Registry of Digital Masters
Compendium of Early Resources

This is a compendium of resources, created between 2001 and 2007, relating to planning for the Registry of Digital Masters. All documents were originally available on the old Digital Library Federation website. We have assembled them here for historical background and to inform conversations going forward.

Contents

Note: The following document, with no signed author, was created in early 2001 to make the case for the need for a digital registry.

More Access at Less Cost: The Case for a Digital Registry

The nation's libraries have a chance to realize huge benefits from a single, obvious fact of the digital-information era: *Access to library holdings is increasingly independent of access to libraries*. Through Internet-connected computers, libraries can extend their collections electronically, and increasingly are doing so. Electronic technologies also give libraries opportunities to contain their expenses for storage, preservation, collections management, and digitization itself.

Such cost savings could start with creation of a new service of an old kind: a registry. Registry services already are familiar in the library world. Through bibliographic registries (such as OCLC and RLIN), we can find out what books and serial publications are on which libraries' shelves. Such shared cataloging makes book hunting easier for researchers while saving money for libraries that otherwise would duplicate catalog records. Through "microfilm registries" (such as the European Record of Microfilm Masters) we can find out what has been microfilmed, is being microfilmed, and where. Again, this helps researchers find microfilm while helping libraries avoid duplication. Now, as libraries create and acquire all kinds of digitized resources, the time has come for a *digital* registry service.

This registry would contain information about the books and serial publications that libraries have digitized for electronic access or are preparing to digitize. Registry searchers could find out also in what format an item has been digitized, and under what terms it could be used. Additionally, the registry would identify which institutions are taking responsibility for preserving originals of each digitized book or journal and which are seeing that digital copies are preserved and stay available.

Clearly, such a registry would give users a convenient way to explore the expanding universe of digital resources. But convenience is just the beginning of potential benefits for libraries themselves. Consider an illustration.

Suppose your library has fine holdings on literature in the nineteenth century, and you have identified a portion worth digitizing as an online collection. If a digital registry existed, you would then check it to see if any items specified for your digital collection had already been digitized by others. From descriptive entries in the registry, you might find that many non-unique works in your

collection had been digitized. You might even click on links provided with the descriptions to check the texts themselves.

But you might also discover that some of the digital texts are not available in the way you need them with images of high quality and rich descriptive information page by page. Therefore, you would need to re-digitize those texts. The others, assuming the registry tells you that they are not restricted by copyright, would be satisfactory already for incorporation in the online collection you are developing. Thus you could add to the world's stock of digital resources, but at far less expense than if you had been unable to find out what already was electronically available.

The potential benefits of a digital registry do not stop there. Suppose that your library contains a lot of brittle books—volumes deteriorating because of the chemical fragility of their paper. But your budget will not cover the cost of microfilming or digitizing all of them. Existing registries indicate that other libraries already have microfilmed some of the same texts but not all. If a digital registry existed, you could check it also. There you could find out which titles among your brittle books might already have been digitized in a high-quality format, or were scheduled to be, and whether commitments to long-term maintenance of durable, reproducible digital texts—and "artifact" copies of the original books—had been made by one or more libraries elsewhere. Their commitments would reduce the number of volumes on which you would need to spend money for preservation copying, conservation treatment, and even library storage space. Your online catalog could provide links to the copies that were digitized and maintained elsewhere. And your own digital investments, if identified in the registry, could save money for other libraries.

Through a digital registry, libraries could expand access while reducing redundant effort and expense for preservation as well as digitization. Because texts identified in a digital registry would be electronically accessible anywhere, libraries could additionally control costs by not duplicating their acquisitions. In fact, digital registries could fit into a network of cost-saving services, such as these:

- digitization services that would reliably produce electronic texts more economically than if libraries all kept doing it individually
- digital repository services that would seek economies by sharing responsibility for maintaining digital resources for the long term
- print preservation services in which libraries would concentrate dollars and expertise to assure the availability, after digitization, of original volumes for those who might need them, without every library having to preserve its own printed copies

- user services that would provide quick, wide, and deep access to research materials in individual research specialties.

Print-on-demand and copyright-clearance services could also be included in this network, which libraries, other entities both commercial and nonprofit, and consortia of such entities could develop to support the responsible and economical stewardship of a cultural heritage that is becoming electronically transmittable.

All this will not happen overnight. We will need to answer questions about how to organize and support such services, how large they would have to be to save libraries more money than the services would cost, and how to change a curatorial culture that associates physical possession of collections with institutional status and identity. But already libraries are pioneering with imagination and skill in the use of today's technologies to cut costs, improve current services, and develop new ones. Even greater possibilities lie ahead for those who are willing to explore.

The Digital Library Federation (DLF) convened a group of explorers in April 2001 to consider a registry service and to work toward its development. Their work is accessible from on the DLF Web site at
http://old.diglib.org/collections/reg/reg.htm

Draft report of a meeting held on 11 April 2001 to consider the potential uses of a service that registers digitized books and journals and to consider implementation

D Greenstein
April 24 2001

Present: Anne Kenney (CLIR/Cornell), Eileen Fenton (JSTOR), Peter Gorman (Wisconsin), Stephen Chapman (Harvard), Morgan Cundriff (LC), Irene Schubert (LC), Paul Conway (Yale), David Bradbury (BL), Dale Flecker (Harvard), John Price Wilkin (Michigan), John Ober (CDL), Tom Peters (CIC), Abby Smith (CLIR), Patric Yott (University of Virgina), Dainel McShane (University of Virginia)

Contents

1. Introduction

The meeting resulted from a series of bilateral discussions about "registry services," in particular, those that are used to record information about the existence and availability of digitized books journals.
These discussions generated great deal of interest, particularly:

- in the costs that libraries could potentially avoid if such registry services were in place (e.g. redundant digitization
- in the new services and service functions that libraries could potentially supply by reallocating even a fraction of the avoided costs.

The meeting was hosted by the DLF which expressed an interest in developing a registry service to some prototype stage if a compelling case could be made for that investment either in terms of cost avoidance, new service, etc. The meeting opened with a *tour de table* during which participants outlined their views and preferences about what a registry service might be expected to achieve. The discussion lasted the better part of the day and achieved consensus at key points

about the primary aims that should guide the construction of the service and the various benefits its existence might bestow.

In light of this consensus and of the potential benefits seen in a registry service, participants agreed to five further steps that should be taken to develop the registry and hoped the steps could be taken in an 8- or 12-week period. Rather than following discussion chronologically, this report is organized thematically under the following heads.

2. Statement of aims

"A service that records information about digitized books and journals may be a key infrastructural part or utility in an evolving network of organizations and services that support the efficient and responsible stewardship of our cultural heritage, all formats, old and new, and the economical and effective development of high-quality scholarly collections."

3. Chief characteristics of a registry service

- Records information about digital surrogates (whether in existence or about to be created) for books and journals (in all languages and on all topics), that is for objects that are collected redundantly by libraries
    - By recording information about a digital object in a registry service, an individual or institution records their intention to ensure that the digital object persists.
    - Digital objects referenced in the service must be available to users, that is, accessible. The objects need not be freely accessible.
    - Terms and conditions of access must be recorded for information referenced in the registry service according to some agreed mechanism.
    - Records in the registry service must include a persistent link to a "use-copy" of the relevant digital object. Where archival master copies exist, they will be indicated in the record but need not be accessible.
    - Rather than prescribe minimum requirements pertaining to the characteristics of digital objects that are referenced in a registry service, (e.g. formats, terms and conditions of use, etc), the service will simply implement agreement about how to record such information.

The service as described will act as key infrastructure. It is not intended to offer end-user services. Rather, its existence will potentially encourage the development of a wide range of end-user services that may include:

- content services that aggregate or otherwise leverage off of existing digital content

- print-on-demand services
- copyright clearance services

The service is seen as one piece of key service infrastructure that exists within and must inevitably interoperate with other key pieces of service infrastructure including:

- catalogues of books
- microfilm registries
- print repositories
- digital repositories
- digitization services

The service as defined is deemed to be a starting point. Its limitations are intended to focus effort in a way that will allow us to assess key assumptions and technologies with a definable set of information content. It is conceivable that such a service could be extended to include audio-visual and other non-unique materials.

4. Uses of a registry service

The registry service would enable institutions to:

- locate information and potentially access digitized books and journals
- avoid redunant digitization effort
- coordinate digitization efforts (e.g. by divvying up responsibility for digitizating a common body of materials)
- coordinate print deposit/preservation effort
- support economical institution-level collection development decisions viz
    - acquisition / disposition of printed materials
    - digitization of books and journals
- support a range of end-user services
- identify collaborative opportunities

5. Other benefits/uses

These include its:

- support for incremental development/improvement of existing digital objects
- formal disclosure of preservation practice as it evolves and support for ancillary community discussion and debate about what constitutes good practice

- cross-fertilization with commercial data producers and suppliers who, as contributors to and users of the registry would be sensitized to community awareness of needs, good practices, etc
- support for a range of end-user services as described above

6. Registry service users

The registry would be used primarily by collection managers (as described above) and service providers who would build end-user services that rely on the registry's existence.

7. Research issues that remain to be investigated

- Strategic issues:
  - costs of building/maintaining a registry (comparable data may be available from other registry and cataloguing efforts)
  - costs that may be avoided by libraries and others if a registry service existed
  - how the existence of a registry service would leverage existing investment e.g. in print collections, digitization, and digital and print repositories
  - models for organizing and sustaining a registry service
- Metadata issues
  - collection-level descriptions; their structure and possible use in a registry service
  - how to describe an intention to ensure persistence of a digital object that is referenced in the registry
  - what granularity for registry entries? (Journals will be particularly challenging)
  - how will the registry make it possible to update records, for example to reflect changes in access or preservation copies of the digital content?
- Other issues
  - How is information in the registry accessed?
  - What interrelationship exists between information about digital surrogates as recorded in the registry and information about print and microfilm editions as recorded in bibliographic and microfilm catalogues and registries respectively?
  - Does the registry include references to digitized newspapers?

8. Next steps

It is anticipated that these steps can be taken within 8-12 weeks:

1. Develop a brief and compelling summary statement describing aims, goals, and potential of a registry service. The case can be used to generate buy in/enthusiasm/etc amongst key stake-holding groups. Some of the elements of a supporting case for a registry (including indication in parentheses of those who may be most swayed by those elements) are indicated below

- Leveraging existing investment in digital content (libraries and their owners)
- Helping to rethink collection development and management costs (library managers and their owners)
- Helping more economically to re-think preservation / persistence strategies (library managers)
- Maximum value for funds spent on digitization (funding agencies and others investing in digitization)
- Key infrastructural component of national print and digital preservation strategies (information producers, information users, and repository managers /libraries)
- Key support for a new generation of end-user information services (information users but also information providers and libraries)
- Exploration of costs involved in doing nothing; that is, in continuing as we are (all)
- Professional development/training and awareness-raising

2. Expert workshop develops a detailed functional specification for the registry service as defined above. This work should by a commissioned review of Michigan's Making of Americas records as currently recorded in OCLC. The review would ask what more would the OCLC service have to do to support the registry functions outlined above.

3. Approach made to OCLC to discuss possible role for OCLC developing a registry service.

4. Expert workshop documents the extended metadata set required by the registry, mechanisms and incentives for creating and supplying those metadata, and discusses issues of granularity, metadata updating, etc as recorded above.

5. Expert meeting to review existing preservation reformatting guidelines with a view to identifying agreed benchmark practices if possible. The review should include institutions with such guidelines in hand including Cornell, JSTOR, Harvard, Library of Congress, University of Virginia, University of Michigan, California Digital Library, RLG, University of Chicago, Indiana University, University of Wisconsin, Yale University. The review might also include Jerry McDonough (New York University) and McKenzie Smith (Harvard) who are currently developing a dtd for technical, administrative and structural metadata.

Report on a Meeting Convened to Evaluate Possible Implementation Paths for a Registry of Digital Monographs and Serials

Held at the DLF Forum, Pittsburgh, PA, on November 16, 2001
Notes by D Greenstein
12/7/01

Present: Judy Ahronheim (Michigan), Meg Bellinger (OCLC), Dale Flecker (Harvard), Daniel Greenstein (DLF), Anne Kenney (Columbia), Abby Smith (CLIR), Pat Stevens (OCLC), Taylor Surface (OCLC), John Price Wilkin (Michigan), Marty Withrow (OCLC), Bob Wolven (Columbia)

The group met to identify an implementation path for a registry for digital monographs and serials, and next steps to realize that path through some prototype development stage. Deliberations were based upon a functional requirement developed for the registry in June 2001 and comments on that functional requirement. During the meeting, the group

- reviewed the functional requirement in light of comments received, making certain modifications;
- discussed other issues arising from the review;
- agreed a preferred solution;
- identified next steps for prototyping the preferred solution

I. Review of functional requirement

The following was agreed:

Bibliographic data. Bibliographic records for the registry will be derived from existing records wherever possible.

Precise holdings. Precise holdings information remains a goal for the registry. It is recognized, however, that a registry initiative is not a place to resolve complex issues surrounding mechanisms for precise recording of serial holdings (e.g. at the issues and article level). Where serials are concerned the registry should permit reference to issues and volumes and develop practice guidelines that, for example, permit summary references (e.g. vols 1-4) to be interpreted as including all issues.

The registry may not be the place where precise holdings data are gathered and maintained. Instead, the registry might link to such information as it may be

available from the site that maintains the digital objects in question.

Information about the use copy. Maintaining up-to-date registry information about access terms and conditions and about access software requirements could be complicated as these conditions and requirements may change. It may be preferable for such information to be maintained by the institution that is responsible for managing the digital object in question and linked to by the registry. There will be advantage in developing a pick list of list of technical formats so that formats won't have to be described in so much redundant detail.

Information about archival master copy. Here as elsewhere, the information in the registry may exist in the form of a link pointing to information (in this case about the archival master copy) that is maintained at the site that manages the digital object in question. Again, a pick list of technical formats will be beneficial.

Statement of intent/queuing. Queuing is a problem when queues aren't maintained; that is, when items entered in the queue remain there for long periods either because they aren't digitized as intended or because they are digitized but not recorded as such in the registry. Nonetheless, those investing in digital reformatting should be encouraged to use the queue. In addition, funding agencies that invest in digital reformatting (IMLS, NEH) should encourage their grant holders to use the queue (as NEH encouraged those microfilming with NEH grants to queue their microfilming intentions)

II. Issues arising from the review

Reducing barriers to use. The registry should be developed in such a way so as to lower the barriers to and minimize the costs involved in data entry. Facilities that enable batch loading of institutionally maintained records will be especially important and will:

- reduce burden on libraries operating at production levels;
- enable registry to quickly capture information about a relatively sizable and diverse legacy of existing digital content

Reducing barriers to record maintenance. The registry should be developed in such a way as to lower the barriers to and minimize the costs involved in maintaining records once entered into the registry. In this respect, facilities that enable frequent batch updating of institutionally maintained records will be important.

Layers of service. Registry services may be developed at different levels. A level of core services are described in the functional requirements document (as

revised), will meet the needs of the library community, and will have the lowest possible barriers to use. In particular, the registry should enable libraries to:

- locate existing digital content (including content that is in a queue and as such about to become digitized)
- register content they have digitized (or intend to digitize)
- access registered digital content, e.g. so that it may be included in local library collections

Additional services may be offered by the registry provider, for example, as a means of generating revenues sufficient to maintaining the service. Such services and the business models that may sustain them are for the registry provider to discuss and consider.

Minimum requirement for a registry entry. Registry entries may be relatively lightweight. At a minimum, they will:

- refer to a digital object claiming that it exists or that it is "in production"
- maintain a verifiable pointer to a use copy
- include a statement about the existence of a persistent master

Additional information may also be available, much of it as pointers

Quality control Quality control over registry entries will necessarily be lightweight.

Inter-relationship with other registries. The registry will need inter-relate with (load from, export to) other registries (e.g. worldcat, microfilm registries, etc)

Next steps: need to evaluate impact on stakeholders. What would our plans mean for people intended to play specific roles (viz builder, user, record supplier)?

Need to look at migration path for existing large legacy collections (Chicago, Virginia, JSTOR, etc.)

Prototype phase should have carefully selected players to test some of the issue (information from multiple sources, precise holdings, etc.)

Registry of what? The registry was initially conceived as a vehicle for recording information about persistent digitally reformatted monographs and serials. It is possible that the registry's scope may be extended to include such information objects irrespective of whether they are digitally reformatted or born digitally.

It was agreed, therefore, to review the registry's functional specification and to extend the registry's scope to include digital monographs and serials (irrespective of whether they are born in printed or digital form) if by extending the registry's scope, the function is not fundamentally altered.

Need for good practice guidelines.

III. Preferred solution

OCLC presented a number of solutions. After discussion, the following emerged as the preference of the group:

- DLF and OCLC should work jointly on a prototype registry service
- The prototype should be built upon WorldCat as WorldCat is redeveloped over the next few years.
- The prototype should be built in a way that lowers the barriers to data entry and provides incentives to institutions that create and manage digital masters to enter information about those masters into the registry. In particular it should permit batchloading and frequent batch updating of records thereby keeping down costs of record creation and record maintenance. This will require a greater degree of openness on OCLC's part with respect to an institution's access to its records. The present inflexibility is partly a pricing problem but also partly a library workflow and staffing problem.
- The prototype's development will occur in phases so that it can take full advantage of a the redeveloped WorldCat. An initial phase will focus on populating the registry and offer a basic level of services. As WorldCat is redeveloped other features will become available such as batchloading, regular batch updating, ability to associate multiple records.
- The prototype will permit variation in serials holdings statement but guidelines will be developed to encourage good practice.
- Development of a business model should be an empirical issue to be investigated during the prototype.

IV. Next steps

1. Report on meeting (DG, asap)

2. Revise functional requirement incorporating modifications and potential inclusion of monograph and serial content that is born digital (Dale Flecker, 1/1/02)

3. Develop succinct statement about aim, objective, and implementation path of prototype (OCLC, 1/1/02)

4. Internal discussions in OCLC (OCLC, 1/1/02)

5. Meet at ALA midwinter to review statements and to identify and begin recruiting participants in prototype development (all, mid-January 2002)

6. Recruit participants in the following groups (to be determined, mid-January 2002 to mid April 2002)

- Registry data suppliers including commercial data creators (e.g. NetLibrary(!), Oxford press, Chicago press, Elsevier, Proquest) and libraries and other not-for-profits involved in digital reformatting (JSTOR, Cornell, Michigan, Chicago, CIC Wright fiction project, Virginia)
- Users - including those interested in using a registry to avoid duplicative digitization, and those interested in using the registry as a collection development tool (e.g. for access to digital content)

7. Initial briefing meeting with prototype participants at CNI (all, April 2002)

Registry of Digital Reproductions of Paper-based Books and Serials
Functional Requirements

July 24, 2001

Introduction

This document offers a functional specification for a registry that records information about digital reproductions of books and serials. It has been produced as part of the DLF's work to define requirements for and encourage the development of such a registry service. An introduction to that work and additional documentation on it is available from http://old.diglib.org/collections/reg/reg.htm

Data registered

The Registry must have the ability to record (or, in some instances, to link to) the following information:

Bibliographic Description. Reproductions should be described using MARC21 and contemporary cataloging rules. Given that the original materials are very likely already cataloged in traditional library format, this should be an easy and inexpensive process. Records should meet the standards for minimal content described in National Level Record - Bibliographic - Full Level & Minimal Level (http://www.loc.gov/marc/bibliographic/nlr).

Precise Holdings. For multi-volume and "continuing" works such as journals, a description should be recorded in standard holdings notation of the precise issues and volumes that have been digitized. If forms of "compressed" holding statements are used, they MUST be understood to imply that every volume and issue of the encompassed run has been digitized.

Information About Use Copy. The following information should be recorded about the use copy (a network-accessible, but not necessarily free, copy of every registered object must be available as a condition for inclusion in the Registry):

- a URL or URN providing a persistent link to the use copy;
- a textual description of the terms and conditions for access to the use copy;
- the technical format, if the materials are not simply available through a standard web interface.

Information About Archival Master Copy. The following information should be recorded about the archival master copy (because persistence is an assumed responsibility of the registering agency, a Master Copy *must* be described):

- a persistent identifier for the master object (this does not need to be an "actionable" link such as an URL or URN -- just an unambiguous identifier that the owner will recognize);
- a textual description of the accessibility of the Master Copy (who can access it and under what terms and conditions);
- a description or a pointer (such as a URL or a standard identifier) to a description of the technical standards used in creating the Master Copy (note that this is a key element - it is expected that materials will be digitized following many differing practices. In order for other institutions to rely on a master, they need to be satisfied that is of sufficient quality. The expectation is that there will be standard best practice guidelines created by the digital library community that libraries can simply "point" to via identifier or URL when appropriate. When community standards or best practices are being followed, it is highly desirable that the name or identifier of such practices be recorded rather than a URL-based link.);
- the technical format of the Master copy (again, this is likely recorded as a pointer to a description of the format used);
- a description or a pointer to a description (such as a URL or a standard identifier) of the repository practices being followed in the storage and maintenance of the Master Copy (as noted efforts are currently underway to define best practices in this area).

If URLs are used to point to external descriptions of practice in any of the fields above, the recording institution must assume the responsibility of maintaining the validity of the link.

(NOTE that if use and archival master copy are the same, the information should be repeated in both areas.)

Statement of intent to digitize. In order to avoid unnecessary duplicate conversions, libraries are encouraged to record their intent to digitize an object as soon as the definite decision to do so is made. The statement should include the projected date on of completion. The MARC21 583 field can be used to record this information. A problem with the use of a queuing mechanism of this sort for microfilming activity has been that not everything queued has subsequent updates to indicate that the filming has actually taken place. In order to avoid this difficulty in the digital registry:

- a name and contact information should be recorded for each queued item;

- the registry system should send a tickler message for each item that remains queued more than 90 days after the expected date of digitization;
- the registry should delete any queuing information more than a year past the expected date of digitization.

Information from Multiple Sources

There will be many cases in which more than one institution will need to register digital copies of the same bibliographic item. In particular, one can expect that for multi-part items such as journals, the entire bibliographic item may not be available from a single institution, and that the record in the Registry should show that one institution has digitized some volumes, and another institution other volumes. Likewise there may be instances in which two institutions digitize the same item in different formats or to different standards. The Registry should provide a unified and coherent view of all digital versions registered

Access

Registered information must be available to users in two ways:

Interactive search. Records of registered materials must be interactively searchable through standard information retrieval queries based on normal MARC bibliographic elements. This search facility is primarily intended for use by library staff looking to see if a known item has been digitized If registered materials are integrated into a larger bibliographic file, searching must provide the ability to limit results to registered digital copies. Because searching is only intended to support library staff, a naïve general user interface is not required.

Harvesting. Registered catalog data must be available for harvesting, supporting at a minimum the Open Archives initiative (OAi) protocols. Metadata formats supported should include both MARC21 and Dublin Core. There is no specific requirement that sub-setting of registered data during harvesting via the OAi "set" functions be supported.

Easy accessibility should be provided to the entire international library community as well as to other institutions and companies (both commercial and non-commercial) engaged in digital conversion efforts.

Visibility as entity

It is important that the Registry be visible and have a recognized name to encourage contribution and use. While it is highly desirable that registered data be accessible as part of a larger bibliographic file, some means of identifying the

Registry (including, but not limited to, the ability to access only registered materials in searching and harvesting as discussed above) and making its utility visible should be provided.

Input and Maintenance

Data input and maintenance should be available through both interactive on-line transactions for individual records, and in batch mode for groups of records. A "derive" function, allowing the majority of the bibliographic description of materials to be copied from existing records for paper originals, is highly desirable. It is expected that the original registering institution will need to be able to update information in the Registry after initial input, to record such things as a change in status from intended to actually digitized, additional volumes digitized, and changes in the format of master or use copies. Additionally, other institutions will need to be able to add information about other digital versions created. The ability to contribute and maintain data should be easily and readily available to the entire library community and to other institutions and companies (both commercial and non-commercial) engaged in digital conversion efforts.

Registry of Digital Reproductions of Paper-based Monographs and Serials Functional Requirements

Dale Flecker
December 2001

Introduction

This document offers a functional specification for a registry that records information about digital reproductions of monographs and serials. It has been produced as part of the DLF's work to define requirements for and encourage the development of such a registry service. An introduction to that work and additional documentation on it is available from http://old.diglib.org/collections/reg/reg.htm.

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The Registry must have the ability to record (or, in some instances, to link to) the following information:

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Precise Holdings. For multi-volume and "continuing" works such as journals, a description should be recorded in standard holdings notation of the precise issues and volumes that have been digitized. If forms of "compressed" holding statements are used, they MUST be understood to imply that every volume and issue of the encompassed run has been digitized. If a "compressed" holding is used for an incomplete run, an unambiguous indication of incompleteness must be included.

Information About Use Copy. The following information should be recorded about the use copy (a network-accessible, but not necessarily free, copy of every registered object must be available as a condition for inclusion in the Registry):

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- the technical format or a pointer (such as a URL or a standard identifier) to the format, if the materials are not simply available through a standard web interface.

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Registered information must be available to users in two ways:

Interactive search. Records of registered materials must be interactively searchable through standard information retrieval queries based on normal MARC bibliographic elements. This search facility is primarily intended for use by library staff looking to see if a known item has been digitized If registered materials are integrated into a larger bibliographic file, searching must provide the ability to limit results to registered digital copies. Because searching is only intended to support library staff, a naïve general user interface is not required.

Harvesting. Registered catalog data must be available for harvesting, supporting at a minimum the Open Archives initiative (OAi) protocols. Metadata formats supported should include both MARC21 and Dublin Core. There is no specific requirement that sub-setting of registered data during harvesting via the OAi "set" functions be supported.

Easy accessibility should be provided to the entire international library community as well as to other institutions and companies (both commercial and non-commercial) engaged in digital conversion efforts.

Visibility as Entity

It is important that the Registry be visible and have a recognized name to encourage contribution and use. While it is highly desirable that registered data be accessible as part of a larger bibliographic file, some means of identifying the Registry (including, but not limited to, the ability to access only registered materials in searching and harvesting as discussed above) and making its utility visible should be provided.

Input and Maintenance

Data input and maintenance should be available through both interactive on-line transactions for individual records, and in batch mode for groups of records. A "derive" function, allowing the majority of the bibliographic description of materials to be copied from existing records for paper originals, is highly desirable. It is expected that the original registering institution will need to be able to update information in the Registry after initial input, to record such things as a change in status from intended to actually digitized, additional volumes digitized, and changes in the format of master or use copies. Additionally, other institutions will need to be able to add information about other digital versions created. The ability to contribute and maintain data should be easily and readily available to the entire library community and to other institutions and companies (both commercial and non-commercial) engaged in digital conversion efforts.

Registry of Archival Masters of Digital Monographs and Serials
Functional Requirements

Dale Flecker
December 2001

Introduction

This document offers a functional specification for a registry that records information about archival masters of monographs and serials published in digital format (note this is a companion to a parallel specification for digitally reformatted monographs and serials PROVIDE POINTER). It has been produced as part of the DLF's work in the archiving and preservation of e-journals.

Data registered

The Registry must have the ability to record (or, in some instances, to link to) the following information:

Bibliographic Description. Masters should be described following bibliographic conventions used in contemporary cataloging "utilities" and integrated library systems. Given that e-journals and e-monographs are very likely already cataloged in traditional library format, this should be an easy and inexpensive process based on copying existing data.

Precise Holdings. For multi-volume and "continuing" works such as journals, a description should be recorded in standard holdings notation of the precise issues and volumes being archived. When archiving is an on-going process, an "open" holdings statement is used. This statement should be "closed" (indicate last issue archived) if the archiving institution stops adding data toits collection. If forms of "compressed" holding statements are used, they MUST be understood to imply that every volume and issue of the encompassed run has been digitized. If a "compressed" holding is used for an incomplete run, an unambiguous indication of incompleteness must be included.

Information About Archival Master Copy. The following information should be recorded about the archival master copy:

- a persistent identifier for the master object (this does not need to be an "actionable" link such as an URL or URN—just an unambiguous identifier that the owner will recognize);

- a textual description of the accessibility of the Archival Master Copy (who can access it and under what terms and conditions);
- a description or a pointer (such as a URL or a standard identifier) to a description of the technical standards used for the Archival Master Copy;
- a description or a pointer to a description (such as a URL or a standard identifier) of the repository practices being followed in the storage and maintenance of the Master Copy (as noted efforts are currently underway to define best practices in this area).

If URLs are used to point to external descriptions of practice in any of the fields above, the recording institution must assume the responsibility of maintaining the validity of the link.

Information from Multiple Sources

There will be many cases in which more than one institution will need to register Archival Master copies of the same bibliographic item. There may be instances in which two institutions archive the same item in different formats or to different standards. The Registry should provide a unified and coherent view of all digital versions registered

Access

Records of registered materials must be interactively searchable through standard information retrieval queries based on normal MARC bibliographic elements. This search facility is primarily intended for use by trained staff looking to see if a known item has been archived If registered materials are integrated into a larger bibliographic file, searching must provide the ability to limit results to registered digital copies. Because searching is only intended to support library staff, a naïve general user interface is not required.

Easy accessibility should be provided to the entire international library community as well as to other institutions and companies (both commercial and non-commercial) engaged in digital archiving efforts.

Visibility as Entity

It is important that the Registry be visible and have a recognized name to encourage contribution and use. While it is highly desirable that registered data be accessible as part of a larger bibliographic file, some means of identifying the Registry (including, but not limited to, the ability to access only registered materials in searching and harvesting as discussed above) and making its utility

visible should be provided.

Input and Maintenance

Data input and maintenance should be available through both interactive on-line transactions for individual records, and in batch mode for groups of records. A "derive" function, allowing the majority of the bibliographic description of materials to be copied from existing records, is highly desirable. It is expected that the original registering institution will need to be able to update information in the Registry after initial input, to record such things as additional volumes archived, and changes in the format of master copies. The ability to contribute and maintain data should be easily and readily available to the entire library community and to other institutions and companies (both commercial and non-commercial) engaged in digital publishing and archiving.

Benchmark for Faithful Digital Reproductions of Monographs and Serials. Version 1. December 2002.

The Digital Library Federation Benchmark Working Group (2001-2002)

PDF version

Contents

1. Introduction

This document defines a minimum benchmark for digital reproductions of printed monographs and serials. The case for such a benchmark is made in an article by Greenstein and George that is available in RLG's *DigiNews*.

The benchmark grew out of DLF's investigation into the need for and functional specification of a registry of information about the monographs and serials that have been digitally reformatted (see http://old.diglib.org/collections/reg/regpapfunc.htm). Functional requirements for a proposed registry were produced as part of the DLF investigation. The requirements state the importance of ensuring that registry records for digital reproductions include "a description or a pointer…to a description of the technical standards used in creating the Master Copy."

Although the registry is not exclusive (it will record information about materials that are born digital as well as digital reproductions, and about masters that meet agreed benchmarks as well as those that do not), it provides an important opportunity to identify and build consensus around minimum characteristics that might be expected of certain kinds of digital objects.

This benchmark has been prepared and endorsed by the DLF to document the minimum characteristics of digital reproductions—regardless of whether or not they are registered in the DLF or other registries—required to ensure usability, persistence and interoperability. One important objective is to define baseline levels of quality that would minimize or eliminate the need to digitize a work more than once. (A *report* on the initial discussion leading to this document is

available from DLF's website.)

Companion documents may be developed defining benchmarks for other digital reproductions—for example, those that may apply to born digital monographs and serial publications, to manuscript items, or to encoded text reproductions of historic materials.

2. What is a Faithful Digital Reproduction?

Faithful digital reproductions are digital objects that are optimally formatted and described with a view to their *quality* (functionality and use value), *persistence* (long-term access), and *interoperability* (e.g. across platforms and software environments). Faithful reproductions meet these criteria, and are intended to accurately render the underlying source document, with respect to its completeness, appearance of original pages (including tonality and color), and correct (that is, original) sequence of pages. Faithful digital reproductions will support production of legible printed facsimiles when produced in the same size as the originals (that is, 1:1).

In practice, digitizing might yield multiple versions of the digital reproductions:

- masters: optimized for longevity and for production of a range of delivery versions (e.g., for screen, for print)
- deliverables: optimized to meet defined use requirements

This benchmark defines minimum characteristics for both versions. ***Section 3*** pertains to masters of page images and machine-readable text. ***Section 4*** pertains to functional requirements for delivery that must be supported by structural metadata.

3. Benchmarks for masters of page images and machine-readable text

To meet functional requirements stated above, faithful digital reproductions must include page images of a quality sufficient to produce printed facsimiles.

High-resolution page image masters will meet or exceed the benchmarks presented in the table below. In cases where multiple masters are produced—e.g., an RGB, "archival master," and a CMYK "print master"—at least one version must meet or exceed the benchmark.

This benchmark acknowledges that what ultimately constitutes legibility and fidelity is a subjective decision. In part for this reason, the benchmark refers minimally to file formats and compression, and does not prescribe minimum tone reproduction requirements for non-textual components (e.g., illustrations

and covers). It also does not provide production-level guidance, for example on how to deal with missing pages, to "clean up" foxing or blemishes, or to select an appropriate dpi for fonts or source pages of different sizes. Such guidance is available elsewhere or will evolve through experience and may be attached as companion documentation to this benchmark.

Minimum Benchmarks for Page Image Masters		
Black and white For text, and may also be used for line drawings, de-screened halftones.	**Grayscale** For covers and illustrations printed in black and white. Recommended, but not required.	**Color** For covers, and meaningful text or illustrations printed in color. Recommended, but not required.
600 dpi, 1-bit or bitonal TIFF images. Images must be sized and saved at 1:1 scale to the dimensions of the original page. Images must be saved uncompressed or with lossless compression. Where images are compressed they must be made available in the Group 4 (ITU-T6) format. The images may be interpolated from 400 optical dpi 8-bit images.	**300 dpi, 8-bit grayscale uncompressed TIFF, or lossless compressed image (e.g. LZW, JPEG2000).** Images must be sized and saved at 1:1 scale to the dimensions of the original page. The dpi specification will relate directly to the font-size and page dimensions of the original source document, and to local definitions of legibility and fidelity. In many cases, 400 dpi will be preferred. Where larger pages are concerned, the lower dpi specification may be required.	**300 dpi, 24-bit color uncompressed TIFF, or lossless compressed images (e.g. LZW, JPEG2000).** Images must be sized and saved at 1:1 scale to the dimensions of the original page. RGB and YCC are the recommended color spaces for masters, particularly when only one master version is produced. The dpi specification will relate directly to the font-size and page dimensions of the original source document, and to local definitions of legibility and fidelity. It may also relate to the perceived artifactual value of the source object or the extent to which its physical characteristics such as foxing, etc., are perceived of as conveying some important information or meaning.

In addition to page images, faithful digital reproductions may also include machine-readable (keyboard or OCR) text. That text may be corrected or uncorrected. If it is corrected to a uniform minimum level, the accuracy level will

be specified (e.g. as 99.995%). Such text may be encoded (at any level, e.g. as specified in *TEI Text Encoding in Libraries. Guidelines for Best Encoding Practices. Version 1.0, July 30, 1999*).

4. Benchmark Functions: Metadata Requirements and Recommendations

While the characteristics above are meant to apply to digital masters, the functional requirements below are somewhat different. In order to keep the master viable over time and create new delivery copies as necessary, the metadata needed to meet the functional requirements below must be collected. However, systems may not exist to perform those functions relative to the master copy. The functional requirements are likely to be met, in terms of usable systems, with the delivery copy.

Faithful digital reproductions of monographs and serials must have descriptive, structural and administrative metadata, and the metadata must be made available in well-documented formats. Sufficient metadata must be created to support a number of essential functions, listed in sections A, B, and C below. These functions will be accomplished through the production of metadata with appropriate richness. No recommendations are made with respect to production practices except for sufficient quality control at least to ensure that benchmark specifications are met.

No recommendations are made with respect to the form the metadata should take or how it should be encoded. It is expected that in order to enable interoperability, metadata and its representation will conform to emerging standards and good practices.

A. Functions required of all digital masters

The following functions are required of all digital masters:
It will be possible to produce, in print or as an online (on-screen) display, a faithful, citable rendering of the physical source including the sequencing of its component parts (pages, volumes, etc.). It will be possible to navigate sequentially through the physical components (go to next, previous, first, last, or nth sequential page image).

The relationship between component parts of the physical source (pages, volumes, etc.) will be represented.

Images of blank pages (including backs-of-plates) will be included as sequenced components. It will be possible to associate higher-level descriptive metadata

with digital component parts of the object (e.g. for the purposes of citation).

B. Functions required where applicable

The following requirements are distinguished from those cited above (4A) because they cannot be met by all digital masters. For example, pagination can only be faithfully supplied where pages are enumerated in the physical source. Placeholders for missing pages can only be reliably supplied for pages that are known to be missing.

Where possible, masters will support navigation to, between, and among logical structures (e.g. chapters for monographs; volumes, parts, and issues for serials) and significant features (e.g. tables, illustrations, blank pages). Citation of those features will also be supported.

Where applicable and in a manner appropriate for the physical object in question, any enumeration found on pages of the physical object will be represented. Representation will maintain all variations in the enumeration of the physical object's component parts (signature pages, preface, etc.)

Placeholders for known missing pages will be included as sequenced components. In the interest of creating complete digital masters, missing pages and other components should be identified as such in higher-level metadata. Where page images are supplied by third parties, information to that effect should be noted in descriptive metadata.

C. Functions strongly preferred

The following functions are useful and recommended, but not required.

High-level logical structures will be identified (e.g. for the purpose of rendering and navigation).

- For monographs, logical structures may include title pages, tables of contents, lists of illustrations, indexes, chapters, etc.
- For serials, logical structures may include volumes, parts, issues, articles, etc.
- Significant features such as tables, illustrations, blank, missing and supplied pages, maps, etc. will be identified (e.g. for the purpose of rendering and navigation).

For the purposes of citation, etc., it will be possible to support association of higher-level metadata with enumerated pages, logical structures, and features as identified.

Representing page rectos and versos for the purpose of printing faithful codices.

Notes

1. The Benchmark Working Group (2001-2002) included: Daniel Greenstein (DLF); Anne Kenney (Cornell); John Price Wilkin (University of Michigan); Ron Murray (Library of Congress); Robin Dale (RLG); Eileen Fenton (JSTOR); Carla Montori (University of Michigan) Judith Thomas (University of Virginia); Chris Ruotolo (University of Virginia) Sherry Byrne (University of Chicago); Janet Gertz (Columbia University) Stephen Chapman (Harvard University); Daniel McShane (University of Virginia); David Ruddy (Cornell University); Robin Wendler (Harvard University). Sections 1-3 prepared on July 30, 2001 (rev. December 6, 2002); Sections 4-6 prepared on March 26, 2002 (rev. December 6, 2002).

2. Dale Flecker, "Registry of Digital Reproductions of Paper-based Monographs and Serials: Functional Requirements," DLF, December 2001, http://www.olddiglib.org/collections/reg/regpapfunc.htm.
3. 600 dpi will capture roman scripts down to 6-point type with the microfilm QI equivalent of 8. Smaller text, scripts with fine lines and small dots and other diacritics (like italics, Arabic, etc.) need higher resolution to be captured completely.

Registry of Digital Masters
New: *Registry of Digital Masters Record Creation Guidelines*.
Version 2.0. May 2007.

Introduction

The DLF takes a growing interest in helping to define and facilitate the development of key "infrastructural services" that are required by digital libraries but beyond the capacity of any one of them to develop. This page introduces work being conducted by the DLF defining the need for and the requirements of a service that registers the existence of persistent digitally reformatted and born digital monograph and serial publications.

It also points to additional materials including a general case for the development of a registry, a functional requirement for the service as it pertains to digitally reformatted materials, a functional requirement for the service as it pertains to born digital materials, a report on a meeting that was convened by the DLF in April 2001 to launch discussion about a registry service, and a report of a meeting held with OCLC in November 2001 to discuss implementation of the a service.

Although the registry service is not intended to be exclusive (it records information about the large and valuable legacy of digitized and born digital monographs and serials) its existence provides an opportunity to identify and build consensus around minimum characteristics that might be expected generally of a faithful digital master. Accordingly, this document points to related work conducted by the DLF to define those minimum characteristics.

Background

An increasing number of libraries and commercial entities are involved in converting existing paper-based monographs and serials to digital form. Unlike the special collections materials that have been the focus of digital conversion in many libraries, monographs and serials are commonly duplicated in many different institutions. This presents both an opportunity and a threat. The opportunity is for coordination between institutions, with the efforts of each contributing to a larger shared but distributed collection. The threat is that resources will be wasted in the repeated digitization of the same material. A key requirement to realizing the opportunity and avoiding the threat is a mechanism for sharing information in a coherent fashion between institutions about what has been digitized; that is, the creation of a registry of digitized materials. (It should be noted that a related effort is underway to define a registry for recording long-term responsibility for the storage and preservation of paper

originals. Such a resource will allow an institution to decide whether to preserve the original source documents for which digital surrogates exist.)
The Registry provides a place for institutions that have created (or are otherwise responsible for) digitized versions of traditional printed monographs and serials to record:

- what specific items have been (or are about to be) digitized;
- where they can be accessed;
- the specifications followed in digitization.

There are two specific types of use the Registry must support:

- Staff engaged in digitizing efforts should be able to discover whether a specific item has already been digitized, and if so whether the digitization has been done at an adequate level such that another digital copy is not required.
- In the spirit of many contemporary metadata efforts, the data contributed to the Registry should be available for large-scale extraction and reuse. One obvious type of reuse that can be envisioned is the ability of a library to extract catalog records for materials digitized elsewhere for inclusion in its own local catalog. Another would be the gathering of metadata about digital materials in a specific topical area for inclusion in a portal or subject catalog.

Some of the benefits that may flow from the registry are documented in *More Access at Less Cost. The Case for a Digital Registry*.

Scope

Initially the Registry was intended for information about faithful reproductions of monographs and serials originally published in paper format. ("Faithful reproductions" are copies intended to preserve the original appearance of published materials, and must include digital images of all pages in the original.) The scope of the initiative was later extended to include born digital monographs and serials.

Where digitally reformatted materials are concerned, reproductions should be of meaningful bibliographic entities as traditionally described in library catalogs: entire volumes of a monograph, whole issues of journals (not single articles). The intent is to record only entities traditionally described in MARC bibliographic and holdings records. By recording materials in the Registry, institutions are signaling the intent to preserve and maintain the accessibility of the described materials over an extended timeframe (decades or centuries, not years). This implies that materials are digitized carefully, complying with established standards and best practices, and that they are stored in professionally managed systems. When registered, materials should already be digitized, or be in an active queue for digitization. A use copy of any material registered must be

available on-line (either for free or through some normal business arrangement such as subscription or a charge-per-use basis) to the general public.

The Registry is not exclusive. It is able to record information about the large and valuable legacy of digitally reformatted and born digital monographs and serials. It is also able to encourage data creators and data users to determine independently and for their own purposes, what constitutes a faithful reproduction. The existence and use of a Registry provides an opportunity to identify and build consensus around minimum characteristics that might be expected generally of digital monograph and serial content. Characteristics of digitally reformatted material are documented in the benchmark now endorsed by the DLF.

Functionality

To achieve the benefits that are documented here, the registry supports a number of specific uses. It has the ability to record certain kinds of data about registered objects (e.g., bibliographic and holdings data), make recorded information available to users in particular ways, and support appropriate data input and data maintenance. To assist in the development of a viable registry, minimum or base level functional requirements statements have been prepared—one for digitally reformatted monographs and serials and one for born digital monographs and serials. Both derive from an early functional requirements statement developed exclusively for digitally reformatted materials.

D I G I T A L L I B R A R Y F E D E R A T I O N

Registry of Digital Masters Record Creation Guidelines
Version 2.
May 2007

PDF Version

Prepared by the
Digital Library Federation/OCLC Registry of Digital Masters Working Group (2001-2007)

Contents

1 Background

The concept of the Registry of Digital Masters developed out of the work of the Digital Library Federation. The Registry has been implemented as a subset of OCLC WorldCat. These Record Creation Guidelines are based on two Digital Library Federation (DLF) papers describing the functionality of a digital registry, *Registry of Archival Masters of [Born] Digital Monographs and Serials Functional Requirements* and *Registry of Digital Reproductions of Paper-based Monographs*. The documents may be found on the DLF Web site or digitally reformatted monographs and serials and born digital monographs and serials.

These Guidelines use *MARC 21 Format for Bibliographic Data* elements and OCLC (Online Computer Library Center Inc.) current cataloging system functionality for Phase 1 of the DLF digital registry project. MARC 21 field 042 "dlr" indicates that a bibliographic record is in the Registry. It is also recommended that the DLF Benchmark for Faithful Digital Reproductions of Monographs and Serials be used to document the minimum characteristics of digital materials: digital reproductions or born digital.

2 Purpose

By recording materials in the Registry, institutions are signaling the intent to preserve and maintain the accessibility of the described materials over an extended timeframe. This implies that materials were born digital or have been converted to digital form, that the digital objects are stored in professionally managed systems, and that the institution is committed to retain and preserve them. When registered, materials should already be digitized, or be in an active queue for digitization. It is recommended, but not required, that a use copy (a network-accessible, but not necessarily free, copy) of any material registered be available on-line to the general public. Where digitally reformatted materials are concerned, reproductions should be of meaningful bibliographic entities.
These guidelines detail which MARC 21 elements should be used to carry Registry-required information. Registry records describe materials that an institution intends to digitize, either from existing paper- and/or microfilm-based materials ("intent to digitize"), as well as born digital materials, and to indicate the standards by which the registered objects have been digitized.
A Registry record also provides information about whether a specific item has already been digitized, and if so, whether the digitization has been done at an adequate level such that another digital copy is not required, what institution is responsible for the digitization, what institution is responsible for the preservation of the digital content, and what specific materials are available.

3 Implementation Guidelines

The guidelines, produced under the aegis of the DLF Registry of Digital Masters Working Group, are designed to promote consistency in how Registry information is recorded, enabling more effective services to be developed for libraries and for users. We encourage all institutions taking preservation responsibility for digital content to produce records using the Registry elements and MARC 21 as described in this document and in the two DLF papers.
The MARC record should have a description of the born digital object or a digital reproduction. It should reference detailed holdings when appropriate, so that others can accurately gauge the extent of the digital material. The metadata may be derived from inspection of the physical material, the microform, or the digital object itself. One bibliographic record could represent all versions of an item, but it is preferred that a separate record be supplied for each manifestation when physical formats and system requirements differ from the original form of an item/object.

All Registry records should conform to either at least the first level of description from Anglo-American Cataloging Rules, 2nd edition, 2002 Revision or a national equivalent. In addition, the following MARC 21 fields should be used as appropriate to record DLF digital registry information as described in the guidelines:

- 007/00 for electronic resource
- 007/11 for source of a digital file
- 007/13 for access and/or preservation indicator
- 042 for identification of Registry materials
- 506 for access restrictions
- 533 for reproduction notes
- 534 for original production notes [not recommended]
- 538 for technical details about digital resource
- 583 for preservation/reproduction actions and/or links
- 856 for access to electronic resources

4 When to Use the Registry

The following table describes the type of item available—1) Master Only 2) Use Copy Only 3) Master/Use Copy 4) No Master/No Use Copy— and whether to include that type of item in the Registry or not:

Type of Item	Inclusion in the Registry
Master only	Yes, may reside in the Registry.
Use copy only	No, a bibliographic record may not be

	within the subset that represents the Registry, but may be in OCLC WorldCat.
Master/Use copy	Yes, may reside in the Registry.
No Master/No Use copy	No, may not reside in the Registry.

5 How Does This Fit in With What Your Institution is Doing or Intends to Do?

There may already be digitization projects at your institution or you may be planning to digitize materials in the future, or you may be collecting born digital content. You may already require or have accessible the technical and preservation information standards used to digitize materials. The Registry and use of standard metadata can be used as verification of your digitization or intent to digitize methodology, that you conform to standards and best practices, provide consistency when describing digital or queued materials, and express your commitment to maintain and preserve the digital materials for the long term.

Whether you add new bibliographic records for digitized materials or update existing records for print materials with intent to digitize information, searching and contributing to the Registry may help determine what to or what not to digitize for your or any other institution.

6 Contribution to the Registry (via OCLC WorldCat)

There are several options for contribution to the Registry:

- Adding records for materials not in WorldCat
    - Online input
    - Online import—may import a file of records to the OCLC Connexion save file
    - Offline batch import—may send a file of records
- Updating existing records in WorldCat
    - Online input—incorporate Registry information into current workflow
    - Online import—not available for updating
    - Offline batch—may send a file of records

7 Access to Registry Records

OCLC availability and access to Registry records: Registry records may be searched in OCLC Connexion and FirstSearch WorldCat by the label "ac" (authentication code). A typical search would be "ac=dlr".
Public access is also available on the Digital Library Federation Web site at http://purl.oclc.org/DLF/collections/reg/OCLCservice.

8 How to Get Started

What do I need to get started? In addition to these guidelines, it may be useful to have access to the following documents referred to in section 1 of the guidelines:

- *DLF Benchmark for Faithful Digital Reproduction of Monographs and Serials*
  http://old.diglib.org/standards/bmarkfin.htm

Provides the guidance and recommendations for documenting minimum characteristics that digital objects share. For material converted in accordance with this benchmark, this information may be linked from the Registry record using MARC 21 field 538 $u.

- *Preservation & Digitization Actions: Terminology for MARC 21 Field 583*
  http://www.loc.gov/marc/bibliographic/pda.html

Provides controlled vocabulary for your preservation and digitization actions used in MARC 21 field 583 subfield $a.

- *Standardized Terminology for Access Restriction*
  http://oclc.org/digitalregistry/506F_vocabulary.pdf

Provides controlled vocabulary, whether or not access restrictions exist, used in MARC 21 field 506 subfield $f. Note that subfield $f has not been implemented in systems as of May 2007; it will be used when it is available. In the meantime, use subfield $a.

You may also use the "cheat sheet," or a short list of minimum Registry requirements, in Section 12, Registry Requirements, of the guidelines, to help you through the process. Although some fields are listed as optional, it is suggested that you include the information if known.

We will now walk through several scenarios of what needs to be included in a Registry of Digital Masters record, or "Registry record."

8.1 Intent to Digitize from print copy (separate record approach)

You intend to digitize an item. Although there is a print copy record available in OCLC WorldCat, there is no metadata for a digitized version. You have determined by what standards the item is to be digitized. In addition to other required MARC 21 fields, you would include the following Registry fields on a new record (if you are following the separate record approach):

- 007/00 c ($a c) (Category of material) – code for electronic resource

- 007/11 ($j) (Antecedent/Source) – source of the file; dependent on the project and/or the object

- 007/13 p ($l p) (Reformatting Quality) – code for the preservation copy

- 007/13 a ($l a) (Reformatting Quality) – code for the access copy

Examples:
007 $a c $j a $l p
007 $a c $j c $l a

- 042 (Authentication Code) – code for dlr; this field may be added or edited by Full or higher authorizations.

042 $a dlr
Note: 042 is not a repeatable field. If more than one 042 code is needed, repeat subfield $a.

- 506 (Restrictions on Access Note) – Whether access is restricted or not, access to a digital object must be specified. Terminology for 506 $f is described in *Standardized Terminology for Access Restriction*. Examples:

506 $3 Master copy $a preservation copy $f No online access $2 star
506 $3 Use copy $f Preview only $2 star $u http://conditionalurl.htm

Note: The master copy need not be available; however, a use copy could be accessible, although not necessarily for "free."
Note: Subfield $f has not been implemented in systems as of May 2007; it will be used when it is available. In the meantime, use subfield $a.

- 538 (System Details Note) Describes technical details about the electronic resources. A URI may be included for more detailed information. Examples:

538 $a Master copy and use copy. Digital master created according to Benchmark for Faithful Digital Reproductions of Monographs and Serials, Version 1. Digital Library Federation, December 2002. $u http://old.diglib.org/standards/bmarkfin.htm

- 583 (Action Note) Records information about processing, reference and

preservation actions. Use *Preservation & Digitization Actions: Terminology for MARC 21 Field 583* for the most current terminology when describing the institution's commitment to preservation (the archiving institution) and/or further actions taken on born digital objects, such as migration to a different format. The first indicator indicates whether or not the field content is suitable for public display. Use $h to record the archiving institution. Use the phrase "committed to preserve" in $l. Example:
583 1 $a Will digitize $c 2007 $h [name of archiving institution] $l committed to preserve $2 pda $5 [your MARC organization code]

Note: $2 pda is the code (from *MARC Code Lists for Relators, Sources, Description Conventions*) used for the Terminology 583 document.
Note: Field 856 is not required as it is unknown at this stage of the process and would be added when the material in online.

8.2 Digitization of print copy complete (separate record approach)

The digitization of a print copy is complete. In addition to other required MARC 21 fields, you would include the following Registry fields on a new record (if you are following the separate record approach):

- 007/00 c ($a c) (Category of material) – code for electronic resource
- 007/11 ($j) (Antecedent/Source) – source of the file; dependent on the project and/or the object
- 007/13 p ($l p) (Reformatting Quality) – code for the preservation copy
- 007/13 a ($l a) (Reformatting Quality) – code for the access copy

Examples:
007 $a c $j a $l p
007 $a c $j a $l a
007 $a c $j c $l a

- 042 (Authentication Code) – code for dlr; this field may be added or edited by Full or higher authorizations.

042 $a dlr

Note: 042 is not a repeatable field. If more than one 042 code is needed, repeat subfield $a.

- 506 (Restrictions on Access Note) – Whether access is restricted or not, access to a digital object must be specified. Terminology for 506 $f is described in *Standardized Terminology for Access Restriction*. Examples:

506 $3 Master copy $a preservation copy $f No online access $2 star

506 $3 Use copy $f Preview only $2 star $u http://conditionalurl.htm

Note: The master copy need not be available; however, a use copy could be accessible, although not necessarily for "free".
Note: Subfield $f has not been implemented in systems as of May 2007; it will be used when it is available. In the meantime, use subfield $a.

¨ 538 (System Details Note) Describes technical details about the electronic resource. A URI may be included for more detailed information. Examples:
538 $a Master and use copy. Digital master created according to Benchmark for Faithful Digital Reproductions of Monographs and Serials, Version 1. Digital Library Federation, December 2002. $u http://old.diglib.org/standards/bmarkfin.htm

¨ 533 (Reproduction Note) Need to provide agency responsible for the reproduction which may be different from preservation institution. Holdings information may be recorded here. Example:
533 $a Electronic reproduction. $b [Chicago] : $b University of Chicago, $c [2007] $5 ICU

¨ 583 (Action Note) Records information about processing, reference and preservation actions. Use *Preservation & Digitization Actions: Terminology for MARC 21 Field 583* for the most current terminology when describing the institution's commitment to preservation (the archiving institution) and/or further actions taken on born digital objects, such as migration to a different format. The first indicator indicates whether or not the field content is suitable for public display. Use $h to record the archiving institution. Use the phrase "committed to preserve" in $l. Example:
583 1 $a Digitized $c 2007 $h [name of archiving institution] $l committed to preserve $2 pda $5 [your MARC organization code]
Note: $2 pda is the code (from *MARC Code Lists for Relators, Sources, Description Conventions*) used for the Terminology 583 document.

¨ 856 (Electronic Location and Access)—A persistent link to the master and/or use copy. Example:
856 40 $3 use copy $z Full text, Acrobat Reader required $u http://validurl.htm
s 1st 4 = http (Hypertext Transfer Protocol)
s 2nd 0 = Resource (for the same source as described)

8.3 Born Digital Object

You want to add a born digital object to the Registry. There is no metadata version available in WorldCat. In addition to other required MARC 21 fields, you

would include the following Registry fields:

¨ 007 For most born digital objects, field 007, subfields $j and $l, are not applicable, but may be applicable for reformatted digital materials.
¨ 007/00 c ($a c) (Category of material) – code for electronic resource
Example:
007 $a c

¨ 042 (Authentication Code) – code for dlr; this field may be added or edited by Full or higher authorizations.
042 $a dlr

Note: 042 is not a repeatable field. If more than one 042 code is needed, repeat subfield $a.

¨ 506 (Restrictions on Access Note) – Whether access is restricted or not, access to a digital object must be specified. Terminology for 506 $f is described in *Standardized Terminology for Access Restriction*. Examples:
506 $3 Master copy $a preservation copy $f No online access $2 star
506 $3 Use copy $f Preview only $2 star $u http://conditionalurl.htm

Note: The master copy need not be available; however, a use copy could be accessible, although not necessarily for "free".
Note: Subfield $f has not been implemented in systems as of May 2007; it will be used when it is available. In the meantime, use subfield $a.

¨ 538 (System Details Note) Describes technical details about the electronic resource. A URI may be included for more detailed information. Use of the 538 for born digital objects may only be applicable for migration activities, unless there are other pertinent technical details to record. Example:
538 $a Master and use copy.

¨ 583 (Action Note) Records information about processing, reference and preservation actions. Use *Preservation & Digitization Actions: Terminology for MARC 21 Field 583* for the most current terminology when describing the institution's commitment to preservation (the archiving institution) and/or further actions taken on born digital objects, such as migration to a different format. The first indicator indicates whether or not the field content is suitable for public display. Use $h to record the archiving institution. Use the phrase "committed to preserve" in $l. Example:
583 1 $h [name of archiving institution] $l committed to preserve $2 pda $5 [your MARC organization code]

583 1 $z NLM permanence rating: $l Permanent: Dynamic Content $5 DNLM

Note: 583 is a repeatable field.

¨ 856 (Electronic Location and Access)—A persistent link to the master and/or use copy. Example:
856 40 $3 use copy $z Full text, Acrobat Reader required $u http://validurl.htm
s 1st 4 = http (Hypertext Transfer Protocol)
s 2nd 0 = Resource (for the same source as described)

Note: Fields 533 and 534 would not be used for a born digital object unless the object was transformed digitally from one electronic form to another.

8.4 Reformatted digital object

You have reformatted previously digitized materials from another source or from a born digital object. You now need to create metadata for the reformatted materials and add Registry minimum requirements.

¨ 007/00 c ($a c) (Category of material) – code for electronic resource

¨ 007/11 ($j) (Antecedent/Source) – source of the file; dependent on the project and/or the object

¨ 007/13 p ($l p) (Reformatting Quality) – code for the preservation copy

¨ 007/13 a ($l a) (Reformatting Quality) – code for the access copy
Examples:
007 $a c $j c $l p
007 $a c $j c $l a
007 $a c $j a $l a

¨ 042 (Authentication Code) – code for dlr; this field may be added or edited by Full or higher authorizations.
042 $a dlr

¨ 506 (Restrictions on Access Note) – Whether access is restricted or not, access to a digital object must be specified. Terminology for 506 $f is described in *Standardized Terminology for Access Restriction*. Examples:
506 $3 Master copy $a preservation copy $f No online access $2 star
506 $3 Use copy $f Preview only $2 star $u http://conditionalurl.htm

Note: The master copy need not be available; however, a use copy could be accessible, although not necessarily for "free".
Note: Subfield $f has not been implemented in systems as of May 2007; it will be used when it is available. In the meantime, use subfield $a.

- 533 (Reproduction Note) Need to provide agency responsible for the reproduction which may be different from preservation institution. Holdings information may be recorded here. Example:
533 $a Electronic reproduction. $b [Chicago] : $b University of Chicago, $c [2007] $5 ICU

- 538 (System Details Note) Describes technical details about the electronic resource. A URI may be included for more detailed information. Use of the 538 for born digital objects may only be applicable for migration activities, unless there are other pertinent technical details to record. Example:
538 $a Master and use copy. Digital master created according to Benchmark for Faithful Digital Reproductions of Monographs and Serials, Version 1. Digital Library Federation, December 2002. $u http://old.diglib.org/standards/bmarkfin.htm

- 583 (Action Note) Records information about processing, reference and preservation actions. Use *Preservation & Digitization Actions: Terminology for MARC 21 Field 583* for the most current terminology when describing the institution's commitment to preservation (the archiving institution) and/or further actions taken on born digital objects, such as migration to a different format. The first indicator indicates whether or not the field content is suitable for public display. Use $h to record the archiving institution. Use the phrase "committed to preserve" in $l. Example:
583 1 $a Transformed digitally $c 20071201 $h [name of archiving institution] $l committed to preserve $2 pda $5 [your MARC organization code]

- 856 (Electronic Location and Access)—A persistent link to the master and/or use copy. Example:
856 40 $3 use copy $z Full text, Acrobat Reader required $u http://validurl.htm
s 1st 4 = http (Hypertext Transfer Protocol)
s 2nd 0 = Resource (for the same source as described)

9 Sample Records

Records in this section are produced as sample purposes only. They are not actual records; they may have been derived from pre-AACR2 print versions or a variety of local systems. Not all fields may be consistent with current coding or other standards. Registry fields are compatible with guideline practice at the

time of the version release. Note: | = $.

9.1 Example 1: Intent to digitize from a print copy

LDR	01159cas 2200349 450
001	390305
005	19910409120000.0
007	c:r an --- a|aap
007	c:r an --- a|aaa
008	851114d18791913mdumr p s 0 0engdd
040	__ **|a** COO **|c** COO
042	__ **|a** dlr
245	00 **|a** American chemical journal **|h** [electronic resource].
260	__ **|a** Baltimore **|b** [s.n.]
300	__ **|a** 50 v. **|b** ill., plates, diagrs., tables. **|c** 22-24 cm.
310	__ **|a** Monthly, **|b** 1899-1913
321	__ **|a** Irregular, **|b** 1879-1898
362	0_ **|a** v. 1-50; Apr. 1879-Dec. 1913.
506	__ **|3** Use copy **|a** Must be on campus **|f** Online access with authorization **|2** star
533	__ **|a** Electronic reproduction. **|m** Vol. 1-50 (Apr. 1879-Dec. 1913) **|b** Ithaca, N.Y. : **|c** Cornell University, **|d** 2006.
538	__ **|a** Master and use copy. **|u** [URL with digitization standards and access to be supplied.]
555	__ **|a** Vols. 1-10, 1879-88. 1 v.; Vols. 11-20, 1889-98. 1 v.; Vols. 21-50, 1899-1913. 1 v.
570	__ **|a** Editors: 1879-1913, Ira Remsen (with C.A. Rouiller, 1911-13)
583	__ **|a** will digitize **|c** 20061103 **|z** Queued for digitization, Nov. 4, 2006 **|h** Cornell University **|l** committed to preserve **|2** pda **|5** NIC
650	_0 **|a** Chemistry **|x** Periodicals.
700	1_ **|a** Remsen, Ira, **|d** 1846-1927, **|e** ed.
700	1_ **|a** Rouiller, Chas. A. **|q** (Charles August), **|d** b. 1883 **|e** ed.
785	04 **|t** Journal of the American Chemical

	Society **|x** 0002-7863
856	40 **|z** http://[To_be_determined.]

9.2 Example 2: Intent to digitize from a print copy

LDR	00985cas 2200277 450
001	396345
005	19911002120000.0
007	cr an --- a|aap
007	cr an --- a|aaa
008	851204d18421859enkuu p s 0 0eng d
040	__ **|a** COO **|c** COO
042	__ **|a** dlr
245	00 **|a** Chemical gazette **|h** [electronic resource] : **|b** or, Journal of practical chemistry, in all its applications to pharmacy, arts and manufactures.
246	30 **|a** Journal of practical chemistry, in all its applications to pharmacy, arts and manufactures
260	__ **|a** London : **|b** R. and J. E. Taylor [etc.].
300	__ **|a** 17 v. ; **|c** 22 cm.
362	0_ **|a** v. 1-17; Nov. 1, 1842-Dec. 15, 1859.
506	__ **|3** Use copy **|a** Open access **|f** Unrestricted online access **|2** star
533	__ **|a** Electronic reproduction. **|m** Vol. 1-17; (Nov. 1, 1842-Dec. 15, 1859) **|b** Ithaca, N.Y. : **|c** Cornell University, **|d** 2006.
538	__ **|a** Master and use copy. **|u** [URL with digitization standards and access to be supplied.]
570	__ **|a** V. 1: Conducted by William Francis and Henry Croft.
580	__ **|a** Merged into the Chemical news.
583	__ **|a** will digitize **|c** 20061106 **|z** Queued for digitization, Nov. 6, 2006 **|h** Cornell University **|l** committed to preserve **|2** pda **|5** NIC
650	_0 **|a** Chemistry **|x** Periodicals.
700	1_ **|a** Francis, William, **|d** 1817-1904, **|e** ed.
700	1_ **|a** Croft, Henry, **|e** ed.
785	14 **|t** Chemical news

856	40 **|z** http://[To be determined.]

9.3 Example 3: Intent to transform a digital copy

LDR	01132cas 2200313 a 450
001	1118394
005	19980420120000.0
007	cr an ---a|aap
007	cr an ---a|aaa
008	860711d18311865mauwr nes 0 0eng d
040	__ **|a** COO **|c** COO
042	__ **|a** dlr
130	0_ **|a** Liberator (Boston, Mass.)
245	04 **|a** The liberator **|h** [electronic resource].
260	__ **|a** Boston, Mass. : **|b** William Lloyd Garrison and Isaac Knapp, **|c** 1831-1865.
300	__ **|a** 35 v. : **|b** ill. **+c** 39-64 cm.
310	__ **|a** Weekly
362	0_ **|a** Vol. 1, no. 1 (Jan. 1, 1831)-v. 35, no. 52 (Dec. 29, 1865).
500	__ **|a** Motto: "Our country is the world - our country men are mankind."
500	__ **|a** Title from caption.
506	__ **|3** Use copy **|a** No restrictions **|f** Unrestricted online access **|2** star
515	__ **|a** Issues for Jan. 3, 1840-Dec. 29, 1865 also called whole no. 470-1803.
533	__ **|a** Electronic reproduction. **|m** Vol. 1, no. 1 (Jan. 1, 1831)-v. 35, no. 52 (Dec. 29, 1865) **|b** Ithaca, N.Y. : **|c** Cornell University, **|d** 2002.
538	__ **|a** Master and use copy. **|u** [URL with digitization standards and access to be supplied.]
570	__ **|a** Editor: 1831- , W.L. Garrison.
583	__ **|a** will transform digitally **|c** 20061104 **|h** Cornell University **|l** committed to preserve **|z** Queued for transformation, Nov. 4, 2006 **|2** pda **|5** NIC
655	_7 **|a** Newspapers **|z** Massachusetts **|z** Boston **|2** rbgenr

700	1_ **|a** Garrison, William Lloyd, **|d** 1805-1879
752	__ **|a** United States **|b** Massachusetts **|c** Suffolk **|d** Boston.
856	40 **|z** http://[To be determined.]

9.4 Example 4: Digitization Complete

LDR	00520nam 2200157 a 4500
001	006957201-1
005	20030327094311.0
007	cr||n |||||b|p
007	cr||n |||||b|a
008	960715s1828 ag 000 0 spa d
040	_ _ |**a** HLS **|c** HLS **|d** HMM
042	_ _ |**a** dlr
043	_ _ |**a** s-ag---
100	1 _ |**a** Sosa, Juan Agustín de.
245	1 0 |**a** Sermón predicado en el día de la publicación del jubileo del Año Santo **|h** [electronic resource] : |**b** que se hizo en la iglesia matriz de la ciudad de Mendoza / |**c** por el presbitero don Juan Agustin de Sosa a catorce de septiembre del año de 1828.
260	_ _ |**a** [Mendoza?] : |**b** Francisco Ederra, |**c** [1828?]
300	_ _ |**a** 24 p. ; |**c** 20 cm.
500	_ _ |**a** Title from caption.
500	_ _ |**a** "Se hallará en el almacén de D. Francisco Ederra"--Colophon.
500	_ _ |**a** The jubilee of the Holy Year, celebrated at Rome in 1825, was extended to the whole world in 1826 by Pope Leo XII in his brief "Exultabat spiritus noster."
506	_ _ |**3** Use copy **|a** No restrictions on use **|f** Unrestricted online access **|2** star
506	_ _ |**a** Digital master available to research institutions for non-commercial use.
533	_ _ |**a** Electronic reproduction. |**b** Cambridge, Mass. : |**c** Harvard College Library Digital Imaging Group, |**d** 2003. |**f** (Latin American pamphlet digital project at Harvard University ; 0005). |**n** Electronic reproduction from microfilm master negative produced by Harvard College Library Imaging Services. |**7**

	s2003^^^^maun^s
538	_ _ |**a** Master and use copy. Digital master created according to Benchmark for Faithful Digital Reproductions of Monographs and Serials, Version 1. Digital Library Federation, December 2002. |**u** http://old.diglib.org/standards/bmarkfin.htm
583	1 _ |**a** Digitized |**c** 2003 |**h** Harvard University |**l** committed to preserve |**2** pda |**5** MH
650	0 _ |**a** Holy Year, 1825.
610	2 0 |**a** Catholic Church |**z** Argentina |**z** Mendoza.
655	7 _ |**a** Sermons |**z** Argentina |**y** 19th century. |**2** rbgenr
700	1 _ |**a** Montt, Luis, |**d** 1848-1909, |**e** former owner. |**5** MH
752	_ _ |**a** Argentina |**d** Mendoza.
830	0 _ |**a** Latin American pamphlet digital project at Harvard University ; |**v** 0005.
856	4 0 |**u** http://nrs.harvard.edu/urn-3:FHCL:66721 |**z** Provides access to page images of entire work.

9.5 Example 5: Digitization Complete

LDR	01790cam 22003251 4500
001	dlr05003696
003	DLC
005	20040312164523.0
007	cr||||||||a|p
007	cr||||||||a|a
008	830714s1763||||stkb||||s|||||000|0|eng||
040	_ _ |**a** DLC |**c** CarP |**d** DLC
042	_ _ |**a** dlr
043	_ _ |**a** a------|**a** a-cc---|**a** e-ur---
050	0 0 |**a** DS7 |**b** .B42
100	1 _ |**a** Bell, John, |**d** 1691-1780.
245	1 0 |**a** Travels from St. Petersburg, in Russia, to diverse parts of Asia ... **|h** [electronic resource] |**c** By John Bell ...
260	_ _ |**a** Glasgow, |**b** Printed for the author by R. and A. Foulis, |**c** 1763.
300	_ _ |**a** 2 v. |**b** front. (fold. map) |**c** 25 x 20 cm.
505	0 _ |**a** I. A journey to Ispahan in Persia, in the years 1715, 1716, 1717, and 1718. Part of a journey to Pekin in China, through Siberia, in the years 1719, 1720, and 1721. With a map of the author's two routes between Mosco and Pekin.--II. The continuation of the journey between Mosco and Pekin. To which is added (with special t.p.) a translation of the Journal of Mr. de Lange, resident of Russia at the court of Pekin, in the years 1721 & 1722. A journey from Mosco to Derbent in Persia, in the year 1722. A journey from St. Petersburg to Constantinople in the years 1737 and 1738.
506	_ _ **|3** Use copy **|a** No restrictions **|f** Unrestricted online access **|2** star
533	_ _ |**a** Electronic reproduction. |**b** Washington, D.C. : |**c** Library of Congress.

538	_ _ |**a** Master and use copy. **|u** [URL with digitization standards and access.]
583	_ _ |**a** Digitized |**c** 2003 **|h** Harvard University **|l** committed to preserve |**2** pda |**5** DLC
651	_ 0 |**a** Asia |**x** Description and travel.
651	_ 0 |**a** Russia |**x** Description and travel.
651	_ 0 |**a** China |**x** Foreign relations |**z** Russia.
651	_ 0 |**a** Russia |**x** Foreign relations |**z** China.
700	_ 1 |**a** Lange, Lorenz.
710	2 _ |**a** Pre-1801 Imprint Collection (Library of Congress) |**5** DLC
776	0 _ |**c** Original |**w** (DLC) 05003696
856	4 0 |**3** Volume 1 |**d** mtfrb |**f** 03696a |**q** h |**u** http://hdl.loc.gov/loc.rbc/mtfrb.03696a
856	4 0 |**3** Volume 2 |**d** mtfrb |**f** 03696b |**q** h |**u** http://hdl.loc.gov/loc.rbc/mtfrb.03696b

9.6 Example 6: Born Digital

LDR	tmIa
007	**|a** e
008	50228s2003 pau eng d
040	__ **|a** CMU **|c** CMU
042	__ **|a** dlr
100	1_ **|a** Torut, Buraskorn.
245	10 **|a** Analyzing economic profit in the brokerage industry **|h** [electronic resource] / **|c** Buraskorn Torut.
260	__ **|a** Pittsburgh, PA : **|b** Carnegie Mellon University, **|c** 2003.
500	__ **|a** Primary academic department -- Information Systems.
500	__ **|a** Thesis department -- Graduate School of Industrial Administration.
502	__ **|a** Thesis (B.S. with honors)-- Carnegie Mellon University, 2003.
506	__ **|f** Unrestricted online access **|2** star
538	__ **|a** Digitization specifications available at **|u** [URL]
583	1_ **|c** 2003 **|h** Carnegie Mellon University **|l** committed to preserve **|2** pda **|5** PPiC
610	20 **|a** Carnegie Mellon University **|x** Dissertations.
700	1_ **|a** Parlour, Christine, **|e** advisor.
700	1_ **|a** Rajan, Uday, **|e** advisor.
710	2_ **|a** Carnegie Mellon University. **|b** Graduate School of Industrial Administration.
856	40 **|u** http://doi.library.cmu.edu/10.1184/LOCAL/a986157 **|z** Electronic Access

9.7 Example 7: Digital Transformation

LDR	….nam 22 a 4500
005	20020122000000.0
007	cr|cn|||||c|p
007	cr|cn|||||c|a
008	20030904s1998 xx 000 0 eng a
040	_ _ **|a** VA@ **|c** VA@ **|d** OCL
042	_ _ **|a** dlr
100	1 _ **|a** Connelly, Zachary D.
245	10 **|a** Electronic submission of undergraduate Thesis **|h** [electronic resource] : **|b** modification of the University of Virginia electronic thesis submittal system / **|c** Zachary D. Connelly.
256	_ _ **|a** Electronic text data (ca. 145 kilobytes).
260	_ _ **|c** 1998.
506	_ _ **|3** Use copy **|f** Preview only **|2** star **|u** http://conditionalurl.htm
516	_ _ **|a** Text and images (PDF)
533	_ _ **|a** Electronic reproduction. **|b** [S.l.] : **|c** University of Virginia, **|d** 2003. **|7** s2003 xx s
538	_ _ **|a** Master and use copy. Benchmark for Faithful Digital Reproductions of Monographs and Serials. Version 1. December 2002. Digital version conforms to: **|u** http://old.diglib.org/standards/bmarkfin.htm
530	_ _ **|a** Also available in print version.
500	_ _ **|a** Computer Science-TCC402.
502	_ _ **|a** Thesis (B.S.)--University of Virginia, 1998.
520	_ _ **|a** "As more people gain access to the Internet, the ability to obtain information from different sources around the world will increase. To incorporate the University of Virginia's student body in this information revolution, an electronic publishing

	system was developed here for use by fourth year engineering students for their theses. After the pilot project was completed and successful, it was important that the system be modified for increased utility, both for the students and the library. This new system must eliminate many of the sources for user error and quicken the incorporation of theses into the library's computer system. This project's focus is to achieve these goals for use by the engineering class of 1998."
583	_ _ **|a** Transformed digitally **|c** 2003 **|h** University of Virginia **|l** Committed to preserve **|2** pda **|5** VA@
856	40 **|z** Full text, Acrobat Reader required **|u**

9.8 Example 8: Serial - Single record approach

007	__ **|a** c **|b** r **|d** b **|e** n **|g** 001 **|h** a **|i** p **|j** a **|k** d **|l** p
007	__ **|a** c **|b** r **|d** b **|e** n **|g** 001 **|h** a **|i** p **|j** a **|k** d **|l** a
010	__ **|a** 74648882 **|z** 22002298
040	__ **|a** DLC **|c** DLC **|d** NSD **|d** NST **|d** AIP **|d** OCL **|d** AIP **|d** NSD **|d** AIP **|d** DLC **|d** COO **|d** CGU
012	__ **|a** 4 **|b** 3 **|d** 7 **|e** n **|f** - **|g** p **|h** - **|j** 0 **|l** 1 **|m** 1
022	0_ **|a** 0002-9092 **|2** 1
042	__ **|a** c **|a** nsdp **|a** dlr
050	00 **|a** S560 **|b** .J6
210	0_ **|a** Am. j. agric. econ.
222	_0 **|a** American journal of agricultural economics
245	00 **|a** American journal of agricultural economics.
260	__ **|a** [St. Paul, MN, etc.] **|b** American Agricultural Economics Association.
300	__ **|a** v. **|c** 23-26 cm.
310	__ **|a** Five no. a year
362	0_ **|a** v. 50- Feb. 1968-
500	__ **|a** Vols. for <Nov. 2003-> published by Blackwell Publishing.
500	__ **|a** Vols. for <1982-> include the proceedings of the annual meeting of the American Agricultural Economics Association.
500	__ **|a** Vols. for 1984- have special biennial issue called: American Agricultural Economics Association. Directory.
506	0_ **|3** v.50-77(1968-1995) **|f** Unrestricted online access **|2** star **|5** NIC
506	0_ **|3** v.78-81(1996-1999) **|f** Unrestricted online access **|2** star **|5** ICU
530	__ **|a** Also issued on CD-ROM.
533	__ **|3** v.50-77(1968-1995) **|a** Also available as electronic reproduction. **|b**

	[Ithaca, New York] : **|c** Cornell University Library, **|d** [2001] **|n** Files for the images of individual pages are encoded in Aldus/Microsoft **|5** NIC
533	__ **|3** v.78-81(1996-1999) **|a** Also available as electronic reproduction. **|b** [Chicago] : **|c** University of Chicago Library, **|d** [2006] **|5** ICU
538	__ **|3** v.50-77(1968-1995) **|a** Master and use copy. Digital Master created according to Benchmark for Faithful Digital Reproductions of Monographs and Serials, Version 1. Digital Library Federation, December 2002. **|u** http://old.diglib.org/standards/bmarkfin.htm **|5** NIC
538	__ **|3** v.78-81(1996-1999) **|a** Master and use copy. Digital Master created according to Benchmark for Faithful Digital Reproductions of Monographs and Serials, Version 1. Digital Library Federation, December 2002. **|u** http://old.diglib.org/standards/bmarkfin.htm **|5** ICU
583	__ **|3** v.50-77(1968-1995) **|a** digitized **|c** 2001 **|f** CHLA **|h** Cornell University **|l** committed to preserve **|z** Digitization funded by Cornell University Class of 1956. Title selected from the series Literature of the agricultural sciences for the Core historical literature of agriculture. **|2** pda **|5** NIC
583	1_ **|3** v.78-81(1996-1999) **|a** digitized **|c** 2006 **|h** University of Chicago Library **|l** committed to preserve **|2** pda **|5** ICU
650	_0 **|a** Agriculture **|x** Economic aspects **|v** Periodicals.
650	_0 **|a** Agriculture **|v** Periodicals.
710	2_ **|a** American Agricultural Economics Association.
710	22 **|a** American Agricultural Economics Association. **|t** Proceedings.

710	22 **|a** American Agricultural Economics Association. **|t** Directory.
776	00 **|t** American journal of agricultural economics (CD-ROM) **|x** 1091-4234 **|w** (DLC)sn 96004817 **|w** (OCoLC)35644984
780	00 **|t** Journal of farm economics **|x** 1071-1031 **|w** (DLC)sn 88024113 **|w** (OCoLC)1643730
856	41 **|3** v.50-77(1968-1995) **|u** http://resolver.library.cornell.edu/misc/5032826 **|x** http://chla.library.cornell.edu/c/chla/browse/title/5032826.html **|z** Connect to full text.
856	41 **|3** v.78-81(1996-1999) **|u** http://wwwl.lib.uchicago.edu/~rd13/PretendSerial.html

9.9 Example 9: Serial - Separate record approach

Aggregator neutral electronic version record

006	m d
007	__ **|a** c **|b** r **|d** c **|e** n **|f** u
007	__ **|a** c **|b** r **|d** b **|e** n **|g** 001 **|h** a **|i** p **|j** a **|k** d **|l** p
007	__ **|a** c **|b** r **|d** b **|e** n **|g** 001 **|h** a **|i** p **|j** a **|k** d **|l** a
010	__ **|a** 2001214619
040	__ **|a** NSD **|c** NSD **|d** OCLCQ **|d** F#A **|d** MUQ **|d** OCLCQ **|d** IUL **|d** COO
012	__ **|l** 1
019	__ **|a** 46607346 **|a** 50266198 **|a** 68697394
022	0_ **|a** 1533-8290 **|y** 0002-1482
042	__ **|a** lcd **|a** dlr
130	0_ **|a** Agricultural history (Online)
245	10 **|a** Agricultural history **|h** [electronic resource].
260	__ **|a** Berkeley, CA : **|b** University of California Press, **|c** 1927-
310	__ **|a** Quarterly, **|b** 1928-
321	__ **|a** Semiannual, **|b** 1927
362	1_ **|a** Print began with: Vol. 1, no. 1 (Jan. 1927).
500	__ **|a** Description based on: Vol. 75, no. 1 (winter 2001); title from issue contents page (University of California Press Web site, viewed on Apr. 22, 2006).
500	__ **|a** Latest issue consulted: Vol. 80, no. 1 (winter 2006).
506	0_ **|3** v.1-39(1927-1965) **|f** Unrestricted online access **|2** star **|5** NIC
506	0_ **|3** v.40-49(1966-1975) **|f** Unrestricted online access **|2** star **|5** ICU
530	__ **|a** Also issued in print.
550	__ **|a** Vols. for 1927- issued by: the Agricultural History Society; <, July 1977-> published for the Agricultural History Society by the University of California Press.
533	__ **|3** v.1-39(1927-1965) **|a** Electronic

	reproduction. **|b** Ithaca, NY : **|c** Cornell University Library, **|d** 2001 **|f** (Core historical literature of agriculture) **|5** NIC
533	__ **|3** v.40-49(1966-1975) **|a** Electronic reproduction. **|b** [Chicago] : **|c** University of Chicago Library, **|d** [2006] **|5** ICU
538	__ **|3** v.1-39(1927-1965) **|a** Master and use copy. Digital Master created according to Benchmark for Faithful Digital Reproductions of Monographs and Serials, Version 1. Digital Library Federation, December 2002. **|u** http://old.diglib.org/standards/bmarkfin.htm **|5** NIC
538	__ **|3** v.40-49(1966-1975) **|a** Master and use copy. Digital Master created according to Benchmark for Faithful Digital Reproductions of Monographs and Serials, Version 1. Digital Library Federation, December 2002. **|u** http://old.diglib.org/standards/bmarkfin.htm **|5** ICU
583	1_ **|3** v.1-39(1927-1965) **|a** digitized **|c** 2001 **|f** CHLA **|h** Cornell University **|l** committed to preserve **|z** Digitization funded by Cornell University Class of 1956. Title selected from the series Literature of the agricultural sciences for the Core historical literature of agriculture. **|2** pda **|5** NIC
583	1_ **|3** v.40-49(1966-1975) **|a** digitized **|c** 2006 **|h** University of Chicago Library **|l** committed to preserve **|2** pda **|5** ICU
650	_0 **|a** Agriculture **|x** History **|v** Periodicals.
650	_0 **|a** Agriculture **|v** Periodicals.
710	2_ **|a** Agricultural History Society.
776	0_ **|t** Agricultural history **|x** 0002-1482 **|w** (DLC) 33020319 **|w** (OCoLC)1478539

830	_0 **|a** Core historical literature of agriculture.
856	40 **|u** http://caliber.ucpress.net/loi/ah
856	40 **|3** v.1-39(1927-1965) **|u** http://resolver.library.cornell.edu/chla/5077685 **|x** http://chla.library.cornell.edu/c/chla/browse/title/5077685.html **|z** Connect to full text.
856	41 **|3** v.40-49(1966-1975) **|u** http://wwwl.lib.uchicago.edu/~rd13/PretendSerial.html
856	40 **|u** http://firstsearch.oclc.org **|z** Address for accessing the journal using authorization number and password through OCLC FirstSearch Electronic Collections Online
856	40 **|u** http://firstsearch.oclc.org/journal=0002-1482;screen=info;ECOIP **|z** Address for accessing the journal from an authorized IP address through OCLC FirstSearch Electronic Collections Online

10 Development Road Map

Future Development	MARC 21 Field/Subfield or Use of Elements	Notes
Precise Holdings	MARC 21 Format for Holdings Data	OCLC will investigate the use of holdings records to record detailed holdings. Currently, the 852 field is not retained in the master record and is considered local data.
Batch processing	583 Action Note (R)□856-40 Electronic Location and Access (R)	Availability and flexibility of batch input and output.□ □In the future, with further investigation, if the digitization does not occur within a specified date range, OCLC may modify automatically and/or batch the "Intent to digitize" statements in field 583, or remove such statements if the intent date has passed and a related 856 field with indicators 40 exists.

11 Glossary

Term	Definition
Born digital	Digital objects that represent works created originally in electronic form only.
DBE	OCLC's Database Enrichment program. See the OCLC Cataloging Service User Guide for more information about the program, Chapter 4.
Digital Registry	See **Registry of Digital Masters**.
Digital reproductions	Digital objects that are optimally formatted and described with a view to their *quality* (functionality and use value), *persistence* (long-term access),

	and *interoperability* (e.g. across platforms and software environments). http://old.diglib.org/standards/bmarkfin.htm.
Item	A document or set of documents in any physical form, published, issued, or treated as an entity, and as such forming the basis for a single bibliographic description. Anglo-American Cataloging Rules, 2nd ed. 2002 revision.
MARBI	Machine-Readable Bibliographic Information—an American Library Association interdivisional committee: **ALCTS** (Association for Library Collections and Technical Services - http://www.ala.org/alcts); **LITA** (Library and Information Technology Association - http://www.ala.org/lita; **RUSA** (Reference and User Services Association - http://www.ala.org/rusa). **Library of Congress** Website (http://www.loc.gov/index.html).
Master copy	The digital object that most closely retains the significant attributes of the original. See also **Digital reproductions**.
OCLC WorldCat	OCLC database of bibliographic records.
RDM	See **Registry of Digital Masters**.
Registry	See **Registry of Digital Masters**.
Registry of Digital Masters	Contains information about the books and serial publications that libraries have digitized for electronic access or are preparing to digitize. Registry searchers could find out also in what format an item has been digitized, and under what terms it could be used. Additionally, the Registry would identify which institutions are taking responsibility for preserving originals of

	each digitized book or journal and which are seeing that digital copies are preserved and stay available. Digital Library Federation Website: http://old.diglib.org/dlfhomepage.htm .
Transform digitally	Copy, reformat, convert or enhance a digital file to another digital format.
Use copy	Accessible online and optimized to meet requirements defined locally or within a community. See also **Digital reproductions**.
WorldCat	See **OCLC WorldCat**.

12 Registry Requirements

In addition to typical cataloging standards, these are requirements for creating Registry entries.

Type of Object	MARC 21 Field	Requirement	Comments
Born Digital□Describe the digital born object.	007/00	M	c
	007/13	O	Use only if reformatted.
	042	M	dlr
	506	M	
	583	M	
	856	M	
Reproduction (separate record for the electronic resource only)□Describe the original object with the reproduction described in 533 (see the guidelines section 5 for how to choose standard practice)	007/00	M	c

	007/11	O	
	007/13	M	
	042	M	dlr
	506	M	
	533	M	
	538	M	If applicable.
	583	M	
	856	M	
Reproduction (for the electronic resource only)□Describe the reproduction with the original object described in 534 (see the guidelines section 5 for how to choose standard practice)	007/00	M	c
	007/11	O	007/11
	007/13	M	
	042	M	dlr
	506	M	
	534	M	
	538	M	If applicable.
	583	M	
	856	M	
Reproduction (single record for both the original and a digital reproduction)□Describe the original object.	007/00	M	c
	007/11	O	007/11
	007/13	M	
	042	M	dlr
	506	M	
	533	M	
	538	M	If applicable.
	583	M	May consider

			adding if you have information not covered by field 538.
	856	M	
Queuing□Describe the intent to digitize an object.	007/00	M	c
	007/11	O	Add information if known.
	007/13	O	Add information if known.
	042	M	dlr
	506	M	
	533	M	Add information if known.
	538	M	Add information if known.
	583	M	
	856	O	Add information if known.

Key to abbreviations in the table

M	= Mandatory
O	= Optional

APPENDIX A – Registry Elements

This table is a summary of MARC 21 elements to be used to satisfy Registry elements.

MARC 21 Field	Subfield or Use of Elements	Notes
		Follow standard practices when creating new bibliographic records or modifying existing records, depending on the system/utility used.
007 Electronic Resource (R)	**/00 Category of material**	When field 007/00 contains code c, it contains

		special coded information about the physical characteristics of an electronic resource.
	c – Electronic resource	*Indicates that the category of material to which the item belongs is **electronic resource** (e.g., programs, data files, image files, digitized audio and video tapes, etc.), which usually consists of digitized machine-readable data, program code, etc. intended to be accessed, processed, or executed by a computer.*
	/11 Antecedent/Source	*Gives information about the source of a digital file important to the creation, use and management of digitally reformatted materials.*
	a – File reproduced from original	*Indicates that the content … has been created by digitization of the original item.*
	b – File reproduced from microform	*Indicates that the content … has been created by scanning from microform.*
	c – File reproduced from electronic resource	*Indicates that the electronic resource has been created or copied from an existing electronic resource (e.g., to generate new copies or derivative copies …)*
	d – File reproduced from an intermediate (not microform)	*Indicates that the content … has been created by reformatting/digitizing from an intermediate other than microform.*
	m – Mixed	*Indicates that the images … have been created from mixed sources (portions scanned from original item, portions scanned from microfilm,*

		etc.).
	n – Not applicable	*Indicates that antecedent or source are not applicable to this electronic resource.*
	u – Unknown	*Indicates that the antecedent or source of this reformatted electronic resource is not known.*
	/13 Reformatting Quality	In the context of the Registry, the following 007/13 codes may be used to identify access or preservation elements in conjunction with fields 533, 583, and/or 856.
007 Electronic Resource (R) (cont.)	**a –** Access	*Indicates the electronic resource is of a quality that will support current, electronic access to the original item (reference use), but is not sufficient to serve as a preservation copy.* Used for the "Use" copy.
	p – Preservation	*Indicates the electronic resource was created via reformatting to help preserve the original item. The capture and storage techniques associated with preservation files ensure high-quality, long-term electronic resources that warrant long-term protection.* Used for the "Master" copy.
042 Authentication Code (NR)	**$a -** Authentication code	**$a dlr –** Registry of Digital Masters.
506 Restrictions on Access (R)		Use field 506 for terms and conditions for *restrictions imposed on access to the described materials.* Alternatively, an additional 856 field may

		be used to indicate the URL/URN which provides a direct link between bibliographic records and addressable electronic files containing current information concerning restrictions imposed on access, use and/or reproduction of materials described in the records.
	1st indicator□**#** - No information provided□**0** - No restrictions□**1** - Restrictions apply	1st indicator□**#** - *Indicates that no information is provided about whether the note states that materials are restricted or unrestricted*□**0** - *Indicates that the field affirms an absence of access restrictions.*□**1** - *Indicates that the field defines access restrictions to some or all of the material described.*
	$a Terms governing access (NR)	*Identifies legal, physical, or procedural restrictions imposed on individuals wishing to see the described materials.*
	$f Standardized terminology for access restrictions (R)□**NOTE**: Use of this subfield while approved by MARBI has not yet officially been announced or implemented by the Library of Congress.	*Contains* data *from a standardized list of terms indicating the level or type of restriction.* **Recommendation:** use $f whether or not there are any restrictions.□A list of terminology, *Standardized Terminology for Access Restriction*, is available at http://www.oclc.org/digitalregistry/506F_vocabulary.pdf, such as **Online access with authorization**.
	$u Uniform Resource	*Contains the Uniform*

	Identifier (R)	*Resource Identifier (URI), for example a URL or URN, which provides electronic access data in a standard syntax*.
506 Restrictions on Access (R) (cont.)	**$2** Source of term (NR) **NOTE**: Use of this subfield while approved by MARBI has not yet officially been announced or implemented by the Library of Congress.	**$2 star** *Contains a MARC code that identifies the source of the term used to record the restriction in subfield $f.* The source of the MARC code is MARC Code List for Relators, Sources, Description Conventions. If different sources are recorded, separate fields should be used.
	$3 Materials specified (NR)	*Contains information that indicates the part of the described materials to which the field applies*. Contains a note relating to the electronic location of the source identified in the field. Indicate whether master and/or use copy.
533 Reproduction Note (R)		*Contains information that describes an item that is a reproduction of original material. The original item is described in the main portion of the bibliographic record and data relevant to the reproduction are given as a note in field 533 when they differ from the information describing the original.* May also be used in conjunction with field 856 $3 pointer to external "detailed holdings".
	$a Type of reproduction (NR)	*Contains the introductory phrase, which identifies the type of reproduction being*

		described.
	$b Place of reproduction (R)	*Contains the name of the place where the reproduction was made.*
	$c Agency responsible for reproduction (R)	*Contains the agency responsible for the reproduction.*
	$d Date of reproduction (NR)	*Contains the date when the reproduction was made.* Supply an estimated year or range of years if the exact year is unknown, for example, yyyy or yyyy-yyyy.
	$e Physical description of reproduction (NR)	*Contains any physical description information about the reproduction. It normally contains the number of physical pieces and the dimensions of the reproduction.*
	$m Dates and/or sequential designation of issues reproduced (R)	*Contains the sequential designation and/or dates of publication of the original issues that have been reproduced*, such as Vol. 1, no. 1 (Apr. 1983)-v. 1, no. 3 (June 1983). Use either $m or $3 to record the designation. $3 is the preferred method.
	$n Note about reproduction (R)	*Contains a note pertaining to the reproduction.* Extent of item, such as $n issues for 1854-1856 on reel with: Journal of the American Temperance Union and the New York prohibitionist, v. 21, no. 7 (July 1857)-v. 24 (1860).
	$3 Materials specified (NR)	*Contains information that indicates the part of the described material to which*

		the field applies, such as v. 1-39 (1927-1965). Use either $m or $3 to record the designation. $3 is the preferred method.
534 Original Version Note (R)		*Descriptive data for an original item when the main portion of the bibliographic record describes a reproduction of that item and the data differ*. Details relevant to the original are given in field 534.□**Recommendation:** when describing the reproduction, preferred usage is field 533 over field 534 with the body of the record describing the original.
538 System Details Note (R)		*Contains system information about an item*. Describes the technical details about the electronic resource or may link to a statement about technical details.□Note: if use and master copy are the same, the information should be repeated.
	$a System details note (NR)	Contains system information about an item. **Recommendation:** subfield $a should include the phrase "**Use copy**", "**Master copy**", or "**Master and use copy**".
	$u Uniform Resource Identifier (R)	*Contains the Uniform Resource Identifier (URI), which provides electronic access data in a standard syntax.*
583 Action Note (R)		*Contains information about*

		processing and reference actions … also used to record information about preservation action relating to an item …. Standard Terminology may be used and the authority for the terminology may be indicated in subfield $2.□For those using the field to record digitization and preservation activities, a standardized list of actions, Preservation & Digitization Actions:Terminology for MARC 21 Field 583.pdf http://www.loc.gov/marc/bibliographic/pda.pdf, is available. Record actions such as "will transform digitally" and "transformed digitally".
	1st indicator - Privacy□**#** - no information provided□**0** - Private□**1** - Not private	*Contains a value that specifies whether the contents of the field are private or not. The state of being private includes information that institutions do not want to display to the public.*□**#** - *Indicates that no information is provided as to the privacy of the field contents.*□**0 –** *Indicates that the field contains private information.*□**1 –** *Indicates that there is no private information in the field.*
583 Action Note (R) (cont.)	**$a** Action (NR)	*Refers to any action taken with respect to the described materials ... For preservation activities, this subfield contains a description of the*

		action … Standardized terminology descriptive of the action used for actions intended or completed; thus "transformed digitally" or "will digitize". Not required for born digital materials.
	$h Jurisdiction (R)	*Contains the name of a person, an institution, or a position or function within an institution, in whom or in which responsibility for an action is vested.* Use $h to inscribe the archiving repository.
	$i Method of action (R)	*Refers to the means or technique by which an action was performed*. Use $i for more specific information about both intended and completed actions, e.g., "OCR" or "textmarkup". **Recommendation**: do not use when describing digital materials.
	$l Status (R)	*Contains the condition or state of the described materials, sometimes but not always resulting from an action ... For preservation activities, this subfield may contain information about the condition of the item ...* May be taken from a list of controlled vocabulary. **Recommendation**: use the phrase **committed to preserve**.
	$n Extent (R)	*Contains the extent, defined as the number of items involved.*
	$o Type of unit (R)	*Contains the type of unit,*

		defined as the name of the unit of measurement.
	$u Uniform Resource Identifier (R)	*Contains the Uniform Resource Identifier (URI) …, which provides electronic access data in a standard syntax … used to record the location of external or supplemental information accessible electronically.*
	$z Public Note (R)	*Contains a note pertaining to an action on an item that is displayed to the public.*
	$2 Source of term (NR)	**$2 - pda** *Contains a MARC code that identifies the source of the term used to record the action information. The source of the MARC code is MARC Code Lists for Relators, Sources, Description Conventions …* If different sources are recorded, separate fields should be used.
	$3 Materials specified (NR)	*Contains information that indicates the part of the described material to which the field applies.*
	$5 Institution to which field applies (NR)	*Contains the MARC code of the institution or organization that holds the copy to which the data in the field applies.* Sources for codes are the MARC Code List for Organizations and Symbols and Interlibrary Loan Policies in Canada.
856 Electronic Location and Access (R)		*Contains the information needed to locate and access an electronic resource.* Manually add or update field 856 with URL of digitized object. May use

		as a link to detailed holdings information at the institution level. May be used in conjunction with field 533 subfields $m and $n.
	1st indicator **4** - HTTP	*Indicates that access to the electronic resource is through the Hypertext Transfer Protocol (HTTP).*
	2nd indicator **0** – Resource **1** – Version of resource	*Indicates that the electronic location in field 856 is for the same resource described by the record as a whole.* **0** – use for separate record approach. **1** – use for single record approach.
	$u Uniform Resource Identifier (R)	*Contains the Uniform Resource Identifier (URI), which provides electronic access data in a standard syntax*.
	$z Public note (R)	*Contains a note relating to the electronic location of the source identified in the field … written in a form that is adequate or intended for public display*. A textual representation of the "extent" of the use copy of an e-serial.
	$3 Materials specified (NR)	*Contains information that specifies the part of the described materials to which the field applies.* **Recommendation**: subfield $3 include the phrase, "**Detailed holdings:**" Note: Indicate master and/or use copy.

APPENDIX B – Workflows

Library of Congress: use of existing single record.

LC has contributed to the Registry with some American Memory collections of digitized. These records will be single records that describe both the original and the digitized versions.

LC workflow for Registry contributions

LC will use the official distributed MARC records from the ILS (i.e. the cataloging for the original) and add fields for the Registry as follows. Note that these records already have 856 links to the digital and have served as both a record for the original and the digital.

Select records by collection using local field
Add extended 007 with the following:
007/11 (Antecedent/source) by collection as appropriate, e.g. from original (optional for Registry)
007/13 = p (preservation)
Add 042 = dlr
Add 506 = $a [add access conditions as appropriate for collection]
Note that 506 $f will be used with $2=star in the future with controlled text when this subfield is available.
Add 533 $a Also available as electronic reproduction $b Washington, D.C. $c Library of Congress
Add 538 $a Master and use digital copies also available. $a with a link to a description of the digitization process by collection when these statements are available; these will moved to 538 $u once that subfield is defined in LC's ILS.
Delete 530 (if applicable)
Add 583 $a digitized $c [date if available] $h Library of Congress $l committed to preserve $2 pda $5 DLC

The records will then go out in LC's normal distribution.

The following is an example (not a complete record). What's in red [bold] gets added. This doesn't include the link to the description of the digitization process.

Sample LC record (single record approach

001	6788737
005	20040224133823.0
007	cr |||||||a|p
008	750915s1833 pau 000 0 eng□*note that 008 reflects the original*
010	|a 02001704
035	|a(OCoLC)1625623
040	|aDLC|cFM|dDLC
042	|adlr
050	00|aE165|b.A38
082	|a917
100	1 |aAlexander, James Edward,|cSir,|d1803-1885.
245	10|aTransatlantic sketches,|bcomprising visits to the most interesting scenes in North and South America, and the West Indies. With notes on negro slavery and Canadian emigration.|cBy Capt. J. E. Alexander ...
260	|aPhiladelphia,|bKey and Biddle,|c1833.
300	|avii, [9]-378 p.|c25 cm.
500	|aThe author visited British Guiana, Barbados, Tobago, Trinidad, Grenada, St. Vincents, Jamaica, and Cuba; thence up the Mississippi through Canada and the Eastern United States.
506	|fUnrestricted online access |2star
530	|aAlso available in digital form on the Library of

	Congress Web site.	
533	|aAlso available as electronic reproduction |bWashington, D.C. |cLibrary of Congress.	
538	|aMaster and use digital copies also available on the Library of Congress Web site. Technical details on the digital scanning are available at |uhttp://memory.loc.gv/ammem/lhtnhtml/lhtnbuild.html	
583	|adigitized |c[date if available] |h[institution name] |lcommitted to preserve |5DLC	
651	0|aUnited States|xDescription and travel.	
651	0|aGuyana|xDescription and travel.	
651	0|aWest Indies, British|xDescription and travel.	
651	0|aCuba|xDescription and travel.	
651	0|aCanada|xDescription and travel.	
856	41|dlhbtn|f01704|qs|uhttp://hdl.loc.gov/loc.gdc/lhbtn.01704	

Cornell University Library scenario for contributing to the Registry of Digital Masters. September 20, 2005.

CUL has made its first contribution to the Registry with the digital collections Core historical literature of agriculture (CHLA) and Home economics archive: research, tradition, history (HEARTH). These gather together digitized versions of print resources. Each record describes the digitized version.

Basic procedure

1. Extracted records from the local catalog.

2. Using a script and a spec for batch processing, edited records for collection-level normalization and to bring them into compliance with Registry guidelines.

3. Manually edited records containing errors discovered after batch process.

4. Sent file of updated bibliographic records to OCLC.

5. Reloaded updated bibliographic records into local database.

Editing of the records (Step 2)

The fields required by the Registry for minimal compliance can, for the purposes of this project, be divided into the following groups:
1) fields altogether absent from the original records and which were subsequently added to them (042, 583);
2) fields absent from a relatively few original records and which were added manually (533);
2) fields that appeared in the original records but not in all the instances or uses required (007 for use copy, 538);
3) fields that appeared in the original records but not necessarily with Registry-approved values (007/11 and 007/13 for master copy)
4) fields that appeared in the original records and which required no changes whatever (856).

The Registry-specific part of the metadata for the completed records looks as follows.

007/11 = a [File reproduced from original] – *preservation copy*

007/11 = a [File reproduced from original] – *use copy*

007/13 = p [preservation] – *preservation copy*

007/13 = a [access] – *use copy*

042 |a dlr

506 |3 [Master and/or use copy] |f [access] |2 star

533 |a Electronic reproduction. |b Ithaca, NY : |c Cornell University Library, |d [year]. |e [no. of image files]

538 |a Master and use copy. Digital master created according to Benchmark for Faithful Digital Reproductions of Monographs and Serials, Version 1. Digital Library Federation, December 2002. |u http://purl.oclc.org/DLF/benchrepro0212

583 1|a digitized $c [year] $f [project name] $h Cornell University $l committed to preserve $2 pda $5NIC

856 40|u http://resolver.library.cornell.edu/chla/[digit string] (usually with subfield x and/or z)
or
856 40|u http://resolver.library.cornell.edu/hoec/[digit string] (usually with subfield x and/or z)
007

The 007 for the preservation copy was found in a relatively few records to contain values that inaccurately or insufficiently described the digitized version. Some of these records also lacked the proper Registry value for 007/11 or 007/13.

One characteristically deficient 007 looked this way.

007	cr|un######## (# = blank for Obsolete Code or Value not Set)

This and any similarly deficient 007 was normalized as follows.

007	cr_bn_001ap**a**ab**p**

The additional 007 for the use copy looks as follows.

007	cr_bn_001apab**a**

533

The 533 presented here is the most generic. Subfield a is the sole constant. Subfield b may be repeated with a different value. Subfield c may appear basically as here but with greater detail - "Cornell University, A.R. Mann Library". It may also be repeated with a different value. If the 533 was added belatedly, which on rare occasions it was, it may or may not have a subfield e.

583

The only optional subfields CUL is using for this project are $f and $5. $f contains **CHLA** or **HEARTH**, as appropriate.

Examples

Note: | = $

001: 2688449
005: 20050127091243.0
006: m d
007: cr bn 001apadp
007: cr bn 001apada
008: 890509s1927 ilu s 001 0 eng d
035: $a(NIC)notisANH0474
040: $aNIC$cNIC$dNIC
042: $adlr
043: $an-us---
100: 1 $aTeele, R. P.$q(Ray Palmer),$d1868-1927.
245: 14$aThe economics of land reclamation in the United States $h[electronic resource] /$cby Ray P. Teele.
256: $aComputer data (357 image files)
260: $aChicago ;$aLondon :$bA. W. Shaw,$c1927.
516: $aAvailable as JPEG files, PDF files, and HTML text.
530: $aAlso available in print and in microfilm.
538: $aMode of access: World Wide Web.
538: $aFiles for the images of individual pages are encoded in Aldus/Microsoft TIFF Version 5.0 using facsimile-compatible CCITT Group 4 compression.
538: $aSystem requirements: World Wide Web browser, Internet connectivity, and Adobe Acrobat Reader.
500: $aDigitization funded by NEH digital to microfilm conversion project. Title selected from the series Literature of the agricultural sciences for the Core historical literature of agriculture, Agricultural economics and rural sociology.
500: $aIncludes index.
506 $3Use copy$aAccess available to account holders only.$f Online access with authorization$2star
533: $aElectronic reproduction.$bIthaca, NY :$cCornell University Library, $d1994.$e357 image files.
538: $aMaster and use copy. Digital master created according to Benchmark for Faithful Digital Reproductions of Monographs and Serials, Version 1. Digital Library Federation, December 2002. $uhttp://purl.oclc.org/DLF/benchrepro0212
583: 1 $adigitized$c1994$fCHLA$hCornell University$lcommitted to preserve$2pda$5NIC
650: 0$aReclamation of land$zUnited States.

776: 0 $cPrint$w(Voyager)1478633
776: 0 $cMicrofilm$w(Voyager)2688597
830: 0$aCore historical literature of agriculture.$pAgricultural economics and rural sociology.
856: 40$uhttp://resolver.library.cornell.edu/chla/2688449$zConnect to full text
899: 0$aCHLAg
905: $a19981008120000.0
906: $awo
948: $ac:nlb
948: 1 $a20001128$bc$dmann01$emannfeh?
948: 2 $a20040903$bb$dmann21$emannfeh?

001: 4086871
005: 20030822090649.0
006: m d
007: cr bn 001apadp
007: cr bn 001apadp
008: 890628s1894 iaua sb 000 0 eng d
040: $aNIC$cNIC$dNIC
042: $adlr
050: 4$aLB1162
100: 10$aBlow, Susan E.$q(Susan Elizabeth),$d1843-1916.
245: 10$aSymbolic education$h[electronic resource] :$ba commentary on Froebel's "Mother play" /$cby Susan E. Blow.
260: 0 $aNew York :$bD. Appleton,$cc1894.
490: 1 $aInternational education series ;$vno. 26
440: 0$aHome economics archive--research, tradition and history
538: $aMode of access: World Wide Web.
538: $aFiles for the images of individual pages are encoded in Aldus/Microsoft TIFF Version 6.0 using facsimile-compatible CCITT Group 4 Compression.
500: $aDigitization funded by Institute of Museum and Library Services, 2001. Preserving the Core historical literature of home economics before 1950.
504: $aIncludes bibliographical references.
506: $aNo restrictions on access copy.$fUnrestricted online access$2star.
533: $aElectronic reproduction.$bIthaca, N.Y. :$cCornell University, A.R. Mann Library, Preservation Unit ;$bMontreal, Quebec :$cTrigonix Inc., $d2001.$e286 image files.
538: $aMaster and use copy. Digital master created according to Benchmark

for Faithful Digital Reproductions of Monographs and Serials, Version 1. Digital Library Federation, December 2002. $uhttp://purl.oclc.org/DLF/benchrepro0212

583: 1 $adigitized$c2001$fHEARTH$hCornell University$lcommitted to preserve$2pda$5NIC

650: 0$aKindergarten.

600: 10$aFrèobel, Friedrich,$d1782-1852.

830: 0$aInternational education series (D. Appleton and Company) ;$vno. 26.

856: 40$uhttp://resolver.library.cornell.edu/hoec/4086871$xhttp://hearth.library.cornell.edu/cgi/t/text/text-idx?c=hearth;idno=4086871

899: 0$aHomEcAr

948: 1 $a20020320$bo$dmann03$emannfeh?

948: 2 $a20030417$bb$dmann03$emannfeh?

Possible workflow for institutions that use single records for both original and digital: create special records for contribution that reflect only the digitized.

Environment: Some institutions may have a single record that covers both the original and the digitized with an 856 link for the digitized version. If an institution does not want to add the required fields to reflect the digital on the same record, it could follow this alternative approach. Portions of the record are extracted and fields added that are required by the Registry so that the record for the Registry reflects the digitized version only.

In contributing to the Registry, the record must be loaded into WorldCat, since that is the way that OCLC pulls these records. Thus, WorldCat will contain two records: the original record that covers both the analog and the digital and this "massaged" record created solely for contribution to the Registry.

Workflow:

1. Identify records in the local catalog for a category of material.

2. Export these as MARC.

3. Use a script in MARCEdit (already developed) to add/change/delete fields as noted below (MARCEdit is available free and must be on the computer used to be able to apply the script. The script may be supplied upon request).

Fields:
001. Change the control number if needed so that it isn't identical to that of the original record.

003. Add 003 to identify whose control number it is.

005. Update to current date

007/11 (Antecedent/source): (if desirable and known) add a value depending on what the item was digitized from

007/13 = p (preservation)

008/23 = s (electronic)

042 = dlr (may add $a to an existing 042 in some cases)

245 Add $h [electronic resource] to follow $a np (usually just $a will be present)

506 = $f[appropriate access statement] $2star

533 = $aElectronic reproduction. $b [place] : $c [institution]

538 = $aMaster and use copy. $u[URL for description of digitization process if available]

583 = $adigitized $c[date if available] $h[institution name] $lcommitted to preserve $2pda $5[institution MARC organization code]

776 = $coriginal $w[control number of original]

856 = $3 $u (as appropriate); change 2nd indicator from 1 to 0.

4. Strip the following: local variable fields, 035s from original record; existing 530s, existing 007s (would either be an electronic resource 007 that isn't as rich as the one we would provide for the Registry, or for the original manifestation).

5. Maintenance issue: There is the question of maintenance if the record for the original gets modified. The institution may need to keep track of what it has sent in this manner. That would involve working out a procedure for also updating the extracted record for the digitized item in these cases.

Last updates May 23, 2007.

Here after referred to as the "Registry".

Anglo-American Cataloging Rules, 2nd edition, updates 2003-2005, published jointly by the American Library Association (ALA), The Canadian Library Association (CLA), and the Chartered Institute of Library and Information Professionals (CILIP), 2005.

MARC 21 field 042 $a indicates that a digital object is included in the Registry, a subset of OCLC WorldCat. For example, use of the first level of description in AACR2 or a national equivalent.

Import OCLC-MARC or MARC21 records only. No prescribed maximum for file size (KB or MB). Connexion imports records in groups of 100, pausing after each group to ask you to confirm that you want to continue. Maximum number of records you can import depends on the number of records currently in your bibliographic or authority save file. Save files can contain up to 9,999 records.

"The MARC code for the Registry of Digital Masters is "dlr".

Intended for OCLC Connexion users, this exercise is illustrative and may not reflect any particular situation. You may need to add or change other fields to create an electronic resource record to pass Connexion validation. Any URLs are for illustration purposes only.

The guidelines only include MARC fields that need to be added to satisfy requirements for the Registry and not all MARC fields that are needed to describe a digital object or what access points to include. See the Appendix A for details on MARC fields used to describe Registry records.

In addition to cataloging records that meet AACR2 level 1 description or a national equivalent. Texts in italics are quotes from MARC 21 Format for Bibliographic Data.
Referred to as a "persistent identifier" in D. Flecker's Registry functional requirements documents, December 2001. All full or higher users may add field 042 with "dlr" in WorldCat with the exception of authenticated serial records. DBE allows the user to add a 506 or 538 field if not already present.

OCLC's Database Enrichment (DBE) program allows all full or higher cataloging users to add and/or modify field 583 and replace the bibliographic record. This field displays to any user; formerly, it displayed only to the inputting institution or when locked by a user.