Digital Imaging (stills)

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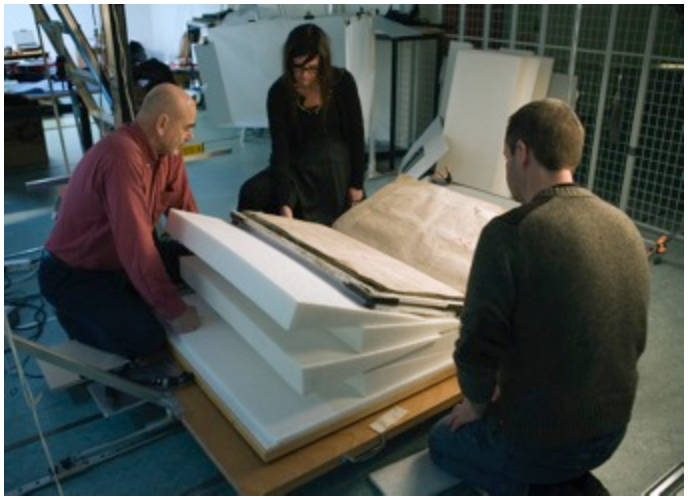
Introduction

1. Digital Imaging workflow
   - Pre-production
   - Image Capture (Camera & Scanner)
   - Post-processing

2. Workshop

   Assignment:
   - 10 images that, together, describe the object
   - Naming & sequencing
   - Detail management
   - End use



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PART 1 - Pre-Production

Why are you digitizing?

1. Conservation / Preservation
2. Content availability

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Pre-Production

Building a work-station for digitizing

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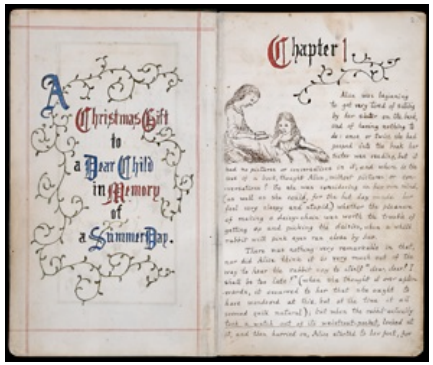
Issues to think about

1. Levels of funds available
2. End use
3. File formats
4. Metadata
5. Equipment
6. Lighting
7. Exposure
8. Background
9. Image Shooting aids



http://ttpdownload.bl.uk/app_files/silverlight/default.html?id=86825520-a671-11db-a264-0050c2490048

http://books.google.com/books?id=ID5P7xbmcO8C&lpg=PP1&dq=alice%20in%20wonderland&pg=PA1#v=twopage&q&f=false

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Levels of funds available

This will determine an important issue:

Quality vs. Quantity

Small-scale vs. Large-scale digitizing

- Are you building up a project for an exclusive, limited collection?
- Is Conservation Assessment a necessity?
- Do you need a repetitive workflow for an unlimited amount of material?
- Keep in mind that the actual image capture is only one part of your digitization budget.
- Is there a time constraint?
- What is realistic for you?

End use

What do you want to do with your digital files?

How much information do you need to impart? Do the files need to be use-neutral?

End use affects how you approach image capture:

what and how much detail resolution you need to capture,

e.g. OCR-ready vs. paper texture

TIP: *The quality of the file you have before you get to post-processing is very important. Photoshop is not the answer to everything. You can't fix what you don't have.*

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File formats

- tiff
- jpeg
- jpeg 2000
- pdf
- dng
- gif
- png
- ?

Non-compressed TIFF is the current International archival standard.

large file
more storage space
more reliable and stable than jpeg

Metadata

What types of metadata do you need to record?

3 basic types:

- Technical – information from and about your image capture device
- Descriptive or Bibliographic – information about the physical object
- Administrative – information about the digital object

Equipment

How to convert analog to digital?

Types of image capture devices: Scanners or cameras

Which you choose depends on the material, size and handling restrictions of your originals

Lighting

Continuous or flash?

Continuous

- less disturbing for long-term use

Flash

- faster exposure time
- less chance of camera shake influencing the sharpness of the image

Exposure

Light & Exposure

Incident vs. Reflected light reading

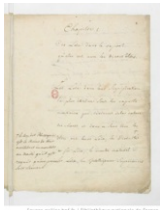
Incident – independent of the individual properties of the object and only takes into account the amount of light falling on the object

Reflected – amount and quality of light reflected from an object changes depending on the color, texture and background

It is better to read the light falling on the object instead of light reflected as this gives consistent exposure reading; allows for more control and is more repeatable

Background

White, black, gray or color?



White

- brings out subtleties in paper color
- good for thin paper

Black

- increases perceived contrast
- gives a sense of floating object

Neutral gray

- usually recommended as it tends to not influence exposure and perceived contrast
- less bleed-through with thinner paper

Color

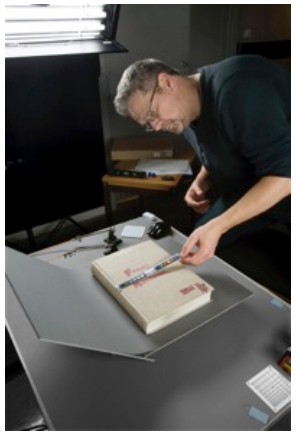
- usually used for exhibition purposes

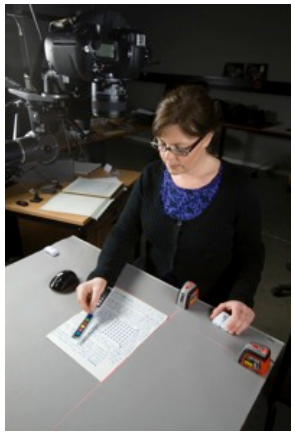
Background

The ideal background shooting environment should also be as neutral as possible in order to limit it's effect on image capture.

Shooting aids

- Camera stand
- Colorchecker or gray card
- Ruler
- Book support
- Page holder
- Focusing aid
- Spectrometer
- Bits & bobs





Shooting aids

- Camera stand
- Colorchecker or gray card
- Ruler
- Book support
- Page holder
- Focusing aid
- Spectrometer
- Bits & bobs

PART 2 - Image Capture (Camera)

Creation of master or archival files

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Image Capture (Camera)

Basic steps of Image Capture

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Image Capture (Camera)

1. Calibration
2. Color space & ICC-profile
3. Lighting
4. Working out 1:1
5. Framing & Cropping
6. Focusing
7. Preview
8. Neutralizing
9. Shooting & Sequencing
10. File naming

Image Capture (Camera)

1. Calibration
   Monitor

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Image Capture (Camera)

1. Calibration. Use a spectrometer and calibration software, e.g. EyeOne, Spyder, Color Navigator

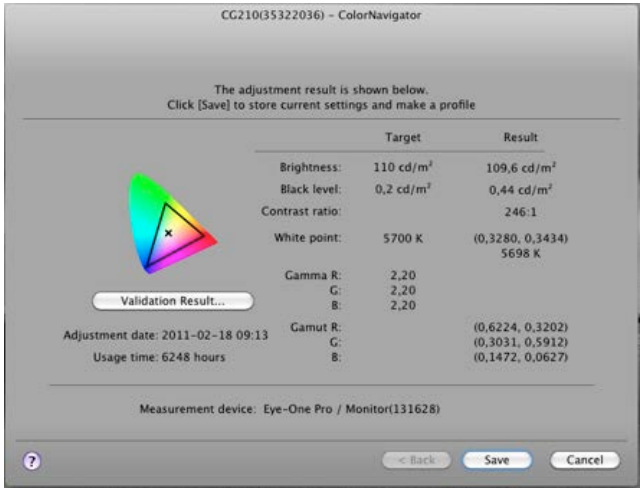
   Calibrated capture and viewing equipment is important for optimum visual accuracy
   - Monitor
   - Camera

   Tip: Gamma 2.2; Luminance 85-140 Cd; 5700K; Black point target 0.2 Cd (Candela)

- http://www.drycreekphoto.com/Learn/Calibration/monitor_black.htm

Image Capture (Camera)

1. Calibration
   Monitor



1. Calibration
   Camera

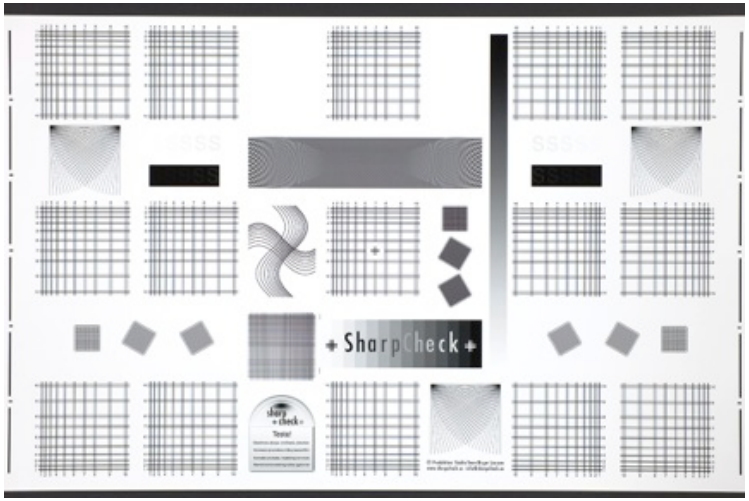


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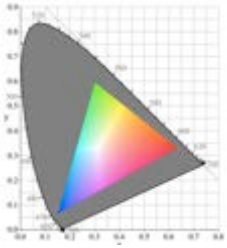
Image Capture (Camera)

2. Color space & ICC-profile

Color space is a mathematical description of how much difference is necessary between two similar colors in order to distinguish them them as two separate colors

- ProPhoto
- Adobe RGB
- sRGB



ICC-profile is a description of how your equipment sees color

Don’t forget to set a color space on your camera

http://www.brucelindbloom.com/

Image Capture (Camera)

3. Lighting quality
   - Even. It is generally recommended to have even lighting across the entire area you are capturing. A broader light source gives more even light. E.g. think of the difference in light quality between a sunny and a cloudy day.
   - Balanced. Lighting has different color temperature. Be sure to note the stated color temperature of your light source or use a color spectrometer to check.
   - Don’t mix light sources
   - A consistent viewing environment is ideal for controlling color in image capture

Image Capture (Camera)

4. Working out 1:1
   - Directly in camera: resolution & pixel array

     Canon 5D Mark II

     = 5616 x 3744 pixels

     = 47,5x31,75cm @ 300ppi

     = 35,6 x 23,77cm @ 400ppi
   - In post-processing: Interpolation
   - Digital stitching

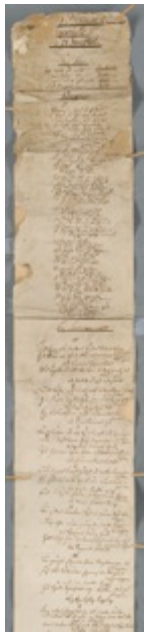


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Image Capture (Camera)

– Digital stitching

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Image Capture (Camera)

5. Framing & Cropping
   - Keep object straight and try to maintain the same position
   - Take into account that the relative size of the page and the book spine can & usually change as you browse further into a book

Image Capture (Camera)

6. Focusing

When digitizing a book it is necessary to maintain the focal plane at the same distance from the lens in order to make automation in post-processing easier. i.e. the top page should always be at the same level

Image Capture (Camera)

7. Preview
   – Check that everything is where you want it to be before shooting

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Image Capture (Camera)

8. Neutralizing: White (Gray) Balance

Don’t forget to white balance your camera.

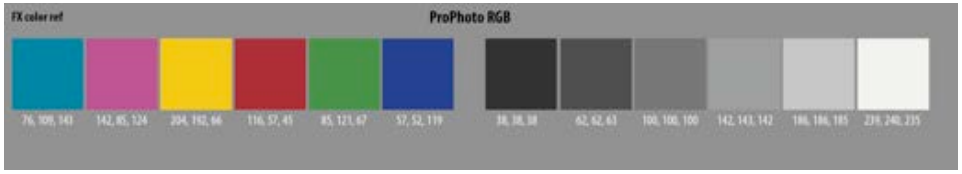

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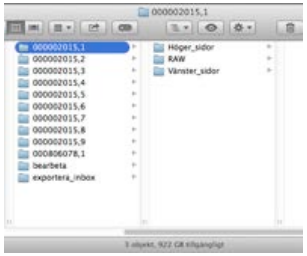
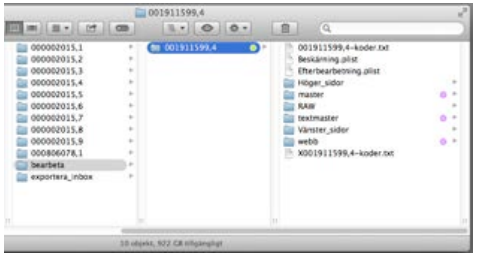
Image Capture (Camera)

9. Shooting & Sequencing
   - all lefts / all rights
   - at KB we started out manually sequencing 1, 3, 5… & 2, 4, 6… then one of our photographers developed a script and software to automatically sequence files



Before script



After script

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Image Capture (Camera)

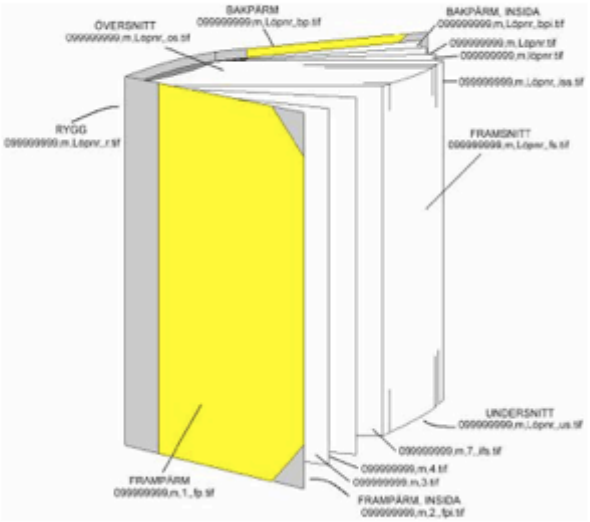
10. File naming.

- Important for organization, search and administrative functions

KB has a composite file naming system. Each position is separated by a comma, and corresponds to the retrieval of different metadata information from the object's catalogue post in Libris.

Gösta Berlings saga (manuscript, Selma Lagerlöf)

003164296,1,m,1,,fp.tif
003164296,1,w,35,12r.tif
003164296,1,j,264,125v.jpg
003164296,1,p,1.pdf



Exempel på namngivning av en inbunden bok [måste exemplet uppdateras?]

Filnamn	Förklaring i klartext
099999999,m,1,,fp.tif	Frampärmen
099999999,m,2,,fpi.tif	Frampärmens insida
099999999,m,3.tif	Försättsblad, opaginerad
099999999,m,4.tif	Försättsblad, opaginerad
099999999,m,5,,ifs.tif	Inlagans första sida
099999999,m,6.tif	Opaginerad sida
099999999,m,7,,t.tif	Titelsida
099999999,m,8,2.tif	Sidan 2
099999999,m,9,3,inh.tif	Sidan 3, innehållsförteckning
099999999,m,10,4,inh.tif	Sidan 4, innehållsförteckning
099999999,m,11,5.tif	Sidan 5
099999999,m,12,6.tif	Sidan 6
099999999,m,13,,pl.tif	Planschblad, opaginerad
099999999,m,14,,pl.tif	Planschbladets baksida, opaginerad
099999999,m,15,7.tif	Sidan 7
099999999,m,16,8.tif	Sidan 8

	Etc., fram till:
099999999,m,90,182.tif	Sidan 182
099999999,m,91,83.tif	Felpaginerad 83
099999999,m,92,184.tif	Sidan 184
099999999,m,93,185.tif	Sidan 185
	Etc., fram till:
099999999,m, sekvensnr,321,reg.tif	Sidan 321, register
099999999,m, sekvensnr,322,reg.tif	Sidan 322, register
	Etc., fram till:
099999999,m, sekvensnr,326,reg.tif	Sidan 326, register
099999999,m, sekvensnr,,reg-iss.tif	Register-inlagans sista sida
099999999,m, sekvensnr.tif	Försättsblad, opaginerad
099999999,m, sekvensnr.tif	Försättsblad, opaginerad
099999999,m, sekvensnr,,bpi.tif	Bakpärmens insida
099999999,m, sekvensnr,,bp.tif	Bakpärmen
099999999,m, sekvensnr,,os.tif	Översnitt
099999999,m, sekvensnr,,fs.tif	Framsnitt
099999999,m, sekvensnr,,us.tif	Undersnitt
099999999,m, sekvensnr,,r.tif	Rygg
099999999,m, sekvensnr,,fb.tif	Föremålsbild
099999999,m, sekvensnr,,sgl.tif	Sigill
099999999,m,1,,bil.tif	Sidan 1 av medföljande häfte (bilaga)
099999999,m,2,,bil.tif	Sidan 2 av medföljande häfte (bilaga)
099999999,m,3,,bil.tif	Sidan 3 av medföljande häfte (bilaga)
099999999,m,4,,bil.tif	Sidan 4 av medföljande häfte (bilaga)

Bläddra igenom paginerat tryck i sin helhet för att kontrollera att pagineringen inom sviten håller rätt ordningsföljd. Har pagineringen rättats med blyerts och stämmer med sekvensen gäller ändringen. Eventuella avvikelser i pagineringens nummersviter anges i bildfångstanvisningen och meddelas till katalogisatören som gör en anmärkning i LIBRIS-posten.

Exempel om föremålsbilder

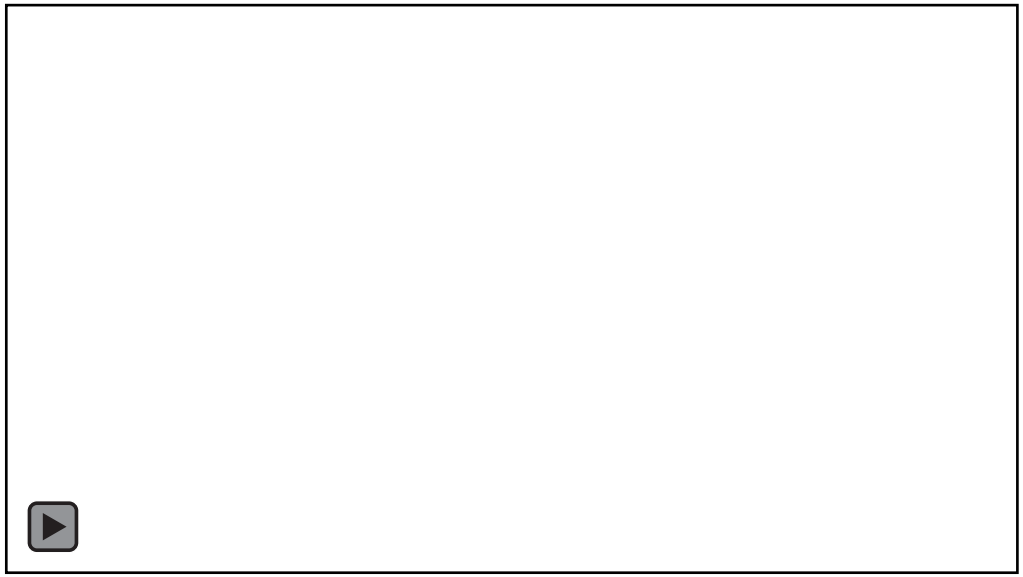
1. **En volym, två poster**
   Ett verk har fyra delar i två volymer. Varje del är särkatalogiserad och det finns en huvudpost. Delarna har alltså egna Regina-nummer. Eftersom webbvisningen baseras på Regina-nummer, ska varje del visas som ett eget objekt på webben även om de i verkligheten är bara två volymer. För att alla delar ska få likadan visning, dokumenteras föremålsbilder (pärmar etc.) med varje del. Volymens föremålsbilder namnges alltså två gånger, med båda delarnas Regina-nummer.

Image Capture (Scanner)

More or less the same steps as with a camera. You are however limited by the size of your scanner and your material.

– Built in:
  – interpolation
  – lighting
  – focus

1. Calibration
2. Prescan
3. Framing
4. Scanning
5. File naming



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PART 3 - Post-Processing

This is where you create user files for your end use. All color adjustment takes place in 16-bit.

- Export from shooting format (RAW) to TIFF
- Final neutralizing
- Render accurate color & contrast
- Sharpen
- Generate derivative user files

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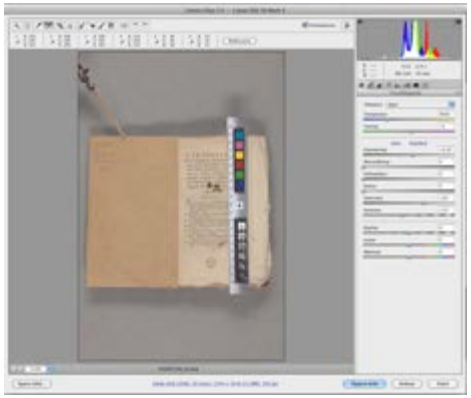
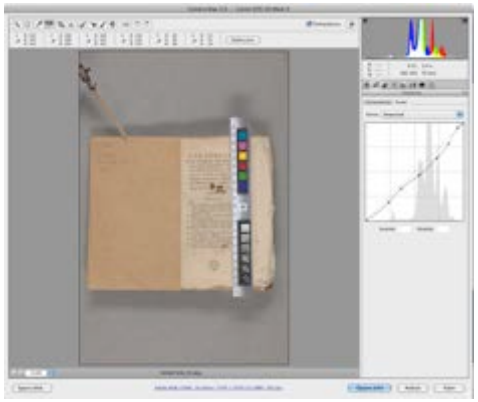
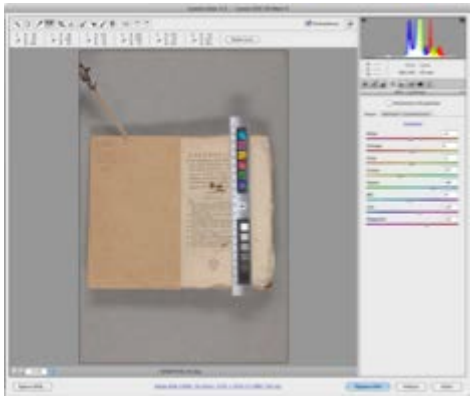
Post-Processing







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Post-Processing

Small-scale production, suitable for:

- special
- heterogeneous
- delicate
- complicated
- limited quantity
- more manual labor

http://commons.wikimedia.org/wiki/File:Carte_des_%C3%A9tats_d%C3%A9sunis_d%27Europe_-_Kungliga_Biblioteket_-_10348540-thumb.png

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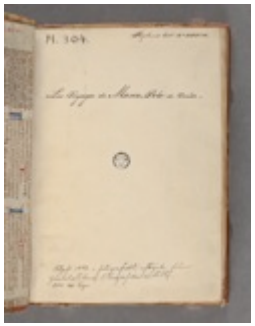
Post-Processing

Small-scale production:

Tools:

- commodity software such as Photoshop
- Macros
- Droplets
- simple Scripts
- customized viewing solutions



Post-Processing

Large-scale:

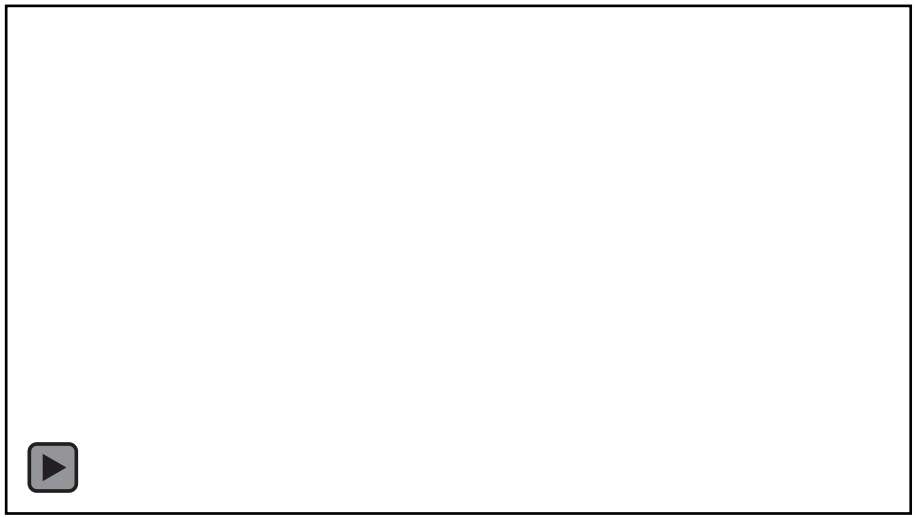
- mass digitizing
- homogeneous
- less delicate collections
- greater need for repeatability and reliability
- standardized workflow
- automation desired

Post-Processing

Large-scale:

Tools:

- Scripts
- Commercial high volume solutions
- Specialized hardware
- Specialized software



Post-Processing

Small-scale:

Suecia

Kungliga biblioteket

http://www.kb.se/samlingarna/oversikt/suecia/forsta-bandet/titelblad-volym1/

Post-Processing

Small-scale:

Vie et miracles de saint François d'Assise

Bibliothéque nationale de France

http://gallica.bnf.fr/ark:/12148/btv1b6000237d.r=.langEN.swf

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Post-Processing

Small-scale:

the Diamond Sutra

British Library

http://www.bl.uk/onlinegallery/virtualbooks/index.html#

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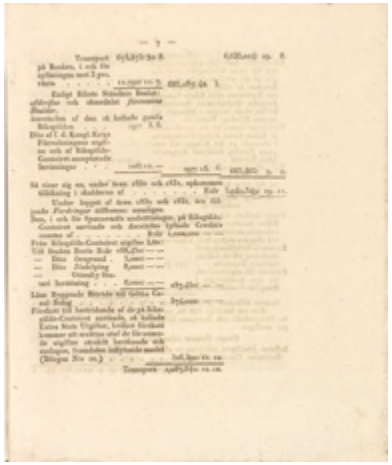
Post-Processing

Large-scale:



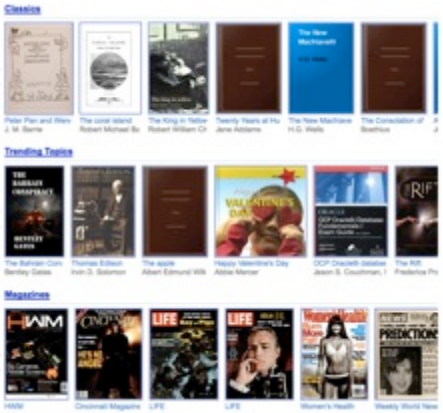
Digitaliserad dagspress

Kungl. biblioteket

http://www.kb.se/samlingarna/digitala/Digitaliserad-dagspress/

Google books

http://books.google.com/books



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WORKSHOP ASSIGNMENT

10 images that, together, describe the object

Keep in mind:

- Naming & sequencing
- Detail management
- End use
- Lighting – Even (flat) vs. uneven (textured)
- Effect of shooting on a white, black or gray background
- Reflective vs. Incident light reading
- Working out 1:1 – Interpolation vs. Non-interpolation
- Framing
- Focusing
- Neutralize & Color Correct
- Naming & sequencing

Photo credits

- Andrea Davis Kronlund
- Jens Östman
- Ann-Sofie Persson
- Birger Larsson
- Per B Adolphson
- Claes Jansson
- Istvan Borbas
- Bibliothéque nationale de France
- British Library
- Google Books
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- Wikimedia Commons

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