## EXPLANATION OF DIFFERENT GRAPHIC FILE FORMATS

Graphics come in many flavors but not all file formats are suitable for all purposes. How do you know which is best? In general, there are graphics formats suitable for printing and those for on-screen viewing or online publishing. Within each group there are also formats that are better than others for the same task.

RGB is the standard mode for display on monitors, for use with web graphics etc. Simply put, it stands for RED - GREEN -BLUE.

CMYK is the format that is used for four colour process printing. CMYK stands for CYAN, MAGENTA, YELLOW and BLACK.

Web Colours (also known as hexidecimal colours) are merely a pallette that is safe to view on a standard computer monitor.

Resolution is the dots (or lines) in an inch. The monitor default is 72 dots per inch. Printing normally require something in the range of 300 to 600 dots per inch to ensure a smooth, non-grainy image.

DPI Dots Per Inch (see resolution)

Vector In the graphics and print industry, we often require a certain type of file called a vector file. Vector graphics use of geometrical primitives such as points, lines, curves, which are all based upon mathematical equations, to represent images in computer graphics. Vector art is key in printing. Since the art is made from a series of mathematical curves it will print very crisply even when resized. For instance, one can take a vector logo and print it on a business card, and then enlarge the same vector logo to billboard size and keep the same crisp quality. A raster or bitmap graphic would blur excessively if it were enlarged from business card size to billboard size.

Bitmap Also referred to as **'raster'**, these graphics are the representation of images as an array of pixels, as it is typically used for the representation of photographic images.

Vector graphics formats are complementary to raster graphics. 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.
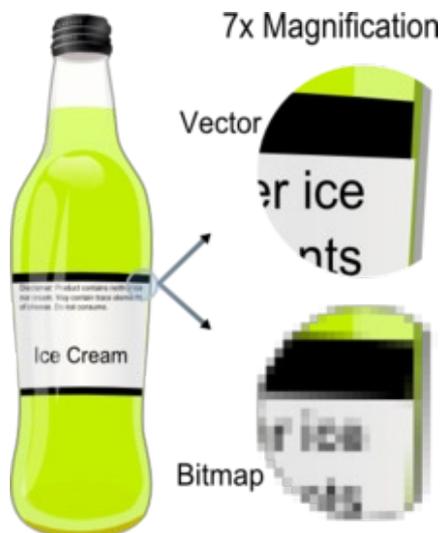
Example showing effect of vector graphics versus raster graphics. The original vector-based illustration is at the left. The upper-right image illustrates magnification of 7x as a vector image. The lower-right image illustrates the same magnification as a bitmap image. Raster images are based on pixels and thus scale with loss of clarity, while vector-based images can be scaled indefinitely without degrading.

Below is a list to reference common file types, and their purpose. You may not be able to open some of these file types if you don't have the appropriate software.

.eps (Encapsulated Post Script)

An .eps file could be created in a number of applications, eg. Photoshop, Illustrator or Indesign, to name the most common. These files are often used to save 'vector' logos.

Colours	These files support several colour modes. CMYK/Pantone colour or RGB for a specific web purpose.
Resolution	These files are usually resolution independent, as you can resize them to whatever resolution you need them, or print them directly from the vector application. However, it is possible for an .eps to be in a raster/bitmap format (such as a Photoshop .eps). In this instance it can range in resolution from high (300dpi) to low (72dpi). For print however, it should always be supplied in the high-resolution range.
Purpose	As stated these files are usually preferred for print, and are also used to export .jpg and .gif files for digital use, but are rarely, if ever seen directly used on the web.

.ai (Illustrator) file

This is a vector format source file, or the format in which the files were originally created, and can easily be exported to .eps or imported into Photoshop or Indesign with ease.

Colours	Same as .eps
Resolution	Same as .eps, (except there is no such format within Photoshop.)
Purpose	As per .eps files .ai files are also preferred in the graphic and print industries.

.pdf (Portable Document Format)

This format is often used in print as it can support vectors and when printed from, has a very low risk of altering any of the other graphic elements contained in the file. These files can also be exported from most applications. Since Adobe makes Illustrator and Photoshop, it expectedly exports the most true-to-form .pdf files. These files can be opened in professional editing software, and printed from (providing it has been created with the correct settings), while also allowing the client to view them using the free Adobe Acrobat Reader.

Colours	Same as .eps
Resolution	Can be either high or low resolution.
Purpose	As stated these files are sometimes used for print, and are also very popular for online document publication.
Creation Method	These files are either exported from an application directly, or, distilled from a 'Postscript (.ps) fle using Adobe Distiller. Distilling or exporting (dependant on what correct job options and settings have been used) creates a pdf file which is either suitable for screen-only viewing (such as files sent from your designer for you to proof), or high-resolution (also referred to as Print-Ready).

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.jpg or .jpeg (Joint Photographic Experts Group)

These files are always raster** graphics. They can be viewed in a host of applications, ranging from professional photo editing software, such as Adobe Photoshop, through to Mozilla or Internet Explorer. Most digital cameras create RGB .jpg files ranging in size from 640 pixels x 480 pixels to 2560 pixels x 1920 pixels or higher by default. .jpg is a great format for creating and exchanging digital photographs.

Colours Will support RGB and CMYK, but without the right software, you cannot view CMYK .jpg files. Most .jpg file creation methods will default to RGB.

Resolution As a standard 72 dots per inch for viewing on the screen. The print resolution should be set to achieve the best result for the method of print selected. (See document 'File Types & Guidelines').

Purpose Usually for web or digital only use, but also used to create printed photographs from a digital camera. Since .jpg offers compression, often an original image can be optimised (altered for faster download) for web use, with a trade-off between file size and quality.

.gif (Graphic Interchange Format)

These files are very often exports from vector formats, but are always raster. In a scenario where the colours used are limited, they are often smaller than a .jpg file, for the same quality image.
.gif files offer two unique options that .jpg files do not:- animation, and transparent backgrounds. As .gifs also allow for transparency, you can place on a pages with different background colours or images, without seeing the image's 'bounding box'. .gifs are not a suitable file format for print due to their limited pallette and normally lo-resolution.

Colours Will make palette of colours either 2, 4, 8, 16, 32, 64, 128 or 256. The fewer the colours the smaller the file, but you may lose quality if you drop colours.

Resolution As a standard, 72dpi for viewing on the screen.

Purpose Almost exclusively used for the web and digital use.

Format	Designed for	Top choice for
AI	**Native file of Adobe Illustrator**	**HIgh Resolution printing of illustrations**
BMP	Screen display under Windows	Windows Wallpaper
EPS	**Printing to PostScript printers/Imagesetters**	**High resolution printing of illustrations**
GIF	Screen display, especially the Web	Online publishing of photographic images
JPEG, JPG	Screen display, especially the Web	Online publishing of photographic images
PDF	**Screen display OR Printing to PostScript Printers**	**High resolution printing of images & documents**
TIFF, TIF	**Printing to PostScript printers**	**High resolution printing of images**

RGB & CMYK Explained - The plain english version

Perhaps one of the most misunderstood truths when printing in color. The 2 acronyms above refer to the color palette which is used in graphic design.

Full colour printing utilises just 4 base colours - the different hues and shades of color are all derived from a combination of 4 those colours, Cyan (c), Magenta (m), Yellow (y) & Black (k).

Your computer monitor, however, displays in an RGB format! Unfortunately, when preparing files for print, converting your RGB file to CMYK sometimes the makes color looks different than what you see on your monitor.

If you do not convert the files to CMYK yourself prior to supplying to us, you run the risk of your job looking different than expected because the conversion was not made. The safest way to achieve colour printing accuracy is to create your artwork using the CMYK pallette from the start. Doing this will give you a better idea of how your colours will look when printed.

About Resolution and understanding D.P.I

DPI (dots per inch) is the measurement used within the printing and graphics design industry to determine how sharp an image is. Web graphics, online pics, etc. are normally created at 72dpi (dots per inch). This low resolution is great for the web because the images look excellent on a computer monitor and the file sizes are very small. When designing graphics for printing purposes, your images should be 300dpi or better. Essentially what this is doing is displaying more information (or dots) for every square inch of the image you are viewing. The more dots used, the sharper the image, it's really that simple. Colour printing will look blurry if a 72dpi artwork is used, so make sure you supply your images at 300dpi at actual size before you submit your files.