text files.
- ~ In many cases, plain text files are considered to be different from binary files because binary files are made up of more than just plain text. When downloading, a completely functional program without any installer is also often called program binary, or binaries (as opposed to the source code).

To send binary files through certain systems (such as e-mail) that do not allow all data values, they are often translated into a plain text representation (using, for example, Base64).

This encoding has the disadvantage of increasing the file's size by approximately 30% during the transfer, as well as requiring translation back into binary after receipt. See Binary-to-text encoding for more on this subject.

Microsoft Windows allows the programmer to specify a system call parameter indicating if a file is text or binary; Unix does not, and treats all files as binary. This reflects the fact that the distinction between the two types of files is to a certain extent arbitrary.



General Information

Composition RULE OF THIRDS



The Main Subject of the image

should be **positioned** in one of the **intersections** of **imaginary lines**

placed about one-third from the top or one-third

from the bottom / one-third from the right side or

one-third from the left side. Where the lines

intersect is where you want to place the important

subject matter





General Information

Copyrights Images and Photography

Taking a photograph while on an airplane is banned in many places, and many mass transit systems prohibit taking photographs or videos while on board buses or trains or inside of stations.

Photography and videography are also prohibited in the U.S. Capitol, in courthouses, and in government buildings housing classified information. Bringing a camera phone into one of these buildings is not permitted either.

Filming while on private property follows many restrictions. The owner of the property is permitted to film their own property. However, they must receive permission from others on the property to be allowed to film that person.

In order to film someone else's property, permission must be received from the owner.

Photographing or videotaping a tourist attraction, whether publicly or privately owned, is generally considered legal, unless explicitly prohibited by posted signs.



General Information

Copyrights Images and Photography

Photographing of privately-owned property that is generally open to the public (i.e. retail) is permitted unless explicitly prohibited by posted signs.

Some jurisdictions have laws regarding filming while in a hospital or health care facility. Where permitted, such filming may be useful in gathering evidence in cases of abuse, neglect, or malpractice.

One must not hinder the operations of law enforcement, medical, emergency, or security personnel by filming.

Any filming with the intent of doing unlawful harm against a subject may be a violation of the law in itself.



General Information

Copyright Act 1976

This is a piece of United States copyright legislation and remains the primary basis of copyright law in the United States, as amended by several later enacted copyright provisions.

The Act spells out the basic rights of copyright holders, codified the doctrine of "fair use," and for most new copyrights adopted a unitary term based on the date of the author's death rather than the prior scheme of fixed initial and renewal terms. It became Public Law number 94-553 on October 19, 1976 and went into effect on **January 1, 1978**.

Fair use is a doctrine in United States copyright law that allows limited use of copyrighted material without requiring permission from the rights holders, such as use for scholarship or review. It provides for the legal, non-licensed citation or incorporation of copyrighted material in another author's work under a **four-factor balancing test**. It is based on free speech rights provided by the First Amendment to the United States Constitution.



General Information

Copyrights

The Current Fee for registration of an artist or writers works is \$35 Online and \$45 in paper. This does not include any fees for attorneys or professional support.

Form Needed to Apply is “VA”

If you copyright a current work.. the use of the copyright symbol is optional. However.. it is a good practice to note on the pages the information is copyrighted.

ADDA Materials state at the bottom of each sheet “ Copyright ADDA International”. This gives a firm indication to anyone the information is protected and permission should be obtained to use any portion of what they have.

If an individual did use the information, and you made the decision to pursue a lawsuit. The maximum limit of statutory damages you may win is \$150,000.00

This is only for the violation of the copyright law. Additional penalties and fines would apply for the Civil Damages, Loss Revenue and a multitude of other offences. In Short... don't steel.



General Information

Copyrights - What Works Are Protected?

Copyright protects “original works of authorship” that are fixed in a tangible form of expression. The fixation need not be directly perceptible so long as it may be communicated with the aid of a machine or device. Copyrightable works include the following categories:

- literary works;
- musical works, including any accompanying words
- dramatic works, including any accompanying music
- pantomimes and choreographic works
- pictorial, graphic, and sculptural works
- motion pictures and other audiovisual works
- sound recordings
- architectural works

These categories should be viewed broadly. For example, computer programs and most “compilations” may be registered as “literary works”; maps and architectural plans may be registered as “pictorial, graphic, and sculptural works.”

A Copyright remains in effect for 70 YEARS beyond the death of the Holder

General Information



Bit Color

1-bit color ($2^1 = 2$ colors) monochrome, often black and white

2-bit color ($2^2 = 4$ colors) CGA, gray-scale early NeXTstation

3-bit color ($2^3 = 8$ colors) many early home computers with TV out displays

4-bit color ($2^4 = 16$ colors) as used by EGA
and by the least common denominator VGA standard at higher resolution

5-bit color ($2^5 = 32$ colors) Original Amiga chipset

6-bit color ($2^6 = 64$ colors) Original Amiga chipset

8-bit color ($2^8 = 256$ colors) most early color Unix workstations,
VGA at low resolution, Super VGA, AGA

12-bit color ($2^{12} = 4096$ colors) some Silicon Graphics systems, Color NeXTstation systems,
and Amiga systems in HAM mode.



General Information

Bit Color

HighColor or HiColor is considered sufficient to provide life-like colors, and is encoded using either 15 or 16 bits:

15-bit uses 5 bits to represent red,
5 for green,
and 5 for blue.

Since 25 is 32 there are 32 levels of each color which can therefore be combined to give a total of 32,768 ($32 \times 32 \times 32$) mixed colors .

16-bit color uses 5 bits to represent red, 5 bits to represent blue, but (since the human eye is more sensitive to the color green) uses 6 bits to represent 64 levels of green.

These can therefore be combined to give 65,536 ($32 \times 64 \times 32$) mixed colors. Sixteen-bit color is referred to as "thousands of colors" on Macintosh systems.



General Information

Bit Color

HighColor LCD displays

Some cheaper LCD displays use dithered 18-bit color

($64 \times 64 \times 64 = 262,144$ combinations) to achieve faster transition times,
without sacrificing truecolor display levels entirely.



General Information

Bit Color

True Color can mimic far more of the colors found in the real world, producing 16.8 million distinct colors.

This approaches the level at which megapixel monitors can display distinct colors for most photographic images, though image manipulation, monochromatic images (which are restricted to 256 levels, owing to their single channel), large images or "pure" generated images reveal banding and dithering artifacts.

24-bit true color uses

- 8 bits to represent red,
- 8 bits to represent blue and
- 8 bits to represent green.

28 = 256 levels of each of these three colors can therefore be combined to give a total of 16,777,216 mixed colors (256 × 256 × 256). Twenty-four-bit color is referred to as "millions of colors" on Macintosh systems.



General Information

Bit Color

30-bit color

Video cards with 10 bits per color, or 30-bit color, started coming into the market in the late '90s.

An early example was the Radius ThunderPower card for the Macintosh, which included extensions for Quickdraw and Photoshop plugins to support editing 30-bit images.



General Information

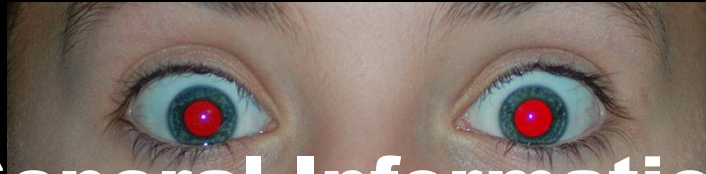
Bit Color

32-bit color

"32-bit color" is generally a misnomer in regard to display color depth.

While actual 32-bit color at ten to eleven bits per channel produces 4,294,967,296 distinct colors, the term "32-bit color" is most often a misuse referring to 24-bit color images with an additional eight bits of non-color data (I.E.: alpha, Z or bump data), or sometimes even to plain 24-bit data.

Systems using more than 24 bits in a 32-bit pixel for actual color data exist, but most of them opt for a 30-bit implementation with two bits of padding so that they can have an even 10 bits of color for each channel, similar to many HiColor systems.



General Information

Red-EYE

The **red-eye effect** in photography is the common appearance of red pupils in color photographs of eyes. It occurs when using a photographic flash very close to the camera lens (as with most compact cameras), in ambient low light.

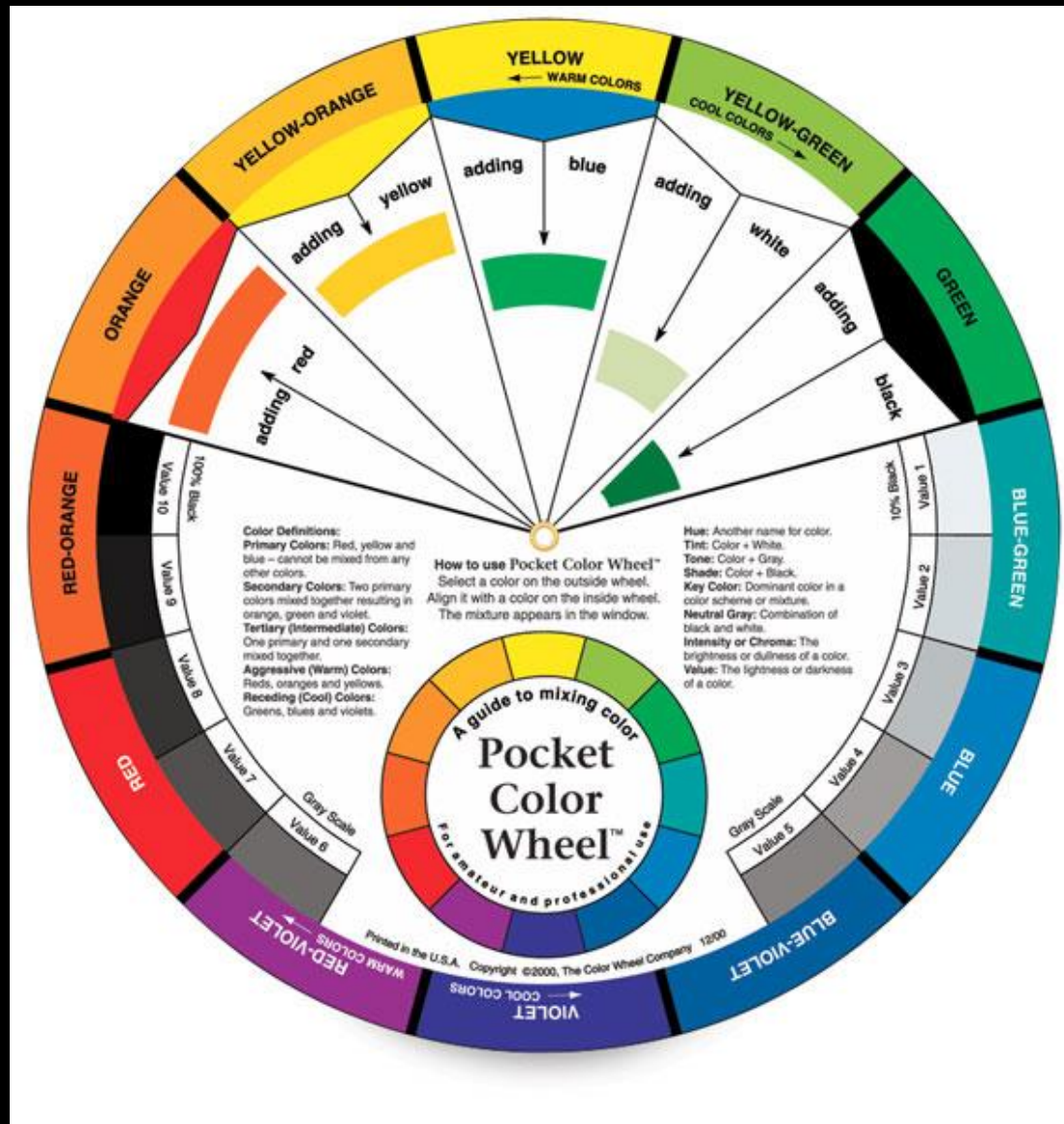
Red-eye effect appears in the eyes of humans and animals that have no tapetum lucidum, hence no **eyeshine**,^[citation needed] and rarely in animals that have a tapetum lucidum. The red-eye effect is a photographic effect, not seen in nature.

Because the light of the flash occurs too fast for the pupil to close, much of the very bright light from the flash passes into the eye through the pupil, reflects off the fundus at the back of the eyeball (see diagram in Eye), and out through the pupil.

The camera records this reflected light. The fact that the reflected light is red often is attributed to the ample blood supply of the retina and/or chorium, but this is incorrect. The red-eye effect is due to the color of the fundus, which is due to melanin, a pigment, principally located in the retinal pigment epithelium (RPE).



Artist Color Wheel





Equipment Operation

KNOW THE FUNCTION OF THE FOLLOWING EQUIPMENT & ITEMS

Scanner

Internal Hard Drive

External Hard Drive

Removable Drive / Jump Drive

RAM

Monitor – CRT & LCD - Operates in what color mode

Digital Projector

Desk Top Ink Jet Printer - Generally operates in what color mode

Laser Printer – Office Color (Photo Simulation)

Laser Printer – Photographic Quality

Thermal Color Printer

Paper Types (Bond x Weight) (Gloss Papers) (Art Papers)



Out-Put Operation

Editing a Photograph in a Graphics Program

Colors that are in Three Dimensions

Graphics to a Website – RGB

Graphics to a Document –

Graphics to a Laser Printer –

Noise Removal Filter for Photoshop

24 Bit Depth will provide how many colors

Dye – Sublimation

Bubble Jet



GRAPHIC EDITING SOFTWARES

A Partial List of programs that are available for the graphics industry

ACD Canvas *(formerly Deneba Canvas)*

Adobe Illustrator

Adobe InDesign;

Adobe Fireworks *(formerly Macromedia Fireworks)*

Adobe Flash *(formerly Macromedia Flash)*

Adobe FreeHand *(formerly Macromedia FreeHand)*

Artworks

CorelDRAW

ConceptDraw

Windows and Macintosh vector graphic editor

Deneba Canvas

Elgorithms MagicTracer

Express Animator

Gerber Omega

Intaglio

jfig *(java programming language based)*

Microsoft Expression Graphic Designer

based on Creature House Expression

Microsoft Expression Blend

Microsoft PhotoDraw

OmniGraffle

Paint Shop Pro

Satori Paint

Serif DrawPlus

SmartDraw

Xara Xtreme



Software Information - Adobe

Photoshop has strong ties with other Adobe software for media editing, animation, and authoring.

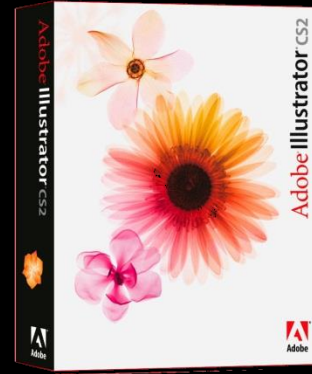
Files in Photoshop's native format, .PSD, can be exported to and from Adobe ImageReady, Adobe Illustrator, Adobe Premiere Pro, After Effects, and Adobe Encore DVD to make professional standard DVDs and provide non-linear editing and special effects services, such as backgrounds, textures, and so on, for television, film, and the Web. For example, Photoshop CS broadly supports making menus and buttons for DVDs.

For .PSD files exported as a menu or button, it only needs to have layers, nested in layer sets with a cuing format, and Adobe Encore DVD reads them as buttons or menus.

Photoshop can utilize the color models RGB, Lab, CMYK, grayscale, binary bitmap, and duotone. Photoshop has the ability to read and write raster and vector image formats such as: .EPS, .PNG, .GIF, .JPEG, Fireworks, etc.

It also has several native file formats.

Software Information Illustrator



Adobe Illustrator is a vector-based drawing program developed and marketed by Adobe Systems.

Illustrator CS is available stand alone or with the Adobe Creative Suite. It is available for both the Mac OS X and Microsoft Windows operating systems.

It was the last version for the Mac which did not run natively on both Intel and PowerPC processors. Illustrator CS was the first version to include 3-dimensional capabilities allowing users to extrude or revolve shapes to create simple 3D objects.

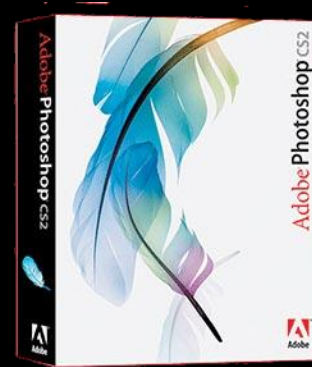
Among the features included in Illustrator CS are Live Trace, Live Paint, a control palette and custom workspaces.

Live Trace allows for the conversion of bitmap imagery into vector art and improved upon the previous tracing abilities.

Live Paint allows users more flexibility in applying color to objects, specifically those that overlap.

Software Information

PhotoShop



Adobe Photoshop, or simply **Photoshop**, is a graphics editing program developed and published by Adobe Systems.

It is the current and primary market leader for commercial bitmap and image manipulation, and is the flagship product of Adobe Systems. It has been described as "an industry standard for graphics professionals" and was one of the early "killer applications" on Macintosh.

Photoshop CS, the tenth iteration of the program, was released on 16 April 2007.

"CS" reflects its integration with other Creative Suite products, and the number "3" represents it as the third version released since Adobe re-branded its products under the CS umbrella.

Photoshop features are the ability to apply non-destructive filters, as well as new selection tools named Quick Selection and Refine Edge that make selection more streamlined.

Adobe released Photoshop CS Extended, which includes all the same features of Adobe Photoshop CS3 with the addition of capabilities for scientific imaging, 3D, and high end film and video users. The successor to Photoshop CS3, Photoshop CS4, is the first 64-bit Photoshop.

Software Information InDesign



Adobe InDesign is a desktop publishing (DTP) software application produced by Adobe Systems.

Designers are the principal users in creating and laying out periodical publications, posters, and print media.

Longer documents still are designed with FrameMaker (manuals, technical documents, etc.), or with QuarkXPress (books, catalogs, etc.).

Using a relational database, InDesign and Adobe InCopy word processor use the same formatting engine as InDesign.

InDesign is the direct competitor to QuarkXPress.

Software Information Publisher



Microsoft Office Publisher (previously and commonly known as **Microsoft Publisher**) is a desktop publishing application from Microsoft.

It is an entry-level desktop publishing application, differing from Microsoft Word in that the emphasis is placed on page layout and design rather than text composition and proofing.

Microsoft Publisher 2007 provides simple story editing with Microsoft Word 2007, but unlike Adobe InDesign & Adobe InCopy, it does not provide built in XML story board and copy-editing support.

Publisher's proprietary file format is unsupported by most other applications, with the exception of Adobe PageMaker.

Markzware's PUB2ID (Publisher to InDesign) plugin will convert Publisher documents from versions 2002 through 2007 to Adobe InDesign CS2 and CS3.

Publisher supports numerous other file formats, including the Enhanced Metafile (EMF) format which is supported on Windows platforms. Publisher 2010 is now being Beta Tested

Software Information

Quark XPress



QuarkXPress ("Quark") is a computer application for creating and editing complex page layouts in a WYSIWYG environment.

It runs on Mac OS X and Windows.

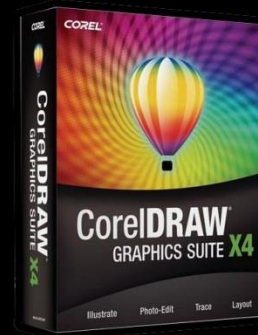
It was first released by Quark, Inc. in 1987 and is still owned and published by them. The most recent version is 7.3.1 and includes editions for publishing in English ("International and U.S."[1]) and over a dozen other languages.

QuarkXPress is primarily used by large publishing houses to produce the kinds of complex page layouts required by magazines, newspapers, catalogs, and similar printed materials.

It is one of two products (the other being Adobe InDesign) that dominate that market space.

Software Information

Corel Photo-Paint



Corel PHOTO-PAINT is a raster graphics editor created by Corel. The current version is Corel PHOTO-PAINT X4 (14) – now X5. It is not sold by itself, but instead included with CorelDRAW (CorelDRAW Graphics Suite).

Its main uses are image manipulation and creation of web graphics as well as photorealistic illustrations, collage, and hand drawn illustrations, using a pen tablet such as the Wacom pen tablet. Many contemporary illustrators use Corel Photo-Paint to make all kind of illustrations.

In today's illustration business, illustrators can use Corel Photo-Paint doing illustrations, to everything from a hand drawn illustration for a magazine, book, storyboards and concept art, as well as for both the movie industry and computer game industry. One could say that any illustration that can be made by a human hand can be done with Corel Photo-Paint, and more. As of version 11, Corel increasingly gave attention to the PC photography user; support for the Windows Image Acquisition-interface and Exif was introduced then, as was a Red Eye Removal Tool. The latest version available for Macintosh is version 11.

PHOTO-PAINT functionality can be extended by Photoshop-compatible plugins.

They are listed in the 'Effects' menu, below the built-in effects.

ADDA Professional Certification Series – Digital Imaging & Editing

Software Information

Corel Draw



Several innovations to vector-based illustration originated with **CorelDRAW**:

a node-edit tool that operates differently on different objects, fit text-to-path, stroke-before-fill, quick fill/stroke color selection palettes, perspective projections, mesh fills and complex gradient fills.

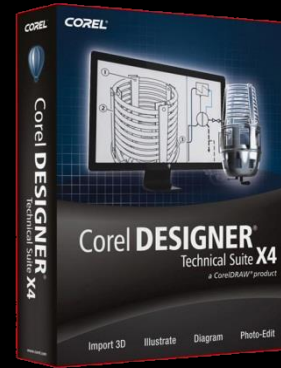
CorelDRAW differentiates itself from its competitors in a number of ways. The first is its positioning as a graphics suite, rather than just a vector graphics program.

A full range of editing tools allow the user to adjust contrast, color balance, change the format from RGB to CMYK, add special effects such as vignettes and special borders to bitmaps.

Bitmaps can also be edited more extensively using Corel PhotoPaint, opening the bitmap directly from CorelDRAW and returning to the program after saving. It also allows a laser to any drawings.

Software Information

Corel Designer



Corel Designer is a vector-based graphics program. It was originally developed by Micrografx, which was bought by Corel in 2001.

The last version developed by Micrografx was 9.0 in 2001.

This program was later sold as Corel Designer 9.

The current version is Technical Suite X4. There is still a number of users who choose to continue working with version 9.0, due to newer versions of the products being based on a modified CorelDraw rather than the original product.

Corel Designer is above all effective for the creation of engineering drawings, but also offers many functions for graphic design.

Software Information

FLASH



Adobe Flash (previously called **Shockwave Flash** and **Macromedia Flash**) is a set of multimedia technologies developed and distributed by Adobe Systems and earlier by Macromedia.

Since its introduction in 1996, Flash technology has become a popular method for adding animation and interactivity to web pages; Flash is commonly used to create animation, advertisements, various web page components, to integrate video into web pages, and more recently, to develop rich Internet applications.

Flash can manipulate vector and raster graphics and supports bi-directional streaming of audio and video. It contains a scripting language called ActionScript. It is available in most common web browsers and some mobile phones and other electronic devices (using Flash Lite). Several software products, systems, and devices are able to create or display Flash, including the Adobe Flash Player.

The Adobe Flash Professional multimedia authoring program is used to create content for the Adobe Engagement Platform, such as web applications, games and movies, and content for mobile phones and other embedded devices.

Software Information

ADOBE PDF



The **Portable Document Format (PDF)** is the file format created by Adobe Systems in 1993 for document exchange.

PDF is a fixed-layout format used for representing two-dimensional documents in a manner independent of the application software, hardware, and operating system.

Each PDF file encapsulates a complete description of a 2-D document (and, with Acrobat 3-D, embedded 3-D documents) that includes the text, fonts, images, and 2-D vector graphics that compose the documents.

PDF IS AN OPEN STANDARD - ISO Ballot for PDF 1.7 Passed! Passed by a vote of 13:1

Countries voting positive with no comments:

Australia, Bulgaria, China, Japan, Poland, South Africa, Spain, Sweden, Ukraine. (9)

Countries voting positive with comments: UK (13), USA (125), Germany (11), Switzerland (19).

Countries voting negative with comments: France (37).

Countries abstaining: Russia - Italy sent comments but is not a voting (P) member.

Total votes 14.

13 Positive is 93% (must be > 66.6%) 1 Negative is 7% (must be < 25%). Clear winner!

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some Photoshop Tools you should know

Rectangular Marquee Tool (M)

Lasso Tool (L)

Crop Tool (C)

Healing Brush Tool (J)

Clone Stamp Tool (S)

Eraser Tool (E)

Blur Tool (R)

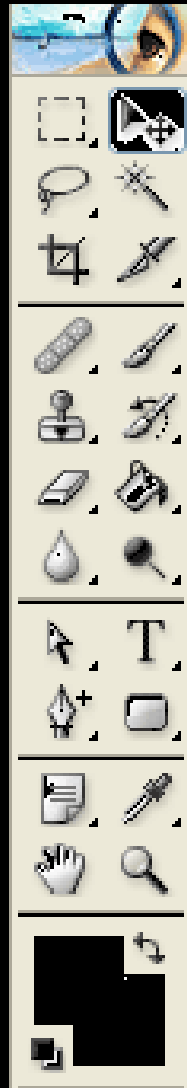
Direct Selection Tool (A)

Add Anchor Point Tool

Notes Tool (N)

Hand Tool (H)

Set foreground color



Move Tool (V)

Magic Wand Tool (W)

Slice Tool (K)

Brush Tool (B)

History Brush Tool (Y)

Paint Bucket Tool (G)

Dodge Tool (O)

Horizontal Type Tool (T)

Rounded Rectangle Tool (U)

Eyedropper Tool (I)

Zoom Tool (Z)

Set background color

Why use Image Database Software



- Helps Keep Track of all Graphic Files
- Photo Management Software allows highly customizable image databases / thumbnails / and graphics editing.
- Photo Management Software makes it easy to catalog, locate, maintain and modify all your graphics and multimedia files, and create online photo galleries.
- If you manage pictures and are in need of an image database to create online photo galleries a management software is a big help.
- Some of the Software found on the Internet is:

ThumbsPlus

PAXit

i MATCH

iView

e-mageSoft

pixelCAT



This Ends the Image Editing Review Section

