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University of Michigan  
School of Information

## COURSE STRUCTURE, REQUIRED READINGS, RESOURCES

### Week 1: Digitization and Preservation: Overview and Issues

The first course session will review the structure of the courses and outline its principal underlying themes. We will examine the central premise of the course – that under certain circumstances digitization is an appropriate preservation strategy. The broader context of new media remediation and the representation of visual information will frame the specific procedures and practices examined during the remainder of the course. This session will also cover the major information resources on digitization.

#### Pre-Class Preparation:

Association of Research Libraries, *Recognizing Digitization as a Preservation Reformatting Method*, June 2004. [CTools] [http://www.arl.org/bm~doc/digi\\_preserv.pdf](http://www.arl.org/bm~doc/digi_preserv.pdf)

Puglia/Rhodes. [2007] “Digital Imaging: How Far Have We Come and What Still Needs to be Done?” *RLG DigiNews*, April 15. [CTools]  
<http://worldcat.org/arcviewer/1/OCC/2007/08/08/0000070519/viewer/file137.html>

#### Required Readings:

Bolter & Grusin. [1996] “Remediation.” *Configurations* 4.  
<http://muse.jhu.edu/journals/configurations/v004/4.3bolter.html>

Erway and Schaffner. [2007] *Shifting Gears: Gearing Up to Get Into the Flow*. OCLC. [CTools]  
<http://www.oclc.org/programs/publications/reports/2007-02.pdf> Related Website:  
<http://www.oclc.org/programs/ourwork/collectivecoll/harmonization/specialcollections.htm>

Mitchell. [1992] *The Reconfigured Eye: Visual Truth in the Post-Photographic Era*. Chapter 3, “Intention and Artiface,” pp. 23-58. [CTools]

Primary Research Group. [2010] *Survey of Library & Museum Digitization Projects, 2011 Edition*. [CTools].

Smith. [1999] *Why Digitize?* CLIR. <http://www.clir.org/pubs/abstract/pub80.html>

#### Resources:

US Federal Agencies Digitization Guidelines Initiative. Still Image Working Group. [2009] *A Resource List for Standards Related to Digital Imaging of Print, Graphic, and Pictorial Materials*.  
<http://www.digitizationguidelines.gov/stillimages/documents/DigitizationStandardsv3final.pdf> [CTools]

US Federal Agencies Digitization Guidelines Initiative. Still Image Working Group. [2009] *Digital Conversion – Documents and Guidelines: A Bibliographic Reference*.  
[http://www.digitizationguidelines.gov/stillimages/documents/Guidelines\\_Bibliography-2009rev.pdf](http://www.digitizationguidelines.gov/stillimages/documents/Guidelines_Bibliography-2009rev.pdf) [CTools]

IS&T Archiving conference proceedings, 2004-2010.

<http://www.imaging.org/store/physpub.cfm?seriesid=28&pubtypeid=2>

Journal of Imaging Science and Technology <http://www.imaging.org/membersonly/jist/jist.cfm>

CoOL – Conservation Online. “Digital Imaging.” <http://cool.conservation-us.org/bytopic/imaging/>

\* an odd assemblage of historically interesting stuff plus some updated documents. Use with care.

PADI – Preserving Access to Digital Information. <http://www.nla.gov.au/padi/topics/69.html>

\* no longer actively maintained, but a wonderful source for an international array of articles and reports

## Week 2: Image Digitization and Imaging Guidelines

In the beginning, there were bitmaps. For the past twenty years, the cultural heritage community, backed by imaging scientists and the imaging industry, has invested significant intellectual effort to develop community standards and best practices. This session will examine the evolution of standards and best practices within the broader context of community building.

### Required Readings:

Conway. [2008] “Best Practices for Digitizing Photographs” *Archiving 2008 Proceedings*. [CTools]

Frey and Reilly. [1999] *Digital Imaging for Photographic Collections: Foundations for Technical Standards*. [CTools]

NISO . [2007] A Framework of Guidance for Building Good Digital Collections. 3<sup>rd</sup> edition. Bethesda, MD: National Information Standards Organization, December. Chapter on Initiatives, pp. 85-96.

<http://www.niso.org/publications/rp/framework3.pdf>

Sassoon. [2004] “Photographic Materiality in the Age of Digital Reproduction.” *In Photographs Objects Histories: On the Materiality of Images*, edited by Elizabeth Edwards, pp. 186-202, 217-18. [CTools]

Williams/Burns. [2009] “Preparing for the Image Literate Decade.” *In IS&T Archiving 2009 Proceedings*. [CTools]

### Resources:

Minerva eEurope. *Digitization Guidelines: A Selected List*. [last revision 2004-04-20]

<http://www.minervaeurope.org/guidelines.htm>

Peterson. [2005] Introduction to Basic Measures of a Digital Image for Pictorial Collections. Library of Congress.

<http://digitalarchive.oclc.org/da/ViewObjectMain.jsp?fileid=0000070519:000006286369&reqid=13040>

California Digital Library.

- Online Archive of California. <http://www.oac.cdlib.org/>

- OAC. Technical Information. <http://www.cdlib.org/inside/projects/oac/tech.html>

Library of Congress. American Memory. <http://memory.loc.gov/ammem/index.html>

- Technical Information. <http://memory.loc.gov/ammem/about/techIn.html>

## Week 3: Digitization Guidelines Today

Guidance on digitization has shifted over the past decade from a synthesis of best practices to a scientifically grounded process that draws on a deepening technical understanding of the connection between the capabilities of scanning technologies and the challenges posed by the variety of resources that require digital conversion. This session reviews the recommendations of two international documents that reflect the new approach to digitization quality.

### Required Readings:

US Federal Agencies Digitization Guidelines Initiative. Still Image Working Group. [2010] *Technical Guidelines for Digitizing Cultural Heritage Materials*.

<http://www.digitizationguidelines.gov/stillimages/documents/Technical.html>

Associated Website: <http://www.digitizationguidelines.gov/stillimages/>

National Library of the Netherlands. [2010] *Metamorfoze Preservation Imaging Guidelines*. Test Version 0.8 July 2010. [CTools] [http://www.metamorfoze.nl/en/methodiek/Metamorfoze Preservation Imaging Guidelines\\_Version\\_0.8\\_July\\_2010.pdf](http://www.metamorfoze.nl/en/methodiek/Metamorfoze_Preservation_Imaging_Guidelines_Version_0.8_July_2010.pdf)

Associated Website: <http://www.metamorfoze.nl/en/methodiek/conversion.html>

### Resources:

Stelmach, Michael [2010] *Evaluating Digital Image Performance: Device Capability and Image Quality*. [PowerPoint presentation] [CTools]

## Week 4: Color in Scanning and Scanner Benchmarking

This session involves benchmarking scanning parameters to optimize text/image legibility, and the use of targets in scanning processes, and an introduction to the state of file formats appropriate for archival preservation masters. Ultimately, preservation quality imaging may turn on the creation of a digital file that is independent of viewing and presentation technology and that faithfully represents the reflected or transmitted light values of an original source. In the interim, careful color management is an essential component of high-quality digital imaging. This session will review the state of technologies that deliver such fidelity today and promise even greater quality in the future.

### Required Readings:

Benchmarking: Kenney/Rieger. [2000] Moving Theory Into Practice – Tutorial [MTP]

•Conversion: <http://www.library.cornell.edu/preservation/tutorial/conversion/conversion-01.html>

•Quality Control: <http://www.library.cornell.edu/preservation/tutorial/quality/quality-03.html>

Burns/ Williams. [2007] "Ten Tips for Maintaining Digital Image Quality." In IS&T *Archiving* 2007 Proceedings. [CTools] <http://imagescienceassociates.com/pubs/50Arch07BurnsWilliams.pdf>

Stelmach/Williams. [2006] "When Good Scanning Goes Bad: A Case for Enabling Statistical Process Control in Image Digitizing Workflows." In IS&T *Archiving* 2006 Proceedings. [CTools]

Süsstrunk. [2002] "Managing Colour in Digital Libraries," in *Colour Engineering: Achieving Device Independent Colour*, John Wiley & Sons, Ltd. [CTools]

Süsstrunk. [2002] "Color Encodings for Image Databases," *Proc. IS&T/SPIE's Electronic Imaging: Internet Imaging*, Vol. 4672, pp. 179-185. [CTools]

## Resources:

Image Permanence Institute. <http://www.imagepermanenceinstitute.org/>

OCLC/RLG. [2000] *Guides to Image Quality in Visual Resource Imaging*. Chapters 4 & 5. <http://www.diglib.org/pubs/df091/df091.htm>

Süsstrunk. [2007] "Image Formation, Colorimetry, Color Spaces, Color Encodings and Color Image Encodings, Color Management," in *Focal Encyclopedia of Photography: 4th Edition*, Elsevier (Focal Press). [CTools]

Universal Test Target. (KB) <http://www.universaltesttarget.com/index.php>

Imaging Science Associates. <http://www.imagescienceassociates.com/>

Image Engineering. <http://www.image-engineering.de/>

## Week 5: Text and Image in Digitization

Digitization of text-based resources is a hybrid, multi-step process that involves a mix of scanning, file processing, and the often complex-markup of textual elements to support search, navigation, and analysis. This session will focus on the key underlying technology standards that support the transformation of printed and written text to searchable data.

## Required Readings:

Chapman, S. [2003] "Managing Text Digitization." *Online Information Review* 27 (1): 17-28. [CTools]

Buzzetti . [2002] "Digital Representation and the Text Model." *New Literary History* 33(1): 61-88 [http://muse.jhu.edu/journals/new\\_literary\\_history/v033/33.1buzzetti.html](http://muse.jhu.edu/journals/new_literary_history/v033/33.1buzzetti.html)

Cope, B. and Kalantzis, M. [2010] "From Gutenberg to the Internet: How Digitization Transforms Culture and Knowledge," *Logos* 21 (102): 12-39.

Renear, A. [2004] "Text Encoding." Susan Schreibman, Ray Siemans, and John Unsworth (eds.) *A Companion to Digital Humanities*. 218-239. <http://www.digitalhumanities.org/companion/>.

## Resources:

Flynn. [2006] "If XML is so easy, how come it's so hard?." "The usability of editing software for structured documents." *Proceedings of Extreme Markup Languages 2006*. <http://epu.ucc.ie/articles/extreme06>

McGann, J. [2001] *Radiant Textuality: Literature After the World Wide Web*. New York, NY: Palgrave Macmillan, 2001. Chapter 3, "Editing as a Theoretical Pursuit," pp. 75-87. [CTools]

Sukovic. [2002] "Beyond the Scriptorium: The Role of the Library in Text Encoding." *D-Lib* 8(1)  
<http://www.dlib.org/dlib/january02/sukovic/01sukovic.html>

van der Weel. [ND] "The Concept of Markup." *Digital Text and the Gutenberg Heritage*. [CTools]  
[http://www.let.leidenuniv.nl/wgbw/~adriaan/Gut/Ch03\\_Concept\\_of\\_markup.fn.pdf](http://www.let.leidenuniv.nl/wgbw/~adriaan/Gut/Ch03_Concept_of_markup.fn.pdf).

Text Encoding Initiative <http://www.tei-c.org/index.xml>

- Bibliography. [http://www.tei-c.org/Activities/SIG/Education/tei\\_bibliography.xml](http://www.tei-c.org/Activities/SIG/Education/tei_bibliography.xml)

Digital Library Federation 2007 "TEI Text Encoding in Libraries: Guidelines for Best Encoding Practices: Version 3 (April 2009)." <http://www.tei-c.org/SIG/Libraries/teiinlibraries/>

University of Nebraska – Lincoln Libraries. *A Basic Guide to Text Encoding*. 2003.  
[http://libr.unl.edu:2000/guide\\_site/teien.html](http://libr.unl.edu:2000/guide_site/teien.html)

## **Week 6: Digitization Project Management and Vendor Relations**

This session will focus on the work of an operational digitization laboratory. Issues of workflow management, quality control, equipment maintenance and calibration, as well as personnel training are all central to a successful digitization program. Increasingly, it is unlikely that the best quality imaging is a do it yourself undertaking. Vended services, sometimes highly specialized in nature, are becoming the norm. This session will enable us to imagine the workings of a third-party service provider, while also offering a behind the scenes tour of a successful program.

### **Required Readings:**

Fleischhauer. [1996] "Steps in the Digitization Process." Library of Congress.  
<http://lcweb2.loc.gov/ammem/award/docs/stepsdig.html>

Hughes. [2004] "Managing a Digitization Project," Chapter 7 in *Digitizing Collections: Strategic Issues for the Information Manager*, pp. 163-207. [CTools]

Kenney/Rieger. [2000] Moving Theory into Practice: Digital Imaging Tutorial. Chapter 9. Management and Chapter 6a. Digitization Chain. <http://www.library.cornell.edu/preservation/tutorial/contents.html>

## **Week 7: Metadata for Image Objects and Wrap-up**

This session will focus on standards for technical and descriptive metadata for still images, particularly the MIX standard maintained by the Library of Congress and associated commercial applications. The session will also cover file formats for preservation quality images. The session will examine metadata issues within the larger context of emerging metadata schemas for preservation. By way of wrap-up, the session will cover roles and responsibilities in a digitization program and summarize the elements of outsourcing digitization work.

### **Required Readings:**

*Metadata for Images in XML Standard (MIX)*. <http://www.loc.gov/standards/mix/>

International Imaging Industry Association. DIG35 Initiative Group.  
<http://www.i3a.org/technologies/metadata/>

OCLC. [2004] *Automatic Exposure: Capturing Technical Metadata for Digital Still Images*.  
[http://www.oclc.org/programs/ourwork/past/automaticexposure/ae\\_whitepaper\\_2003.pdf](http://www.oclc.org/programs/ourwork/past/automaticexposure/ae_whitepaper_2003.pdf)

Buonora/Liberati. [2008] "A Format for Digital Preservation of Images: A Study on JPEG 2000 File Robustness," *D-Lib Magazine* (July/August). <http://www.dlib.org/dlib/july08/buonora/07buonora.html>

Library of Congress. Digital Project Roles and Responsibilities. [PowerPoint slide] [CTools]

OCLC. [1998] RLG Guidelines for Creating a Request for Proposal for Digital Imaging Services (Including Text Conversion and Encoding). <http://www.oclc.org/programs/ourwork/past/digimgtools/RFPGuidelines.pdf>

## Resources:

JPEG2000. <http://www.jpeg.org/jpeg2000/>

Robert Buckley podcast on the benefits of the JPEG2000 format.  
<http://www.digitizationguidelines.gov/stillimages/presentations.html>

Tagged Image File Format (Adobe). <http://partners.adobe.com/public/developer/tiff/index.html>

Caplan/Guenther. [2005] "Practical Preservation: the PREMIS Experience," *Library Trends*  
[http://www.loc.gov/premis/caplan\\_guenther-librarytrends.pdf](http://www.loc.gov/premis/caplan_guenther-librarytrends.pdf)

Marko/Powell. [2001] "Descriptive Metadata Strategy for TEI Headers: A University of Michigan Library Case Study." *OCLC Systems & Services* 17(3): 117–20. <http://dx.doi.org/10.1108/10650750110402585>

McDonough [2006] "METS: standardized encoding for digital library objects," *International Journal on Digital Libraries* 6(2):148-158. [CTools]

## Resources on Cost Issues:

Chapman. [2000] "Considerations for Project Management," In *Handbook for Digital Projects: A Management Tool for Preservation and Access*. NEDCC. <http://nedcc.org/oldnedccsite/digital/iii.htm>

Chapman. [2004] "Counting the Costs of Digital Preservation: Is Repository Storage Affordable?" *Journal of Digital Information* 4/2 (2004) <http://journals.tdl.org/jodi/article/view/jodi-113/99>

NINCH. [2003] *The Price of Digitization: New Cost Models for Cultural and Educational Institutions*.  
<http://www.ninch.org/forum/price.report.html#dp>

Puglia. [1999] "The Costs of Digital Imaging Projects," *RLG DigiNews* 3(5).  
<http://worldcat.org/arcviewer/1/OCC/2007/08/08/0000070519/viewer/file1215.html>

Research Libraries Group Worksheet for Estimating Digital reformatting Costs,  
<http://www.oclc.org/programs/ourwork/past/digimgtools/RLGWorksheet.pdf>