

Digitizing Your Family History Collections

Planning Your Digitization Project

1. Review your collection
2. Choose hardware: Scanners, cameras, and other accessories
3. Become familiar with file formats and image properties
4. Plan for metadata, file names, and image organization
5. Make a digital preservation plan for your images

Review Your Collection

Before digitizing anything, choose the material that you want to focus on. Survey that portion of your collection and determine their **format**, **condition**, and system of **arrangement**. This will help you determine what equipment you need for imaging. The Digitization Planning Form is a good place to record this information.

Common item formats include:

- Unbound documents
- Oversized documents
- Photographic prints
- Photo albums
- Film (negatives, slides, and other transparencies)
- Bound volumes
- Objects

Condition can affect how you digitize something, or even if you can digitize it at all. Look out for:

- Rusty fasteners, like staples and paperclips
- Rubber bands
- Brittle paper
- Folded documents
- Mold

Arrange the material that you plan to digitize. Choose an arrangement that isn't too complicated; family papers are often organized by family, by document type, or chronologically. As you arrange your material, prepare it for digitization:

- Unfold and flatten folded documents
- Remove paper clips, staples, metal brads, and other fasteners
- Take documents and photographs out of enclosures, like envelopes
- Unroll and flatten rolled documents and photographs

Handle documents and photographs gently and stop doing anything that causes additional damage.

Choosing Hardware

The best options for home digitization projects are a flatbed scanner or a camera/cell phone with a tripod.

Select a **scanner** with at least 600 dpi optical resolution or higher (2000-3000 dpi optical resolution for film). Use scanners to digitize:

- Photographic prints
- Photo albums that open flat or can be disbound
- Film, including negatives and slides
 - scanners can only be used for film if they have a transparency adapter
- Small, flat objects

Select **cameras** that can take pictures that are at least 10 megapixels. It's also important to control the ISO, shutter speed, white balance, and other settings. A macro lens and the ability to take images in RAW format are also recommended. Use cameras to digitize:

- Photographic prints, including oversized images
- Cased photographs
- Film, including negatives and slides (with a lightbox and tripod, or other film holder)
- Most photo albums
- Large, thick, or bulky objects

If you use a camera, you will also need some additional equipment:

- Copy stand, tripod, or camera clamps
- Two adjustable lamps
- Background material
- A book cradle or pillows (for bound vols.)

Depending on the camera you are using, or the material you are photographing, you may need:

- Cell phone camera:
 - Photo light box
 - Tripod or copy stand with a cell phone mount
- Acrylic stands for supporting objects

Equipment can be purchased at:

- Electronics Stores
- Online retailers
- Specialty retailers, e.g., B&H photo
<https://www.bhphotovideo.com/>
- Archival suppliers, e.g.,
<https://www.gaylord.com/c/Weights>

TIP: Always read reviews! <https://www.pcmag.com/>

Scanning & Photography Basics

Using a Flatbed Scanner

General recommendations: Turn off auto exposure and any automated color correction or image repair.

1. Clean scanner glass with a lint-free cloth, dampened with water.
2. Wipe photos with a dry, anti-static cloth.
3. Position photograph(s).
4. Select image settings.
5. Preview and scan.

Using a Camera

Recommended camera settings:

- ISO 100-200
- Aperture priority mode
- f8-11
- Highest image quality
- Autofocus
- Adjust white balance (if necessary)

Workflow:

1. Set up background for photographs.
2. Set up and turn on lights.
3. Set up tripod or stand and attach camera.
4. Adjust camera and tripod so item fills most of the camera viewfinder.
5. Set up document.
6. Test focus and exposure.
7. Take photographs.

Digitizing by Format

Digitizing Unbound Material

Materials such as documents, notes, photocopies, original certificates, letters, photographs, etc.

A flatbed scanner is best for unbound documents and photographs in your collection, especially if your documents are letter size or smaller. The most common scanner size is 8.5 by 11.7 inches, which can easily scan letter sized and A4 paper. If you have several larger documents, you may consider getting a larger scanner. Scanners that will accommodate up to 11 x 17 inches are readily available. If you have experience with image editing, you can scan a larger document in sections and “stitch” the sections together.

A camera with a tripod or copy stand can also be used to digitize unbound documents and is really the best option for digitizing a large document in one piece. Cameras can also be used for smaller documents. Taking a picture with a camera is usually faster than using a scanner, but cameras also take more time to set up to take quality images, so keep that in mind when deciding which one to use. *See recommended scanning settings below.*

Digitizing Bound Material

Materials such as books, diaries, photo albums, scrapbooks, ledgers, and account books.

Before digitizing bound items, check the binding to determine whether to use a scanner or a camera. If the book can open fully—180 degrees—without putting strain on the binding, it can be digitized on a scanner. If you do decide to use a scanner to digitize a bound volume, be careful not to press too hard on the spine as you scan each page.

Some scrapbooks and albums have bindings that can be easily taken apart and then reassembled, such as three-ring binders and post bindings. If that's the case, scan each page separately on a scanner and then rebind the volume.

If a volume can't open completely, use a camera and a copy stand or tripod. Use a book cradle, book wedge, or other support to hold one side of the volume and keep the binding from too much stress and strain. *See recommended scanning settings below.*

Digitizing Three-Dimensional Items

Materials such as coins, metals, framed items, cased photographs, and other objects.

In most cases, a camera is the best option for digitizing a three-dimensional object. You should experiment with different lighting and camera angles to find out what works best for the item you're trying to photograph. If your object is flat, however, you can try scanning it. Objects tend to move when you put the scanner lid down on them, so try experimenting with different backgrounds, like a piece of paper or cloth, instead.

Digitizing Negatives and Photographic Film

Some flatbed scanners have transparency adapters for 35 mm film and slides, medium format, and 4 x 5 film. Cameras can also photograph film, but you would need a lightbox to illuminate negatives and transparencies. *See recommended scanning settings below.*

General recommendations:

- Turn on Unsharp Mask
- Use autoexposure to help with color correction for negatives.

Workflow:

1. Clean scanner and film.
2. Place film or slides in film holders and put on scanner.
3. Select image settings.
4. Preview.
5. Select each frame and adjust for color and exposure as necessary.
6. Scan final image(s).

Recommended Scanning Settings by Format

Document type	Minimum Resolution	Color Mode	Notes
Printed documents (bound or unbound)	300-400 ppi	grayscale (8 bit) or color (24 bit)	Higher resolution and color recommended for rare and illustrated materials.
Handwritten documents (bound or unbound)	400 ppi	color (24 bit)	
Oversized documents (over 11 x 17 inches)	300 ppi	color (24 bit)	
Photographs (8 x 10 inches or less)	400 ppi	grayscale (8 bit) or color (24 bit)	Image should be 4000 pixels on long edge; adjust resolution accordingly.
Photographs (8 x 10 to 11 x 14 inches)	400-600 ppi	grayscale (8 bit) or color (24 bit)	Image should be 6000 pixels on long edge.
Photographs (over 11 x 14 inches)	600 ppi	grayscale (8 bit) or color (24 bit)	Image should be 8000 pixels on long edge.
Photo albums	400 ppi	color (24 bit)	Scan at higher resolution if editing or printing individual images on the album's page.
Photographic film, including negatives and slides (4 x 5 inches or less)	800-2800 ppi	grayscale (8 bit) or color (24 bit)	Image should be 4000 pixels on long edge.
Photographic film (4 x 5 to 8 x 10 inches)	800-1200 ppi	grayscale (8 bit) or color (24 bit)	Image should be 6000 pixels on long edge.
Photographic film (over 8 x 10 inches)	800 ppi	grayscale (8 bit) or color (24 bit)	Image should be 6000 pixels on long edge.

The table above was based on ALCTS Minimum Digitization Capture Recommendations, June 2013, <http://www.ala.org/alcts/resources/preserv/minimum-digitization-capture-recommendations>

File Management

As you save your images, choose file names that are meaningful and consistent throughout your project. Meaningful file names will help you associate the digital image with the original document or photograph. For greatest interoperability between systems, file names should:

- Be relatively short
- Use only alpha-numeric characters, hyphens, and underscores
- Avoid spaces, punctuation, or special characters
- Should always end with a period and a file extension
- Should include dates (if relevant) in the form YYYYMMDD

Use folders to organize your files. Like file names, folder names should be meaningful and relatively short. Keep your folder structure simple. If possible, the digital organization of your folders should reflect the organization of the original papers.

Metadata, or description, is the best place to record more detailed information about your images. It will make it easier to find material about specific people, places, and subjects. Useful metadata to record includes:

- Title (or Caption)
- Creator
- Date
- Summary or Description
- Source of the file (if relevant)
- Keywords

There are several ways to create metadata:

- Embed your metadata directly within the image, using an image editor or with the tools that come with your operating system
- Write metadata in a separate file, such as a spreadsheet or text file, and save it with your images
- Create your metadata with an image manager or similar program

Digital Preservation and Storage

Create a plan for storing and managing your images over time. Digital files are fragile; you should save multiple copies of important files and check them regularly. Follow the **3-2-1 rule**:

- Make **3** copies
- On at least **2** types of storage media
- Save **1** copy in a different location

Files can be stored on online cloud storage or external media, such as external hard drives, USB flash drives, CDs, and DVDs. Check your images once a year to make sure that you can still open them. Copy your files to new media every 5 years.

Basic Image Editing

REMINDER: Always edit a copy of your images, not the original files!

Consider the features you need before choosing an image editor. Common image editing tasks include:

- Changing image size or resolution
- Converting file formats
- Cropping
- Straightening
- Adjusting contrast and brightness
- Changing tone and color
- Correcting red eye
- Retouching and repairing
- Adding text, graphics, and effect

Image Editing Tool	What does it do?
Automatic Adjustments	Edits the image without input from the user. This can be a good place to start, and then you can make additional changes with specific tools.
Brightness/Exposure	Adjusts how bright or dark the image is. Helps make details in a dark image easier to see. • Overexposed images are too bright and lack details in highlights. • Underexposed images are too dark and lack details in shadows.
Color Balance	Changes the mixture of colors in an image. Can be used both to make colors more accurate or to make creative changes to the image.
Contrast	Adjusts the difference between the light and dark parts of the image. Determines how many shades of gray or color are visible in the image.
Cropping	Removes an outer portion of the image. Crop your image to create better composition or to remove unwanted areas of the image.
Histogram	A graph that displays all the tones in your image. Dark shades are on the left; light shades are on the right.
Rotate (and Straighten)	Changes the orientation of the image. Almost all image editors can rotate images in 90-degree increments; some can also do more precise rotation, which is used to straighten images.
Saturation	Adjusts the intensity of the color in the image. Increasing saturation makes the color brighter and deeper.
Shadows and Highlights	Adjusts the darkest and lightest parts of an image. Both shadows and highlights should contain some detail.

	Cost	Resizing	Resolution	Adjustments	Red Eye/Repairs	Text & Effects	Comments
Adobe Photoshop	\$\$\$	✓	✓	✓	✓	✓	Best of the best; can be overwhelming
Adobe Photoshop Elements	\$\$	✓	✓	✓	✓	✓	Photoshop for non-professionals; bundled with some scanners
Corel PaintShop Pro	\$\$	✓	✓	✓	✓	✓	PC only; functionality of Photoshop at a lower price
ACDSee	\$\$	✓	✓	✓	✓	✓	Lower cost; not as robust as Photoshop or Elements
GIMP (GNU Image Manipulation Program)	free	✓	✓	✓	✓	✓	Open source (PC, Mac, and Linux); interface can be confusing
Paint.NET	free	✓	✓	✓	✓	✓	PC only; more robust than Microsoft Paint
Apple Photos	free	✓		✓	✓	✓	Mac only; limited options with built-in tools
PhotoScapeX	free	✓	✓	✓	✓	✓	Mac and Windows 10; More robust than Photos
Google Photos	free	✓		✓		✓	More of a photo organizer; limited editing capabilities
Affinity Photo	\$\$	✓	✓	✓	✓	✓	Mac and PC; functionality of Photoshop at a lower price
Skylum Luminar	\$\$	✓	✓	✓	✓		Mac and PC; functionality of Photoshop at a lower price
XnView MP	free	✓	✓	✓		✓	Mac and PC; image organizer with basic editing tools

To download XnView: <https://www.xnview.com/en/xnview/>

For reviews, see <https://www.cnet.com/> or <https://www.pcmag.com/>

Getting Help!

Contact a conservator *before* digitizing if:

- Documents are extremely fragile
- Documents can't be unfolded without cracking or tearing
- Documents are tightly rolled

Find a conservator near you at <http://www.conservation-us.org/membership/find-a-conservator>.

Resources

Digitization

Minimum Digitization Capture Recommendations, ALCTS Preservation and Reformatting Section, June 2013, <http://www.ala.org/alcts/resources/preserv/minimum-digitization-capture-recommendations>

Digital Imaging for the Small Organization (PDF), from the Minnesota Historical Society, https://www.mnhs.org/sites/default/files/mnlocalhistory/wp-content/uploads/2011/05/guidelines_digital_for_small_organizations.pdf

How to Digitally Archive and Share Historical Photographs, Documents, and Audio Recordings, by James E. Kennedy, <https://archivehistory.jeksite.org/index.htm> This website provides well-researched, detailed information on digitizing manuscript collections with scanners and cameras, image editing, and more.

Getting Started with Digitisation, <https://digitalnz.org/make-it-digital/getting-started-with-digitisation>

Digital Readiness Toolkit, Recollection Wisconsin, <https://recollectionwisconsin.org/digital-readiness-toolkit> This guide is designed for public history organizations, but it includes information that is useful for home digitization projects as well. In particular, see the [Digitize](#), [Describe](#), and [Store and Maintain](#) sections.

Digitising your collection blog series (PDF), *Archives Outside*, <https://archivesoutside.records.nsw.gov.au/resources/digitising-your-collection-pdf/> Five-part series from the New South Wales (Australia) State Archives covers planning, technical specifications, scanning and document handling, metadata, and access.

Guidelines for the Digitization of Photographs and Textual Documents, Bentley Historical Library, University of Michigan, <https://deepblue.lib.umich.edu/handle/2027.42/98757>

Scanning and Photography

A Few Scanning Tips, <https://www.scantips.com/> Includes information on scanning and photography.

“Camera Scanning,” <http://www.dpbestflow.org/camera/camera-scanning> This article provides video tutorials on how to use a DSLR camera to digitize photographs and film and edit the resulting images. The website ([dpBestflow.org](http://www.dpbestflow.org)) also advises photographers on how to manage and preserve their digital images.

Computer Darkroom, <http://www.computer-darkroom.com/> Includes articles on scanning and editing, including detailed tutorials on scanning negatives.

Ian Lyons, *Digitize Your Analogue Images*, https://www.computer-darkroom.com/pdf_files/archive-scans.pdf By the creator of the Computer Darkroom website.

How to Use Your DSLR to Scan Negatives, *Fstoppers*, <https://fstoppers.com/education/how-use-your-dslr-scan-negatives-137248>

How to Scan Film Negatives with a DSLR, *PetaPixel*, <https://petapixel.com/2012/05/18/how-to-scan-film-negatives-with-a-dslr/>

Scanning without a Scanner: Digitizing Your Film with a DSLR, *B & H Photo*, <https://www.bhphotovideo.com/explora/photography/tips-and-solutions/scanning-without-scanner-digitizing-your-film-dslr>

File Management and Digital Preservation

Digital Archiving Research Guide, *University of Michigan Library Research Guides*, <https://guides.lib.umich.edu/c.php?g=992751>

How Long Will Digital Storage Media Last?, *Library of Congress*, https://digitalpreservation.gov/personalarchiving/documents/media_durability.pdf

How to Add Photo Metadata Without Special Software, *The Family Curator*, <https://thefamilycurator.com/how-to-add-photo-metadata-without-special-software/>

North Carolina Department of Natural and Cultural Resources, *Best Practices for File-Naming*, <https://archives.ncdcr.gov/media/829/open> (PDF)

Photo Metadata, <https://www.photometadata.org/> Tutorials and resources on embedding metadata in digital photographs.

Glossary of Key Terms

Term	Definition
Bit depth	The number of bits used to describe each pixel in an image. It is related to the number of shades of color in the image (e.g., 8-bit, 16-bit, 24-bit, etc.).
DPI	Dots per inch; originally a printing term describing the number of dots of ink in an inch of paper. It is frequently used interchangeably with PPI . Scanner manufacturers usually provide scanner resolution in DPI.
Interpolated Resolution	Resolution that a camera or scanner can achieve by adding pixels between the ones that are captured by the device; similar to increasing the image size of a digital photograph or using the digital zoom on a digital camera.
Metadata	Metadata literally means “data about data.” It documents important aspects of a resource, and helps users to find, interpret, and access resources in any format. It includes descriptive metadata, which describes the content of a resource.
Optical Resolution	The resolution at which a device, such as a scanner or digital camera, is capable of capturing pixel values based on actual samples taken from an original; the highest resolution that the device can capture
Pixel Dimensions	The horizontal and vertical measurements of an image expressed in pixels. Multiply the physical dimensions of an image by the resolution of an image, in pixels per inch, to get the pixel dimensions.
PPI	Pixels per inch – used to describe the resolution of a scanner, monitor, or other digital device.
RAW files	Raw files are the unprocessed files created by a digital camera. They are the highest quality images that a camera can create and contain all data that the camera can detect.
Resolution	A relative value, usually expressed as the density of elements, such as pixels, within a specific distance, usually an inch. Resolution affects the amount of detail you can see in a digital image.