Best Practices for Digital Collections

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Best Practices for Digital Collections

Corinne Jacox, Catalog/Reference Librarian, Creighton University Law Library
Yumi Ohira, Digital Initiatives Librarian, University of Nebraska at Omaha Libraries

2018 NLA/NSLA Joint Conference, October 5th, 2018
Planning

Create New Research Opportunities for Users

- Available to a variety of users
- Enhance understanding of the digital objects

Planning is Key

- Institution’s mission and goals
- Costs and capabilities for long term maintenance
- Standards -- documentation, formats, metadata
- Timeline
- Define the scope (characteristics of objects to be digitized)
  - How many, formats, sizes, unusual characteristics, condition
- Workflow
- Equipment -- optimize quality and level of production
Policies

Access
Content
Committee
Copyright
Metadata
Preservation
Withdrawal

Examples
University of Chicago Library
University of Hawaiʻi at Mānoa Library
Institutional Repository Policies

This page overviews policies that guide Knowledge@UChicago, the University of Chicago's institutional repository.

Scope

Contributors to Repository

Contributors must be affiliated with the University of Chicago and have valid CNID credentials to deposit work in the repository. Alumni and other affiliated users without CNID credentials should contact the Knowledge@UChicago team.

Scope of Deposited Content

- Deposited content can be scholarly, creative, research-related, or teaching resources.
- Deposited content should be in a completed state, rather than in-progress and regularly updated.
- Contributors may deposit content created prior to joining the University of Chicago.
- Contributors must be willing and able to grant the University the non-exclusive rights to both preserve and make their work available through Knowledge@UChicago.
- Deposited content must be in a digital format.
- If the deposited content is part of a series, other works in that series should also be deposited when possible so that we can offer a full and complete collection.

Supported Content Types

The following content types are among those that will be accepted:

- publications (including preprints)
- dissertations
- masters and undergraduate theses
- working papers and technical reports
- white papers
- datasets up to 1GB (data sets must be complete and ready to use, and must include a readme file. At this time, no classified/restricted/confidential data can be accepted.)
- conference presentations
- conference posters
- campus-based publications
- course-based publications
- teaching and learning resources
- audio and video recordings

This is a non-exhaustive list. Contributors are welcome to deposit content that can be characterized as “scholarly, creative, research-related, or teaching resources” and to contact us with any questions about materials.
UH M Library holds a large number of collections that would be appropriate for digitization and online access. However, digitization projects are costly and require a commitment of staff time. The following list of criteria is recommended to guide selection of collections of analog materials for conversion to digital format. Selection is an activity led by content managers and specialists with the help of D-CARP.

Copyright Status
What is the copyright status of the materials? Most material considered for digitization and access on the open Web falls into one of the following three categories:

- **Public domain:** works that never were, or are no longer covered by copyright. Works in the public domain may be used without permission.
- **All works published before January 1, 1923.**
- **Works published between 1923 and 1964 and not renewed in the 28th year.**
- **Works published without copyright notice before 1989.**
- **Unpublished works whose author died before 1932; otherwise, the term is life plus 70 years.**
- **Works for which the copyright is held by the University.**
- **Works for which we have secured permission to digitize.**
Staffing

- **Project Manager** -- oversees daily operations and maintains the budget, timeline, and workflow
- **Collections Assessor** -- selects originals, checks their condition and makes conservation recommendations, rehouses originals as necessary, and reshelves them once digitization and cataloging are complete
- **Database Manager** -- creates and maintains databases for the project
- **Scanning Technician** -- handles original objects, creates scans and surrogates, and produces backup files on the storage media
- **Quality Control Technician** -- checks the image files generated by the scanning technician against benchmarks
- **Cataloger** -- creates or edits records for digital images of originals included in the project
- **Web Manager** -- designs and maintains the website housing the project

*Lucidea Think Clearly Blog*
Metadata

- Data about data
  - Description and context of the data
  - Helps to organize, find and understand data
- Recognized standard
  - Easier to exchange/migrate data with other systems
  - No standard can cover all materials for all users
- Three types
  - Descriptive
  - Administrative
  - Structural
Descriptive Metadata

- Describes resource for discovery and identification
- Includes elements such as title, abstract, author, dates, subjects, keywords, and unique identifiers (PURL, handle)
- General standards
  - DCMI (Dublin Core Metadata Initiative)
  - MODS (Metadata Object Description Schedule)
  - MARC (MAchine-Readable Cataloging)
- Standards for special descriptions
  - Data Sets for Social Sciences: DDI (Data Documentation Initiative)
  - Archive: EAD (Encoded Archival Description)
Administrative Metadata

- Provides information to help manage a resource
  - When and how it was created
  - File type
  - Technical data on creation and quality control (critical for migration and long-term sustainability of the digital resource)
  - Who can access it
- Subsets
  - Rights management metadata (intellectual property rights)
  - Preservation metadata (information needed to archive and preserve a resource)

Sample Elements

- Scanner type and model
- Resolution
- Bit depth
- Color space
- File format
- Compression
- Light source
- Owner
- Copyright date
- Copying and distribution limitations
- License information
- Preservation activities
Structural Metadata

- Facilitates navigation and presentation of electronic resources
  - Provides information about the internal structure of resources including page, section, chapter numbering, indexes, and table of contents
  - Describes relationship among materials (e.g., photograph B was included in manuscript A)
- Example
  - METS (Metadata Encoding & Transmission Standard)

Sample Elements

- Structuring tags
  - Title page
  - Table of contents
  - Chapters
  - Parts
  - Errata
  - Index
  - Sub-object relationship (e.g., photograph from a diary)
Metadata Best Practices

- Mountain West Digital Library Dublin Core Application Profile Version 2.0 (2011)
- Lyrassis Digital Toolbox Metadata
- Orbis Cascade Alliance Dublin Core Best Practice Guidelines Version 2.3 (2018)
- Nebraska Library Commission Nebraska Memories Metadata Guidelines (2009)
<table>
<thead>
<tr>
<th>Element Name</th>
<th>creator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Label</td>
<td>Creator</td>
</tr>
<tr>
<td>DC Definition</td>
<td>An entity primarily responsible for making the resource.</td>
</tr>
<tr>
<td>Is Field Required?</td>
<td>Mandatory if applicable</td>
</tr>
<tr>
<td>Is Field Repeatable?</td>
<td>Yes</td>
</tr>
<tr>
<td>How to Use</td>
<td>Person or entity responsible for creating intellectual content of resource such as a person, organization or service. Prefer form of name as verified in the Library of Congress Name Authority File (LCNAF). If name is not listed there, give name in the following format: Last name, First name, Middle initial and period, year of birth and/or death if known, separated by a hyphen. For further help in formatting names not found in LCNAF, consult a cataloging resource such as the Anglo-American Cataloguing Rules (AACR²), Resource Description and Access (RDA), or Describing Archives: A Content Standard (DACS).</td>
</tr>
<tr>
<td>Refines/Refinement</td>
<td>None</td>
</tr>
<tr>
<td>Schemes</td>
<td>Library of Congress Name Authority File (LCNAF)</td>
</tr>
<tr>
<td>DC Mapping</td>
<td>dcterms:creator</td>
</tr>
<tr>
<td>MARC Mapping</td>
<td>100 1# (Main Entry--Personal Name), or 110 2# (Main Entry--Corporate Name), 111 1# (Main Entry--Conference Name) or 700/710/711</td>
</tr>
</tbody>
</table>
Privacy

Establish procedures and policies to protect the interests of donors, individuals, groups, and institutions whose public and private lives and activities are recorded in their holdings.

Access restrictions on collections to ensure that privacy and confidentiality are maintained.

Users’ rights to privacy by maintaining the confidentiality of their research and protecting any personal information collected about the users.

*Society of American Archivists*
Individual summation on behalf of TOJO, Hideki, Prime Minister of Japan, read to the Tribunal by Blewett and Kiyose April 9-12, 1948. It contends that TOJO was not individually guilty of the charges against him, that "no act performed by him during the entire period of the indictment was criminal," and that no evidence offered by the Prosecution proved him guilty of criminal commission or criminal omission. One of the major points was that Japan was acting in self-defense.

Ichiro Kiyose, Japanese Counsel; George Francis Blewett, American Counsel

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http://hdl.handle.net/10504/74576

Collections
Delaney Tokyo Trial Papers
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<th>International Military Tribunal of the Far East</th>
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<tr>
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<td>dc.date.accessioned</td>
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</tr>
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<td>The Creighton University Law Library provides access to these materials for educational and research purposes, and for personal enjoyment. Permission to reproduce the file in any form other than for personal individual use must be obtained in writing from the Creighton University Law Library.</td>
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<td>Trials, litigation, etc.</td>
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<td>dc.conversion.creation</td>
<td>application/PDF--This 69,600,000 byte file is derived from a 300 dpi uncompressed PDF file that was scanned from the original using a Xerox WorkCentre 7120, color configuration. ABBYY FineReader (Build 10.0, 104.206; Part #700/28) was used for text recognition.</td>
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Digitization Workflow

1. Digitization Request
2. Capture (Scanning process)
3. Convert (Edit and save digital objects)
4. Preserve
5. Access
Digitization Workflow - (1) Digitization Request
Digitization Workflow - (2) Capture

MASTER FILES

Reflective SCANS
(Photos, Maps, & Graphic Material)

Length of longest side islekicted
Target scale for 10 x 8 in print size

1 5100
2 2550
3 1700
4 1275
5 1020
6 850
7 728
8 637
9 560
10 510
11 463
12 425
13 392
14 362
15 340
16 318
17 300

Document SCANS

Transparencies
(Slides & Negatives)

35 mm 4000 PPI
2.25 in 2200 PPI
4 by 5 in 1020 PPI
5 by 7 in 900 PPI
8 by 10 in 600 PPI

Manuscripts 400 grayscale
(or color)
Printed Text 400 grayscale
(or 600 bitonal)
Blueprints 400 bitonal

All files are saved in uncompressed tiff format. Color scans taken at 24 bit, Grayscale at 8 bit.
Digitization Workflow - (3) Convert

- Unaltered TIFF (Master Image)
- Edited TIFF (Deliverable Image)
- Edited JPEG (Access Image)
Digitization Workflow

- (3) Convert

File Naming Conventions:

**kcas204_ecs_f1d1p1ow.jpg**

**kcas204_ecs_f1d1-d100.pdf**

**fhsuflar_wkohp_ryan-stellaow.mp3**

**fhsuflar_wkohp_ryan-stella_p1-100.pdf**

**fhsugsth_tacha-dustin_p1-100.pdf**

**fhsugsth_tacha-dustin_p1.tif**

---

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<thead>
<tr>
<th>I. Institutional name</th>
<th>Example 1</th>
<th>Example 2</th>
<th>Example 3</th>
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<tr>
<td>A. Parent Organization</td>
<td>kcas</td>
<td>Kansas Cosmosphere</td>
<td>fhsu Fort Hays State University</td>
</tr>
<tr>
<td>B. Organization</td>
<td>ll</td>
<td>Forsyth Library</td>
<td>gs Graduate School</td>
</tr>
<tr>
<td>C. Department</td>
<td>ar</td>
<td>Archives &amp; Special Collections</td>
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</table>

<table>
<thead>
<tr>
<th>II. Object ID</th>
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<tbody>
<tr>
<td>A. Collection</td>
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</table>

<table>
<thead>
<tr>
<th>B. Box within Collection</th>
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</thead>
<tbody>
<tr>
<td>ecs_ Environmental Control System</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>C. Folder within Box</th>
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<tbody>
<tr>
<td>f[x] Folder Number x</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>D. Document within Folder</th>
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</thead>
<tbody>
<tr>
<td>d[x] Document Number x</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>II. Lastname-Firstname of author / subject</th>
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</thead>
<tbody>
<tr>
<td>ryan-stella_ Stella Ryan (HiI Interviewee)</td>
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</table>

<table>
<thead>
<tr>
<th>III. Part Designator</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Part Within Document (single)</td>
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<tr>
<td>A. Optimized file</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>B. Reverse of Document</th>
</tr>
</thead>
<tbody>
<tr>
<td>B. Web-ready file</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>IV. Page Designator</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Pages within document (Combination PDF)</td>
</tr>
<tr>
<td>A. File Extension</td>
</tr>
</tbody>
</table>

| Example 1: kcas204_ecs_f1d1p1ow.jpg | Single Cosmosphere document (JPEG Web-use) |
| Example 1: kcas204_ecs_f1d1-d100.pdf | Combination Cosmosphere PDF document |
| Example 2: fhsuflar_wkohp_ryan-stellaow.mp3 | Oral History for WKCHP (MPS Web-use file) |
| Example 2: fhsuflar_wkohp_ryan-stella_p1-100.pdf | Combination Oral History Transcript PDF document |
| Example 3: fhsugsth_tacha-dustin_p3-100.pdf | Combination Thesis PDF document |
Digitization Workflow - (3) Convert

File Naming Conventions for Scanned Items

Under the collection folder (see the Directory Structure & Folder Naming), create new folders to save TIFF, JPEG, and PDF files as necessary. For example:

- Shares (G) > Digitized Material > CONTENTitem > MS20011

The folder “unnumbered”:
- Save a TIFF (.tif) file as a presentation quality file.
- Filenames: combine (last number)_{number} (original format [e.g. *].tif)
- *original format type: image [ing]
- Sound [so]
- Video [vi]
- Text [xt]
- **Shelf number: Unless resaving work on a batch of images using the same file name prefix, add (001), example: MS20011_img_0001.tif

The folder “ TIFF”:
- Save an edited TIFF master file
- Under adequate scanning conditions, this editing of the file may be necessary. If you are not sure about the editing of the file, then save an unedited TIFF file for the production master.
- Filenames: combine (call number)_{number} (original format [e.g. *].tif)
- example: MS20011_img_0001.tif

The folder “JPEG”:
- Save an edited JPEG master file (selected images optimized for quality/medium image quality)
- Filenames: combine (call number)_{number} (original format [e.g. *].jpg)
- example: MS20011_img_0001.jpg

The folder “PDF”:
- Create a PDF file by combining JPEG files in the JPEG folder into PDF format.
- Before saving the PDF, make sure all OCR files for the PDF document are saved in the same folder, example: MS20011.pdf

Save the metadata describing the collection:

If the collection consists of journals or newspapers, the directory structure and file naming can be, for example:

?
Digitization Workflow - (3) Convert

MSS0034_1978_Wether_m_001.tiff
MSS0034_1978_Wether_001.jpg

UNO0012_Boys_of_Omaha_v01_001.jpg
UNO0012_Boys_of_Omaha_v01_001.jpg
...
UNO0012_Boys_of_Omaha_v01.pdf

http://digitalpowrr.niu.edu/
Digitization Workflow - (3) Convert

Analyzing/OCR

What is PDF/A?

**PDF/A-1a**: The PDF/A-1a requires tagging for structure as well as Unicode character maps for fonts. The objective for PDF/A-1a includes the goals for PDF/A-1b and accessibility for physically impaired users. The tags for accessibility enable screen readers to provide some form of description for images.

**PDF/A-1b**: The PDF/A-1b variant is for content that has no accessibility tagging; it’s useful for scanned documents. The objective for PDF/A-1b is to ensure reliable reproduction of the visual appearance of the document.

**PDF/A-2**: The PDF/A-2 is the second part of the standard and addresses some of the new features added with versions 1.5, 1.6, and 1.7 of the PDF Reference.

**PDF/A-3**: The PDF/A-3 allows for the embedding of arbitrary file formats such as XML, CSV, and CAD into PDF/A as complete archived objects.
Digitization Workflow

- (3) Convert

Digitization Workflow - (4) Preserve

3-2-1 Rule

3: Make 3 copies

2: At least 2 of the copies should be on 2 different types of storage media.

1: Store 1 of the copies in a different location from the other 2 copies.
Digitization Workflow - (4) Preserve

Goals of Long-term Digital Preservation

- Availability
- Identity
- Persistence
- Renderability
- Understandability
- Authenticity
Digitization Workflow - (4) Preserve

Preservation Metadata

Provenance: Preservation metadata should record information bearing on the custodial history of the digital object, potentially stretching back to the time of the object’s creation, and moving forward through successive changes in physical custody and/or ownership.

Authenticity: Preservation metadata should include information sufficient to validate that the archived digital object is in fact what it purports to be, and has not been altered, either intentionally or unintentionally, in an undocumented way.

Preservation activity: Preservation metadata should document the actions taken over time to preserve the digital object, and record any consequences of these actions that impact the look, feel, or functionality of the object.

Technical environment: Preservation metadata should describe the technical requirements, such as hardware, operating system, and software applications, needed to render and use the digital object in the state in which it is currently stored in the repository.

Rights management: Preservation metadata should record any binding intellectual property rights that limit the repository’s powers to take action to preserve the digital object, and to disseminate the object to current and future users.
**Digitization Workflow**  - (4) Preserve

**Levels of Digital Preservation**  
https://ndsa.org/activities/levels-of-digital-preservation/

<table>
<thead>
<tr>
<th>Storage and Geographic Location</th>
<th>Level 1</th>
<th>Level 2</th>
<th>Level 3</th>
<th>Level 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Two complete copies that are not colocated</td>
<td>- At least three complete copies in a different geographic location</td>
<td>- At least one copy in a geographic location with a different disaster threat</td>
<td>- All three copies in geographic locations with different disaster threats</td>
<td>- Have a comprehensive plan in place that will keep files and metadata on currently accessible media or systems</td>
</tr>
<tr>
<td>- For data on heterogeneous media (optical discs, hard drives, etc.) get the content off the medium and into your storage system</td>
<td>- Document your storage system(s) and storage media and what you need to use them</td>
<td>- Document a comprehensive monitoring process for your storage system(s) and media</td>
<td>- All three copies in geographic locations with different disaster threats</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>File Fixity and Data Integrity</th>
<th>Level 1</th>
<th>Level 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Check fixity on import if it has been provided with the content</td>
<td>- Check fixity on all inputs</td>
<td></td>
</tr>
<tr>
<td>- Create fixity if it wasn't provided with the content</td>
<td>- Use write-blockers when working with original media</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Virus-check high risk content</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Information Security</th>
<th>Level 1</th>
<th>Level 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Identify who has read, write, move and delete authorizations to individual files</td>
<td>- Document access restrictions for content</td>
<td></td>
</tr>
<tr>
<td>- Restrict who has these authorizations to individual files</td>
<td>- Maintain logs of who performed what actions on files, including deletions and preservation actions</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Metadata</th>
<th>Level 1</th>
<th>Level 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Inventory of content and its storage location</td>
<td>- Store administrative metadata</td>
<td></td>
</tr>
<tr>
<td>- Ensure backup and non-colocation of inventory</td>
<td>- Store transformative metadata and log events</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Store standard technical and descriptive metadata</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>File Formats</th>
<th>Level 1</th>
<th>Level 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>- When you can give input into the creation of digital files encourage use of a limited set of known open formats and codes</td>
<td>- Inventory of file formats in use</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Monitor file format obsolescence issues</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Perform format migrations, emulation and similar activities as needed</td>
<td></td>
</tr>
</tbody>
</table>

- Storage and Geographic Location: between Level 1 and Level 2
- File Fixity and Data Integrity: Level 1
- Information Security: Level 1
- Metadata: Level 1
- File Formats: Level 2
Digitization Workflow  - (5) Access
Digitization Workflow - (5) Access
Digitization Workflow - (5) Access

Oral History Metadata Synchronizer
http://www.oralhistoryonline.org/
Digitization Workflow - (5) Access
Questions
Thank you!

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