



# Preparing Images for the Web

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The basics on file formats, resolution, editing, and optimization.



# Welcome to Web Graphics!

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## Overview:

A comprehensive study of Adobe Photoshop Elements, an application used to create, manipulate and optimize images for use on the Web. Image file formats and resolution will be discussed at length as well as appropriate image preparation for e-mail attachments.

## You will need:

- Adobe Photoshop Elements
- Digital Images (.jpg, .gif, .tif)
- Microsoft Windows XP

## You will learn:

**Digital Image Formats:** What are they and how to use them correctly.

**The Pixel:** What a digital image is made of and how it determines image resolution and size.

**Web and the Resolution:** Screen resolution how it affects image display.

**Under Compression:** "Save for Web" vs. "Save"

**Get the picture:** Importing images from the Web, a digital camera, other device.



# Digital Image Formats

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## GIF (Graphic Interchange Format)

**What is it?** A graphic file format that was developed specifically for use on the Web. The max amount of colors that can be displayed is 256. Uses LZW compression. Allows transparency.

### Uses:

- The Web

### Great for:

- Black & white images
- Line drawings
- Images that use “web-safe” colors
- Images that have large areas of homogeneous color.
- Simple animated icons and banners
- Images with transparent areas

### Who uses it?

- Web designers
- Web graphic designers

## JPEG (Joint Photographic Experts Group)

**What is it?** A graphic file format that was created to allow for full-color images. Millions of colors can be displayed using a JPEG. Uses a complex mathematical algorithm to calculate compression.

### Uses:

- The Web
- Digital cameras produce them
- Desktop printing

### Great for:

- PowerPoint presentations
- High image quality
- Color fidelity or true-life
- Complex textures

### Who uses it?

- Graphic designers
- Web graphic designers
- Web designers
- Photographers

# The Pixel:

## What a digital image is made of.

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A digital image is made up of **PIXELS**.

**Pixel:** A tiny block of color.

**Image Resolution:** The number of pixels in an image equals the size of the image.

For example, an 800x600 pixel image has an image resolution of 480,000 (the total # of pixels). It is different from **SCREEN RESOLUTION**.

**Pixels on the computer screen...**

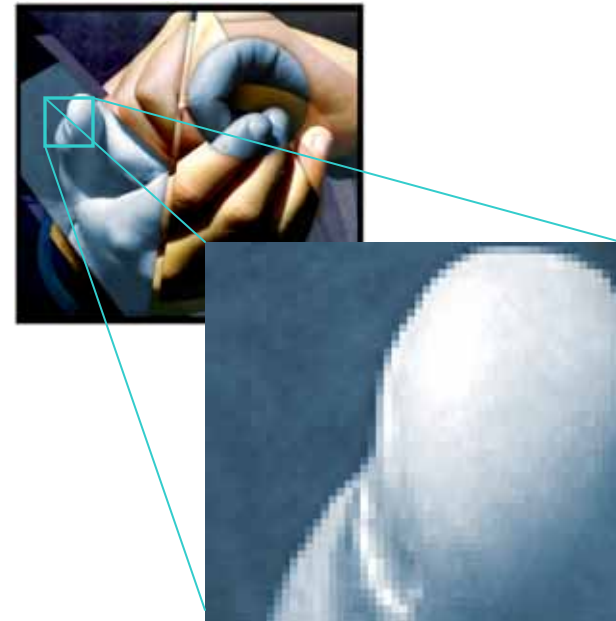
- 1 digital image pixel = 1 screen pixel

**Resizing images** is just a matter of decreasing or increasing the number of pixels in an image.

When resizing, the image is **RESAMPLED** according to an **INTERPOLATION** method. Interpolation is the method in which pixels are added or deleted from a digital image.

**Zoom-in/Zoom-out...**

- Zooming in on an image reveals the individual pixels present.
- From far away the image appears smooth and cohesive.
- Close-up, the image appears jagged and **"PIXELATED"**.



# The Pixel:

## What a digital image is made of.

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### Compare a digital image to a mosaic

Just like a mosaic is composed of many multicolored pieces of glass and stone, so a digital image is made up of multiple **pixels**.

When you zoom in far enough on a digital image, you are able to see the individual **pixels** that compose it.





# The Pixel:

## What a digital image is made of.

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### Hands-on Activity

Explore an image's pixels

#### Finding the pixels

1. Click START>ALL PROGRAMS>ADOBE PHOTOSHOP ELEMENTS...
2. Open an image by clicking BROWSE FOR FILE... on the Welcome Screen or FILE>OPEN... on the window toolbar.
3. Navigate to the sample image files in C:\PROGRAM FILES\ADOBE\PHOTOSHOP ELEMENTS 2\SAMPLES...
4. Choose an image file and double-click on it.
5. Zoom in on the image by clicking on the magnifying glass on the Tools palette. The cursor turns into a magnifying glass.
6. Using the magnifying glass, click on the image until you can see the individual pixels.
7. Experiment with zooming in and zooming out.
8. Note at what zoom percentage the image begins to appear **"pixelated"**.



# The Pixel:

## What a digital image is made of.

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### Hands-on Activity

#### Resizing Images

##### Image size and resolution

1. With the same image file open, view the image's properties by clicking on IMAGE>RESIZE>IMAGE SIZE...
2. Here you can see image's size, or image resolution.
3. Under Document Size, the size is given in inches. Here you can see how large the image would print on paper.
4. Keep "Resolution", under Document Size, at its default setting. This does not refer to the image resolution, but rather to how many of the images pixel's will be displayed per inch on a computer monitor. This is affected by **SCREEN RESOLUTION**.
5. Keep "**Constrain Proportions**" checked when you want the width and the height of the image to remain in proportion to each other.
6. Keep "**Resample Image**" to *bicubic* when enlarging images and bilinear when shrinking.
7. Experiment with resizing the image.

# Web and the Resolution

**Screen Resolution:** the number of pixels your computer monitor displays.

**Screen resolution varies with the settings on your computer. For example ...**

- A monitor with an 800x600 screen resolution is capable of displaying 800 pixels across by 600 pixels down.
- A monitor with an 1027x768 screen resolution is capable of displaying 1024 pixels across by 768 pixels down.

**Most monitors come with a range of screen resolution settings:**

- From “low” or “less” to “high” or “more, 800x600, 1027x768, 1028x960, etc.
- The more or less refers to the number of pixels it can display.

**The trade off...**

- The higher the screen resolution setting the smaller everything on your monitor will appear.

**The size of your monitor** determines how big each pixel is displayed.

**Screen resolution vs. image resolution**

- Both determine how an image is displayed on a screen.
- If an image’s dimensions, or resolution, equals the screen resolution, the image will fill the screen.
- **For example:** An 1280x960 image displayed on a monitor with 1280x960 screen resolution will fill the screen completely.



- A 1280x960 image displayed on a monitor with 800x600 screen resolution will appear bigger on screen.







# Web and the Resolution

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## Hands-on Activity

### Screen resolution and its affect on images

1. With the same image opened, return the image to it's original state. Use the History palette, if need be to, to "rewind" or "rollback" any edits you may have made.
2. Click START>PROGRAMS>CONTROL PANEL
3. Double-click on DISPLAY. The "Display Properties" window appears. Click on the "Settings" tab.
4. Change the screen resolution and click OK.
5. Go back to the image in Photoshop Elements and notice how the image appears.
6. Experiment with the screen resolution settings.



# Web and the Resolution

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## Hands-on Activity

### Screen resolution and desktop wallpaper

1. Click START>PROGRAMS>CONTROL PANEL
2. Double-click on DISPLAY. The “Display Properties” window appears. Click on the “Desktop” tab.
3. Click on BROWSE and choose an image to use as your wallpaper.
4. Choose whether to tile, stretch, or position the wallpaper in the center.
  - **Tile:** repeats the image across your screen. The number of tiles is determined by the size of the image. The smaller the image the, the more it tiles across the screen.
  - **Center:** places the image directly in the center of your screen. The size of the image is determined by the SCREEN RESOLUTION and IMAGE RESOLUTION
  - **Stretch:** forces the images to fill the screen, even if its too small. Distortion will occur however if the image’s dimensions are not at least similar if not the same as the SCREEN RESOLUTION.
5. Choose a background color for your desktop just in case the image you choose is not big enough to cover the whole screen without stretching or tiling it.
6. Click OK.
7. Look at your new desktop wallpaper.
8. Experiment with the various position settings.



# Under Compression

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To allow for faster download times, Web graphics are **COMPRESSED** or, reduced in pixel number.

Both GIF and JPEG images can be compressed.

## Image compression allows for...

- Lower file sizes
- Faster downloads

**The snowball effect...** the more pixels, the higher the image resolution, the higher the image quality, the bigger the file size, the higher the download time.

**The solution...** To counteract this snowball effect, image editing applications allow you to determine what resolution your image should appear in on the screen.

**The ideal GIF resolution** = 72ppi-100ppi or how many of the images pixel's will be displayed per inch on a computer monitor. **SCREEN RESOLUTION** affects this.

**The ideal JPEG resolution** = whatever quality is needed since the majority of the time they are photos which need true-color quality.

Many image editing applications come with a "Save for Web" feature which allows you to choose the optimum settings for your Web graphics.



# Under Compression

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## Hands-on Activity

### My first Web graphic

1. With the same image opened, return the image to it's original state. Use the History palette, if need be to, to "rewind" or "rollback" any edits you may have made.
2. Add text and shapes to the image using the Tools palette.
3. When you are done with your graphic, click FILE>SAVE FOR WEB...
4. Now you see two (2) instances of your graphic: the original and a preview.
5. Watch the quality, download time and file size of your graphic change as you apply different options.

#### **"Save for Web" for GIFs**

- Optimized file format: GIF
- Color reduction process: perceptual, selective, adaptive, Web.
- Dither: The way in which your GIF will manifest on the screen while being downloaded. Dither types: diffusion, pattern, noise.
- Transparency and Transparency Dither
- Interlaced
- Lossy
- Colors: choose how many colors the image can display without losing quality.
- Web Snap

#### **"Save for Web" for JPEGs**

- Optimized file format: JPEG
- Compression quality
- Progressive: the way in which your JPEG will manifest on the screen while being downloaded.
- Quality
- Blur
- Matte



# Get the Picture

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## **How do I get my image from my CD, digital camera, etc?**

- Images can usually be imported into image editing applications from within the applications themselves.
- Digital devices such as cameras can be either plugged into your computer with a cable directly for retrieval of images or the memory card reader can be directly plugged into the computer. The memory card could then be inserted into the reader for image retrieval
- Windows Explorer (the map of the Microsoft Windows computer), can be used to copy your files to your Desktop from a disk drive such as your memory card reader or USB memory stick.

## **How do I get my image from my e-mail?**

- Image e-mail attachments must be downloaded and saved to your computer in order to work with them.
- They can be saved directly to your computer.



# Final Thoughts...

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## Saving with a purpose...

When working with digital images in general, determine your purpose and save your images accordingly.

**Web:** .gif or .jpeg

**Print:** .tif (Tagged Image File Format)

**General/Archive:** .tif or .psd (Photoshop native)

## Editing with a purpose...

When you are ready to edit your digital images don't forget where they are going to be used.

### Will they be...

- Used on a website?
- Used in an application such as PowerPoint?
- Sent in an e-mail?
- Printed in color or black and white?

## TIPS:

**Save your work at regular intervals during your image editing sequence.** You will lose all the changes you have made if the image editing software or computer crashes.

**Always SAVE your original images in a native &/or non-destructive format such as .tif or .psd first.** Saving new images as .jpg or .gif will automatically degrade the quality of any subsequent uses.

**Make a copy of any original image you wish to make edits on.** This leaves the original image untouched and you are free to experiment on the copy.

### Best fonts for plain text on the Web:

- Times New Roman, Arial, Verdana, Trebuchet MS, Century Gothic
- This excludes text used in images; images can contain any font type since the image does not rely on the user's having a particular font installed on their computer.



# Additional Resources

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## Books:

Fott, G. & McClelland, D. (2002). *Photoshop Elements 2 For Dummies*. Indiana: Wiley Publishing, Inc.

Frazier, P. & Smith, B. E. (2003). "Compressing and Image in Photoshop Elements". *Creating Web Graphics for Dummies*. Indiana: Wiley Publishing, Inc.

Lynch, Patrick J. (2002). *Web Style Guide 2nd edition*. Connecticut: Yale University Press.

King, Julie A. (2002). "Demystifying Digital Camera Resolution". *Shooting & Sharing Digital Photos for Dummies*. Indiana: Wiley Publishing, Inc.

King, Julie A. (2002). "Shrinking Digital Pictures to Screen Size". *Shooting & Sharing Digital Photos for Dummies*. Indiana: Wiley Publishing, Inc.

King, Julie A. (2002). "Ten Ways to Protect Your Pictures". *Photo Retouching & Restoration for Dummies*. Indiana: Wiley Publishing, Inc.

Warner, J. (2005). "Working with Digitally Captured Images". *Creating Family Web Sties for Dummies*. Indiana: Wiley Publishing, Inc.

## Websites:

Official "Web Style Guide 2<sup>nd</sup> edition" website. <http://www.webstyleguide.com/>

Official Adobe Photoshop Elements website. <http://www.adobe.com/products/photoshopelwin/main.html>



# Image Credits

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Slide 4: Photoshop sample image

Slide 5: [http://www.bbc.co.uk/history/ancient/romans/mosaics\\_gallery.shtml](http://www.bbc.co.uk/history/ancient/romans/mosaics_gallery.shtml)

Slide 8: <http://www.snoopy.com>





# Support Information

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