

A Framework of Guidance for Building Good Digital Collections

3rd edition
December 2007

A NISO Recommended Practice

Prepared by the
NISO Framework Working Group
with support from the
Institute of Museum and Library Services



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FOREWORD

The 3rd edition of *A Framework of Guidance for Building Good Digital Collections* was produced by the National Information Standards Organization (NISO) Framework Working Group, with the generous support of the Institute of Museum and Library Services (IMLS). Working Group members are:

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INTRODUCTION

This *Framework of Guidance for Building Good Digital Collections* has three purposes:

1. To provide an overview of some of the major components and activities involved in creating good digital collections.
2. To identify existing resources that support the development of sound local practices for creating and managing good digital collections.
3. To encourage community participation in the ongoing development of best practices for digital collection building.

It is intended for two audiences:

- cultural heritage organizations planning and implementing initiatives to create digital collections; and
- funding organizations that want to encourage the development of good digital collections.

The use of the word “good” in this context requires some explanation. In the early days of digitization, a collection could be considered good if it provided proof of concept or resulted in new institutional capabilities—even if the resulting collection itself was short-lived or of minimal usefulness to the organization’s users.

As the digital environment matured, the focus of digital collection-building efforts shifted toward the creation of useful and relevant collections that served the needs of one or more communities of users. The bar of “goodness” was raised to include levels of usability, accessibility, and fitness for use appropriate to the anticipated user group(s).

Digital collection development has now evolved and matured to a third stage, where simply serving useful digital collections effectively to a known constituency is not sufficient. Issues of cost/value, sustainability, and trust have emerged as critical success criteria for good digital collections. Objects, metadata, and collections must now be viewed not only within the context of the projects that created them, but as building blocks that others can reuse, repackage, repurpose, and build services upon. “Goodness” now demands interoperability, reusability, persistence, verification, documentation, and support for intellectual property rights.

In edition three of this Framework we acknowledge that digital collections increasingly contain born-digital objects, as opposed to digital objects that were derived through the digitization of analogue source materials. We also acknowledge that digital collection development has moved from being an ad hoc “extra” activity to a core service in many cultural heritage institutions.

Digital collections must now intersect with the user’s own context—within the course, within the research process, within the leisure time activities, and within the social networks that are important to the end user.

Users—in particular the younger generations of users—have integrated digital technologies so completely into their lives that they are ready and even eager to move into a role as creators and collaborators. The rise of shared information spaces such as YouTube and Flickr; the popularity of social networking sites such as MySpace, Facebook, and LinkedIn; and the growth of the “mash-up” as the vehicle for new creativity demonstrate that good digital collection-building has become an active collaboration between the information professional and the user, resulting in collections that are reliable and authoritative, yet also compelling and useful to a wide range of users wherever they live, work, and play.

The *Framework of Guidance* provides criteria for goodness organized around four core types of entities:

- Collections (organized groups of objects)
- Objects (digital materials)
- Metadata (information about objects and collections)
- Initiatives (programs or projects to create and manage collections)

Note that services have been deliberately excluded as out of scope. It is expected that if quality collections, objects, and metadata are created, it will be possible for any number of higher-level services to make effective use and reuse of them.

For each of these four types of entities, general principles related to quality are defined and discussed, and supporting resources providing further information are identified. These resources may be standards, guidelines, best practices, explanations, discussions, clearinghouses, or examples.

How to Contribute

Every effort has been made to select resources that are useful and current, and to provide helpful annotations. However, the list of resources is not exhaustive and, given the dynamic nature of the digital information environment, can be expected to change rapidly over time.

With the third edition of the Framework, we open the document up for ongoing contributions from the community of librarians, archivists, curators, and other information professionals. We encourage you to contribute your own ideas and experiences, suggest resources, and evaluate those that have been suggested.

Please see the Community Version on the Web at:

<http://purl.fcla.edu/fcla/NISOCCommunityFramework>

How to Use

There are no absolute rules for creating good digital collections. Every digital collection-building initiative is unique, with its own users, goals, and needs. Initiatives dealing with legacy collections, for example, have different constraints than projects embarking on new digitization efforts, which in turn have different constraints than projects building collections of born-digital materials. Museums, libraries, archives, and schools have different constituencies, priorities, institutional cultures, funding mechanisms, and governance structures.

The key to a successful project is not to strictly and unquestioningly follow any particular path, but to plan strategically and make wise choices from an array of tools and processes to support the unique goals and needs of each collection.

A number of excellent resources take a holistic view of digitization projects, covering topics ranging from selection, capture, and description to preservation and long-term access. The following are highly recommended:

- UKOLN, *Good Practice Guide for Developers of Cultural Heritage Web Services* (2006) <http://www.ukoln.ac.uk/interop-focus/gpg/>.
- Anne R. Kenney and Oya Y. Rieger, *Moving Theory into Practice: Digital Imaging for Libraries and Archives* (2000) <http://www.library.cornell.edu/preservation/tutorial/>. An online tutorial of imaging basics in English, French and Spanish.
- Northeast Document Conservation Center, *Handbook for Digital Projects: A Management Tool for Preservation & Access* (2000) <http://nedcc.org/oldnedccsite/digital/dighome.htm>.
- Arts and Humanities Data Service (AHDS), *Guides to Good Practice* website <http://www.ahds.ac.uk/creating/guides/index.htm>. A series of guides to covering collection, description, and digitization for specific types of materials, such as GIS, performance resources, and virtual reality.
- Washington State Library, *Digital Best Practices* website <http://digitalwa.statelib.wa.gov/newsite/best.htm>.
- Susan Schreibman (editor), *Best Practice Guidelines for Digital Collections at University of Maryland Libraries*, 2nd ed. (2007) http://www.lib.umd.edu/dcr/publications/best_practice.pdf.

COLLECTIONS

A digital collection consists of digital objects that are selected and organized to facilitate their discovery, access, and use. Objects, metadata, and the user interface together create the user experience of a collection.

Principles that apply to good digital collections are:

Collections Principle 1: A good digital collection is created according to an explicit collection development policy.

Collections Principle 2: Collections should be described so that a user can discover characteristics of the collection, including scope, format, restrictions on access, ownership, and any information significant for determining the collection's authenticity, integrity, and interpretation.

Collections Principle 3: A good collection is curated, which is to say, its resources are actively managed during their entire lifecycle.

Collections Principle 4: A good collection is broadly available and avoids unnecessary impediments to use. Collections should be accessible to persons with disabilities, and usable effectively in conjunction with adaptive technologies.

Collections Principle 5: A good collection respects intellectual property rights.

Collections Principle 6: A good collection has mechanisms to supply usage data and other data that allows standardized measures of usefulness to be recorded.

Collections Principle 7: A good collection is interoperable.

Collections Principle 8: A good collection integrates into the users own workflow.

Collections Principle 9: A good collection is sustainable over time.

COLLECTIONS PRINCIPLE 1

Collections Principle 1: A good digital collection is created according to an explicit collection development policy that has been agreed upon and documented before building the collection begins.

Of all factors, collection development is most closely tied to an organization's own goals and constituencies. Collection builders should be able to refer to the mission statement of their organization and articulate how a proposed collection furthers or supports that mission. The institution should be able to identify the target audience(s) for the collection but also think about unexpected uses and users. If the institution collects print, artifacts or other non-digital materials, the digital collection should fit in with the organization's overall collection policy.

There are a few cases where a selection policy may not be required: digitization on demand, when an organization is creating digital content based on end-user requests, and mass digitization programs, which are often indiscriminate. Even these efforts require planning and should follow principles for building good collections as appropriate. Disciplinary or institutional repositories that encourage users to deposit their own intellectual property present an interesting case. These still benefit from a published collection policy, but it may have to be fairly flexible in acknowledgement that the users may be the best judges of relevance.

The following documents are general guidelines for selecting materials for digitization.

- Technical Advisory Service for Images (TASI), *Selection and Preparation of Materials* (2003) <http://www.tasi.ac.uk/advice/creating/selection.html>.
- Technical Advisory Service for Images (TASI), *Selection Procedures* (2003) <http://www.tasi.ac.uk/advice/creating/selecpro.html>.
- Northeast Document Conservation Center, *Handbook for Digital Projects*, chapter IV: Selection of Materials for Scanning (2000) <http://nedcc.org/oldnedccsite/digital/iv.htm>.
- Joint RLG and NPO Preservation Conference, *Guidelines for Digital Imaging: Guidance for selecting materials for digitisation* (1999) http://eprints.ucl.ac.uk/archive/00000492/01/paul_ayris3.pdf.
- Anne R. Kenney and Oya Y. Rieger, *Moving Theory into Practice*: Chapter 2, Selection (2000) <http://www.library.cornell.edu/preservation/tutorial/selection/selection-01.html>. A short, general guide with pointers to library selection policies and a bibliography.
- California Digital Library, *Collection Development Framework* website <http://www.cdlib.org/inside/collect/framework.html>. Covers both commercially licensed and locally digitized resources.

Local policies on selecting materials for digitization:

- Columbia University Libraries, *Selection Criteria for Digital Imaging* (2001) <http://www.columbia.edu/cu/libraries/digital/criteria.html>.

- University of California Libraries, *Selection Criteria for Digitization* (2005)
<http://libraries.universityofcalifornia.edu/cdc/pag/digselec.html>.

National library policies for digitized and born digital materials:

- Digital National Library of Scotland, *Strategic Plan 2005-2008* (2005)
http://www.nls.uk/professional/policy/docs/nls_digital_library_strategy.pdf.
- Library and Archives Canada, *Digital Collection Development Policy* (2006)
<http://www.collectionscanada.ca/collection/003-200-e.html>.
- Library of Congress, *Electronic Resources Selection Guidelines* (2004)
<http://www.loc.gov/acq/devpol/electronicselectionguidelines.html>.
- National Library of Australia, *Collection Digitisation Policy* (2006)
<http://www.nla.gov.au/policy/digitisation.html>.

Criteria for inclusion in portals:

- North Carolina ECHO (Exploring Cultural Heritage Online), *Portal Collection Development Policy* (2000) <http://www.ncecho.org/colldev.asp>.
- Digital Library for Earth System Education (DLESE), *Collection Scope and Policy Statement* (2004) http://www.dlese.org/documents/policy/CollectionsScope_final.html. Selection for inclusion in a topical library of learning objects.
- National Science Digital Library, *Collections Policy*
http://nsdl.org/about/?pager=collection_policy. Selection policy for a collection of collections.
- New Jersey Digital Highway, *Collection Development Policy* (2004)
<http://www.njdigitalhighway.org/documents/njdh-coll-dev-policy.pdf>. Selection for a statewide collaborative including libraries, museums, archives, and other cultural heritage organizations.

Selecting materials for digitization specifically for preservation purposes:

- Library of Congress Preservation Reformatting Division, *Selection Criteria for Preservation Digital Reformatting* <http://lcweb.loc.gov/preserv/prd/presdig/presselection.html>.
- National Library of Medicine, *Selection Criteria for Digital Reformatting* (2006)
<http://www.nlm.nih.gov/psd/pcm/digitizationcriteria.pdf>.

Selecting born-digital content for preservation:

- Mary Ide and Leah Weisse, *Recommended Appraisal Guidelines for Selecting Born-digital [Television] Master Programs For Preservation and Deposit with the Library of Congress* (2006)
<http://www.ptvdigitalarchive.org/docs/Selection/RecommendedAppraisalGuidelines.pdf>.

COLLECTIONS PRINCIPLE 2

Collections Principle 2: Collections should be described so that a user can discover characteristics of the collection, including scope, format, restrictions on access, ownership, and any information significant for determining the collection's authenticity, integrity, and interpretation.

Collection description is a form of metadata (see also METADATA). Such description serves two purposes: it helps people discover the existence of a collection, and it helps users of the collection understand what they are viewing. Describing collections in established catalogs and registries is also a way of establishing the authority of the content.

Collection descriptions should help users understand the nature and scope of the collection and any restrictions that apply to the use of materials within it. It is good practice to incorporate a narrative description of the collection, description of the scope and extent of the collection, names and contacts for the organization(s) responsible for building and maintaining the collection (as organizational provenance is an important clue to the authenticity and authority), terms and conditions of use, restrictions on access, special software required for general use, the copyright status(es) of collection materials, and contact points for questions and comments. Many project planners find a description of the methodologies, software applications, record formats, and metadata schemes used in building other collections helpful.

There is no dominant metadata standard for describing collections, although in the last few years there has been substantial progress towards this goal.

- IMLS, *Digital Collections and Content: Resources* website <http://imlsdcc.grainger.uiuc.edu/resources.asp>. Discusses the benefits of collection level description and gives examples of collection description schema.
- Research Support Libraries Programme, *RSLP Collection Description* website <http://www.ukoln.ac.uk/metadata/rsrp/>. An early effort to develop a standard collection description schema.
- NISO Z39.91 *Collection Description Specification* (2005) <http://www.niso.org/standards/resources/Z39-91-DSFTU.pdf>. A draft standard that builds on the RSLP effort and work in the Dublin Core community, developed by the NISO MetaSearch Initiative (http://www.niso.org/committees/MS_initiative.html).
- UKOLN *Collection Level Description* (2001) <http://www.ukoln.ac.uk/metadata/cld/>.

Archival description can also be thought of as a form of collection description.

- ISAD(G): *General International Standard Archival Description* (2000) <http://www.ica.org/en/node/30000>. Set of general rules for archival description developed by the International Council on Archives.
- *Encoded Archival Description (EAD)* website <http://www.loc.gov/ead/>. The EAD provides an XML representation of archival finding aids.

Good examples of collection-level terms and conditions of use:

- Library of Congress, *Prints and Photographs Online Catalog* website <http://www.loc.gov/rr/print/catalog.html>.
- National Maritime Museum (U.K.) Search Station, *Copyright Notice, Disclaimer And Terms Of Use* <http://www.nmm.ac.uk/searchbin/searchs.pl?return=copyright>.
- AdAccess Project, *Copyright and Citation Information* (1999) <http://scriptorium.lib.duke.edu/adaccess/copyright.html>.

Examples of websites with informative information about the collection and/or project:

- *Historic Pittsburgh* website <http://digital.library.pitt.edu/pittsburgh/>.
- *Yiddish Children's Books* website <http://palmm.fcla.edu/ycb/index.shtml>. This site follows the PALMM (Publication of Archival, Library and Museum Materials) program's standard template for "sidebar" information with links such as "About the Collection," "Technical Aspects," "Related Sites," etc. <http://palmm.fcla.edu/strucmeta/guidelines.pdf>.
- *Histpop: The Online Historical Population Reports* website, *Project Histpop* website <http://histpop.org/ohpr/servlet/Category?page=Project&path=Project&active=yes&treestate=expandnew>.

When possible, collections should be described in collection-level cataloging records contributed to a union catalog such as OCLC's WorldCat (<http://www.oclc.org/worldcat/>).

The registries listed below allow institutions to register their own collections, or to propose their collections for registration. Unfortunately most registries appear to be poorly maintained.

- Digital Library Federation, *Digital Collections Registry* website <http://dlf.grainger.uiuc.edu/DLFCollectionsRegistry/browse/>.
- Smithsonian Institution Libraries, *Library and Archival Exhibitions on the Web* website, <http://www.sil.si.edu/SILPublications/Online-Exhibitions/>. Web exhibitions only.
- UNESCO/IFLA *Directory of Digitized Collections* website <http://www.unesco.org/webworld/digicol/>. Particularly useful for the international focus.
- IMLS, *Digital Collections and Content* website <http://imlsdcc.grainger.uiuc.edu/collections/GemTopPlusSubs.asp>. Registry of all digital collections built with IMLS funds.
- *Imagelib and the Clearinghouse of Image Databases* website <http://elearn.arizona.edu/imagelib/>.
- Technical Advisory Service for Images (TASI) *Image Sites* website <http://www.tasi.ac.uk/imagesites/index.php>. Actively maintained.

COLLECTIONS PRINCIPLE 3

Collections Principle 3: A good collection is curated, which is to say, its resources are actively managed during their entire lifecycle.

Digital curation is concerned with the lifecycle management of a resource from the time it is created or obtained until it is purposely disposed of. Curation encompasses a set of activities that include active data management, archiving, and digital preservation.

Active data management is required to ensure that objects in a collection can be used and reused over time. It can include creating, correcting, and enhancing metadata; correcting or enhancing the data itself; and adding annotations, linkages to other materials, or other enriching information. It can involve working with the creators of the digital objects to ensure they are appropriately transferred to the custody of the curator, and appropriately described and documented.

- *Digital Curation Centre* website <http://www.dcc.ac.uk/>. The U.K.'s Digital Curation Center promotes digital curation by sponsoring events like workshops and conferences and collecting or commissioning publications and tools. Their website links to a wealth of information, much of it focused on active data management. The DCC is also publishing a comprehensive Curation Manual <http://www.dcc.ac.uk/resource/curation-manual/> in a series of installments. More than 45 chapters have been commissioned so far, covering a wide range of topics from appraisal and selection to technological obsolescence. Although only a handful of chapters have been published so far, this is likely to become a definitive resource on digital curation.
- Philip Lord and Alison Macdonald, *E-Science Curation Report* (2003) http://www.jisc.ac.uk/uploaded_documents/e-ScienceReportFinal.pdf. Details the requirements of data curation in the sciences and database-intensive social science and humanities disciplines.

There are industry standard practices applicable to all mission-critical data and are not specific to digital collections. Data center and IT staff should be aware of these good general resources:

- ISO/IEC 27002:2005, *Information technology – Security techniques – Code of practice for information security management* (June 2005) http://en.wikipedia.org/wiki/ISO/IEC_27002. This Wikipedia article describes the standard and links to purchase information.
- *Web Application Security Consortium* website <http://www.webappsec.org/>. The Consortium produces and releases technical information, articles, guidelines, and documentation for best practice security standards.

Capture of born-digital materials can present special challenges, particularly ephemeral materials and works with distributed authorship such as websites and emails. Many academic institutions have established institutional repositories for content generated by students, faculty, and staff, but it is difficult to convince authors to deposit their own materials.

- *Creating an Institutional Repository: LEADIRS Workbook* (2004)
<http://www.dspace.org/implement/leadirs.pdf>. Covers all angles of planning, policy and implementation. Written by MIT for a British audience.
- *Australian Partnership for Sustainable Repositories (APSR)* website
<http://www.apsr.edu.au/>. APSR supports the implementation and use of institutional repositories at universities in Australia, and promotes linkages among them.

While some usages equate digital preservation with archiving, preservation is more properly thought of as that subset of archiving concerned with the application of active preservation strategies to ensure an object remains usable despite hardware and software obsolescence. Preservation strategies generally involve format transformation, hardware/software emulation, or combinations of the two. The long-term archiving and preservation of digital materials is a difficult and expensive undertaking that requires substantial resources and serious institutional commitment. Resources are now available that continue to move the discussions forward toward best practice for preservation of digital content.

- *Trustworthy Repositories Audit and Certification (TRAC): Criteria and Checklist* (2007)
<http://www.crl.edu/PDF/trac.pdf>. These metrics will likely become the basis on an international standard for assessing trustworthy digital repositories.
- *Digital Repository Audit Method Based on Risk Assessment (DRAMBURA)* website,
<http://www.repositoryaudit.eu/>. Toolkit and supporting tutorials are designed to help a repository do a self-audit against the TRAC criteria.
- *PREMIS Preservation Metadata Maintenance Activity* website,
<http://www.loc.gov/standards/premis/>. Includes a Data Dictionary for preservation metadata, supporting materials and a forum for the PREMIS Implementors' Group.
- National Library of Australia, *Preserving Access to Digital Information (PADI)* website
<http://www.nla.gov.au/padi/>. Comprehensive clearinghouse of current and historical materials related to digital preservation and curation.

COLLECTIONS PRINCIPLE 4

Collections Principle 4: A good collection is broadly available and avoids unnecessary impediments to use.

This principle encompasses three attributes: availability, usability, and accessibility.

Availability means that the collection is accessible and usable upon demand by an authorized person. This implies that collections should be accessible through the Web, using technologies that are well known among the target user community. They should be “up” as close to 24/7 as possible, which has implications for system security and maintenance. Availability does not require that use of all materials be free and unrestricted; charging for use and limiting access may be appropriate and even necessary in some circumstances. But it does require an attempt to make the materials as widely available as possible within any required constraints.

- American Library Association, *Principles for Digital Content* (2007) <http://www.ala.org/ala/washoff/oitp/Principlesfinalfinal.pdf>. These recently adopted principles emphasize commitment to equitable access.

Usability refers to ease of use. There is often a tradeoff between functionality and general usability; the timing of the adoption of new features should be considered in light of how many potential users will be capable of using the technology and how many will find it a barrier. Bandwidth requirements are also a consideration, as some file formats or interfaces may not be usable by individuals on low bandwidth connections. The minimum browser version and bandwidth requirements for use should be documented as part of the collection description.

For general access collections, the web pages and search forms providing access to the collection, as well as the metadata and digital object displays, should be tested against various browsers and browser versions. Different operating systems support different commands for manipulating screen information, such as selecting multiple items in a drop down menu on a search screen, so testing should include Windows, Mac, and Linux operating systems for at least the current and previous three years. Testing should include different screen resolutions (varying height and width pixel arrays). Look for particularly problematic items, such as color variations, display of non-English language characters, and rendition of XML.

- Usability.gov website <http://www.usability.gov/>. An excellent source of information on usability and user-centered design for websites and other communication systems.
- U.S. Department of Health and Human Services, *Research-Based Web Design & Usability Guidelines – Current Research-Based Guidelines on Web Design and Usability Issues* (2006) <http://www.usability.gov/pdfs/guidelines.html>.
- Technical Advisory Service for Images (TASI), *Developing Effective Interfaces for Online Image Collections* (2006) <http://www.tasi.ac.uk/advice/delivering/interfaces.html>.
- Technical Advisory Service for Images (TASI), *Developing Usable and Accessible Interfaces for Online Image Collections* (2006) <http://www.tasi.ac.uk/advice/delivering/usability.html>.

Accessibility is the property of being usable by people with disabilities. Collection interfaces should be designed to maximize usability for people with visual impairments, loss of hearing, loss of mobility (for example, trouble using a mouse) and even cognitive impairments.

Legislation and de facto standards define web accessibility:

- World Wide Web Consortium (W3C), *Web Accessibility Initiative (WAI)* website <http://www.w3.org/WAI/>. The most important single site for accessibility issues. Includes links to W3C accessibility standards.
- W3C Web Accessibility Initiative, *Policies Relating to Web Accessibility* website <http://www.w3.org/WAI/Policy/>. Links to accessibility legislation in 17 countries plus the United Kingdom and European Union.

Several clearinghouses focus on web accessibility, among them:

- CPB/WGBH National Center for Accessible Media website <http://ncam.wgbh.org/projects/>. Includes a number of accessibility initiatives including projects focused on educational materials.
- University of Wisconsin, Trace Research and Development Center: *Designing More Usable Web Sites* <http://trace.wisc.edu/world/web/>. A clearinghouse of useful tools, initiatives, and documentation on accessibility.

There is a large body of literature on accessible web design:

- Utah State University Center for Persons with Disabilities, *WebAIM (Web Accessibility in Mind)* website <http://www.webaim.org/>. An excellent introduction to Web accessibility issues and evaluation tools.
- Massachusetts Institute of Technology, *Adaptive Technology for Information and Computing* website <http://web.mit.edu/atic/www/accessibility/index.html>. Shows how accessibility guidelines can be applied in an institutional context.
- Audio Illinois website <http://www.alsaudioillinois.net/>. A model site using audio narration to describe pictures for the sight impaired.

COLLECTIONS PRINCIPLE 5

Collections Principle 5: A good collection respects intellectual property rights.

The collection development policy should reference the organization's copyright policy and/or incorporate principles of support for copyright and the copyright status of the organization's collections.

Intellectual property rights must be considered from several points of view:

- what rights the owners of the original source materials retain in their materials;
- what rights or permissions the collection developers have to digitize content and/or make it available; and
- what rights or permissions the users of the digital collection are given, to make subsequent use of the materials.

Rights management is facilitated by good recordkeeping. Collection managers should maintain a consistent record of rights holders (including contact information when possible) and permissions granted for all applicable materials.

Rights management is complicated by the fact that a work may include contributions from many creators. The underlying rights of complex multimedia works can be challenging to untangle and can involve contract law as well as copyright.

Many useful collections lack a deed of gift that clearly permits the digital distribution of resources. When resources have uncertain provenance, current best practices suggest a practical approach:

- actively solicit information about the creator – from the donors or their heirs or from the audience that utilizes the digital collection; and
- develop a risk management strategy that balances the educational value of the collections against principles of fair use, the potential commercial exploitation of the collection, and the organization's ability to identify and solicit permissions from copyright holders.

A risk assessment will enable the library to make practical, defensible choices among collections of uncertain provenance – a critical concern for digital collection building. Viewed from any side, rights issues are rarely clear-cut, and the rights policy related to any collection is more often a matter of risk management than one of absolute right and wrong. A policy statement, posted prominently on the web portal to the collection, can articulate the organization's reasons for making works of uncertain provenance available in digital form to a wide audience.

Rights in the International Arena

It is important to realize that intellectual property rights are an international protection that is governed by treaty. Current intellectual property law derives from international treaty. As

nations sign and ratify an intellectual property rights treaty, they must develop laws to reflect the provisions of the treaty.

Intellectual property rights treaties provide the minimum requirements to which all signatory states must adhere. Treaties generally provide guidance to signatory states on the areas where member states have flexibility to customize their laws to reflect regional and local needs.

The fundamental treaties governing international copyright are:

Berne Convention (Paris, 1971)

The primary international copyright treaty is the *Berne Convention for the Protection of Literary and Artistic Works*. This treaty provides minimum enforceable standards intended to harmonize across the laws and standards of its signatory countries. The most significant minimum standard is the term of protection granted to a work: life of the author plus fifty years.

WIPO Copyright Treaty (WCT) (Geneva, 1996)

The WCT is intended to bring copyright into the digital era and is the genesis of many provisions of the *Digital Millennium Copyright Act*, the U.S. copyright law enacted to enable compliance with the WCT. Among other provisions, the WCT recognizes computer programs as copyright protected literary works, as well as providing copyright status for compilations of data that exhibit creativity in the arrangement or selection of the data.

WIPO Performances and Phonograms Treaty (WPPT) (Geneva 1996)

The WPPT updates the *Rome Convention of 1961*, particularly describing the rights of performers and producers for authorizing the fixing of performances and phonograms and making them available to the public by wired or wireless means.

The WCT and WPPT are noteworthy for two controversial provisions. The treaties require signatory countries to provide legal protection and remedies against the circumvention of technical measures that protect the exercise of authors' rights or that restrict acts of use that are not authorized by authors or permitted under law. This provision represents a critical change in the treatment of infringement by providing for the prevention of infringing uses of a work. Previously, the Berne treaty provided for legal remedies against infringing use after the fact within the country of origin for the work. For the first time, the WCT and WPPT provide authors with the legal ability to technically prohibit or restrict infringing uses of a work in advance of such use, and legally bind the signatory countries to protect against the circumvention of these technological measures.

The WCT and WPPT also require that signatory countries provide legal remedies against any party that knowingly removes or alters rights management information, where this information is defined as "information which identifies the work, the author of the work, the owner of any right in the work, or information about the terms and conditions of use of the work, and any numbers or codes that represent such information, when any of these items of information is

attached to a copy of a work or appears in connection with the communication of a work to the public.” (WIPO Copyright Treaty, *art. 12*)

Legally enforced metadata is a new concept for metadata that is discussed further in Metadata Principle #4.

Four key issues that are important to understand about international copyright are:

1. Copyright is viewed by treaty as a “natural right” that obtains to a work as soon as it is fixed in tangible form. No country requires registration for copyright to take effect. The United States is notable for applying copyright requirements on works based on the law in effect when the work was first fixed in tangible form. Thus some works require copyright registration or renewal or copyright notice conforming to specifications. Most nations apply the current provisions of copyright law to all existing works.
2. International copyright originates in treaty, which establishes minimum standards for compliance. These minimum standards may only be referenced in national law, so when dealing with works of an international character or that will be distributed internationally, a basic understanding of at least the three treaties referenced above is important.
3. Copyrighted works are accorded “national treatment” by all the signatory member states of a treaty, which means that a copyright holder who is a foreign national is accorded the same treatment, with respect to copyright and copyright infringement within the member state, as the citizens of that member state.
4. Every country may make exceptions to copyright to further the common good of its citizens. These exceptions, generally called fair use or fair dealing, differ markedly across countries but must meet the minimum conditions imposed by treaty. They:
 - must represent special cases rather than the normal use of resources,
 - must not conflict with “normal exploitation of the work,” and
 - must not “unreasonably prejudice the legitimate interests of the author.”

The best source for information about international copyright is the World Intellectual Property Organization, which has oversight for intellectual property treaties:

<http://www.wipo.int/portal/index.html.en>.

The IFLA Committee on Copyright and Other Legal Matters (CLM) provides news and information by country as well as background papers, etc.

<http://www.ifla.org/III/clm/copyr.htm>.

Most countries have government agencies tasked with intellectual property right management. Many countries also have non-governmental organizations that advise on copyright. The national library or national library association is a good place to find the relevant agency, as

well as a good copyright bibliography, if you are unfamiliar with the authoritative copyright agency or organization for a specific country.

“How-to” guides for digital collections:

- New Jersey Digital Highway, *Copyright Issues for Digital Collections* website http://www.njdigitalhighway.org/copyright_issues_libr.php.
- Washington State Library, *Digital Best Practices, Rights and Permissions to Publish Digital Collections* website <http://digitalwa.statelib.wa.gov/newsite/collection/rights.htm>.
- Mary Minow, *Library Digitization Projects and Copyright* (2002) <http://www.llrx.com/features/digitization.htm>. Comprehensive and entertainingly presented.

Helpful general publications on copyright:

- Georgia Harper, *Copyright Crash Course* website <http://www.utsystem.edu/ogc/intellectualproperty/cprtindx.htm>. A general introduction to virtually all copyright-related issues. There is a useful section on the logistics of obtaining permission that takes the perspective of risk vs. benefit.
- Canadian Heritage Information Network (CHIN), *Copyright Guide for Museums and Other Cultural Organizations* website http://www.chin.gc.ca/English/Intellectual_Property/Copyright_Guide/index.html.
- Peter Hirtle, *Copyright Term and the Public Domain in the United States* (2007) http://www.copyright.cornell.edu/training/Hirtle_Public_Domain.htm. A handy (possibly indispensable) chart for quick lookup of likely status by the date of publication.
- JISC Legal Information Service, *Intellectual Property Rights Overview* (2006) <http://www.jisclegal.ac.uk/ipr/IntellectualProperty.htm>. Covers “the landscape of copyright law and its application to Further and Higher Education.”
- Electronic Information for Libraries (eIFL), *Handbook on Copyright and Related Issues for Libraries* (2006) <http://www.eifl.net/cps/sections/services/eifl-ip/issues/eifl-handbook-on>.

Particular material types:

- Daniel I. Cohen and Roy Rosenzweig, *Digital History: A Guide to Gathering, Preserving and Presenting the Past on the Web*, Chapter “Owning the Past: Images, Music and Movies” (2005) <http://chnm.gmu.edu/digitalhistory/copyright/6.php>. Digital multimedia.
- Technical Advisory Service for Images (TASI), *Copyright FAQ* (2006) http://www.tasi.ac.uk/advice/managing/copyright_faq.html. Digital images.
- AHDS, *Creating Digital Audio Resources: A Guide to Good Practice*, Chapter 2 “Working with Copyright” http://ahds.ac.uk/creating/guides/audio-resources/GGP_Audio_2.1.htm. Digitizing audio.

Clearinghouses on law and policy related to copyright and intellectual property:

- International Federation of Library Associations (IFLA), *Committee on Copyright and Other Legal Matters* website <http://www.ifla.org/III/clm/copyr.htm>.
- United States Copyright Office website <http://www.copyright.gov/>.
- American Library Association, *Copyright* website <http://www.ala.org/ala/washoff/woissues/copyrightb/copyright.cfm>.
- Section 108 Study Group website <http://www.loc.gov/section108/study.html>. Section 108 of U.S. Copyright Law provides limited exceptions for libraries and archives. The study group was convened to recommend changes to the law for current technologies.
- University of Maryland University College, *Center for Intellectual Property* website <http://www.umuc.edu/distance/odell/cip/cip.shtml>. Resource center for the higher education community on the topics of copyright and intellectual property.

In the UK, the Technical Advisory Service for Images (TASI), a JISC-funded project that advises the UK's further and higher education community on digitization initiatives, provides a number of useful guides that address each aspect of rights, from digitization to use:

- Technical Advisory Service for Images (TASI), *Copyright and Digital Images* (2006) <http://www.tasi.ac.uk/advice/managing/copyright.html>.
- Technical Advisory Service for Images (TASI), *Roles and Responsibilities for Staff Involved in Building Digital Image Collections* (2006) <http://www.tasi.ac.uk/advice/managing/copyright-creators.html>.
- Technical Advisory Service for Images (TASI), *Roles and Responsibilities for Staff Involved in Using Images for Teaching and Research* (2006) <http://www.tasi.ac.uk/advice/managing/copyright-users.html>.

Although treaties have an important role to play in the international arena by providing the minimum standards to which all signatory countries adhere, every country is different in its approach to copyright law. This edition of the *Framework of Guidance* uses Web 2.0 technologies to encourage readers to share information. The editors encourage readers to share guidance in copyright adherence for digital collection building for their countries.

If digitized materials do have restrictions on use, these must be documented and enforced. At this time there are few mechanisms for exercising programmatic control of resources. Rights Expression Languages (RELs) are not widely in use in cultural heritage environments, but their continued development and application bear watching.

- California Digital Library Rights Management Framework, *Copyright Data Elements for the CDL* <http://cdlib.org/inside/projects/rights>. Includes a schema for recording information relevant to the copyright status of a work.
- Karen Coyle, *Rights Expression Languages: A Report for the Library of Congress* (2004) <http://www.loc.gov/standards/rereport.pdf>. Analyzes a sample of rights expression

languages in terms of their impact on the selection, maintenance, and preservation of digital content.

- Rutgers University Libraries, *Rucore Rights Metadata - Draft* (2006)
http://rucore.libraries.rutgers.edu/collab/ref/doc_mwg_rights_md_draft.pdf.
Provides copyright information and an event subschema for documenting rights events, such as rights transfer, rights research, etc.

Examples of digital collections with copyright or legal policies on their web pages:

- Library of Congress, *Legal* website <http://www.loc.gov/homepage/legal.html>.
- University of Washington, *College of Architecture and Urban Planning Copyright Policy* website <http://www.caup.washington.edu/vrc/policies/vrccopyright.html>.
- University of Arkansas Digital Collections, *Copyright and Permissions* website <http://0-digitalcollections.uark.edu/library.uark.edu/copyright.asp>. Includes a form to request permission to publish.
- Tate Online, *Copyright and the Reproduction of Works* website <http://www.tate.org.uk/home/copyright.htm>.

COLLECTIONS PRINCIPLE 6

Collections Principle 6: A good collection has mechanisms for collecting data that measure use and usefulness.

Digital collections should be evaluated periodically to monitor usage, assess service effectiveness, demonstrate return on investment, inform collection development, inform strategic planning, and support funding requests. The criteria, methods, and metrics for evaluating collections will vary by the objectives of the collections and the purposes of the evaluation. For example, the collections of the National Science Digital Library are designed to support teaching and learning, so it is appropriate that evaluation measures focus on the educational impact of these collections.

Effective collection management employs a variety of research methods to assess collection usefulness. Observation, surveys, focus groups, interviews, experiments, case studies, and transaction log analyses have been used by digital libraries to assess usage and usability. Each method has its strengths and limitations. To obtain a clear picture of the value of a digital collection is to answer the question: “Who is using what, how, and why?” It is often necessary for collection evaluators to use a combination of methods and measures to answer this question effectively.

The use of the digital collection is closely related to the collection’s content, functionality, usability, and accessibility. Establishing benchmarks for use, collecting usage data over time, and following international standards for measuring use of digital content will enable collection managers to conduct longitudinal collection assessment and compare collection services with those provided by peers. Evaluation is an iterative process. Results of evaluation should inform the design and improvement of a digital collection.

Frameworks and guidance for evaluating digital collections:

- Fourth DELOS Workshop, *Evaluation of Digital Libraries: Testbeds, Measurements, and Metrics* (2002) <http://www.sztaki.hu/conferences/deval/presentations.html>. Offers a promising evaluation scheme by identifying Users, Data/Collection, System/Technology, and Usage as four dimensions of digital libraries and developing evaluation metrics for each.
- Christine Borgman, *Evaluating the Uses of Digital Libraries* (2004) http://www.delos.info/files/pdf/events/2004_Ott_4/Borgman.pdf. A useful framework for evaluating several dimensions of digital library usage.
- Roxanne Missingham, *What Makes Libraries Relevant in the 21st Century? Measuring Digital Collections from Three Perspectives* (2003) <http://www.nla.gov.au/nla/staffpaper/2003/missingham2.html>.
- Thomas C. Reeves, Xornam Apedoe, and Young Woo, *Evaluating Digital Libraries: A User-Friendly Guide* (2003) <http://eduimpact.comm.nsdl.org/evalworkshop/UserGuideOct20.doc>.

- Tefko Saracevic, *How Were Digital Libraries Evaluated?* (2004) http://www.scils.rutgers.edu/~tefko/DL_evaluation_LIDA.pdf. An overview of previous digital library evaluation efforts.

Currently the COUNTER standards are dominant for measuring the use of digital collections, but they focus more on vendor-provided data than on collections produced by institutions.

- COUNTER (*Counting Online Usage of NeTworked Electronic Resources*) website http://www.projectcounter.org/code_practice.html. The COUNTER Codes of Practice are standards for measuring use of electronic journals, databases, and e-books.
- NISO, *Standardized Usage Statistics Harvesting Initiative* (SUSHI) website http://www.niso.org/committees/SUSHI/SUSHI_comm.html. Defines Web services-based harvesting of COUNTER usage data from different vendor platforms.

Usage data are somewhat limited when considered alone. When combined with input measures, output measures, or instructional data, they can help shed light on the effectiveness of a digital collection or digital library. Google Analytics (<http://www.google.com/analytics/>) provides tools to track where users come from and how they use a website.

Resources on collection evaluation methods, standards, and tools:

- Denise Troll Covey, *Usage and Usability Assessment: Library Practices and Concerns* (2002) <http://www.clir.org/pubs/abstract/pub105abst.html>. A good overview of research methods for studying collection use.
- International Coalition of Library Consortia (ICOLC), *Revised Guidelines for Statistical Measures of Usage of Web-Based Information Resources* (2006) <http://www.library.yale.edu/consortia/webstats06.htm>. Endorses COUNTER and SUSHI and provides guides for recording usage statistics.
- *Managing Electronic Collections: Strategies from Content to User* website http://www.niso.org/news/events_workshops/Collections-06-Agenda.html. Presentations from a NISO workshop held September 28-30, 2006 at Denver, Colorado. Presentations from day one “Understanding users and usage” and day two “Usage statistics wrap-up; practical collection and repository management” are especially useful.
- Association of Research Libraries, *MINES for Libraries: Measuring the Impact of Networked Electronic Services* website <http://www.arl.org/stats/initiatives/mines>. A web-based survey on user demographics and their reasons for using networked electronic resources.
- ANSI/NISO Z39.7-2004, *Information Services and Use: Metrics & statistics for libraries and information providers--Data Dictionary* (2004) <http://www.niso.org/emetrics/>. A data dictionary of terms pertaining to use metrics and statistics, includes measures for electronic resources; the main focus is on usage of resources in libraries.

Some collection assessment studies:

- Johan Bollen and Rick Luce, "Evaluation of Digital Library Impact and User Communities by Analysis of Usage Patterns," *D-Lib Magazine*, v. 8, no. 6 (2002) <http://www.dlib.org/dlib/june02/bollen/06bollen.html>. Using server logs to assess the impact of a digital collection and understand the user community of a digital library.
- Christine Borgman, *Evaluating a Digital Library for Undergraduate Education: A Case Study of the Alexandria Digital Earth Prototype* (2002) <http://www.sztaki.hu/conferences/deval/presentations/borgman.ppt>. How users make use of digital collections and the effect of digital collections on students and instructors.
- Casey Jones et al, "Developing a Web Analytics Strategy for the National Science Digital Library," *D-Lib Magazine*, v. 10, no. 10 (2004) <http://www.dlib.org/dlib/october04/coleman/10coleman.html>. A summary of NSDL evaluation efforts.
- Susan Musante, *Evaluating MicrobeLibrary on Many Levels: Library Use, User Needs, Accessibility Issues, and Educational Impact* (2004) http://nsdl.commsdl.org/meeting/archives/2003/wiki/uploads/36/MicrobeLibrary_NSDL_2003_Presentation.ppt.
- Chris Neuhaus, *Digital Library Evaluation: Measuring Impact, Quantifying Quality, or Tilting at Windmills?* (2003) http://nsdl.commsdl.org/meeting/archives/2003/wiki/uploads/36/nsdlevaluation101503_eerl_2.1.ppt.
- Michael Organ, "Download Statistics: What Do They Tell Us? The Example of Research Online, the Open Access Institutional Repository at the University of Wollongong, Australia," *D-Lib Magazine*, v. 12, no. 11 (2006) <http://www.dlib.org/dlib/november06/organ/11organ.html>.
- Kristen Fisher Ratan, *Applications of Usage Statistics* (2006) <http://www.niso.org/presentations/MEC06-05-Ratan.pdf>. How usage statistics are used for collection management purposes.

COLLECTIONS PRINCIPLE 7

Collections Principle 7: A good collection is interoperable.

Collection developers should design their services to support interoperability, particularly the ability to share their metadata with external search engines. At an early stage in the collection design process, collection developers should scan the landscape for related efforts. Collection developers should be aware of and in contact with related efforts, follow widely accepted benchmarks for quality of content and of metadata, and provide adequate collection description for users to place one collection in the context of others. This is a way to expand the use and usefulness of digital collections and may help gain sustainable support for them.

Making collections interoperable will also open up new opportunities for re-purposing the contents of a collection. We can assume that current delivery and access services may evolve into mechanisms that are inconceivable thus far. The National Library of Australia's *IT Architecture Project Report* (<http://www.nla.gov.au/dsp/documents/itag.pdf>) alludes to this in both its content and recommendations.

The Google *Webmaster Tools* website (<https://www.google.com/webmasters/tools/docs/en/about.html>) provides free tools to improve Google indexing of any website.

For more on collection description, see Collections Principle 2.

For more on sharable metadata, see Metadata Principle 2.

For more on interoperable objects, see Objects Principle 3.

COLLECTIONS PRINCIPLE 8

Collections Principle 8: A good collection integrates into the workflows of staff and end users.

When digital collection building represents a significant new service for an organization, it presents an opportunity to review existing workflows, and possibly reallocate resources, responsibilities and tasks. In order to successfully add digital collections to an organization's service suite, it is important to integrate digital collection building into staff workflows. When digital collection building is an established activity, it is useful to periodically review staff workflows for improvement. The operational staff performing these activities will generally be the best advisors as to how to make them more intuitive and less time consuming.

End users find information most useful when it integrates smoothly with their own patterns of work. A faculty member looking for research articles and a recreational genealogist building an electronic family tree will work in different places, at different times, and using different tools. However each will use a digital collection more comfortably if they can access it from the environment with which they are familiar.

In the emerging digital landscape, digital collection building is increasingly a collaboration with the end user. Some sites allow users to add keywords to the metadata ("social tagging"). Some allow them to contribute digital resources, such as personal stories or family photographs to a local history web portal or preprints or postprints to an academic institutional repository. Integrating with the user's workflow enables the user to contribute without significant additional effort. An example might be the ability, in a collaboration space such as the Sakai learning management system, to simply "save to the repository" when the faculty author has completed his work. A local history portal might ask, at the end of a search on a topic, "Do you have any resources on this topic to share?" and provide a simple menu-driven process to upload digital resources.

Workflow examples for digital collection building:

- Jessica Williams, Sandra Paske and Stephen Dast, *Audio Procedures and Workflow for the University of Wisconsin Digital Collections Center* (2004)
<http://uwdcc.library.wisc.edu/documents/AudioWorkflow.pdf>.
- Technical Advisory Service for Images (TASI), *Managing the Workflow* website
<http://www.tasi.ac.uk/advice/managing/workflow.html>.
- Sharon Favaro, *Metadata Workflow for Digital Collections* (2006)
<http://www.njdigitalhighway.org/documents/njdh-metadata-workflow.pdf>.

End user workflow:

- Herbert Van de Sompel, et al, "Rethinking Scholarly Communication: Building the System that Scholars Deserve," *D-Lib Magazine*, v. 10, no. 9 (2004)
<http://www.dlib.org/dlib/september04/vandesompel/09vandesompel.html>.

- Tim O'Reilly, *What is Web 2.0?* (2005)
<http://www.oreillynet.com/pub/a/oreilly/tim/news/2005/09/30/what-is-web-20.html>. The classic article defining Web 2.0 as a new platform harnessing the power of the community.
- Michael E. Casey and Laura C. Savastinuk, "Library 2.0: Service for the Next Generation Library," *Library Journal*, v. 131, Issue 14 (2006)
<http://www.libraryjournal.com/article/CA6365200.html>.

COLLECTIONS PRINCIPLE 9

Collections Principle 9: A good collection is sustainable over time.

Digital collections containing resources of long-term value should be sustained and archived permanently to ensure access. Sustainability needs to be addressed from an organizational, financial, and technical perspective. Organizational commitment requires buy-in from administrators. There must be a clear understanding of the long-term obligations necessary to ensure a sustained digital collection.

Sustaining the collection may take different sets of skills and different commitments of resources than the original collection building. Aspects of ongoing maintenance include maintaining the currency of locations, ensuring that access applications remain usable, data entry and data cleaning, logging and accumulating statistics, and providing some level of end-user support. They also include the system administration functions of upgrading server hardware and operating system software as required over time, maintaining server security, and ensuring that restoration of applications and data from backups is always possible.

In particular, digital collections built with special funding should have a plan for their continued availability, maintenance and support beyond the funded period. Optimally, regardless of how it was initiated, the digital collection will be integrated into the institutional collections management workflow.

Sustainability at the collection level is related to, but not identical with, persistence at the object level (see OBJECTS Principle 2). Certainly the collection-level archiving strategy should be tied to the object-level preservation strategy. However, managers of collections containing materials of long-term importance should take steps to ensure not only that the objects within them will be preserved in usable form over time, but also that collection-level access to the content is maintained.

There is a growing body of literature on sustainability. Some particularly relevant resources are listed here:

- Technical Advisory Service for Images, *Sustainability of Digital Resources* (2006)
<http://www.tasi.ac.uk/advice/managing/sust.html>.
- Donald Waters, "Building on Success, Forging New Ground: The Question of Sustainability," *First Monday*, v. 9, no. 5 (2004)
http://firstmonday.org/issues/issue9_5/waters/index.html.
- Liz Bishoff and Nancy Allen, *Business Planning for Cultural Heritage Institutions* (2004)
<http://www.clir.org/PUBS/reports/pub124/contents.html>.
- *The NINCH Guide to Good Practice in the Digital Representation and Management of Cultural Heritage Materials*, Chapter XI, Sustainability: Models for Long-term Funding (2002)
<http://www.nyu.edu/its/humanities/ninchguide/XI/>.