UNDERSTANDING IMAGES

In Short:

- **For web:** use .png, .gif, .svg or .jpg, at 72 or 150 ppi*.

- **For print:** .eps or .ai are best for logos and art containing text; .pdf .tif or .jpg images may also be used and work well for photos and other art but need to be 300 ppi or more *at the size it will be used*.

- **How can you tell** what the resolution of an image is? You can't unless you have Photoshop, InDesign or another graphics program, however you can assume that images pulled from the web cannot be used in print.

- **Warning about images saved in MS Word:** Special care is needed when saving images in MS Word for export later because they are often reduced to low resolution in the process. The best practice is to send the original images separately.

- **High quality PDF** files maintain the integrity of all vector and pixel-based art (however, pdfs cannot be edited).

- Of course, **proper licensing** must be obtained to use images, whether they have a copyright mark or not!

.eps or .ai (Also known as line or vector art) Native Illustrator files, best for print logos.

1. Vector art works like a "paint by numbers" with lines and filled-in shapes. There are NO pixels. Line art can be expanded to any size and remain crisp and clean. Vector files can be converted to .gif or .png for use in web.

2. Vector files have a transparent background. Here is an example of how an image with a transparent background looks over a texture.

Vector files can be rasterized (turned to pixels); raster files cannot be converted to vector.

However, just to confuse things, images with pixels can be embedded into vector files. The embedded raster image stays as pixels even though it is inside an .eps. Vector files with raster images embedded are very large! I don't know why anyone would do this, but has become very common.

Pixel-Based (Raster)Images (.tif, .jpg, .psd, digital camera and scanned images)


3. Here is the same art converted to pixels or rasterized. It is 20 pixels wide and 20 pixels high. (For these examples the pixels are shown magnified.)

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*ppi means pixels per inch. Many people, use the term dpi which means dots per inch. Dpi only matters in printing. If you hear the tern dpi thrown around when people are talking about image resolution, it is safe to assume they really mean ppi. Even many pros make this mistake!!!
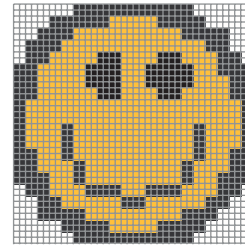
Pixel-Based (Raster)Images *(continued)*
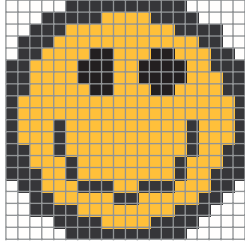
4. Here is a diagram of the pixels. Each pixel can only be one shade of one color.

"Low-res!?" says the summer intern " No Problem, I'll just increase the resolution in Photoshop!" But what happens when you do that?
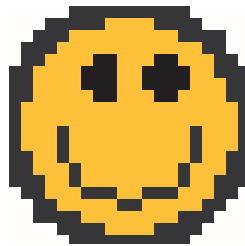
5. Here is the same art with the resolution doubled from 20 to 40 ppi. Why does it look the same?

6. Here is a diagram of the pixels—4 per inch instead of 2. The image has twice as many pixels and more megs but looks the same!

7. The only thing you can do to make it look less pixelated is to turn on anti-aliasing. This will smooth your pixels, but may also look blurry.

8. The best solution is to create the image as high resolution in the first place. Here is the image created at 300 ppi.

*continued…*

Pixel-Based (Raster)Images *(continued)*

9. Many (but not all) rasterized images have an opaque background. Here is an example of what an opaque image looks like over a texture. Once a file has an opaque background it cannot be erased. The best you can do is draw an outline around the art to "clip" it, called silhouetting, a painstaking process best left for very simple images.

Why do images look smaller on higher resolution devices?
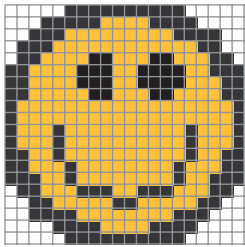
9. Here is a diagram of a 20 pixel x 20 pixel image. In this example, the pixels are large so the image is large.
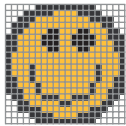
10. High resolution devices have more pixels per inch so the pixels are smaller. Here is a diagram of the same 20 pixel x 20 pixel image. The pixels are small so the image is small.

Tablets and smart phones generally have 150 ppi resolution, computers usually have 72. Web designers have to bear this in mind when designing sites.