



A Bitmap is worth 1000 words (1000s of words?)

It is said that a picture is worth a thousand words. So, keeping this in mind, I'm going to keep this discussion about pictures under a thousand words!

Computer graphics are as basic as this: they can be either a raster image or a vector image.

Now, you've encountered raster graphics hundreds of times before, only, you've probably heard them referred to as bitmaps. The lowdown on a bitmap is it's just a grid of individual pixels that makes up your image of grandmother sitting in her easy chair reading a 1938 edition of *National Geographic*.

On your computer this bitmap is rendered in those countless tiny squares that make up your computer screen. Digging just a not deeper, each of these squares, or pixels, has been coded as a specific hue or shade.

When you see them together, that's when grandma's concentrated stare into the *National Geographic* becomes the picture on your screen.

So, when do you use a bitmap? Well, it's best used for a non-line art images such as photographs, or for scanned artwork and even for detailed graphics.



You make the call for a non-line art image as a raster graphic when you're printing subtle chromatic gradations, undefined lines and shapes, and of course, for complex compositions such as a group of people all wearing Hawaiian shirts in the blazing August sunshine.

However, raster graphics are all pixel-based, which means you can't push the envelope. There's only that much to be done with a bitmap image, because if you try to make it stand on it's head, degradation sets in. It just won't do windows!

You've seen pictures go jagged and blurry when they were stretched? this happens because the individual pixels that make up grandma's photo are fixed in number. You can't stretch them, not even with the digital equivalent of hamburger helper.



If you do, the individual pixels that make up the image suddenly find their partner pixel far away, with no filler between, and this looks like, er, stretch marks.

To put it differently, raster images are resolution-specific, and the law is unyielding, which is such that they are defined and displayed at one specific resolution. As many of us should know, or at least heard about, resolution in bitmaps is measured in DPI, or dots per inch.

More DPI means better resolution, which means that you could get a better printout if you're printing to a high-end printer.

Of course, nothing is for free. Higher resolution means bigger files, and you have to do better than a 3.5 floppy disk on a 486 PC computer if you're going to work on removing (or improving!) grandma's irascible smile in PhotoShop.

Moreover, a large bitmap file isn't all that hot on economy - it tends to be a bit on the sluggish side, can be unwieldy to work with, and could take forever to print if your printer isn't in a cooperative mood.

No doubt you've seen some of these bitmap formats: TIFF, JPEG, GIF, PCX and BMP. Hmm... A Tiff at 300 DPI works wonderfully, just like sliced bread!

Now vector graphics are a whole different ball-game. They're based on mathematical formulas that define geometric primitives such as polygons, lines, curves, circles and rectangles - stuff you can immediately forget.

What this means is they work best when they're dealing with structured images like line art graphics with have flat, uniform colours.

You will find most vector graphics shaped as logos and fonts, which means they're mostly created, and not natural, as say a photograph.

Because of the way vectors work, you will find them more malleable, versatile and thankfully, flexible.

One of the widely appreciated facts about vector graphics is they're quickly and perfectly scalable. There is no limit for sizing - you just grab and stretch, and the graphic dutifully follows.

And thankfully, too, they are not resolution-dependent. In fact, resolution is dependent on the monitor or printer that's doing the work, so the better the printer, the better the output quality. They're also small files, for unlike a raster graphic, there is no map of the bits that has to remember where each pixel resides.

Conclusion? Vector graphics are efficient, versatile, and fun to work with. Some of the vector formats you've probably met are AI, ESP, WMF, and PICT for Macintosh.

So, what's your preference? Well, bitmap and vector graphics are different entities altogether, and there's no substitute for grandmother reading her favorite magazine in your favorite photograph.

However, it certainly makes a world of difference understanding how to make her faraway eyes speak a thousand words in a quality printed document.