

# Digitization Strategies for Museums

## ■ Demos

- One Hundred Years in Five Minutes video
- Digital Video made for High School kids
- Cleopatra Project [www.artic.edu/cleo](http://www.artic.edu/cleo)
  - Bringing a kiosk application to the Web
  - QT-VR as a Web pan/zoom viewer for single images
- Image enhancement
  - Object: Glass & Silver Centerpiece
  - Replacing backgrounds: life-size Rodin shot in-situ

## ■ Administration

- **Art Institute of Chicago Image Manager RFP**
  - Image feature set
  - Image-based reports
- **Image metadata**
  - View Information
  - Status: color corrected, temp scan, copyright, restrictions
  - Use: web, internal research doc, print publication, video

# Examples of Metadata Fields

- Image #
- Image status
- Mime type
- Preferred view?
- View information
- File size
- Filename
- Bit depth
- Pixel height
- Pixel width
- Resolution
- Derived from:
- Enhanced?
- Image capture device

## ■ Digital Image Metadata

### – Automatic Generation

- Pixel dimensions, file size, mime type, bit depth, color space, creation date, modification date

### – Human judgement

- Subject or iconography of view or detail

### – Internal Management

- Preferred view
- Significant alteration
- Capture device and/or profile
- Restrictions
- Rights

## ■ Related Analogue Metadata

### – Film type and inventory

# Examples of View Metadata

obverse  
reverse  
recto  
verso  
front view  
front view, slightly turned  
3/4 view  
back view  
3/4 back view  
profile view  
side 1  
side 2  
view 1  
view 2  
detail: head  
detail: Herakles  
closed view  
open view  
without pedestal  
with pedestal  
with frame  
without frame

detail: mark  
detail: handle  
detail: chair back  
detail: arm  
detail: carving on chair arm  
detail: foot  
detail: finial  
detail: interior seat construction  
detail: patent stamp  
detail: signature  
detail: torso  
left panel  
right panel  
upper left quadrant  
upper right quadrant  
lower left quadrant  
lower right quadrant  
interior view  
top view  
bottom view  
view from above  
base

## ■ **Types of Publications Restrictions**

### – **Quality examples**

- **Out of focus, Poor color, Shape Distortion, Highlight reflections, Object cropped, Exposure poor, Uneven illumination, Damage to film, Poor aesthetic**

### – **Conservation documentation examples**

- **Backlit, Infrared reflectogram, Mid-Treatment, Pre-Treatment, Raking Light, Ultraviolet fluorescence, Photo of radiograph**

### – **Rights related**

- **Photography copyright not held, deaccessioned work, loan**

- **Desktop Image Cataloguers**
  - **Portfolio, Cumulus**
- **Workflow scenarios**
  - **Capture, review, master, create metadata, apply file naming conventions**
- **Staff roles**
  - **Scanning technician**
  - **Colorist**
  - **Digital photographer**
  - **Derivative manager**
- **New Functions**
  - **Digital files/match prints for lithographers(Epson 5000)**
  - **Portable digital photography for PR photography (Nikon D1)**
  - **Color laserjet instead of B/W RC prints (HP8550GN)**
- **Archiving**
  - **CD/DVD or AITII?**

<b>Media</b>	<b>MB</b>	<b>\$</b>	<b>MB/\$</b>
AIT 2 tape	50,000	79.95	625
CD-R	640	0.35	1,829
CD-RW	640	1.50	427
DLT	35,000	89.95	389
DVD-RAM	5,200	23.95	217
DVD-ROM	4,800	5.00	960
MO	640	9.33	69
MO	2,600	29.95	87
Zip	100	7.50	13
Zip	250	11.00	23

# ■ Photoshop 6.0

- Cautions for Photoshop 5
- Contact sheet making
- Web imaging controls (ImageReady)
- Web gallery (export to HTML)
- Size to fit to automate derivatives

- **High end digital studio cameras**
  - **Trilinear scanning**
    - **Betterlight & PhaseOne**
      - **(scanning backs)**
    - **Leica (scanning camera)**
  - **Three-shot array**
    - **Sinar Leaf Volare & Megavision**
  - **Piezo**
    - **Eyelike & Carnival 2020**

## ■ **Trilinear scanning**

- **Line-by-line scanning**
- **Use three rows of electrodes with Red, Green and Blue filters**
- **A stepper motor moves each electrode on line at a time**
- **Only stationery subjects**
- **Usually best results with continuous daylight**



## ■ Betterlight

- Works with any 4x5 view camera, lenses, and accessories
- Inserts into a standard 4x5 view camera like a film holder
- Focus and compose normally on the camera's ground glass
- Compact, lightweight design allows a full range of camera movements
- Large image area preserves lens coverage and perspective
- -(including tungsten, daylight, HMI, or fluorescent lighting) \*
- **Reproduction quality superior to film**
- High resolution, uninterpolated scans without film grain
- -3750 by 5000 pixels, 53 MB rgb file (model 4000)
- -6000 by 8000 pixels, 137 MB rgb file (model 6000)
- -8000 by 10640 pixels, 244 MB rgb file (model 8000) \*
- Wide dynamic range with clean shadows and highlights
- -9+ f-stops; 12-bit data converters with 14-bit data path and output tables \*Wide color gamut with excellent separation of similar hues

## ■ **Three-shot array**

- **Shoots three separate images**
- **One each Red, Green and Blue**
- **Filter rotates in front for each shot**
- **Image sensor is large grid, or array**
- **B&W images can be moving (only one shot)**
- **Light source can be continuous or strobe**

## ■ Piezo

- **Small grid functions like three-shot array**
- **Grid can move to create higher res multiples of four or sixteen pictures which are merged**
- **Also can function as a one-shot color camera at lower resolution**

## ■ **Multiple-array**

- **Low to medium range resolution**
- **Usually hand camera with flash**
- **Prism separates light into RGB**
- **Camera must interpolate pixels so quality is not as high as previous three cameras**

## ■ **Lighting systems**

- **Balcar**
- **Scandles**
- **HMI**
- **Dichroic Quartz Halogen (Tarsia Tech Ind)**

# ■ Camera evaluation

- Cost

- Targets, example images

- Image quality

- Ease of use

- Which camera for which application?

# Cameras under \$1,000

- **Storage (not all of the same type is =)**
  - Compact flash: Nikon, Kodak, Canon
  - Smart Media (less sturdy): Olympus, Agfa, Fuji
- **Batteries**
  - NiMH, lead-acid pack or Lithium ([batterybusters.com](http://batterybusters.com))
- **Card Reader (frees the camera)**
- **Best three cameras under \$1,000**
  - Nikon 990, Kodak 4800 or Olympus 3.3 megapixel

## ■ **Mid-range to High-end Film Scanners**

- **Umax Powerlook 3000**
- **Scitex Eversmart**
- **Imacon Flextight**
- **Scanmate F10**
- **Heidelberg Nexscan**
- **Quality & Workflow issues**
  - **Dynamic range**
  - **Speed (SCSI-2or Firewire best choice)**

- **Color Management**
  - **Ambient environment**
    - **Lighting**
    - **Walls**
    - **Desktops**
  - **Monitor Calibration**
    - **ColorPar**
    - **Adobe Gamma**
  - **Color Spaces**
    - **ICC Profiles**
    - **Apple Colorsync/Windows CMS**
  - **Color Matching Systems**
    - **Greitag**
    - **Monaco**

## ■ **Printers**

- **Fujix Pictography**
- **HP Color Laserjet**
- **Iris**
- **Epson ink-jet**
- **Dye-Sublimation (Kodak, Sony, etc.)**
- **Cymbolic Science**
- **Lambda**

## ■ **Software tools**

- **Acrobat 4 (web capture tool)**
- **Lasersoft scanning software**
- **Debabelizer**
- **Mr. Sid, OpenPix, Flashpix,**
- **QT-VR**

## ■ **File format to come**

- **JPEG 2000**

## ■ **Digital watermarking**

- **Digimarc “invisible system”**
- **Custom visible surprint**
- **Website protection**
- **Adobe Acrobat digital signatures**
- **Can’t copy/can’t print software**

# **The Art Institute of Chicago Imaging Department**

## **Products & Services**

# Past Practices

## Distribution of Products:

- **Object Photography**
  - 4+ color transparencies
  - 5+ b/w prints
  - 2 b/w negatives
  - 4 35mm slides
- **Exhibitions**
  - 2-4 color transparencies or b/w
  - 4 slides of each view, min. 20 views
  - Slides for Graphics Dept. of signage
- **Publicity**
  - Color negs to make color & B/W prints or slides
  - Full day shoot to deliver dozens of views only  
small percentage is used

# Image Products

<b>Current Product</b>	<b>New Product</b>	<b>Use</b>
Original color transparency	Digital file	Publication
Original B/W Negative	None	Discontinue
Dupe Color Transparency	Digital file	Publication
B/W prints of objects	Color laserprint	Reference
B/W prints of events and exhibitions	Color laserprint	Reference
35mm color slides of objects	Slide made from digital file	Lecture

# Image Products Costs

<b>Current Product</b>	<b>Cost Materials and Labor</b>	<b>New Product</b>	<b>Cost Materials and Labor</b>
Original color transparency	50.00	Digital file	10.00
Original B/W Negative	10.00	None	0
Dupe Color Transparency	20.00	Digital file	10.00
B/W prints of objects	8.00	Color laserprint	2.00

# Efficiencies – 3D Object Photography

## 2D New Photography

No new B/W . Scan CT.

Deliver color laserprints.

Slides to Slide library & staff on demand.

Digital file/match print for publication

## 3D New Photography

No new B/W, Scan CT.

Deliver color laserprints.

Slides to Slide library & staff on demand.

Extra views shot with small format

digital camera É ..instead of film.

Digital file/match print for publication.

# Efficiencies

## Exhibition & Publicity Photography

- Small format color digital camera
- Color laser prints
- Digital file & matchprint for publication
- Slides to Slide library & staff on demand

# **Efficiencies**

## **Archive Reprints**

- Scan available B/W or color**
- Deliver color laserprint for reference**
- Digital file & matchprint for publication**

# Digital Studio 2001

- High-end digital capture.
- All purpose digital files (*use-neutral*)
- Users make their own laserprints through templates in enterprise image database.
- Network attached storage: [snapappliances.com](http://snapappliances.com)
- Backup to AIT2 4mm DAT tape-- redundantly; rotate new tapes annually