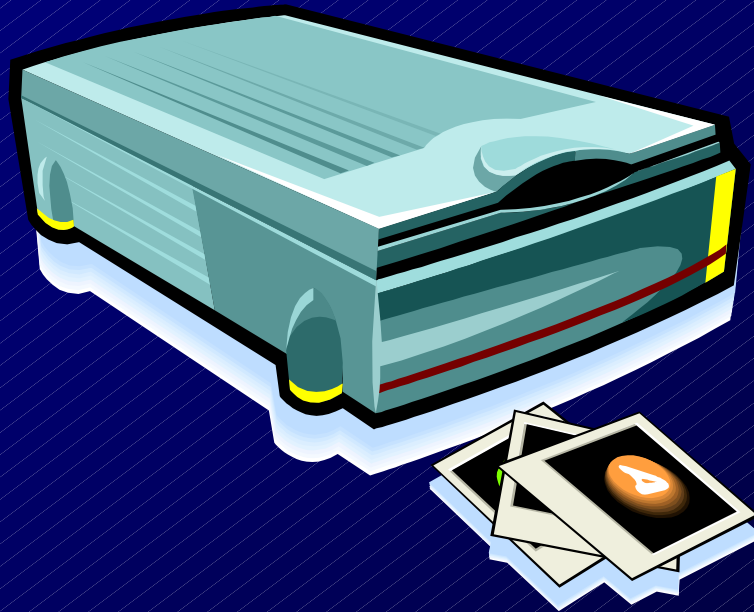


Scanning



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SLIS / OSALL / SAOUG - Lead, follow or get left behind!

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DE BEERS

Scanning

1. The fundamentals
2. Choosing DPI
3. Saving your scan
4. Scanning : De Beers Library
5. Questions



◆ The Fundamentals

We scan for the capability of our output device.

We choose the scan resolution based strictly on the needs of the output device that will process the image. The devices are normally a printer or a monitor

Monitors and printers work very differently from each other, all the rules are very different for images intended for these two devices.



Scanning

Printed Images

- ◆ Image size is measured in inches or cm
- ◆ Image size does NOT vary with scanned resolution
- ◆ Image size is modified on paper by scaling
- ◆ Image pixels are spaced on paper using specified scaled resolution
- ◆ Several printer ink dots are used to represent colour of one image pixel.

Monitor Images

- ◆ Image size is measured in pixels
- ◆ Image size varies with scanned resolution
- ◆ Image size is modified on screen by resampling
- ◆ Image pixels are located at each screen pixel location, one for one.
- ◆ On screen pixel location contains one image pixel, and can be of any RGB value.



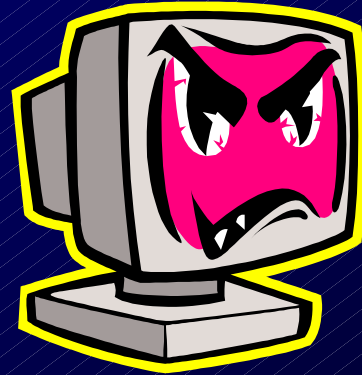
Scanning

◆ Type

How many colours do you scan at ? Billions ? Millions ? 256

Shades of gray? Line Art ?

So, what do you scan at ?



- ◆ Scanning Colour Photos
Billion of colours (if available) or Millions.
- ◆ Black & White
256 Shades of gray for black & White photos
2 Reasons:
 1. Age (Will remove discolouration “yellownes”)
 2. Smaller file size.
- ◆ Line Art
Scanning text or images that are only black & White
Scans only black & White – No gray



DPI (Dots per inch)

◆ Video Resolution – How much to scan ?

On monitors, scan resolution merely determines image size.

We think of greater resolution as showing more detail, and while that's generally true (within limits), it's because it makes the image larger. But we are always greatly limited by our output device, and often cannot take advantage of maximum resolution. The images are huge, and our screens are simply not large enough.

Dpi and image file size (Memory Cost)

Scan Res.	6 x 4 Image size	Pixel count	Colour Memory size in bytes	Gray Scale	Line
75 dpi	450 x 300	135,000	405,000	135,000	16,875
150 dpi	900 x 600	540,000	1,62 Mb	540,000	67,500
300 dpi	1800 x 1200	2.16Mb	6,48 Mb	2.16 Mb	270,000
600 dpi	3600 x 2400	8.64 Mb	25,92 Mb	8.64 Mb	1,08 Mb



Scanning for the monitor

- ◆ Set the scan resolution to produce the desired image size

If you scan a 6 x 4 inch photo at 110 dpi the you will get an image size of :

$(6 \text{ inches} \times 110 \text{ dpi}) \times (4 \text{ inches} \times 110 \text{ dpi}) = 660 \times 440 \text{ pix}$ – which will more or less fill a 640 x 480 monitor screen.

Scanning at 140 dpi will fill 800 x 600 screen
 $(6 \text{ inches} \times 140 \text{ dpi}) \times (4 \text{ inches} \times 140 \text{ dpi}) = 840 \times 560 \text{ pix}$

Scanning at 180 dpi will fill a 1024 x 768 monitor screen

$(6 \text{ inches} \times 180 \text{ dpi}) \times (4 \text{ inches} \times 180 \text{ dpi}) = 1080 \times 720 \text{ pix}$

Scanning for the printer

- ◆ Unlike the monitor, printer software does NOT ignore the original size of the photo.
A 6 x 4 inch photo will print at 6 x 4", no matter if it was scanned at 75 dpi or 300 dpi.
Therefore a 300 dpi scan has more dots per inch, which means more information, which means a better printed photo.



Scanning for e-mail and the web

2 Objectives

1. Picture quality
2. File size

◆ How to achieve this:

1. Scan at 75 – 100 dpi
2. Cropping



REVIEW

- ◆ This is a good time to review the different concepts of the word "resolution" in images:
- ◆ While scanning - when creating the image, resolution determines the spacing of the pixel samples taken from the original master copy. If we scan a width of 2 inches at 100 dpi, we create an output image width of 200 pixels. This is basically all resolution does, and then the output device takes over.
- ◆ While on video screen - Scanned resolution no longer has any meaning other than size. The image width of 200 pixels will occupy 200 pixel positions on the screen, which might be 640 or 800 pixels wide itself.
- ◆ While printing - Resolution is just a remembered number from the original scan, and now it is used to determine the printed spacing of the pixels on the paper. 200 pixels at 100 dpi will print as 2 inches



Saving your image

- ◆ **JPEG (Joint Photographic Experts Group)**
- ◆ **TIF (Tagged Image File)**
- ◆ **BMP (BitMap Picture)**
- ◆ **GIF (Graphic Interchange Format)**



IMAGE FORMATS

◆ **JPEG (Joint Photographic Experts Group)** **Advantages**

JPG is capable of saving millions of colors

JPG is a lossey format. It compresses a picture as you save it. It does this by discarding information.

Widely recognized format.

Disadvantages

Because it's a lossey format, each time you open and then save a JPG, you lose more information. What you are doing is making a copy of a copy. Do this enough times and the image quality of the scan starts to deteriorate.



IMAGE FORMATS

◆ **TIF (Tagged Image File)**

A TIF is a non-lossey format. A one megabyte scan is saved as a 1 megabyte file (approximately). You can open a TIF and save it as many times as you want without a loss of image quality.

Like the JPG, the TIF is a widely recognized format and it is also capable of saving millions of colors.



IMAGE FORMATS

◆ **BMP (BitMap Picture)**

Like the TIF, the BMP is a non-lossey format. Not as widely recognized as the TIF or JPG but it is capable of saving millions of colors.

The main advantage of saving a photo as a BMP is that Windows® uses the BMP format for it's wallpaper. If you use Windows® and you want to use a scan as wallpaper on your computer monitor, save it as a BMP.



IMAGE FORMAT

◆ **GIF (Graphic Interchange Format)**

Advantages

Most widely used raster graphic file format.

All Browsers support the GIF format.

Supports transparency

“Animated”

Disadvantages

Only supports 256 colours



SAVING YOUR DOCUMENT

- ◆ **Adobe Acrobat (PDF)**

Acrobat Reader is freely available.

Preserves the exact look and content of the originals, complete with fonts and graphics.

Adjust magnification and other aspects of viewing.

Easy conversion of electronic files to PDF format.

OCR

