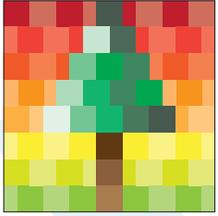


RASTER VS. VECTOR GUIDE

WHAT IS A RASTER IMAGE?

A raster image is an image that is made up of thousands to millions of individual square pixels, each representing a different color, and arranged together in order to display an image. A good example of a raster image is a photograph. **Common file names that are associated with raster images include: jpg, png, tiff, gif, and bmp.**

At Right: Sample Raster Illustration - Notice how each color is in its own square and is rendered in a pattern to make up the image.



WHAT IS A VECTOR IMAGE?

A vector image is made up of simple points and paths. The file contains data telling the points and paths how they are connected, in addition to what colors are being used to fill those spaces. Typically, vector images are used for logos and brand elements, along with designs that are intended for print. **Common file names that are associated with vector images include: ai, eps, and pdf.**

At Left: Sample Vector Illustration - Notice how the lines are crisp and connected (via points) to make shapes and separate colors.

RASTER & VECTOR FACTS

- Raster images display many variations of color in a single image. They also allow for color editing manipulated in many different ways. They also have the ability to display light and shadow details more precisely.
- Raster images are used in both web and print - but are dependent on meeting specific pixel dimensions for each type of application. Web images can have significantly less pixels and still look crisp, whereas print requires maximum pixels to ensure crisp quality. Web imagery can have fewer pixels and still be crisp, whereas print requires a large pixel ratio to ensure crisp quality.
- Raster images CAN NOT be enlarged without compromising quality.
- Vector files CAN be converted to raster files, but RASTER FILES CAN NOT BE CONVERTED TO VECTOR. Saving a raster image as an .AI, .EPS, or PDF DOES NOT convert it to a vector. In some instances, raster images can be re-drawn by a professional designer as a vector, but it may require several hours to do so (and it could be costly too).
- Raster images are often larger files, due to the complexity of individual colored pixels relative to the image size. (The larger the image = more pixels + more colors = larger file size.)
- Vector images are fully scalable, meaning that the same image can be designed once and resized for any size application. Thus, you can create an image that is 2 inches by 2 inches and re-size it to fit a 200 square foot space without losing image quality.
- Vector files are typically smaller than raster files, as they are simply comprised of mathematical data rather than pixels.
- The main difference between the two is that raster image pixels do not maintain their quality as their size increases. In fact, the more you enlarge a raster image, the more the quality decreases. Additionally, the lower number of pixels you have in an image, the more blurry or "pixelated" it becomes when blown up.
- Vectors display at the highest resolution allowed by the output device, regardless of size.
- Rasters will become blurry when enlarged beyond the native pixel dimension size.

RASTER VS. VECTOR GUIDE

RASTER VS. VECTOR USAGE

- Raster images are primarily used for photos, which is why Photoshop is an industry standard, raster editing program.
- Vector drawing programs, such as Adobe Illustrator, automatically create vector data as you draw. Logos, business cards, brochures, along with other graphic and branding elements that are intended for print, are best suited for vector art.
- A raster format is best for photographs and digital images.
- If you're not sure whether you should create a raster or vector file, here is some insight:
 - A. If you're creating anything with a logo, brand elements, type, or graphics with the intent to print, you should use vector art.
 - B. If you're working with photography or creating something for use on a screen or for the web, with no intent to print, use raster art.
- Some projects contain both kinds of element such as a vector logo and a raster photograph. It is just very important that when combining the two, the raster image should be set at a high enough pixel ratio (minimum 300ppi) to ensure crisp printing.

WHY DO WE NEED A VECTOR IMAGE?

- In order to create custom & cut graphics, printers will require a vector file.
- Vectors are much easier to manipulate. Thus, art/design/layout will be less time consuming for printers and less costly to you.
- Vectors provide consistent shape and clear printing at any size. Raster images are simply too unpredictable when being reproduced. As a result, printers can not guarantee print quality when raster images are involved.

EXAMPLES



.AI/.EPS VECTOR FILE
Original Art Size: 1" x 1"
Sized to 2" x 2"
No Loss of Detail

.PNG RASTER FILE
Original Art Size: 1" x 1"
Sized to 2" x 2"
Heavily Pixelated

.JPG RASTER FILE @72PPI
Original Art Size: 1" x 1"
Sized to 2" x 2"
Extremely Pixelated

.JPG RASTER FILE @150PPI
Original Art Size: 1" x 1"
Sized to 2" x 2"
Heavily Pixelated

.JPG RASTER FILE @300PPI
Original Art Size: 1" x 1"
Sized to 2" x 2"
Slightly Pixelated