

Appendix A: Selected Resources

Below you will find a list of resources for many concerns related to digitization projects. This appendix includes resources on the following topics:

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General

ARMA International. *Home Page*. <http://www.arma.org/>

“ARMA International is the oldest and largest association for the records and information management profession.” This website provides users with access to publications and information about electronic records management, standards and best practices, professional development, and upcoming conferences and seminars. Local chapters of ARMA have been developed in many metropolitan cities, of which a list can be found on this ARMA International site.

Bibliographic Center for Research. Bibliographic Center for Research’s (BCR) Collaborative Digitization Program (CDP) *Digital Toolbox*. <http://www.bcr.org/cdp/digitaltb/index.html>

The Digital Toolbox includes information on Digitization Training, Best Practices, Getting Started, Digital Imaging, Metadata, Digital Audio, EAD, Rights Management, Digital Preservation, and the Dublin Core Builder. Each section provides the user with valuable information when starting a digitization program. The [*Digital Imaging Best Practices Guide*](#) was updated in June 2008 and addresses issues to think about before starting a project, provides general information on upfront and ongoing costs, standard file formats, computer hardware and software requirements, the importance of quality control, metadata standards, and storage options. Appendixes provide more in-depth detail as well as resources for more information. Also includes basic discussion of descriptive, administrative, structural, and technical metadata. More attention is paid to preservation metadata including information on PREMIS (PREservation Metadata Implementation Strategies) and METS (Metadata Encoding and Transmission Standard).

California Digital Library (CDL). *CDL Guidelines for Digital Images (CDL GDI)*. Version 2.0. September 2008. www.cdlib.org/inside/diglib/guidelines/bpgimages/cdl_gdi_v2.pdf

Reviewed and updated annually, this resource provides information specifically on how to create digital images with the intent to deposit them in the California Digital Library (CDL), however the importance of the topics covered is useful for anyone contemplating a digital imaging project. The guide includes information on file formats, compression, watermarking, and definitions of terms to understand. Additional guidelines are provided for both digital masters and derivative files taken from various media types (textual documents, maps, graphics, photographs, slides or negatives, and 3D objects).

Cornell University. *Digital Preservation Management: Implementing Short-term Strategies for Long-term Problems*. http://www.icpsr.umich.edu/dpm/dpm-eng/eng_index.html

An online tutorial that addresses many preservation issues and preservation strategies in a step-by-step guide. Topics include terms and concepts, obsolescence and physical threats, digital repositories, metadata, legal issues, balancing stakeholders, access issues, financing the future, and organizational and technological infrastructure.

Cornell University, Department of Conservation and Preservation. *Moving Theory into Practice: Digital Imaging Tutorial*. www.library.cornell.edu/preservation/tutorial

Created in 2000, this tutorial provides hands on learning about the digitization process. Ten sections related to digital imaging walk the user through the basic concepts of digital imaging with self-checks along the way. Sections include terminology, selection, conversion, quality control, metadata, technical infrastructure, presentation, preservation, management and further resources.

Council of State Archivists (COA). *Archives Resource Center (ARC)*.
<http://www.statearchivists.org/arc/index.htm>

Website of program resources developed by and for state archives and record centers. Topics include directories, legal statutes, digitization, training and education, records retention policies, disaster planning, preservation, collaborations and information on various records types. Digital Imaging guidelines and standards:
www.statearchivists.org/arc/states/res_imag.htm . Collaboration and partnerships:
www.statearchivists.org/issues/ocp/index.htm

Federal Agencies. *Federal Agencies Digitization Guidelines Initiative*.
<http://www.digitizationguidelines.gov/>

A work group of federal agencies created to develop digitization guidelines and standards. Developing guidelines to support the long-term preservation efforts of the Library of Congress. Resource includes a glossary of terms to help standardize word usage.

JISC Digital Media (formally TASI) <http://www.jiscdigitalmedia.ac.uk/>

Home page for the UK's JISC Digital Media. Provides links to advice, training, and news about still images, moving images, and sound. Much of the information provided is specific to digital media. Topics include but are not limited to deciding how to digitize, managing the workflow, legal issues, project management, risk assessment, choosing a file format, compression issues, developing a digital preservation strategy, file naming, and metadata overview and schemas.

Joint Information Systems Committee (JISC). *Digital Images Archiving Study*. March 2006.
www.jisc.ac.uk/whatwedo/programmes/programme_preservation/imagesarchiving.aspx

The results of a six long month study address the concerns of long term preservation of digital materials. User requirements, digital image properties, preservation methods, metadata requirements, organizational models, and projected preservation costs are evaluated.

Minnesota Historical Society. *Electronic Records Management Guidelines*. March 2004.
<http://www.mnhs.org/preserve/records/electronicrecords/erguidelines.html>

This guide discusses many topics of concern in relation to electronic records management. Topics include legal issues, management strategy, long-term preservation, metadata, file naming, file formats, storage facilities and procedures, digital media, electronic document management systems, digital imaging, e-mail management, web-content management, electronic and digital signatures, and a glossary. The entire guide or specific sections of interest can be viewed online or downloaded for your convenience.

Minnesota Historical Society. *Trustworthy Information Systems Handbook*. July 2002.
<http://www.mnhs.org/preserve/records/tis/tis.html>

Trustworthy means that an information system, whether computer- or paper-based, is accountable and can produce reliable and authentic information and records. Government records and record keeping systems must be accountable to citizens and elected officials. The Minnesota State Archives developed a set of guidelines and criteria to establish the trustworthiness of information systems.

North Carolina Office of Archives and History. *Government Records Branch of North Carolina*. October 30, 2008. <http://www.records.ncdcr.gov/default.htm>

Home page that links user to guidelines for public records, state agency records, county and municipal records, and university records. These guidelines include legal information, retention schedules, [best practices for digital preservation](#), digital imaging standards, and project planning. Guidelines are easily understood and explained further with examples. Some specific topics include the importance of dates on files for following retention schedules, the idea that files will move from their original location, multiple versions, and that there will inevitably be exceptions in every case.

North Carolina ECHO (Exploring Cultural Heritage Online). *Digitization Guidelines*. 2007.
<http://www.ncecho.org/dig/digguidelines.shtml>

This guide covers collaboration, standards and best practices, project planning, selection, legal considerations, digital production, metadata, digital preservation, presenting your digital project, targeting the K-12 audience, project evaluation, project management, resources and glossary. The guide is available in HTML as well as in PDF.

Northeast Document Conservation Center. *Preservation Leaflets*.
<http://www.nedcc.org/resources/leaflets.list.php>

The Northeast Document Conservation Center is a good source of preservation information and materials on both digital and paper files and photographs. Preservation Leaflets have been written by ‘experts’ in the field about how to plan and prioritize digitization projects, the physical environment and how to protect resources, emergency management and disaster planning, storage and handling procedures, reformatting, and conservation. A variety of aspects of a digitization project are reflected in the various leaflets.

Porter-Roth, Bud. “Digital Conversion Projects: A Decision-Making Checklist.” *The Information Management Journal*. March/April 2007: 58-61, 63. www.arma.org/imj

An article that asks the questions that must be answered before starting a digitization project. Questions address the issues about the types of files that could be digitized, about the conversion process, whether done in-house or out-sourced, as well as other important concepts.

Preserving Access to Digital Information (PADI). <http://www.nla.gov.au/padi/>

Administered by the National Library of Australia, PADI provides a topical gateway to international preservation resources. Major topics include general resources on digital information; issues of authenticity, archiving, selection, storage and technical obsolescence; digital preservation strategies including emulation, encapsulation, migration and universal virtual computer; data documentation and standards for metadata, file formats, and persistent identifiers; intellectual property rights management; information on various formats and media types; management issues; information on various national approaches; digital libraries; other digitization topics; and digital preservation tools.

Sitts, Maxine K. *Handbook for Digital Projects: A Management Tool for Preservation and Access*. Andover, Massachusetts: Northeast Document Conservation Center, 2000.

<http://www.nedcc.org/resources/digitalhandbook/dman.pdf>

A guide that discusses the complete digitization process, from the moment it is considered to the long term preservation of the records. Discusses the pros and cons for

digitizing materials, selection of materials, project management, copyright issues, technical specifications, vendor relations and long term access.

South Carolina Archives and Records Management. *Electronic Records Management Guidelines*. February 2005, with updates done in 2008 on certain sections.
<http://arm.scdah.sc.gov/erp/ermanagement+guidelines.htm>

The home page for the Electronic Records Management Guidelines links the user to short documents covering electronic records management issues. File naming, file formats, digital media storage, document management systems, digital imaging, e-mail management, web content management, electronic signatures, and the Trustworthy Information System Handbook for South Carolina are all discussed in more detail.

TAB Products. *Digital Imaging Needs Assessment Tool*. June 2008.
www.tab.com/ecms.aspx/RM-HOMEus-DigitalImagingNeedsAssessment-june2008.htm

A worksheet that will help you understand your current records management system, assess if digital imaging is right for you, and help explain what might be involved in a digital imaging project. Questions focus around the topics of your imaging objectives, your current filing environment, collaboration and access, compliance, and your records management strategy.

UPDIG Working Group. *The Universal Photographic Digital Imaging Guidelines*. September 2008, Version 4. <http://www.updig.org/index.html>

Guidelines created to assist with accurate reproduction and management of digital files, including digital asset management, color profiling, metadata, and photography workflow. These guidelines are for photographers, designers, printers and image distributors alike.

Utah State Archives. *Guide to Digital Imaging*. June 2005.
<http://www.archives.state.ut.us/recordsmanagement/ERM/guide-to-digital-imaging.html>

A guide that highlights the possible advantages and disadvantages of a digitization project. Lists other factors to take into account before making any decisions. A cost-benefit analysis of time is provided. Long-term storage, retention and disposition of both paper and digital records are also taken into consideration.

Legal Requirements

Federal Trade Commission and Department of Congress. *Electronic Signatures in Global and National Commerce Act*. June 2001.

<http://www.ftc.gov/os/2001/06/esign7.htm>

Report on the Electronic Signatures (ESIGN) act. Includes background of e-commerce, summary of public comments, and an analysis of the benefits and burdens of the Act.

Library of Congress. *THOMAS*.

<http://thomas.loc.gov/>

An online resource for federal legislative information. Provides various search options to find bills, resolutions, acts, treaties and reports. Search by topic, creator, bill text, bill number. Track legislative sessions. Links to other government resources, such as the Federal House and Senate, are also linked from here.

Minnesota Legislative Reference Library. *Links to the World – Government Data Practices*. October 27, 2008.

<http://www.leg.state.mn.us/lrl/links/data.asp>

An online resource that includes links to government information for the state of Minnesota and the Federal government. Links to sites about privacy issues are also included.

Minnesota Office of the Revisor of Statutes. *Revisor of Statutes Home Page*. 2009.

<https://www.revisor.leg.state.mn.us/index.php>

The Minnesota Office of the Revisor of Statutes is responsible for compiling, editing and printing Minnesota Laws, Statutes and Rules for each legislative session. The home page provides access to the Minnesota Laws, Statutes, and Rules through a search tool. Other links allow the user to search for Bills and follow their status through time. Information is also provided about the different branches of government and government resources.

National Conference of State Legislatures. *Uniform Electronic Transactions Act*. 2008.

<http://www.ncsl.org/programs/lis/CIP/ueta-statutes.htm>

Website discussing the Uniform Electronic Transactions Act (UETA). A graphic of North America highlights states that have already enacted UETA. Links to each state law are included.

Office of Management and Budget, United States Government. *Memoranda: Guidance on Implementing the Electronic Signatures in Global and National Commerce Act*. September 25, 2000.

<http://www.whitehouse.gov/omb/memoranda/esign-guidance.pdf>

Explains the areas that the Electronic Signatures Act (ESIGN) covers, relates it to government activities, and discusses retention schedules, filing requirements, and effective dates.

Uniform Law Commission. *The National Conference of Commissioners on Uniform State Laws*.

<http://www.nccusl.org/Update/>

The National Conference of Commissioners on Uniform State Laws works to create uniformity of state laws. Their site allows users to search or browse acts by title or state. With the evolution of e-commerce and the increasing need to do business across state lines, having uniform laws ensures compatibility.

USA.gov. *Laws and Regulations – General Reference Resources*. September 5, 2008.

http://www.usa.gov/Topics/Reference_Shelf/Laws.shtml

Provides links to web resources related to federal, state, and local laws and regulations.

Cost Justification

Apple, Bryan. *Documents – Physical, Digital, or Both? A Framework for Evaluation*. November 11, 2008.

<http://www.twincities.arma.barr.com/Programs/Presentations/20081111BryanAppleARMATC.pdf>

PowerPoint presentation given by the Director of Digital Document Management Solutions stresses the importance of knowing the overall business processes of an organization before making the decision to digitize files. Pluses and minuses of paper and digital files are suggested. Offsite storage and destruction policies are also considered important factors in the decision to digitize.

Avedon, Don M. “Electronic Imaging 101 part III – Application analysis, document preparation and digitizing”. *ARMA Records Management Quarterly*. October 2004.

http://findarticles.com/p/articles/mi_qa3691/is_/ai_n8710569

The content of this older report remains important as it breaks down cost analysis into hard costs and soft costs. Questions are asked about the system requirements as they

pertain to customer service, competitive advantages, reducing processing time, and document quality. Other aspects of a digitization project are also touched upon.

North Carolina ECHO (Exploring Cultural Heritage Online). *Digitization Guidelines*. 2007.
<http://www.ncecho.org/dig/digguidelines.shtml>

The chapter on Project Planning in the Digitization Guidelines created by North Carolina ECHO covers goals, audience, needs analysis, standard processes, documentation, and evaluation. A table separates the costs into the categories of hardware, software, staff wages, training costs, presentation and preservation costs, and material costs making estimated costs easy to view. Available in HTML and as a PDF file.

Puglia, Steven. "The Costs of Digital Imaging Projects". *RLG DigiNews*. October 15, 1999. Volume 3, Number 5.
<http://worldcat.org/arcviewer/1/OCC/2007/08/08/0000070511/viewer/file422.html>

Discusses the many components that should be considered when developing a digitization plan. Many tables analyze the costs of per-item production including specifics on digitizing, metadata creation, and number of images completed per day. Each category is analyzed in more detail. Projected maintenance costs are also covered.

Roderick, Elizabeth. *More Than Just Pretty Pictures: A Cost/Benefit Analysis of Digital Library Holdings*. December 9, 1998.
<http://net.educause.edu/ir/library/html/cnc9804/cnc9804.html>

A discussion of the Library of Virginia's Digital Library Project highlighting the cost benefits for digitizing parts of the collection. Project costs and ongoing costs are defined, as well as a comparison of the time and money needed to assist patrons online, via the mail, and in person. Time and money estimates are made for both the library and patron.

In-House vs. Outsourcing

ARMA International. *Buyer's Guide*.
<http://www.arma.org/buyersguide/index.cfm>

Search vendors and companies that provide services by name, market type, product, or alphabetically. Government Market is an option.

ARMA Twin Cities Chapter. *Vendor Directory*. Updated November 2008.
<http://www.twincities.arma.barr.com/Vendor%20Directory/venddir.html>

Includes links to vendor that address: commercial records/off-site storage, content/document management software, document destruction, imaging sales and services, records/retention management software, consulting services, disaster recovery, filing/storage sales and service, and micrographs.

Dale, Robin L. *Outsourcing and Vendor Relations*. Northeast Document Conservation Center (NEDCC). 2007.

<http://www.nedcc.org/resources/leaflets/6Reformatting/07OutsourcingAndVendorRelations.php>

Leaflet is designed to address the pros and cons of both in-house and out-sourcing digitization options. Highlights that it is not usually a black and white decision, portions of the project can be done in-house and others outsourced. Provides information on setting up an in-house digitizing area. Request for Information, Request for Proposals, evaluating proposals, contract negotiation tips, and communicating with vendors is also highlighted.

Montana State Library. *Digitization Planning Power Point*. Montana State Library Training Materials Fall 2008.

<http://msltraining.pbwiki.com/Fall%20Workshop%202008>

This Power Point presentation discusses the importance of planning a project, and knowing the pros and cons for each decision you make. Asks a lot of questions to get you thinking about your project purpose. Notes include more details about the pros and cons of both in-house and vendor digitization programs.

File Formats

Graves, Ralph. *File Formats Glossary*. Crutchfield. April 19, 2008.

http://www.crutchfield.com/S-zSaxMtp6oIW/learn/learningcenter/home/fileformats_glossary.html

Definitions of file types as well as related terms that provide background information and understanding to the overall concepts surrounding file formats.

InterPARES 2 Project. *General Study 11 Final Report: Selecting Digital File Formats for Long-Term Preservation*. March 2007.

[www.interpares.org/display_file.cfm?doc=ip2_file_formats\(complete\).pdf](http://www.interpares.org/display_file.cfm?doc=ip2_file_formats(complete).pdf)

A study that discusses major concepts regarding digital file types, including the importance of standards and selection criteria. Stability, open file formats, standard formats, standard terms, selection criteria, and policy considerations are all covered as recommendations for developing and implementing policies related to long-term digital preservation discussed.

JISC Digital Media. *Choosing a File Format for Digital Still Images: File Formats for Master Archives*. May 2006. <http://www.jiscdigitalmedia.ac.uk/stillimages/advice/choosing-a-file-format-for-digital-still-images/>

Includes information on formats for capture, master archives, optimization, manipulation, and various forms delivery including printing, web delivery, and PowerPoint applications.

JISC Digital Media. *File Formats and Compression*. March 2009. <http://www.jiscdigitalmedia.ac.uk/stillimages/advice/file-formats-and-compression/>

Explains file compression. Defines the different types of compression, lossy and lossless. Explains image format types, which effect compression.

Library of Congress. *Sustainability of Digital Formats Planning for Library of Congress Collections: Format Descriptions*. <http://www.digitalpreservation.gov/formats/fdd/descriptions.shtml>

Includes detailed descriptions of various file types for still images, sound, textual images, and others. Encoding information included. Sustainability factors are also covered.

Minnesota Historical Society. *Electronic Records Management Guidelines – File Formats*. March 2004. <http://www.mnhs.org/preserve/records/electronicrecords/erfformats.html>

Legal concepts, proprietary and non-proprietary, file format types, preservation, compression, and other key issues to consider as explained in this guide. Includes information for non-text based documents. Emphasizes the importance of planning the digitization project.

Office of Enterprise Technology State of Minnesota. *Enterprise Technical Architecture 2.02*. September 8, 2006 <http://www.state.mn.us/portal/mn/jsp/content.do?agency=OETweb&id=-536891917&subchannel=-536891918&programid=536911145>

Guidelines for the state of Minnesota to follow when managing records. Includes information on network architecture, storage, data exchange, application architecture, accessibility, workflow, security, and reliability. Home page also includes information on IT standards and securities, and IRM policies, standards and guidelines.

University of Michigan, Bentley Historical Library, University Archives. *PDF/A (ISO 19005-1) FAQ*. <http://bentley.umich.edu/uarphome/bestprac/pdfafaqs.php>

Provides general information about the PDF/A format, its uses, and instructions for creation. Answers questions about the format that help explain its features and benefits.

Wotsit.org. *The Programmer's File and Data Resource*.
<http://www.wotsit.org/default.asp>

Collection of information on file types and data formats. Includes specifications and technical information useful to programmers.

Resolution

Bibliographic Center for Research. *BCR's CDP [Collaborative Digitization Program] Digital Imaging Best Practices Version 2.0* June 2008. <http://www.bcr.org/cdp/best/digital-imaging-bp.pdf>

Includes basic information on the overall concepts needed to understand resolution and its associated ideas including modes of capture, bit depth, color space, resolution, tonal dynamic range, compression, and file formats.

J. Paul Getty Trust. *Introduction to Imaging – Revised Edition: The Image*.
http://www.getty.edu/research/conducting_research/standards/introimages/image.html

Explanation of color management, bit-depth, dynamic range in relation to resolution. Discusses differences in on-screen color and print color. Definitions of screen resolution, monitor resolution, printer resolution, and capture resolution.

Library of Congress. *Technical Standards for Digital Conversion of Text and Graphic Materials*. December 2006. <http://lcweb2.loc.gov/ammem/about/techStandards.pdf>

Current Library of Congress standards for text and graphic images. Includes information on how to test processes and which ISO standards should be met when working with

resolution, color, dynamic range, tonality, optical character recognition, and image capture. Chart summarizes document types with standards for various formats. Metadata and file management are also discussed.

National Archives Records Association (NARA). *Technical Guidelines for Digitizing Archival Masters for Electronic Access: Creation of Production Master Files – Raster Images*. June 2004. <http://www.archives.gov/preservation/technical/guidelines.html>

Technical specifications relating to resolution discussed including how to test for accuracy and quality control. Spatial resolution, bit depth, and color modes are explained. Color calibration techniques are discussed in detail.

United States Government Printing Office. *Report on the Meeting of Experts on Digital Preservation*. March 12, 2004. <http://www.gpoaccess.gov/about/reports/preservation.pdf>

Reviews specifications for resolution and metadata standards for seventeen institutions. Covers plain text, illustrated text, color documents, bit depth, compression, and master copy format.

File Naming

Alberta Government. *Naming Conventions for Electronic Records*. August 2005. <http://www.im.gov.ab.ca/publications/pdf/DocumentNamingConventions.pdf>

This resource provides a complete package of information relating to naming conventions. The introduction discusses the importance of a standard file naming convention. Covers file storage in general – personal vs. shared servers. Reviews elements of importance and provides examples of how each would be using in a file name. Engages the reader into further thought about what decisions will need to be made. Appendix provides four examples of different files names with explanation of what situation they would be good for.

Bibliographic Center for Research (BCR). *BCR's CDP [Collaborative Digitization Program] Digital Imaging Best Practices Version 2.0* June 2008. <http://www.bcr.org/cdp/best/digital-imaging-bp.pdf>

Lists eight important ideas to consider when developing a file naming convention. Includes more specific ways to track where the file originated from. Highlights the importance of unique file names following an established convention and being able to think long-term.

Brookhaven National Laboratory (BNL) Web Communication Standards. *File Naming Conventions and Directory Structure*. February 5, 2008.

<http://www.bnl.gov/webstandards/fileNaming.asp>

Discusses file naming conventions for online directories.

CabinetOffice, e-Government Unit. (London). *Guidelines for UK Government Websites Illustrated Handbook for Web Management Teams: 3.1 File Storage and Servers*.

http://archive.cabinetoffice.gov.uk/e-government/docs/resources/web_guideline_handbook/pdf/wgl_3-1.pdf

Resource for file organization and storage related to government websites in the UK. Provides a checklist of basic needs and explains the issues of case sensitivity, file name length, and spaces on various platforms.

Digital Projects Advisory Group, University Libraries at the University of Colorado at Boulder. *File Naming Conventions for Digital Collections*. March 4, 2008.

<http://ucblibraries.colorado.edu/systems/digitalinitiatives/docs/filenameguidelines.pdf>

Provides background information on file naming. Explains importance of knowing what the project entails before naming files. Lists seven guidelines to follow when creating a file naming convention. Highlights importance of documenting file convention decisions and the decision making process. Includes example of needed documentation.

JISC Digital Media. *Choosing a File Name*. November 2008.

<http://www.jiscdigitalmedia.ac.uk/crossmedia/advice/choosing-a-file-name/>

Recommends that file names only be eight characters long based on the ISO 9660 standard to ensure compatibility across platforms. Discusses the various ways of using folder structure and files names to name files with reasons to use descriptive or non-descriptive file names.

Minnesota Historical Society. *Electronic Records Management Guide - File Naming*. March 2004. <http://www.mnhs.org/preserve/records/electronicrecords/erfnaming.html>

Provides general concept knowledge needed to understand file naming conventions. Lists common file name elements that can be used, discusses challenges and issues related to creating a long term file naming convention. Asks questions that need to be answered before implementing a file naming system. Internet file names, domain names, and URL protocols are also discussed.

North Carolina Department of Cultural Resources. *Best Practices for File-Naming*. May 7, 2008. http://www.records.ncdcr.gov/erecords/filenaming_20080508_final.pdf

Guidelines for file naming are easily understood and explained further with examples. Addresses the importance of dates on files for following retention schedules, the idea that files will move from their original location, multiple versions, and that there will inevitably be exceptions.

University of Edinburgh, Records Management Section. *Standard Naming Conventions for Electronic Records*.
<http://www.recordsmanagement.ed.ac.uk/InfoStaff/RMstaff/RMprojects/PP/FileNameRules/FileNameRules.htm>

Provides a list of thirteen guidelines to follow when creating a file naming convention. Rules have some specifics working with correspondence and emails. Each rule has its own page displaying the rule, an explanation, and a correct and incorrect example.

York University, Information and Privacy Office. *Information and Privacy Toolkit - Tip Sheet 6 – Naming Conventions for Electronic Files and Folders*. May 8, 2007
<http://www.yorku.ca/secretariat/infoprivacy/infotoolkit/docs/TipSheet6NamingConventionsEFilesFolders.pdf>

Provides an easy to read list of guidelines including examples and explanations for each. A scaled-down version of *Standard Naming Conventions for Electronic Records* produced by the University of Edinburgh Records Management Section is also offered here.

Metadata

American Library Association. *Update on Major Metadata Standards*. Library Technology Reports. November/December 2005. www.techsource.ala.org or
http://www.accessmylibrary.com/coms2/summary_0286-12329830_ITM

Resource explains numerous metadata schemas and provides information on where to go for more information. Schema discussed include: Metadata Authority Description Schema (MADS), Metadata Object Description Schema (MODS), Resource Description and Access (RDA), Metadata Encoding and Transmission Standard (METS), Dublin Core (DC) and many others.

Bibliographic Center for Research (BCR). *BCR's CDP [Collaborative Digitization Program] Digital Imaging Best Practices Version 2.0* June 2008. <http://www.bcr.org/cdp/best/digital-imaging-bp.pdf>

Basic discussion of descriptive, administrative, structural, and technical metadata. More attention is paid to preservation metadata including information on PREMIS (PREservation Metadata Implementation Strategies) and METS (Metadata Encoding and Transmission Standard).

Collaborative Digitization Program (CDP) Metadata Working Group. *Dublin Core Metadata Best Practices Version 2.1.1*. September 2006. <http://www.bcr.org/cdp/best/dublin-core-bp.pdf>

The Collaborative Digitization Program (CDP) has adopted the Dublin Core metadata standard as a baseline standard for metadata to help ensure compatibility across various collections. The report defines Dublin Core itself and explains why it was chosen as the standard. Each Dublin Core metadata element is then defined, including specific rules to that element. Input guidelines and examples help the reader understand that function of each element in more detail.

Dublin Core Metadata Initiative. <http://dublincore.org/>

Provides an overview and history of the Dublin Core metadata set. Links to the metadata elements with a detailed description of how they are used. Includes general information on encoding guidelines and schemas. The main page also has a link for additional resources including papers, presentations, training, tools and projects.

Federal Agencies Digitization Guidelines Initiative. *Digitization Standards: A Resource List for Standards Related to Digital Imaging of Print, Graphic, and Pictorial Materials*. July 21, 2008. <http://www.digitizationguidelines.gov/stillimages/digstandards.html>

A resource list for digitization standards. Many resources are very technical in nature, and include information on the ISO standard.

JISC Digital Media. *Metadata Overview*. November 2006. <http://www.tasi.ac.uk/advice/delivering/metadata.html>

The metadata overview is very general but provides solid information. Also linked from this page are other metadata resources that go into more details including: Challenges of Describing Images, Getting Practical with Metadata, and Metadata Standards and Interoperability. A good resource for both general and more descriptive information.

JISC Digital Media. *Putting Things in Order: Links to Metadata Schemas and Related Standards*. <http://www.jiscdigitalmedia.ac.uk/stillimages/advice/putting-things-in-order-links-to-metadata-schemas-and-related-standards/>

Information about twenty-seven metadata schemas and related standards.

Kansas State Historical Society. *Digital Imaging Guidelines for State Agencies*. Kansas State Historical Society.
<http://www.kshs.org/government/records/electronic/digitalimagingguidelines.htm>

Guidelines for government records that adhere to the records preservation laws of Kansas. Seventeen recommendations to follow as best practice. Based on *Guidelines for the Use of Digital Imaging Technologies for Long-Term Government Records in Alabama*.

Kwon, Hyuckbin, Theresa A. Pardo and G. Brian Burke. *Building a State Government Digital Preservation Community: Lessons on Inter-organizational Collaboration*. Center for Technology in Government. March 2008.
http://www.ctg.albany.edu/publications/working/building_community/building_community.pdf

Discusses collaboration of projects and resources. Written specifically with government issues in mind. Partnerships should be within states, between states, between states and the private sector, and between states and the federal government. The Library of Congress and National Digital Information Infrastructure and Preservation Program (NDIIPP) is assisting with this collaboration.

Lavoie, Brian and Richard Gartner. *Preservation Metadata*. Digital Preservation Coalition Technology Watch Report. September 2005. <http://www.dpconline.org/docs/reports/dpctw05-01.pdf>

Discusses the history and importance of preservation metadata. Elements of preservation metadata are defined and explained as well as the development of a preservation metadata schema. Discusses how the Open Archival Information System (OAIS), PREservation Metadata: Implementation Strategies (PREMIS), and the Metadata Encoding and Transmission Standard (METS) relate to each other and the development of preservation metadata.

Minnesota Historical Society. *Minnesota Recordkeeping Metadata Standard (IRM 20)*. May 29, 2002. <http://www.mnhs.org/preserve/records/metadastandard.html>

Explains the context for the Minnesota Recordkeeping Metadata Standard and its legal requirements. Both a summary and detailed list of the metadata elements are included.

Online Computer Library Center (OCLC). *PREMIS (PREservation Metadata: Implementation Strategies) Working Group*. 2008. <http://www.oclc.org/research/projects/pmwg/>
<http://www.loc.gov/standards/premis/v2/premis-2-0.pdf>

Home page for the PREMIS Working Group. “The objectives of PREMIS were to develop a core preservation metadata set, supported by a data dictionary, with broad applicability across the digital preservation community and identify and evaluate alternative strategies for encoding, storing, and managing preservation metadata in digital preservation systems.” This site links users to the Data Dictionary created by PREMIS. The Data Dictionary also includes background information on PREMIS itself, definitions of terms, descriptions of entities, and tables for each element with the associated rules. The website also keeps users updated with the latest activities of PREMIS.

Puglia, Steven, Jeffrey Reed, and Erin Rhodes. *Technical Guidelines for Digitizing Archival Materials for Electronic Access: Creation of Production Master Files – Raster Images*. U.S. National Archives and Records Administration (NARA). June 2004.
<http://www.archives.gov/preservation/technical/guidelines.pdf>

Very detailed description of metadata types and technical aspects used by the National Archives and Records Administration (NARA). This detailed guide that includes descriptions of eleven types of metadata, the digitizing environment, necessary equipment, workflow and processing procedures, specification for various record types, file formats, naming conventions, storage recommendations and quality control issues. Provides guidance for accessing project metadata needs.

PREMIS Editorial Committee. *PREMIS Data Dictionary for Preservation Metadata version 2.0*. March 2008. <http://www.loc.gov/standards/premis/v2/premis-2-0.pdf>

A link to the Data Dictionary that includes background information on PREMIS, definitions of terms, descriptions of entities, and tables for each element with the associated rules.

Rieger, Oya Y. *Preservation in the Age of Large-Scale Digitization*. Council on Library and Information Resources (CLIR). <http://www.clir.org/pubs/abstract/pub141abst.html>

A white paper addressing recent large-scale digitization projects. Includes framework for addressing preservation issues and process recommendations.

Spindler, Robert P. *Digital Preservation*. Northeast Document Conservation Center. 2007. <http://www.nedcc.org/resources/leaflets/6Reformatting/05DigitalPreservation.php>

Written in 2007, this leaflet discusses challenges associated with digital records and highlights the use of metadata to help preserve documents. Some challenges are physical degradation of media, obsolescence of media, and migration failure. Discusses the human factor of digital preservation.

United States Government Printing Office (GPO). *Report on the Meeting of Experts of Digital Preservation: Metadata Specifications*. June 14, 2004. Revised June 2, 2005. http://www.gpoaccess.gov/about/reports/metadata_report_final.pdf

Discussion of what people want the GOP to do for preservation metadata. Highlights partnering with libraries to develop a no-fee public access database for government records. Stresses the importance of standards if multiple repositories will be creating metadata but understands that documents will come in various formats. Includes chart of what metadata schemas institutions are currently using for different purposes.

Storage

Bibliographic Center for Research (BCR). *BCR's CDP [Collaborative Digitization Program] Digital Imaging Best Practices Version 2.0* June 2008. <http://www.bcr.org/cdp/best/digital-imaging-bp.pdf>

This guide includes sections on storage systems, network concerns, and storage conditions. There is more detailed information on data center basics, network design for data protection, RAID arrays, and online storage.

North Carolina ECHO (Exploring Cultural Heritage Online). *Digitization Guidelines: Chapter 6 – Digital Preservation*. 2007. http://www.ncecho.org/dig/guide_6preservation.shtml#6.4

Discusses challenges of digital preservation including storage media and storage concerns. Addresses preservation strategies. Guidelines for improving the lifespan of media formats.

Conway, Paul. *The Relevance of Preservation in a Digital World*. Northeast Document Conservation Center Preservation Leaflet. <http://www.nedcc.org/resources/leaflets/6Reformatting/04RelevanceOfPreservation.php>

Overall discussion on digital preservation that defines preservation based on the purpose of the digitizing project which affects the storage goal for the project.

The PC Guide. *Redundant Arrays of Inexpensive Disks (RAID)*.
<http://www.pcguide.com/ref/hdd/perf/raid/index.htm>

A good explanation of everything RAID including cost, benefit, limitations, concepts and issues, level definitions including a comparison chart, and configuration and implementation. The site itself, however, is ad heavy.

South Carolina Department of Archives and History. *Electronic Records Management Guidelines: Digital Imaging Version 2*. March 2008.
<http://arm.scdah.sc.gov/NR/rdonlyres/33990F8B-D9E2-4303-A490-6CA6F6C14062/0/ermDI.pdf>

General information on digital media. Defines magnetic and optical solutions.

South Carolina Department of Archives and History. *Electronic Records Management Guidelines: Digital Media Storage - Facilities and Procedures Version 2*. March 2008.
<http://arm.scdah.sc.gov/NR/rdonlyres/E03AB5A2-2B90-490B-96BF-D3E838FABCF7/0/ermDMSFP.pdf>

Planning and maintenance of storing digital media. Details storage facility requirements, components and conditions for digital media. Lists proper handling techniques. Includes legal requirements for South Carolina.

Storage.com. *What is RAID? Definitions*. September 9, 2008.
http://searchstorage.techtarget.com/sDefinition/0,,sid5_gci214332,00.html

Explains how RAID works and defines the ten RAID levels. Links to other resources for more information.

Tom's Hardware Guide. *External RAID Storage: Direct Attached Storage is not Dead Yet*.
<http://www.tomshardware.com/reviews/external-raid-storage,1922.html>

Discusses storage solutions. Reviews two specific RAID systems “aim to bridge the gap between inflexible high-speed internal storage and flexible, but expensive networked storage solutions.”

Preservation Strategies

Besser, Howard. *Digital Longevity*. Handbook for Digital Projects: A Management Tool for Preservation and Access. 1999. <http://www.gseis.ucla.edu/~howard/Papers/sfs-longevity.html>

An older article, but it addresses the important aspects of digital files including life span, viewing concerns, and problems encountered such as scrambling, custodial, and translation problems. The article also discusses various approaches to improving digital longevity.

The Commission on Preservation and Access and the Research Libraries Group. *Preserving Digital Information*. Report of the Task Force on Archiving Digital Information. May 1, 1996. <http://www.ifla.org/documents/libraries/net/tfadi-fr.pdf>

An older report often cited when discussing digital preservation. The guide includes the challenges of archiving digital information (obsolescence, migration, and legal issues), the roles and responsibility of archives including operating environments, migration strategies, and finances.

Cornell University. *Digital Preservation Management: Implementing Short-term Strategies for Long-term Problems*. <http://www.icpsr.umich.edu/dpm/dpm-eng/terminology/strategies.html>

An online tutorial that addresses many preservation issues and preservation strategies in a step-by-step guide. Topics include terms and concepts, obsolescence and physical threats, digital repositories, metadata, legal issues, balancing stakeholders, access issues, financing the future, and organizational and technological infrastructure. This particular section defines the follow strategies: bit-stream copying, refreshing, durable/persistent media, technology preservation, digital archaeology, analog backups, migration, replication, reliance on standards, normalization, canonicalization, emulation, encapsulation, and the universal virtual computer.

Digital Preservation Testbed. *Migration: Context and Current Status*. December 5, 2001. <http://www.digitaleduurzaamheid.nl/bibliotheek/docs/Migration.pdf>

A paper that discusses different methods of preservation including technology preservation, printing to paper, migration, emulation, encapsulation, virtual machine software, and XML. The method of migration is covered in depth and includes information on different migration strategies, risk management, issues and concerns, and the current research and knowledge surrounding migration.

JISC Digital Media. *Establishing a Digital Preservation Strategy*.
<http://www.tasi.ac.uk/advice/delivering/digpres2.html>

A report that discusses the importance of having an organizational strategy for a digital collection before you begin converting files. The processes of technological preservation, technological emulation and migration are explained.

Lawrence, Gregory W. et al. *Risk Management of Digital Information: A File Format Investigation*. Council on Library and Information Resources. June 2000.
<http://www.clir.org/pubs/reports/pub93/contents.html>

This report discusses both emulation and migration, with more details on the migration process. A risk management chart shows associated risks with the file formats and conversion process when using migration. States the importance of assessing risk, and explains how to complete a risk assessment for your own collection.

Markin, Andy. *CD and DVD Longevity: How Long Will They Last?* Audioholics Online A/V Magazine. August 25, 2004. <http://www.audioholics.com/education/audio-formats-technology/cd-and-dvd-longevity-how-long-will-they-last>

How to test storage media to interpret a storage life. Explains the construction and components of optical media to help understand why they are fragile. Dos and don'ts for handling and storage of optical media.

Preserving Access to Digital Information (PADI). *Migration*. National Library of Australia.
<http://www.nla.gov.au/padi/topics/21.html>

Helps define different methods of migration including refreshing, and using standard formats. Addresses the issues around metadata, risk management, intellectual property rights, costs, and frequency of migration.

UKOLN at the University of Bath. *Good Practice Guide for Developers of Cultural Heritage Web Services: Digital Preservation*. <http://www.ukoln.ac.uk/interop-focus/gpg/Preservation/>

The focus of this section of this guide book is digital preservation. Digital preservation is defined with details about each strategy; technology preservation, technology emulation, and data migration. Preservation metadata is also addressed

Disposition of Originals

Manitoba Government. *Managing Records in the Manitoba Government*.
<http://www.gov.mb.ca/chc/archives/gro/recordkeeping/managing1.html>

Discusses records schedules, transferring and use of files, destruction and records with archival value. Additional policies address how to transfer records for offsite disposal and destruction as well as the use of a paper shredder at the office level.

Mead, Kevin. *Get Serious About Paper Record Destruction*. American Health Information Management Association (AHIMA).
http://library.ahima.org/xpedio/groups/public/documents/ahima/bok1_012344.hcsp?dDocName=bok1_012344

Discusses the importance of taking control of paper records and knowing the risks involved with various methods of destruction. Policies and procedures set the stage for the trustworthiness of records.

PALINET. *Digitization and Preservation*.
http://www.palinet.org/ds_ps_pag_preservation.aspx

A resource slanted more towards preservation rather than storage, the PALINET website includes links to preservation policies that represent best practices. Disaster planning and preservation techniques that ultimately relate to best practices for storage of original and digital materials are also covered.

State of Wisconsin – Department of Administration. *Records Management Section Fact Sheet #4: January 2008 Topic: Options for Destruction of Paper Files*.
http://www.doa.state.wi.us/facts_view.asp?factid=17&locid=2

Policies for the state of Wisconsin for both non-confidential and confidential materials including a witness of destruction service.

University of Miami Leonard M. Miller School of Medicine. *Secure Data Disposal Methods*.
<http://it.med.miami.edu/x677.xml>

Defines secure data disposal and discusses methods of disposal for various types of media including paper, electronic, magnetic, and optical formats.

Providing Access

Adams, Margaret O. *Archival Reference Services for Digital Records: Experience with the Access to Archival Databases (AAD) Tool*. New Skills for the Digital Era Case Study 9. http://rpm.lib.az.us/NewSkills/CaseStudies/9_Adams.pdf

Discusses the National Archives and Records Administration's (NARA) Access to Archival Databases (AAD) tool as a method to providing access and assisting with reference services. Background information about records requests and how the AAD has assisted with the digitization process. Also discusses the skills required of archivists when working with digital rather than analog records.

The Archivists' Toolkit. *Introduction to the Archivists' Toolkit*. 2007. <http://www.archiviststoolkit.org/>

The home page for the Archivist's Toolkit, the first open source archival data management system intended for a wide range of archival repositories. The application supports accessioning, description, establishing name and subjects, managing location information, and exporting finding aids and reports in various standard formats.

Archon. *Archon: The Simple Archival Information System*. University of Illinois. 2008. <http://www.archon.org/>

The home page for Archon, the web-based tool that automatically publishes archival descriptive information and digital archival objects to a user-friendly website.

Hodge, Gail and Evelyn Frangakis. *Digital Preservation and Permanent Access to Scientific Information: The State of Practice*. The International Council for Scientific and Technical Information and CNDIS US Federal Information Managers Group. <http://www.icsti.org/documents/preservationrpt.pdf>

Covers general topics of concern in the archival profession including access, preservation, standards, workflow, and trends. Discusses six different "off-the-shelf" systems for digital preservation and access including OCLC Digital Archives, PANDORA, LOCKSS, and Fedora.

Mengel, David J. *Access to United States Government Records at the U.S. National Archives and Records Administration*. Japan-US Archives Seminar. May 2007. http://www.archivists.org/publications/epubs/accesstoarchives/07_David_MENGEL.pdf

This resource provides a history of the legal requirements to provide access to government records. The role of the National Archives and Records Administration's

(NARA) in holding the government accountable for their actions is discussed. Discusses access regulations and concerns particular to each branch of the US government including the Executive Records, Presidential Record, Legislative Records, and Judicial Records.

The National Archives and Records Administration. *Access to Archival Databases (AAD)*
<http://aad.archives.gov/aad/>

This is the home page for the Access to Archival Databases website which is an example of a searchable database to find digital materials on various topics held by NARA. The Getting Started Guide helps answer questions that can assist a user as well as a developer of an online searchable system.

The National Archives and Records Administration. *Electronic Records Archives (ERA)*.
October 2, 2008. <http://www.archives.gov/era/>

“The Electronic Records Archive is the National Archives and Records Administration's strategic initiative to preserve and provide long-term access to uniquely valuable electronic records of the U.S. Government, and to transition government-wide management of the lifecycle of all records into the realm of e-government.”

The National Archives. [UK] *Access to Archives (A2A)*.
<http://www.nationalarchives.gov.uk/a2a/>

An example of a database that gives users access to catalog records of about 400 repositories most of which are in England and Wales. This resource can be used to see holdings in many repositories at once.

Nguyen, Binh Q. *Information Assurance Issues and Requirements for Distributed Electronic Records Archives*. Army Research Laboratory. April 2003.
<http://aad.archives.gov/aad/help/getting-started-guide.html>

A summary of the important issues and requirements in ensuring authenticity and accurate documents in an electronic records management system. Includes information on data availability, integrity, authentication, confidentiality, and nonrepudiation. Information on network setups, threats, and concerns. Appendix includes a list of other information assurance resources.

Pearce-Moses, Richard. *Caught in the Middle: Access to State Government Records in the United States*. Japan-US Archives Seminar. May 2007.
http://www.archivists.org/publications/epubs/accesstoarchives/09_Richard_Pearce-MOSES.pdf

A discussion on how to balance providing access to government documents with the right to privacy of individuals. Tries to answer what is record or more specifically what is a public record? Talks about the pressures put on archives to both allow and restrict access to various documents.

Schwartz, Scott W., Christopher Prom, Kyle Fox and Paul Sorensen. *Archon: Facilitating Global Access to Collections in Small Archives*. International Federation of Library Associations and Institutions 74th Annual Conference. August 2008.

http://www.ifla.org/IV/ifla74/papers/159-Schwartz_Prom_Fox_Sorensen-en.pdf

Written by the developers of Archon, the web-based tool for publishing archival information on the web, this paper discuss the challenges small archives are faced in regards to providing access to their holdings and the importance of collaboration and global access. The features of Archon are described in detail including the collections management features and administrative features that were created to assist archives on every level of curation.

Spiro, Lisa. *Archival Management Software*. Council on Library and Information Resources (CLIR). January 2009. http://clir.org/pubs/reports/spiro/spiro_Jan13.pdf

A discussion of the different archival processing solutions available that help provides access to collections. The Archivists' Toolkit, Archon, Cuadra STAR, Eloquent, and CollectiveAccess systems are all discussed, including user feedback.

Developing a Program

Clareson, Thomas F.R. *Statewide Digitization Program Plan for the Delaware Division of Libraries*. PALINET. August 30, 2007.

http://state.lib.de.us/For_Libraries/Planning/Digitization/documents/DEStatewideDigPlanFinal20070830.pdf

Addresses collaborations on the state level and steps that should be taken before a digitization program is created.

Greenstein, D. *Strategies for Developing Sustainable and Scalable Digital Library Collections*. Digital Library Federation. July 12, 2006. <http://www.diglib.org/collections/collstrat.htm>

Outlines steps needed for developing sustainable digital collections.

Government Printing Office (GPO). *Information Brief: Digitization and the FDLP*. United States GPO. April 2007.

http://www.gpo.gov/su_docs/fdlp/pubs/proceedings/07spring/digitization-0407.pdf

An update to the GPO digitization project.

Hurst, Jill Ann. *Planning for Regional Digitization Projects: The SCRLC Approach*. South Central Regional Library Council. September 30, 2002.

<http://www.lakenet.org/Digitizing/2002digplan.pdf>

This document provides an example of a digitization plan including the mission and scope of the program and a project time line. Questions are asked about project management, material selection, digitization, material access, long-term strategy, and funding. These questions can be used as a guide for any project or program.

Indiana University. *Indiana University Digital Library Program*. December 9, 2008.

<http://www.dlib.indiana.edu/index.shtml>

Collaborating with multiple units from Indiana University they have created the Digital Library Program (DLP). The DLP offers various services relating to digital library development to University staff as well as external partners in the areas of project planning, digitization services, electronic text services, metadata services, and interface design and usability services. This homepage will lead the reader to many different areas of interest related to digital services.

Lahr, Thomas F., Robin Haun-Mohamed and Eleanor G. Frierson. *Developing the Digital World of Government Information and Official Publications: A View from the United States*.

International Federation of Library Association 71st General Conference. August 2005.

http://www.ifla.org/IV/ifla71/papers/037e-Lahr_Haun_Frierson.pdf

Discussion of the US government's digitization and preservation initiatives. Description of the Government Printing Office's project and the four institutions that will pilot the program.

Roth, Eric J. *Opportunities, Challenges, and Priorities: Developing a Collaborative Digitization Plan for the Mid-Hudson Valley*. Southeastern New York Library Resources Council. May 2001.

<http://www.hrvh.org/about/HRVHassessment.pdf>

Discussion of the digitization project goals for the Hudson Valley area. Other local and national digitization efforts are summarized. After reviewing others efforts, suggestions are made for developing a plan which also addresses possible issues of concern.

Smith, Abby. *Developing Sustainable Digital Library Collections: Strategies for Digitization*. Digital Library Federation. September 2001. <http://www.ncsi.iisc.ernet.in/raja/is214/is214-2006-01-04/clir-pub101.pdf>

Discusses the importance of sustainability and how they relate to policies, guidelines, and best practices. Using digitization as a method for preservation and access is discussed with the overall impacts on the institution.

Stanford University Digital Library Systems and Services. *Digitization Program, Scanning Labs, How to Start a Digital Project*. Stanford University Libraries and Academic Information Resources. January 17, 2006. <http://www-sul.stanford.edu/depts/dlss/services/index.htm>

Stanford University has an “ongoing program to produce and acquire digital library collections”. This webpage details the scanning services available as well as what to do to start a digital project within the University. Provides background information on a developed digital program.

WebJunction. *Developing Digital Projects: Digitization Action Plan*. July 19, 2005. <http://www.webjunction.org/216/articles/content/435617>

A worksheet, originally created to use in conjunction with an online course on Digital Projects, asks important questions about all stages during the development of a digital project or program.