



Handbook On
**GRAPHIC FILE CONVERSION
MANAGEMENT
AND WORKFLOW**

*Converting Raster Graphic Files
to Vector Graphic Files*

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This handbook is assembled for use by graphic designers to address procedures and provide resources pertaining to the task and workflow of converting raster graphic files to vector graphic files.





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GRAPHIC FILE CONVERSION MANAGEMENT AND WORKFLOW

I. INTRODUCTION

In recent years, the proliferation of accessible and increasingly affordable professional design software on the market has brought to light the growing issue of print shops receiving a varying range in quality of artwork from print clients. This range in quality is of constant concern to print shop owners and their employees and very often needs to be addressed by in-house graphic designers.

Often client artwork arrives to a printer as rasterized, low-resolution or even hand-drawn and/or scanned pieces. This artwork must be vectorized in an efficient workflow while maintaining the aesthetics the client or the client's representative intended. This handbook will address specific file type attributes a print shop may receive and help to create an efficient and flexible workflow for the in-house graphic production artist.



II. WHY CONVERT FROM RASTER TO VECTOR?

So what is the underlying need that this handbook addresses and why do graphics require conversion from raster to vector formats prior to printing? It comes down to what elements comprise a specific graphic: raster or vector. A raster graphic is comprised of pixels of a varying colors that align to form a graphic. The number of pixels used to form a graphic in this manner is called resolution. The higher the resolution, which equates to more pixels used, the better a graphic will look, specifically when enlarged. These higher resolution graphics, however, require large amounts of memory to store, transmit and transport and will still pixelate, or become “blocky” or grainy when enlarged as seen in FIGURE 1.

Vector graphics, the alternative, aids in keeping files sizes low and will not pixelate when enlarged. This file type does not consist of pixels of a certain predetermined number arranged in a specific order to form a picture. A vector graphic consists of paths formed between points in space. When these paths are closed they can be filled or stroked with color. These points in space can be mathematically resized by vector graphics software and the color(s) reapplied, thus avoiding loss in graphic quality.



Figure 1 - Raster & Vector Graphic Comparison



III. COMPREHENSIVE GRAPHIC FILE DESCRIPTIONS

Below is a list of file types, both raster and vector, common to the graphic design industry along with a brief description. This is by no means intended to reflect all of the graphic file types that may be encountered by a graphics designer or operator due to the exponential advances inherent to the field, but a list of the most common, industry-standard compressions. For additional information regarding the file types listed below as well as other, less-utilized compressions and their attributes, see the **WEB RESOURCES** section on page 10 of this handbook.

Raster File Types

BMP (Windows Bitmap) - Microsoft Windows compression format of lower quality than JPEG and with known compatibility issues.

DOC - Default Microsoft Word document file type.

GIF (Graphics Interchange Format) - Compression generally used to create small file sizes to be used in web work. This file type does not support a wide color range.

JPEG (Joint Photographic Experts Group) - Compression format used primarily for optimization to a small file format. Not generally used for high resolution work.

PNG (Portable Network Graphics) - Compression generally utilized to create small file sizes to be used in web work. Similar to, but of better quality than, GIF compression.

PSD - Native Photoshop file type which preserves graphic layer, resolution, color mode and other file information.

PSP - Native Paint Shop Pro file type which preserves graphic layer,



resolution, color mode and other file information.

RAW - Uncompressed format for high resolution images.

TGA (Truevision Advanced Raster Graphics Adapter) - Compression generally used for files with a limited color range. Used widely in video production due to the ability of the compression to embed an additional alpha layer within the file.

TIFF (Tagged Image File Format) - Cross-platform, flexible file format that supports numerous color modes and is generally used for very high resolution or uncompressed files.

Vector File Types

AI - Native Adobe Illustrator file type which preserves graphic layer, resolution, color mode and other file information.

EPS (Encapsulated PostScript) - Format that can be opened in either raster or vector editing software. This format supports all color modes.

PDF (Portable Document Format) - Adobe format which preserves nearly all attributes of a document in order for it to display correctly regardless of the software and/or hardware on which it is displayed.

SVG (Scalable Vector Graphics) - File type which allows a graphic to be scalable in XML and adjust to screen size and resolution.





IV. CONVERTING RASTER FILES TO VECTOR FILES

The following portion of this handbook covers the graphic conversion process utilizing Photoshop and Illustrator, two examples of industry-standard raster and vector graphic design software from Adobe Systems, Inc. However, these steps are general enough in nature that they may be used as a general guide for those using other software brands of similar capabilities.

Additionally, the steps below assume a certain amount of industry-standard skill and knowledge in regards to basic operation of the featured Adobe Systems software. More in-depth information regarding operation for this or similar applications should be sought from the manufacturer's technical manuals of the specific software utilized. Graphic software manufacturer web resources can be found in the "Web Resources" section of this handbook on page 10.

Utilizing Adobe Photoshop

Several steps may be performed in Adobe Photoshop to aid in the conversion process prior to placing the graphic into Adobe Illustrator:

1. Open the rasterized graphic in Photoshop. In this example, an element has been hand-drawn for use in a logo. Notice how the image contains rough, jagged edges, known as pixelation, from the low-resolution scan (FIGURE 2). This is of a typical quality a print shop may receive from some micro-business clients.
2. Smoothing some of the pixelation before importing into Illustrator tends to streamline the conversion process. This can be done in two steps:

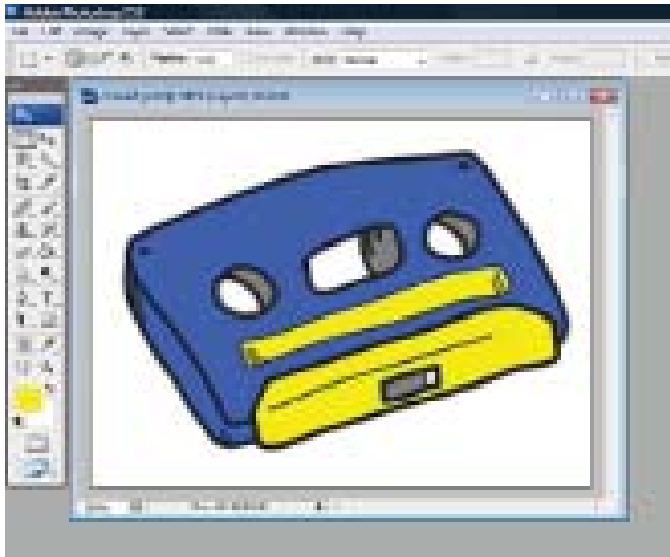


Figure 2 - Pixelation Due to Low Resolution Scan

- a. Upconvert to image to 300 dpi (FIGURE 3). The image pixelation will smooth out, but the image will be blurry.

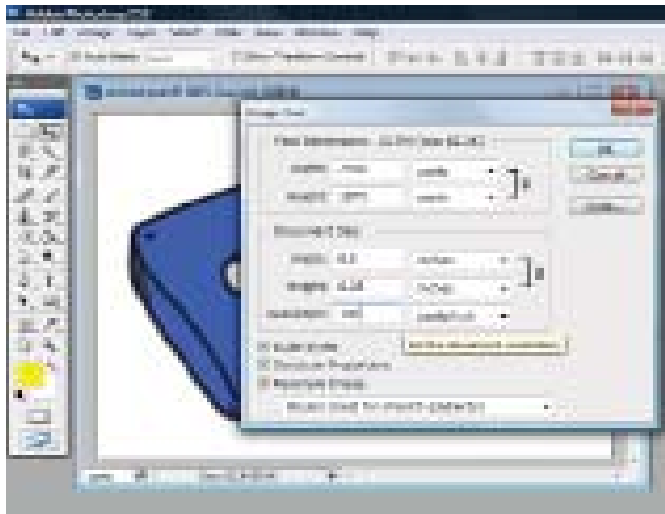


Figure 3 - Increase Resolution of Scanned Image



- b. Use the Smart Sharpen filter to smooth out the image blurriness. There are no exact figures to enter into the Amount and Radius fields. Use the slider bar below both fields and the preview window to adjust accordingly until the best, smoothest image is achieved. (FIGURE 4)
3. Save the file as a jpeg if it is not already saved in that compression.

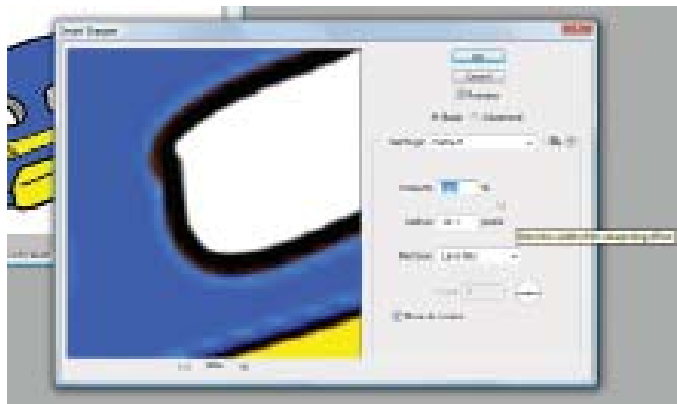


Figure 4 - Smart Sharpen Filter

Utilizing Adobe Illustrator

1. Open the upconverted and sharpened file in Illustrator.
2. ALT-drag the image to make a copy so there are two identical images in the workspace. One of these images will be used to create the image's color palette.
3. With one of the two images highlighted, click to reveal the Live Trace drop-down menu. It is encouraged that the attributes of these presets in this drop-down be explored to find the best settings for a particular graphic. For the purpose of this example, the Color 6 preset and its default settings will work well. (FIGURE 5)



V. CONCLUSION

Graphics operators are encouraged to experiment with the steps in this handbook in order to refine the raster to vector conversion task to fit the needs of the particular job types and graphics files received. Of special consideration for experimentation should be the amount of sharpening in the chosen raster software and the present and/or settings of the tracing application in the chosen vector software.

Graphics operators wishing to learn or hone skills in creating vector paths manually should familiarize themselves with the b ezier curve tools in the particular vector graphic editing software of their choice. These tools are utilized to create the physical paths that comprise a vector graphic. Creating these paths is a task which can be done by hand if the designer chooses this method rather than the auto-tracing features of the vector graphics software. This manual method may offer more finite control in graphics creation.

Additionally, a list of helpful resources and contacts has been compiled to provide technical information and resources for employees of contemporary print shops. Print shop representatives may also elect to provide a copy of this handbook to better educate existing and potential print clients to the processes involved in successful completion of print assignments. Education and efficiency provide for lower production costs and more timely delivery.



VI. WEB RESOURCES

- <http://www.aiga.org>
The professional association for design
- <http://www.openwith.org>
free programs to open any file extension
- <http://www.identifont.com/>
Identifont - Identify fonts by appearance
- <http://tc.eserver.org>
The EServer Technical Communications Library - A cooperative library for technical communicators
- <http://www.creativepro.com>
Software and hardware information and tutorials
- <http://www.atomiclearning.com>
Online software training
- <http://www.smashingmagazine.com>
Online graphics and design magazine containing articles and tutorials
- <http://www.vectormagic.com>
Easily Convert Bitmap Images To Clean Vector Art
- <http://www.adobe.com>
Adobe Systems Incorporated
- <http://www.corel.com>
Corel Corporation.



VII. INFORMATION SOURCES

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