

# Overview of Workshop

- Introduction to Scanning & Digital Imaging
- Scanning Demonstrations - Flatbed Scanner
- The Digital Camera
- Lunch & Informal Discussions
- Scanning Demonstrations - File Types
- Image Manipulation - Post Scanning
- OCR Scanning
- Questions to the Presenters

# INTRODUCTION TO SCANNING & DIGITAL IMAGING

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# Whither Digital Images ? (1)

- Traditionally came from Scanning Images
  - This used to be “The Scanning Workshop”
  - Still a significant source for genealogists
- Digital Still Cameras now a growing source
  - Easy to takes lots of pictures, use the ones you want
  - Also useful for copying documents and pictures
  - Megapixles and features increasing as prices decrease
  - Will be covered in greater detail later on this morning

# Whither Digital Images ? (2)

- Digital movie cameras
  - video images/clips
  - can also take still pictures but at a much lower quality
- Images from/via the Web
  - Census, Vital records, Wills etc
    - Scotlandspeople BDMs - small (<100k) TIFF file
    - Scottishdocuments - large (~1M) colour TIFF file
    - Documents on line (England ) - ~1M (6 page PDF file)
    - Ancestry.Com Census - large (~1M) GIF file

# Whither Digital Images ? (3)

- From fellow researchers & local history societies
  - Pictures, documents, maps, plans
  - Various formats - TIFF, JPG, PNG, GIF, PDF
- Images have similar attributes regardless of source
  - all have dimension, size, resolution (DPI), bit depth (“colours”)
  - will be discussed as part of the Scanning session
- Will now look at “Scanning”

# So Many Models & Options (1)

- CanoScan LiDE 20
  - Optical resolution 600\*1200 DPI
  - Selectable resolution 25 DPI to 9600 DPI
  - 48 bit internal, 24 bit output
  - Technology used - Contact Image Sensor/LED
  - Maximum size A4/Letter (216 \* 297 mm)
  - Interfaces - USB 2.0 Full Speed (USB 1.1)
  - Power Supply - Through USB
  - Recommended Retail Price \$129

# So Many Models & Options (2)

- CanoScan 5000F
  - Optical resolution 2400\*4800 DPI
  - Selectable resolution 25 DPI to 9600 DPI
  - 48 bit internal, 48 bit output (24 bit greyscale option)
  - Technology used - CCD/Cold Cathode Fluro Light
  - Maximum size paper - A4/Letter (216 \* 297 mm)
  - Size film - 35mm, slides in mount
  - Interface USB 2.0 Full Speed (USB 1.1)
  - Recommended Retail Price \$349

# So Many Models & Options (3)

- CanoScan 9900F
  - Optical resolution 3200\*6400 DPI
  - Selectable resolution 25 DPI to 9600 DPI
  - 48 bit internal, 48 (Film only) or 24 bit output
  - Technology used - CCD/Cold Cathode Fluro Light
  - Infrared spectrum used to remove scratches/dust etc
  - Maximum size paper - A4/Letter (216 \* 297 mm)
  - Size film - 35mm, 120/220mm, 5"x4", slides in mount
  - Interface USB 2.0 Hi Speed/Firewire
  - Recommended Retail Price \$699

# So Many Models & Options (4)

- Canon N660U
  - Optical resolution 1200\*2400 DPI (1200\*1200 film)
  - Selectable resolution 25 DPI to 9600 DPI
  - 42 bit internal, 24 bit output
  - Technology used - Charge Coupled Device
  - Maximum size A4/Letter (216 \* 297 mm)
  - Interfaces - USB
  - In built film adapter
  - Approximate Price \$260

# So Many Models & Options (5)

- EPSON Perfection 4870 Photo
  - Optical resolution 4800\*9600 DPI
  - Selectable resolution 25 DPI to 12,800 DPI
  - 48/24 bit internal, 48/24 bit output (colour/greyscale)
  - Optical Density (Film) 3.8 Dmax
  - DIGITAL ICE dust and scratch removal
  - Technology used - CCD/Cold Cathode Fluro Light
  - Maximum size A4/Letter (216 \* 297 mm)
  - Interface USB 2.0 Hi Speed/Firewire
  - Approximate Price \$750

# So Many Models & Options (6)

- EPSON's Digital Ice dust and scratch removal
  - “Repairs” damaged photos while they are actually being scanned
  - Saves lots of time and effort of having to do this in your photo manipulation software (eg using the “clone” tool or “speck” remover etc)

# So Many Models & Options (7)

- Want a larger A3 format ?
  - Epson 10000XL A3 Scanner ~\$5,000
    - Transparency adaptor ~\$900
    - Optical resolution 2400\*4800 DPI
    - 48 bit internal, 24 bit output
  - UMAX PowerLook 2100XL !\$3,000
    - Optical resolution 800\*1600 DPI
    - 42/14 bit internal, 42/14 bit output (colour/greyscale)

# So Many Models & Options (8)

- All makes and models of scanners include
  - Software for scanning pictures
  - Software for OCR
  - Software for image manipulation
  - TWAIN compatible
  - Support multiple file formats
- Some flatbed scanners have slide/film adapters/capabilities

# The Scanning Process (1)

- Five basic aspects to consider
  - Type of scanner
  - Scanning mode
  - Scanning resolution
  - Adjusting the scanned image
  - Printing the image

# Types of Scanners (1)

- Type of Scanner
  - Genealogists mainly interested in photographs, drawings, documents & text
  - Flatbed Scanner
    - Optical Character Recognition (OCR) for text
    - may also have film/slide attachment
  - Film Scanner
    - for slides & negatives

# Types of Scanners (2)

- Type of scanner to use depends on
  - Type of image you wish to capture
    - Reflective art, photographs, maps, drawings etc
    - Photographic film - slides, negatives
  - Quality of the image you wish to capture
    - Resolution, colour/grey-scale depth (bits)
    - Slide attachment for flatbed scanner may be depending on intended output
  - Your budget

# Scanning Mode (1)

- Scanning mode, choice of
  - line-art, dithered, greyscale, colour
  - choice depends on
    - what you are scanning
    - what you want to do with the scanned image
      - View on monitor
      - Print - B&W or Colour, Laser or InkJet,
      - Put on Web Page - thumbnail or downloadable for subsequent printing

# Scanning Mode (2)

## – line-art

- for drawings - eg plan of cemetery or land, wills, BDM certificates
- for OCRing at a later time

## – dithered

- approximation of colours not available on system by grouping “samples” of available colours
- don't use in scanning process if image is to be retouched/modified later on

# Scanning Mode (3)

- greyscale
  - B&W photos
  - colour photos to be printed on a B&W printer
- colour
  - colour photos
- May be called by various names by software
  - B&W Document same as Line-art
  - Millions of Colors as well as Color Photo
  - B&W Photo same as greyscale

# Scanning Resolution (1)

- Scanning resolution
  - Size of the file
  - Output resolution (imagesetting, colour output)
  - Screen frequency (greyscale, colour scan)
  - Size of the image (original, final print)
  - Above factors interrelate
  - Don't necessarily use maximum dots (samples) per inch (dpi)

# Adjusting the Scanned Image (1)

- Adjusting the scanned image
  - Tonal levels, highlights, shadow details etc
  - Colour levels, hue, saturation
  - Manipulate, move item, remove item, select only part of the image
  - Sharpen, soften, mask (eg to remove moire patterns)
  - Done during scanning process or afterwards in image manipulation software

# Printing the Image (1)

- “Printing” the Image
  - Printer
    - Black & white - halftones
    - Colour
  - World Wide Web
    - Viewing or downloading and printing
  - Screen/Monitor

# Creating a Bitmap (1)

- Scanner creates a bitmap by
  - Sampling image at defined intervals
    - eg every  $1/300$  of an inch,  $1/600$  ” etc
  - Checks colour or grey value it finds
  - Assigns a numeric “value” to the sample point
  - Using Dots per Inch (DPI) for scanned image
    - Strictly speaking - Samples for scanners, Dots for printers and Pixels for Screens. However, Samples, Pixels and Dots are used interchangeably.