1. Name and address of grant recipient:
Minnesota Academic Group for New Opportunities in Library and Information Access (MAGNOLIA)
Members include the library directors from:
St. Cloud State University, 420 Fourth Ave. S, St. Cloud, MN 56301-4498 (Kristi Tornquist);
Minnesota State University, Mankato, 228 Wiecking Center, Mankato, MN 56002-8419 (Joan Roca);
Winona State University, P.O. Box 5838, Winona, MN (Christine Clements);
University of Minnesota, Twin Cities, University Libraries, 309-19th Ave. S, Mpls., MN, 55455 (Wendy Pradt Lougee);
MINITEX, U of M, 15 Andersen Library, 222-21st Ave. S, Mpls., MN, 55455 (Bill DeJohn)

2. Name, title, phone, fax, and e-mail address of administrator: Kristi Tornquist, Dean; Learning Resources & Technology Services, MC 112, St. Cloud State University, 720 Fourth Ave. South, St. Cloud, MN 56301-449

3. Name of Project: Minnesota Digital Library Implementation – Phase 1

4. Grant was obtained under: State of Minnesota Five Year State Plan for the Use of Library Services and Technology Act (LSTA) Funds - Fiscal Years 2003-2007 and the LSTA Priorities for FY 2003.
   a. Federal Project purpose number: __1 and 2____
   b. LSTA Plan Goal number: __2A____
   c. LSTA Plan Activity letter: ___4___
   d. Federal Congressional District(s) ___All____

5. People Served: Give the actual (real) number of end users directly served by this project.
   “Minnesota Reflections” went live on the Web, without promotion, in mid-August 2005, just prior to the Minnesota State Fair. As a participant in the MINITEX “@ Your Library” exhibit in the Wonders of Technology pavilion, approximately 800,000 people learned about “Minnesota Reflections.” Between 10 August and 23 October, with limited publicity, “Minnesota Reflections” received 9,286 visits. During the period covered by the grant, 240 individuals attended MDLC annual conferences and workshops.
6. Narrative report for project.

A. Project Purpose: See Directions

For the following detailed response, the MDLC’s goals and objectives from the original grant application are in italics and the current status of each goal or objective is plain type.

**Minnesota Digital Library Coalition’s primary goal and overarching goal:**

*To create a new library and education resource for the state, a digital collection of valuable archives of Minnesota’s cultural heritage resources made accessible to all Minnesotans.*

The MDLC has, at a fundamental level, achieved this primary goal with two related projects: “Minnesota Reflections” ([http://reflections.mndigital.org](http://reflections.mndigital.org)), providing access to 5,347 historic photographs, and “Minnesota Maps Online” ([http://www.digital.mnhs.org/cdm4/about.php](http://www.digital.mnhs.org/cdm4/about.php)), providing access to 3,589 original plat maps and 5 historic atlases of Minnesota (1 statewide and 4 selected counties). The activities described below established a new digital collection of photographic images, drawn from the collections of more than 50 cultural heritage institutions around the state, and supported the establishment of a new collection of cartographic resources. In addition, the MDLC undertook a study of educational use of primary resources and the Internet and includes recommendations for future activities to integrate digital resources into school curriculum.

**Implementation Grant Goals:**


**Objectives:**

- **Develop selection criteria – to include technical & thematic criteria**

  For the purposes of phase I of the “Minnesota Reflections” project, the MDLC adopted the following selection criteria:
  1) Continuous tone images (e.g., photographs (positive or negatives), postcards, line drawings, etc.);
  2) images produced prior to 1909 or representing locations or people prior to 1909;
  3) images representing the wide diversity of peoples, lifestyles, industries, activities, and geographic regions in Minnesota;
  4) unique images (that is, not available in already existing, publicly accessible databases)

- **Identify copyright restrictions and use restrictions**

  The MDLC has developed and is using a “publishing agreement” with participants in “Minnesota Reflections.” Through the publishing agreement, contributors retain full ownership of any content digitized by or distributed electronically through the MDLC’s online repository. The contributor grants to MDLC a worldwide, non-exclusive, perpetual, and royalty-free license to incorporate its content into the MDLC’s online repository, aggregate it with other content, and make it publicly available. The contributor provides copyright information with each image that it contributes to the MDLC online repository; unfortunately, many contributors make overly restrictive rights management statements, prohibiting any reproduction, even for educational purposes. Anyone who seeks reproduction rights, especially for commercial use of content in the MDLC online repository, is required to acquire permission from the contributor; each image includes information to contact the rights holder. The MDLC itself may not and will not make commercial use of the content of its online repository.

- **Develop plans for archiving and preservation of digital objects and media**

  The MDLC is pursuing two methods of storing digital masters. First, TIFF images are burned to CD-ROM (MAM-A gold color therm), one copy for the contributing institution and a second copy for the MDLC, in care of the University of Minnesota’s Digital Collections Unit and stored in the Minnesota Library Access Center. This redundant supply, primarily for disaster recovery purposes, is not suitable for long term digital preservation. Second, as part of the ingest to CONTENTdm, TIFF images are stored temporarily on a UofM Libraries magnetic storage array (spinning disk) and its corresponding server. A 3 terabyte StorEdge FC storage array and corresponding SunFire V120 server (650 MHz, 512 Mb RAM) was acquired by the MDLC at the end of the grant period and will be installed at the UofM Libraries’ Information Technology Services unit for TIFF masters. Back-up tape services are
provided nightly as part of the UofM Libraries systems routine. At this time, the MDLC has deliberately not committed to an official digital archiving and preservation program (i.e., one where resources are dedicated to actual bit monitoring, refresh, and preservation). This is an issue facing many digital library initiatives, in the US and abroad, that has yet to see an adequate solution.

MHS, as part of a previous grant it received, is storing digital masters of original land survey maps on a grid brick server system in a project with the San Diego Supercomputer Center. The MDLC involvement in this project is directed to providing access to JPEG2000 images via CONTENTdm on a server residing at MHS. The digital preservation aspects of the grid brick server system are intriguing, but may be beyond the reach of the MDLC.

- **Develop standard agreements with contributors that allow for repurposing of digital images**

Refer to the “publishing agreement” described in the copyright and use restrictions above.

- **Establish regional MDL scanning centers**

For the goal of this phase of the digitization project, the MDLC has changed this objective. While the group remains committed to the concept of regional scanning centers, visits with several potential centers made it apparent that greater attention to the quality of imaging hardware and image scanning practices needs to be implemented before establishing regional scanning centers. Further, the concept of regional scanning centers requires establishing a stronger level of trusted relationship among participating organizations and establishing insured delivery and loan policies similar to resources for museum exhibitions. Finally, considerable work would need to be done in establishing secured and trusted connections, in establishing appropriate authentication schemes for access, and improvements in controlling the granularity of access supported in the CONTENTdm Acquisition Station before regional scanning centers could work. Instead, we concentrated on negotiating with potential contributors and their boards of directors to establish trusted relationships for lending, under tested museum exhibition guidelines and MHS extension of insurance coverage during the period of the loan, historic materials to MHS for digitization. Through this process the MDLC established, based largely upon the reputation of the UofM and MHS, a limited network of trusted relationships with participants, assuring the safety of their materials; this relationship could be extended to future participants.

Some contributors were unwilling to send their resources to an outside agency for digitization, preferring that digitization remain in-house. This grant did not allow for purchase of high quality scanning equipment for all potential participants in the project. The option to loan equipment was discussed, but not pursued for several logistical reasons, including training, delivery, insurance, and timelines. Some contributors, able to adhere to MDLC scanning best practices, preferred to scan their own objects and supplied TIFF masters via CD-ROM for ingest to CONTENTdm.

- **Identify participating institutions, images, collections**

Through e-mail solicitation, a Web contributor’s form, and personal contact by the Project Manager, we received indications of interest in digitizing portions of their collection from 31 local historical societies, libraries, or archives in the first six months of the project. Eventually, project applications were presented by 57 cultural heritage institutions scattered throughout Minnesota. Only one (1) application was rejected; this was based on issues of uniqueness (all of the proposed images already exist in the MHS Visual Resources Database) and assurances of ownership. The following cultural heritage organizations have images in this initial phase of “Minnesota Reflections:”

American Swedish Institute
Anoka County Historical Society
Becker County Historical Society
Beltrami County Historical Society
Blue Earth County Historical Society
Carlton County Historical Society
Clearwater County Historical Society
Concordia University, St. Paul
Cottonwood County Historical Society
Dakota County Historical Society
Douglas County Historical Society
Fillmore County Historical Society
Freeborn County Historical Society
Goodhue County Historical Society
Gustavus Adolphus College
Hennepin History Museum
Iron Range Research Center
James J. Hill Library
Lake County Historical Society
Macalester College
Martin County Historical Society
Minneapolis Public Library
Minnesota State University, Mankato
Nicollet County Historical Society
Northeast Minnesota Historical Center
Olmsted County Historical Society
Otter Tail County Historical Society
Pennington County Historical Society
Pipestone County Historical Society
Pope County Historical Society
Renville County Historical Society
Roseau County Historical Society
Sacred Heart Area Historical Society
St. Benedict's Monastery
St. Cloud State University
St. John's Abbey
St. Olaf College
Scott County Historical Society
Sherburne County Historical Society
Stearns History Museum
Stevens County Historical Society
Stewartville Public Library
Stillwater Public Library
U.S. Army Corps of Engineers, St. Paul District
University of Minnesota, Duluth
University of Minnesota Libraries, University Archives
University of Minnesota Libraries, Minnesota Orchestra Archives
University of Minnesota Libraries, Northwest Architectural Archives
University of St. Thomas
Wanda Gag House Association
White Bear Lake Area Historical Society
Winona State University

One additional collection, Big Stone County Historical Society, accounting for nearly four hundred additional images, is awaiting ingest to CONTENTdm.

Throughout the project planning and recruitment phase, the MDLC was concerned about both geographical and institutional diversity of participants in “Minnesota Reflections.” Between the previous mid-grant report and this final report, largely through personal contact by the project manager, the MDLC was able to assure the geographical and institutional diversity it sought.

Contributing CHOs, in coordination with the project manager in many instances, were responsible for selecting images fulfilling the project goals. Proposals were reviewed by a selection sub-committee of the MDLC, with representatives from academic, public library, historical society, and k12 communities. Several proposals were returned for additional information or revision; as mentioned above, only one was rejected.

- **Document agreements**

  The Steering Committee recognizes the importance of this issue and has directed its discussion toward an organizational affiliation appropriate to the MDLC’s mission and goals, most likely MINITEX. Further, the Steering
Committee recognizes the importance in crafting long-term agreements with contributing cultural heritage organizations (CHOs) and with the two scanning centers and server sites (UofM and MHS).

Only one contributing institution, the Iron Range Research Center, asked for a signed agreement on the use of their contributions to “Minnesota Reflections.” They sought the legal advice of the Minnesota Attorney General’s Office (MnAG). The MnAG created a legal agreement between the IRRC and the MDL that was signed by the project manager on behalf of the MDL. The MDLC Steering Committee, however, based upon its lack of corporate base or institutional affiliation, was reluctant to recognize the document as legally binding. This and the following objective remain issues to be resolved by the MDLC. At this time, agreements are limited to trust by contributing CHO in the leadership of the MDLC.

- **Obtain signatures on ownership/use rights with participating organizations**

  See preceding objective.

- **Digitize images**

  A total of 5,347 continuous tone images, primarily historic photographs, are now or will shortly be available through “Minnesota Reflections;” the UofM Digital Collections Unit scanned 1580 digital images, not including UofM contributions; the balance of the collection was scanned at MHS. An additional 4,000 JPEG2000 digital images of original land survey maps housed in the Office of the Secretary of State and previously scanned by MHS were created from TIFF masters created under a previous project.

- **Describe images (descriptive metadata)**

  The MDLC, from an early date, works with the Collaborative Digitization Project (CDP, formerly the Colorado Digitization Project) to establish best practices for metadata. The effort resulted in the Western Trails Best Practices for Metadata, establishing a modified qualified Dublin Core standard. That standard was adopted for the “Minnesota Reflections” project. The following elements are used:

  1. Identifier
  2. Title
  3. Photographer
  4. Contributor
  5. Description
  6. Date of Photo
  7. Date Created-controlled
  8. Local Subject
  9. General Subject
  10. Specific Subject
  11. Country
  12. State
  13. County
  14. City or Township
  15. District
  16. Geographic Feature
  17. Parent Collection
  18. Rights Management
  19. Contributing Institution
  20. Language
  21. Resource Identifier
  22. Publisher
  23. Date Digital
  24. Type
  25. Format
  26. digiSPECSformat
  27. digiSPECSsize
  28. digiSPECSbitdepth
  29. digiSPECSresolution
The following additional metadata elements are used with the MHS original land survey maps:

37. Township
38. Range
39. Township/Range
40. Litoral
41. Principal Meridian
42. Fractional Township
43. Fractional Range
44. Plat Type
45. Plat Material
46. Original Condition Notes
47. Original Location
48. Staff Comments
49. DVD Volume Number

Excel templates containing fields for each of these elements and a definitions document were distributed to contributing CHO's. Despite providing training, the metadata template, and metadata definitions, numerous inconsistencies in contributor metadata caused numerous problems. Part of the problem derived from changes in the metadata template; it went through several iterations and was released to some contributors before its final form was stabilized. In addition, some contributors felt the need to add metadata fields. There was not a single collection that loaded perfectly or did not require some manual intervention and manipulation of the metadata.

The MDLC metadata committee will be discussing (on 28 October 2005) revisions to the metadata schema, supporting documentation, training, and overall workflow processes. The major metadata changes proposed are:

1) Controlled vocabulary—removing unnecessary levels of control in fields for technical metadata.
2) Field sequencing—organizing metadata for end user display rather than one that is expedient for data entry.
3) Field labels—adjust geographic field labels, e.g., Minnesota County instead of County, to assure compliance with MHS Geographic Names file.

Outcomes: Participation in Minnesota Reflections by a variety of organizations across the state that own images of Minnesota’s history. Digitization of between 5,500 and 10,000 images creation of the metadata to describe those images. Collection of those images and their metadata into the Minnesota Digital Library database. Addition of other already digitized images to the MDL.

2) Create the technological foundation and infrastructure of the MDL.

Objectives:

• Create images for the database

  See descriptions of digitization above.

• Build database server

  The MDLC acquired two SunFire servers (one for the Web server and one for the database server) that were installed at the UoM prior to receipt of this grant; the CONTENTdm management database was acquired through this grant (see below) and installed on one of the servers; MHS acquired an additional server and the MDLC acquired an additional copy of CONTENTdm for that server.

  Installation of CONTENTdm on the MHS server proved to be particularly vexing. Working with both OCLC (CONTENTdm sales rep and initial support) and DiMeMa (CONTENTdm developer), MHS programmers and staff spent about 10 months resolving the problems.
Both servers initially installed CONTENTdm version 3.7; this was upgraded to version 4.0 just prior to full production with “Minnesota Reflections.” The unpredictable release of version 4.0 delayed critical aspects of the overall implementation, compressing original timelines and placing additional expectations on the contributions of UofM and MHS. CONTENTdm, as delivered, is sufficiently robust to support simple, single image objects (e.g., photographs and maps) and some complex/compound objects (e.g., atlases and books). Without customizing the code to expand functionality, as many in the CONTENTdm community have done, the ability to create complex relationships between records, collections, and individual objects is somewhat limited. Additionally, without acquiring the multi-site version of CONTENTdm and an associated server, users do not have the ability to search both “Minnesota Reflections” and “Minnesota Maps Online” simultaneously.

There are three major issues/bugs with CONTENTdm that have been reported to DiMeMa but remain unresolved. These are:

1) Memory errors in the Apache Server. This requires considerable diligence in monitoring the situation before the system “crashes.” UofM has imposed some measures on the system to prevent large memory errors from spawning, but these are temporary measures that will begin to compromise overall system performance. DiMeMa’s lead technical developer is investigating this issue.

2) Custom query limitations, either the total string character length or the number of values included in a query. These custom queries return inconsistent results. DiMeMa has acknowledged the bug.

3) User administration promises more than it delivers. The Web interface suggests the ability to grant authorizations in the Acquisition Station at a more granular level than is actually possible; this was a strong reason to implement version 4.0, but it doesn’t work as advertised.

Establish authorization mechanisms for accessing the server

The CONTENTdm Acquisition Station (AS) in version 4.0 was found to be overly strict and generally inflexible to serve the needs of the MDLC. Also, the AS became notorious at the UofM for crashing easily, especially with TIFF files larger than about 150 Mb, disrupting the image loading. As a consequence, for the purposes of this phase of the project, the AS was not provided to those CHOs that did their own scanning. The MDLC would like to use the AS for editing metadata by cataloging volunteers, but problems with the granularity of access control (described above) makes this risky at present; nonetheless, the volunteer catalogers will likely be granted full access at individual collection levels on a limited basis. Restrictions resulting from the UofM firewall will be handled on a case-by-case basis.

Refine the document-type definition in IMAGES, (a UofM developed database for delivery of digital objects) to support Western States Best Practices for Metadata, previously adopted by the MDLC

No longer necessary. MDLC created metadata definition within CONTENTdm (see elsewhere in this report for further information about CONTENTdm decision).

Create an image upload mechanism from regional centers to the IMAGES database

No longer necessary. CONTENTdm is bundled with an “Acquisition Station” for uploading both images and metadata. As mentioned elsewhere in this report, the granularity of control within the Acquisition Station, the timing of the implementation of CONTENTdm was handled by the two server sites. The MDLC would like to use the AS for editing metadata by cataloging volunteers, but problems with the granularity of access control (described above) makes this risky at present; nonetheless, the volunteer catalogers will likely be granted full access at individual collection levels on a limited basis. Restrictions resulting from the UofM firewall will be handled on a case-by-case basis.

Refine/adapt an online metadata editor and ingest mechanism for the IMAGES database

After further lengthy review and discussion of the current structure and development of the IMAGES database, the technology subcommittee of the MDLC determined, and the steering committee concurred, that our initial estimates to further development of IMAGES to fulfill the needs of MDLC were overly optimistic. In short, the dollars estimated for the further development were inadequate. As a consequence, we reviewed commercially available products that would more readily fulfill the project goals. After reviewing the merits of several products (report is available online at http://www.lib.umn.edu/digilab/mdl/softwarereport0404.pdf), the MDLC selected CONTENTdm, a widely used digital collection management database application. The UofM loaded a preview copy of CONTENTdm on the MDLC server, loaded images and metadata from a pre-existing collection (Stearns History Museum content loaded into IMAGES), tested a migration crosswalk of metadata from IMAGES, and verified the recommendation of the report. The UofM, on behalf of the MDLC, negotiated a contract with OCLC the distributor of CONTENTdm, for the
purchase of two (2) copies of CONTENTdm, one for the UofM and one for MHS. The contract was finalized and signed in mid-October 2004.

The CONTENTdm Acquisition Station, which supports online metadata editing and image ingest, was used only by the two server sites (UofM and MHS) during this phase of the project. There were no particular problems with the AS for this server site; problems with distributed access are described elsewhere in this report.

- **Develop crosswalks from known databases to IMAGES data base, for example PastPerfect**

A crosswalk from IMAGES to CONTENTdm was developed during the trial preview. Miranda Novak at St. John’s University developed one method for migrating metadata from PastPerfect to CONTENTdm; the MDLC is investigating other methods.

In general, the issue of developing crosswalks was bypassed by using the MDLC metadata template by contributors during this phase of the project (described elsewhere in this report).

- **Develop a mechanism to upload images and to associate them with existing metadata**

The CONTENTdm Acquisition Station is designed to support upload of images and metadata. The MDLC developed an Excel-based template for metadata (initially developed by Colorado State University) based upon the MDLC standards that were used by participating institutions for delivering image metadata to the MDLC. Because all of the ingest of metadata and images was handled by the UofM Digital Collections Unit the process was fairly straightforward. The majority of problems, as noted elsewhere, resulted from inconsistencies in contributor metadata, not adhering to MDLC guidelines, and inconsistencies with an early version of the metadata template that was distributed to early contributors.

- **Develop documentation and workflows for creation and transfer of images**

Based on experiences during this phase one project, the workflow and documentation will be reconsidered at a management team meeting with server site staff on 28 October at the UofM. A revision of existing documentation will follow and will be published to the MDLC Web (http://www.mndigital.org).

- **Develop mechanisms to review and enforce minimum standards for creating images and metadata**

The Project Manager, through meetings with potential participants, continues to review standards and local adherence used throughout the recently completed phase one. The MDLC needs to clarify a point of confusion in the “Imaging Best Practices” – namely, the need to use first generation image sources, either original negatives or prints from original negatives, as the scanning source whenever possible. The Project Manager has encountered at least one situation where scanning was done from 35mm transparencies of prints from original masters; the resulting scanned image quality is less than desirable.

As noted previously, there was considerable variation in the metadata provided by contributors. The review of our metadata practices will include an analysis of the areas where local practices most conflict with MDLC standards. Simultaneously, as a consequence of MDLC participation in the Western Trail Metadata Standards group, we are investigating the adoption and application of METS (Metadata Encoding & Transmission Schema) as a replacement metadata standard.

- **Establish recovery & backup procedures for system**

TIFF masters of all images were burned to gold seal CD-ROMs, with one copy returned to the contributing CHO and one retained by the UofM on behalf of the MDLC. In addition, TIFF masters were temporarily stored on a magnetic storage array in the UofM Digital Collections Unit; these images are being moved to a new 3 terabyte storage array acquired by the MDLC and located at the UofM.

- **Create a flexible Web interface**

The MDLC contracted with graphic designer Garrick Willhite to develop an appropriate color palette, wordmark, logo, letter font, and initial Web layout for the MDLC Web site (http://www.mndigital.org). The basic design was approved in spring 2005 and Jason Roy, MHS, implemented the design and reorganization during June and July 2005.
The new Web site went “public” in August. Below is the header from the MDLC Web, showing the color template, logo, wordmark, and letter font used throughout the site.

Using the MDLC Web site redesign as a guide (color template, wordmark, logo, and letter font), staff in the UofM Digital Collections Unit created a compatible interface design for “Minnesota Reflections” (http://reflections.mndigital.org). There are five ways to search or browse the collection:

1) Basic keyword search (across all collections)
2) Advanced search (allowing field searching, keyword Boolean searching or proximity searching against any group of collections)
3) Browse by contributing institution (also available from the “Profiles” page)
4) Browse by topic (select from 17 broad topics based on limited controlled vocabulary provided by the MDLC)
5) Browse by region (select from 8 regions, either by name or a clickable map)

The “Minnesota Reflections” main page also incorporates a snippet from and link to an essay by Bonnie Wilson, former photo archivist at MHS, a “Spotlight” highlighting a specific collection or a topical collection (currently the Bosse collection provided by the St. Paul District Office of the U.S. Army Corps of Engineers), and a link to “Profiles” of collections from CHO contributors and links to the CHO Website.

The “Minnesota Maps Online” follows a similar design to “Minnesota Reflections,” using layouts and search options available with CONTENTdm. The design adheres to MHS standards, but uses a color palette that complements the MDLC. The development of this Website is incomplete at the moment, but will have richer search features and a link to both “Minnesota Reflections” and the MDLC Web when complete.

- **Determine branding possibilities**

  This goal has become part of the preceding goal. Both “Minnesota Digital Library,” as an umbrella for the collaborative digitization initiative as a whole, and “Minnesota Reflections,” as the database of contributor resources, are used in documents and publicity about the project.

- **Explore toolkit development requirements and issues**

  This goal is yet to be discussed in full, although some background discussion among some MDLC participants has occurred. CONTENTdm allows users to add selected images to “my favorites,” sort the resulting set in any order, view a slideshow online, and create a Web page including thumbnails that link to the reference images that can be saved to an individuals Web space; however, this is not the full functionality envisioned by the MDLC.

  The MDLC Management Team is currently investigating the possibility of using a Wiki environment to allow users to select images (similar to the “my favorites” option in CONTENTdm) and add personal metadata, description, narrative, or impression. The possibilities of creating and supporting a Wiki-based user community centered on digital objects in “Minnesota Reflections” is intriguing, but at this point it remains at a theoretical discussion level pending time to investigate a prototype.

**Outcomes:** A functioning computer infrastructure, including servers, workstations and scanners. A functioning database that allows for input of images and metadata and searching of the database by end users. Documented procedure for bringing items into the MDL. A design plan or prototype for a K-12 toolkit for use of items in the collection.

3) **Prepare for the future by testing technical aspects of delivering complex, multi-image objects, such as maps, which will move the MDL development upward on the complexity hierarchy of objects we will seek to incorporate into the library.**

**Objectives:**
• **Research software/hardware options for delivery of large-form, multi-image digital objects, which encompass compression, page turning and other delivery issues.**

One of the primary reasons for adopting the CONTENTdm management system as a platform for “Minnesota Reflections” is its ability to incorporate and manage large-form, multi-image digital objects. MHS has completed scanning of historic plat maps; it has acquired a copy of CONTENTdm and installed it on one of their servers. However, as noted previously, there are concerns about how well CONTENTdm handles more complex digital objects in the long run. The cost of further development of the UofM IMAGES database to support this phase one project, as well as other MDLC goals, was deemed prohibitive.

• **Purchase software for compression and delivery of large-form, multi-image digital objects**

The MDLC allocated funds to purchase one instance of JPEG2000 for use by MHS on large-form objects. JPEG2000 is a relatively new image standard, one which the imaging industry believes will largely replace TIFF over time; JPEG2000 allows users to pan and zoom within digital images. The compression allows for more rapid transmission of data as well as additional viewing capabilities. A second instance of JPEG2000 will be acquired for the UofM CONTENTdm server as we explore the possibility of converting JPEG images to JPEG2000 to allow users to zoom in and see more detail in the photographic images. This conversion will require a delicate negotiation with contributing CHOs to assure that resulting images will not be reproduction quality, at least in their Web delivery.

• **Develop and adopt metadata standards for large-form, multi-image digital objects that are consistent with Western States Best Practices for Metadata, previously adopted by the MDL, and with the Library of Congress Metadata Encoding & Transmission Standard (METS) for descriptive, administrative, and structural metadata. (see [www.loc.gov/standards/mets/](http://www.loc.gov/standards/mets/))**

The metadata adopted for “Minnesota Maps Online” is described above and is an elaboration of qualified Dublin Core to better support geographic names and coordinates. Jason Roy, MHS, represents the MDLC on the Western Trail Metadata Best Practices group and is participating in the investigation of METS as a more flexible and complete standard than qualified Dublin Core.

• **Digitize and create metadata for some large-format maps to add to the collections previously digitized by the Minnesota Historical Society.**

TIFF masters from a previous project between MHS and the Minnesota Department of Administration Land Management Center were available (see [http://www.lmic.state.mn.us/chouse/GLO/index.html](http://www.lmic.state.mn.us/chouse/GLO/index.html)); 3,589 JPEG2000 images of original plat maps and 574 JPEG2000 images of atlas pages compiled into 5 compound objects were created from the TIFF master under this grant. The images and associated metadata (modified as noted previously) were loaded to the MHS instance of CONTENTdm as “Minnesota Maps Online.”

• **Integrate the access to the maps included in this complex digital objects project with the images in Minnesota Reflections**

Residing on two separate servers, integration of “Minnesota Reflections” and “Minnesota Maps Online” through a single search would require either an implementation of a CONTENTdm multi-site server or an OAI-PMH server. While the former might be preferable in the current environment, it may not scale well for future projects; this needs to be investigated further. The latter option, similar to OAIster ([http://oaister.umd.umich.edu/cgi/b/bib/bib-idx?c=oaister;page=simple](http://oaister.umd.umich.edu/cgi/b/bib/bib-idx?c=oaister;page=simple)) might scale better, but could require a larger local investment. This remains a long-term goal of the MDLC, but was overly ambitious for this phase of the project.

• **Explore options for making large form maps interactive with images from Minnesota Reflections**

At a basic level this could be done with a simple link between the metadata for county in each database; however, a more robust solution would require a revision of the current metadata detail and the addition of considerable GIS metadata (see Minnesota GIS metadata guidelines at [http://thoreau.dnr.state.mn.us/mis/gis/intranet/gisdata.html](http://thoreau.dnr.state.mn.us/mis/gis/intranet/gisdata.html)) to both images and maps. Such GIS metadata and detailed descriptive metadata would need to be manually determined for images and most maps and would require considerable time and financial commitment.

**Outcomes:** Brought into the MDL’s range of accessible objects more than 3,500 large-format maps. Developed and adopted standards for digitization and metadata creation for large-format maps and other complex, multi-image objects.
Provided MDL with experience in working with objects more complex than simple continuous tone images.

4) *Training and education across the state in digitization techniques and standards, in metadata development, and in MDL standards.*

**Objectives:**

- **Determine what we want to teach**

The MDLC contracted with OCLC to provide training for the two server sites and scanning centers and St. John’s University on CONTENTdm. The training was held on 10 December 2004 at the UoM and was attended by 20 people. The full-day training covered the basic operations of CONTENTdm. An advanced training session for system administrators on CONTENTdm version 4.0 will be held at the UoM in November 2005, after the period covered by this grant.

The MDLC provided two training workshops on scanning and metadata; Jason Roy (digital project manager at MHS and an active member of several MDLC committees) discussed the basics of scanning and use of the MDLC metadata template, and John Chapman (Metadata Librarian at UoM and chair of the MDLC metadata committee) discussed metadata in general and the specifics of the Western States Best Practices for Metadata. One workshop was held at the University of Minnesota—Duluth and was attended by 16 people; the other workshop was held at Minnesota State University, Mankato and was attended by 25 people.

The MDLC also provided a digital color workshop for staff at the two primary training centers; attendance was limited to 12 people. Wayne Torborg, Director of Digital Collections and Imaging for the Hill Museum & Manuscript Library at St. John's University, and a frequent presenter at MDLC annual conferences, was the presenter for this one day workshop held at the Minnesota History Center.

The project manager, Jim Dildine, has provided numerous one-on-one training on selection, scanning, and use of the metadata template to participating CHO's.

We have received notices of interest, particularly for training in scanning techniques and methods for adding and editing metadata and scanned images with the CONTENTdm Acquisition Station or editing metadata with the CONTENTdm Web-based Editor. We anticipate providing training on the AS for “Minnesota Reflections” content contributors on an “as-needed” basis as we begin to implement both the Acquisition Station and the CONTENTdm Editor in the next phase of the project.

- **Establish/identify stakeholders**

We identified two major stakeholder groups for initial training:

1) CHO's that preferred to maintain control of their historic photographs, provided their own scanning to create digital masters, and provided their descriptive and a portion of their technical metadata, and
2) CHO's that would send their historic photographs to one of the two scanning centers (UoM and MHS) and provide their descriptive metadata using the MDLC template.

The MDLC expected participants in the first group to attend the scanning and metadata workshops described above. Participants in the second group were welcome to attend the workshops, but it was assumed that the directions distributed with the metadata template and one-on-one training provided by the project manager would suffice; based on the number of errors in the metadata, we need to improve our directions for metadata and require attendance for both types of participants during future phases of the project. Changes in workflow practices for the next phase of the project will require some training in the use of the CONTENTdm Acquisition Station for the first type of participants and use of the CONTENTdm Web-based Editor for both types of participants.

Through informal and formal contact with “Minnesota Reflections” participants and experience, despite training, throughout the development of “Minnesota Reflections,” it is apparent to the MDLC that there remains considerable need for additional training on “good enough” and “best” metadata and “good enough” and “best” digitization practices.

- **Develop educational units**

The MDLC has two components for its Introduction to Scanning and Metadata workshop:

1) **Best practices for scanning,** based on the Western States Best Practices for Digitization, presented by Jason Roy, and
2) Metadata overview and the qualified Dublin Core defined by the Western States Best Practices for Metadata, presented by John Chapman and Jason Roy.

- **Arrange locations for training**

  Training was provided in Minneapolis (UofM for CONTENTdm training), St. Paul (MHS for digital color workshop), Duluth (scanning and metadata workshop) and Mankato (scanning and metadata workshop).

- **Plan/convene the second and third annual MDL conferences during the summers of 2004 and 2005**

  The 2004 annual conference was held at the Minnesota History Center, St. Paul, on 25 October 2004. With 91 participants, attendance was down slightly compared to our first annual meeting on 2 June 2003, but a wider range of cultural heritage institutions was represented. The conference consisted of a general session (reporting on recent developments and current status of the MDLC project and “Minnesota Reflections” in particular) and several breakout sessions. The sessions on digital color, implementing the CONTENTdm database, and participation in “Minnesota Reflections” were particularly well received.

  The conference evaluation was strong, with 100% of attendees rating the overall value of the conference as “excellent” or “good”; no one rated the conference lower than “good.”

  The 2005 annual conference was held at the Minnesota History Center, St. Paul, on 6 June 2005. Attendance increased to 124 participants from a wide range of cultural heritage organizations. The sessions on History Day projects, digital color, and an MDLC Q&A were well received.

- **Provide support for other educational opportunities, such as the MINERVA conference**

  The MDLC provided $1,500 of support for the 10 October 2004 annual conference and is a named sponsor of the 2005 conference to be held 2 November 2005.

**Outcomes:**

- Creation of MDL workshops in digitization, metadata creation, standards compliance, and curriculum development. Trained collection personnel in digitization, metadata development, and standards compliance. Increased statewide awareness of MDL. Discovery of needs for future phases of development of MDL.

5) **Stimulate interest in the Minnesota Digital Library as a new library resource, working closely with the K-12 educational community as a primary audience.**

The main effort to publicize the MDLC initiative and the “Minnesota Reflections” project has come through invited presentations at local and national conference:

1) 2004 MDLC Conference (presenters: Kristi Tornquist, Jim Dildine, John Butler, Keith Ewing)
2) 2004 Wisconsin Digital Library Conference, Madison WI (presenter: Kristi Tornquist)
3) 2004 Minnesota Library Association Conference, Duluth, MN (presenters: John Butler, Jim Dildine, Keith Ewing)
4) 2004 Museum Computer Network Annual Conference, Minneapolis (presenter: Keith Ewing)
5) 2005 MDLC Conference (presenters: Jim Dildine, John Butler, Keith Ewing)
6) 2005 Midwest Archivists Conference, Chicago IL (presenter: Jim Dildine)
7) 2005 Statewide Digitization Planners Conference, Dublin OH (attendees: Keith Ewing, Jason Roy)

“Minnesota Reflections” premiered as part of the MINITEX sponsored “@ Your Library” exhibit in the Wonders of Technology pavilion at the Minnesota State Fair in August 2005. Approximately 800,000 people attended the exhibit and generated considerable positive comment.

Articles about “Minnesota Reflections” and the MDLC have been published in:

3) U-News (a St. Cloud State University house publication, October 2005; circulation: 17,000),
4) University Times (a St. Cloud State University insert in the 1 October 2005 St. Cloud Times; circulation 27,000),
5) MEMOrandum (May 2005; for K12 media specialists; circulation)

Links to “Minnesota Reflections” are available from:
1) Anoka County Library (http://www.anoka.lib.mn.us/find/selectedWebSites.htm)
2) Bethel College Library (http://library.bethel.edu/quick_fact_info.jsp?GenRefID=26)
3) College of St. Catherine Library (http://www.stkate.edu/library/topics.html)
4) Concordia College (http://www4.cord.edu/library/cyurscoствtu.asp)
5) Dakota County Library (http://www.co.dakota.mn.us/LIBRARY/quicklinks/results.asp?searchtype=New)
6) East Central Regional Library (http://cecl.lib.mn.us/reference)
7) Fond du Lac Tribal and Community College (http://www.fdltc.edu/web/Library/)
9) Inverhills Community College (http://www.inverhills.edu/Library/resource.htm)
10) LookSmart FURL (http://www.furl.net/item.jsp?id=1716172)
11) Macalester College (http://www.macalester.edu/infoservices/news/)
12) Metronet (http://www.metronet.lib.mn.us/)
13) Minnesota Department of Education (http://education.state.mn.us/mde/Learning_Support/Library_Services_and_School_Technology/Resources/)
14) Nicollet County Historical Society (http://www.nchsmn.org/links.html)
15) Rosemount High School, District 196 (http://www.isd196.k12.mn.us/rhs/library/socialstude)
16) Roseville Area Schools, District 623, Fourth Grade Curriculum Links (http://www.isd623.org/bh/learning/fourth.cfm)
17) St. Cloud State University Library (http://lrs.stcloudstate.edu/library/guides/ref_tools/image.asp)
18) St. Olaf College Libraries (http://www.stolaf.edu/library/research/web/history.html)
19) SELCO (http://www.selco.lib.mn.us/)

Some images in “Minnesota Reflections” are searchable through Google (http://www.google.com).

In addition, 3,000 MDLC “Minnesota Reflections” bookmarks were distributed during the Minnesota State Fair and another 2,000 were distributed to school media centers through the regional library multitype systems. We have received a request for an additional 15,000 bookmarks from MEMO.

The most important project undertaken by the MDLC to support this goal was a contract with Scott Sayre and Kris Wetterlund of Sandbox Studio to survey and investigate use of digitized primary resources to support curricular activities in K12 schools in Minnesota and potential use of “Minnesota Reflections” as an educational tool. The final report includes six recommendations for MDLC consideration:

1) Training is key for resource adoption and use: The MDLC should develop and offer regional training programs to provide teachers with time dedicated to learning about the MDL and explore ways its resources can be used in their teaching. Subsidies need to be available to pay for substitute teachers and/or pay for travel to training site. The MDLC is considering a grant to fulfill this purpose.

2) Digital resources must be developed with multiple uses in mind: While most teachers aspire to create electronic presentations and computer-based student activities, the realities often require printable images for handouts or overhead transparencies. Providing larger images suitable for copying, even in an educational setting, may pose problems for contributing CHO.

3) Create a method for delivering and sharing downloadable, pre-packaged sets of images: The MDLC should develop a clearinghouse of pre-built PowerPoint presentations on common topics of Minnesota history. While creating and delivering such pre-packaged sets is possible within CONTENTdm, sharing such resources would require a new approach.

4) Develop keyword- and content-organizing options compatible with K-12 teaching practices: The MDLC should extend descriptive metadata to include topics that relate directly to those used in K-12 social studies curricula and state education standards.

5) Continue to expand the number of available images and rich media resources: The MDLC should expand the emphasis and specifications on the digitization of images and rich media with direct relevance to the needs of K-12 teachers and learners and include instructions on how to accurately cite resources. The next phase of “Minnesota Reflections” will expand the date range for historic photographs to 1923 and will consequently expand the variety of images available; the MDLC needs to consider curriculum relationships as part of the selection process.

6) Work cooperatively with other cultural institutions and agencies: The MDLC needs to work in partnership with other CHOs delivering digital content to maximize impact, minimize redundancies, and clarify relationships; ultimately, users want to minimize the number of sites they need to visit when searching for materials related to Minnesota history. The MDLC is in the very early stages of discussion how a state-based OAI-PMH harvester and search could be implemented; while such a project is possible, it would not integrate well with
recommendations 2, 3, 4, and 5. The MDLC will be considering these recommendations during the next phase of the project. We will also be sharing the final report with the CHO community in Minnesota so that they might consider its implications for their projects.

**Outcomes:** An established working relationship with K-12 community in developing the functionality and content of the MDL. Creates public awareness of the MDL through publicity, participation in conferences, support of organizations across the state who are working to digitize collections.

6) Establish governance and funding for the future of the MDL

**Objectives:**

- Regular (monthly) MDLC Steering Committee meetings

The 14-person MDLC Steering Committee adopted a schedule of monthly meetings in Spring 2004; while the complexity of some calendars limits the ability of everyone to participate in every meeting, participation and support for the MDLC remains strong. The Steering Committee expanded to 17 people with the addition of Gay Galles (Moorhead), representing the K12 community, Steve Harsin (Iron Range Research Center), and Todd Digby (MnSCU).

The start of the “Minnesota Reflections” project required establishing a sub-committee, known as the “management team” to coordinate project development, communication, and assure fulfillment of the terms of the grant. The management team consists of five members of the Steering Committee (representing the server site (UofM), a key scanning center (MHS), the project manager (MHS/MDL), budget administration (SCSU), and the grant principle investigator (SCSU) and meets via conference call every two weeks. In addition to coordinating project development, the team develops policy and procedures documents for the Steering Committee, provides support and oversight for the project manager, and sets the agenda for the Steering Committee’s monthly meetings.

- Develop and refine ongoing goals

See other sections of this report on how goals and objectives are changing as the initiative develops.

- Formalize MDL governance organization

Organizationally, the MDLC is a hybrid collaborative.

- St. Cloud State University provides grant and fiscal administration, server administration and support for the MDL Web site, public relations, and overall project leadership.
- The University of Minnesota Libraries, in particular the Digital Collections Unit and the Digital Library Development Lab, provides server administration and support for “Minnesota Reflections” on CONTENTdm and the backup disk array, scanning services, and leadership in infrastructure and metadata developments.
- The Minnesota Historical Society provides extensive scanning services, leadership in metadata development, and server administration and support for “Minnesota Maps Online” on CONTENTdm; MHS also provides facilities for the annual conference and contracts for project management for “Minnesota Reflections.”
- MINITEX provides space for the monthly meetings of the Steering Committee and other meetings and logistical support for conference and workshop registration.

Other lead participants provide varying levels of support, from organizing speakers for the annual conference to providing facilities for workshops.

A key component in implementing “Minnesota Reflections” and an objective in the grant application was identifying and contracting for project management. Everyone involved with the MDLC to date is able to provide some portion of their time to MDLC and the project, but workload pressures at their home institutions limits the level of participant contact and negotiations and day-to-day management of operational details. After numerous discussions and negotiations with the SCSU business office on the legal ways to contract for a project manager, after developing a formal Request for Proposals for project management services and posting that request publicly, and after discussing project management with several potential managers, we determined that the best way to handle project management was to contract with one of the key participants in the project. Minnesota Historical Society stepped up and MDLC through SCSU contracted with MHS to provide day-to-day project management. Subsequently, representatives from MDLC worked with MHS to review applications for the project manager position; MHS selected Jim Dildine, a librarian with significant experience in photo archives and digitization projects with the Arizona Historical Society. MHS donates office space, telecommunications access, and other support services for the project manager. Mr. Dildine started work on 16 August 2004.
Theproject manager became the key contact between the MDLC and participants in “Minnesota Reflections.” In addition to initiating contact or responding to inquiries, the project manager worked with local CHOs to identify potential contributions, review and edit descriptive metadata, and review existing digitization processes and projects at selected CHOs; drafted documents and policies for MDLC review; presented project goals and negotiated with local CHOs and their boards for participation; and worked diligently to establish and assure trusted relationships among participants. In addition, the project manager is an important part of the MDLC’s public relations effort, making presentations to local and regional conferences. The project manager participates in Steering Committee meetings and management team conference calls. The contract with MHS for project management was extended for the next LSTA grant funded project.

The Steering Committee remains the focus of governance, providing the deliberative arena in which the scope, future directions, and policies for the initiative are shaped. The management team sub-committee provides operational coordination and direction as well as identifying issues that need to be addressed by the Steering Committee. Among the major difficulties faced by the MDLC are how to balance institutional commitments of the lead participants with the broader statewide needs of the MDLC and how, without consistent funding, to dedicate or commit staff to the advocacy necessary to enhance and expand the mission.

A sustainable organizational identity and structure has remained elusive. As noted elsewhere in this report, it has been difficult for the MDLC to initiate legal agreements or contracts with contributing CHOs, server sites, and scanning centers and move beyond the spirit of volunteerism and matching contributions of the lead participants (UofM, MHS, SCSU, MINITEX, and MSU, Mankato). As is typical with many statewide digitization collaborations, the big institutions “drive the bus;” in other states this is often the state library or the major research university, in the MDLC the UofM is the major research institution and we have depended on both MHS and MINITEX. There is only one alternative model, that of the Collaborative Digitization Project (formerly the Colorado Digitization Project), which became a 501c3 organization; however, the CDP depends upon membership fees, the generosity of its “parents” (the University of Denver and University of Colorado), and grants to support dedicated staff. Generous LSTA grants have supported the initiation of the MDLC and “Minnesota Reflections,” but the project requires a long-term business plan and a strong institutional affiliation to be sustainable. To that end, recent discussion in the Steering Committee and among the lead participants has focused on moving the MDLC organizationally into MINITEX; however, it is unclear, other than providing an “institutional home,” how the MDLC would become part of MINITEX. Another possibility has recently emerged as MHS discusses a “cultural heritage grid.” Consequently, the MDLC is looking at its overall mission and how that mission fits with the missions of participating CHOs and the MDLC lead participants.

- **Establish principles for agreements with participating organizations**

  The MDLC has established a copyright agreement form with participating CHOs; however, as described above, the MDLC does not exist as an entity capable of signing agreements or contracts. While St. Cloud State University, as fiscal agent for the MDLC, has signed a contract with MHS to provide project management for the duration of the grant, it is unwilling to assume responsibility for other contracts. Similarly, while the UofM has verbally committed to sustaining “Minnesota Reflections” and the MDLC backup disk array for the foreseeable future, there is no formal contract or agreement to that end.

- **Formally establish MDL**

  On 15 November 2004, the MDLC Steering Committee met with Suzanne Miller, State Librarian, to discuss issues relating to sustainable funding and sustainable organizational location and form for the MDL initiative. The initiative to date has been exclusively funded by LSTA grants, in-kind contributions from key participating organizations, and a $7,500 grant from the Minnesota State Colleges and Universities. As discussed above, the MDLC recognizes the importance of solving the sustainability issue; the key participants recognize the value of the project, both to themselves and others, but individually are unable to commit funding support beyond in-kind contributions.

- **Solicit ongoing funding**

  The MDLC received a $7,500 grant from MnSCU for 2004-05. SCSU submitted a grant application for an IMLS Leadership grant, but it was not funded, in part due to sustainability concerns. Kristi Tornquist met with representatives of Creative Memories about possible grant opportunities; while the response was generally favorable, nothing further has developed. The Minnesota Office of Higher Education has included the MDLC in its funding request to the governor. MnSCU has included funding for MDLC in a federal “earmarks” request through
Representative Mark Dayton and Senator Norm Coleman.

- Prepare and pursue legislative agenda

MDLC leaders have worked with the Minnesota Library Association to place the MDLC on its list of legislative priorities.

**Outcomes:** Increased funding support for MDL. Legislative support for development of MDL. Complete organizational structure and governance principles. Establishment of MDL as an independent organization.
B. Project Activities/Methods: See directions

January-August 2004  Investigated options for contracting for project management; initiated contract between SCSU (as fiscal agent for MDLC) and MHS to contract for project management; interviewed several candidates and selected Jim Dildine. Michael Fox, Marian Rengel, and Keith Ewing represented the MDLC.


February-April 2004  Initiated “call for digitization projects” via listserv. Daardi Sizemore, Marian Rengel represented the MDLC.

March-October 2004  Investigated database options (final report available at http://www.lib.umn.edu/digilab/mdl/software/report0404.pdf); selected CONTENTdm; UofM negotiated contract that was signed in mid-October. John Butler and Eric Celeste represented the MDLC in negotiations; the MDLC technology working group evaluated database options and selected CONTENTdm.

June-October 2004  Planned and conducted MDLC annual conference. Daardi Sizemore, Marian Rengel, Michael Fox represented the MDLC.

September-December 2004 Project manager familiarized with project background; established content selection committee, final guidelines, and participation form which was distributed via the project manager and various listservs. Jim Dildine, Marian Rengel, Keith Ewing, Daardi Sizemore, Lisa Maarohn, and Bonnie Wilson represented the MDLC.

October 2004-March 2005  Acquired and installed CONTENTdm at UofM; received CONTENTdm training in December; more difficult installation of CONTENTdm started in November 2005, but not completed until August 2005. John Butler, Eric Celeste and Jason Roy represented the MDLC.

October 2004-August 2005  Contracted with Garrick Wilhite, graphic designer, to develop color palette, logo, wordmark, and homepage design for MDLC; reorganized MDL Web page. Marian Rengel, Jason Roy and Keith Ewing represented the MDLC.


October 2004-May 2005  Reviewed digitization proposals from 55 CHOs covering 6400 images; worked with several CHOs to revise proposal; rejected proposals duplicative content. Jim Dildine, Marian Rengel, Lisa Maarohn, Bonnie Wilson, Jason Roy, and Keith Ewing represented the MDLC.

January-September 2005 Delivered historic original photographs under exhibition loan agreements to MHS and UofM for scanning; scanned 6300 images and created gold-seal CD-ROMs of TIFF masters for each participating CHO. Jim Dildine, Jason Roy, and John Butler represented the MDLC.

February-March 2005  Upgraded CONTENTdm license to “level 2” to support up to 16,000 images. John Butler represented the MDLC.

March-June 2005  Planned and conducted MDLC annual conference. Daardi Sizemore, Marian Rengel, Michael Fox represented the MDLC.

March-June 2005  Began ingest of selected projects into CONTENTdm at UofM to test processes and settings. John Butler represented the MDLC.

March-October 2005  Contracted with Sandbox Studio to conduct survey and assessment of K12 interest in and use of digitized primary resources in curriculum; final report delivered. Marian Rengel and Keith Ewing represented the MDLC.

June-July 2005  Conducted two scanning and metadata workshops. John Chapman and Jason Roy represented the MDLC.
June-August 2005  Contracted with Bonnie Wilson, retired photo archivist, to supply essay, “Some reflections on photography,” for “Minnesota Reflections;” second essay has been accepted but not posted. Marian Rengel and Keith Ewing represented the MDLC.

July-October 2005  Upgraded to version 4.0 of CONTENTdm; notified DiMeMa about several bugs (fixed) and three major problems (unresolved); began ingest of all images for “Minnesota Reflections;” finalized initial interface. John Butler and Eric Celeste represented the MDLC.

August 2005  Participated in MINITEX “@ Your Library” exhibit in the Wonders of Technology pavilion at the Minnesota State Fair. Eleven volunteers represented the MDLC.

August-October 2005  Resolved problems installing CONTENTdm at MHS; converted images to JPEG2000 and loaded; created complementary interface design. Jason Roy represented the MDLC.
C. Project Outputs:
- Attendees at MDLC annual conferences: 219
- Participants completing MDLC-delivered workshops: 41
- Participants completing MDLC-sponsored workshops: 32
- Individuals contacted through K12 survey: 95
- Visitors to “@ Your Library” exhibit at Minnesota State Fair: 800,000 (est.)

Number of digitized images accessible through “Minnesota Reflections”: 5,347
Number of digitized images accessible through “Minnesota Maps Online”: 3,589

D. Project Outcomes:
- Visits to “Minnesota Reflections” Web: 9,286 (analysis of Web log)
  - Average pages viewed per visit: 15 (analysis of Web log)

E. Other Results
- Participants in K12 survey and focus groups: 95

7. Expenditures on the project from all sources (Breakdown expenditures for all funds used on the project to include LSTA funds):

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Narrative discussion of the MDLC budget:

Overall
The Minnesota Digital Library Coalition, through St. Cloud State University, spent $294,856.87 or 98.3 percent of the $299,983.56 awarded in its LSTA FY2003 grant. The grant allocation was distributed as follows:

- 11.7 percent on Personnel costs including principal investigator, grant coordinator, and administrative staff
- 5.7 percent on Automation Hardware
- 0.5 percent on Automation Software
- 0.7 percent on Supplies
- 74.3 percent on Contractual services
- 7.1 percent on Other expenses

Funding by LSTA budget category:
Of the six LSTA categories under which we received funding, only personnel and supplies remained unchanged from our original budget.

D. Personnel
We spent $34,562.28 or 98.5 percent of our $35,096.76 personnel funds. This included $10,467.12 for the principal investigator, $12,246.66 for the grant coordinator, and $11,848.50 for administrative support.
E. Automation Hardware
Our original grant budget included $5,000 for Automation Hardware, which we spent as planned on a hard drive array for the Minnesota Historical Society complex digital objects prototype project, “Minnesota Maps Online.” As work on “Minnesota Reflections” progressed the Minnesota Digital Library Coalition management team identified two needs for increased computer resources, including additional hard drive capacity for moving digitized files through the CONTENTdm system and backup of the MDL copies of the digital masters. To meet these needs, we moved funds from Other, Contractual, and Automation Software. We spent $16,799.68 for hardware, or 336 percent of adjusted amount.

F. Automation Software
The MDLC spent $1,500, or 80.5 percent of the awarded $1,864 in this category, for JPEG2000, an extension for CONTENTdm, for the use of MHS in its complex digital object prototype project. We moved the remaining amount to Automation Hardware.

G. Supplies
The Minnesota Digital Library anticipated using DVDs as the primary storage medium for two sets of master images created in “Minnesota Reflections,” one set would go to the contributor, one would stay with the MDLC. However, by the time of the project, CDs were still the best storage option and became our primary supply cost. CDs, copier and postage charges and annual meeting supplies totaled $1,979.28 or 68.25 percent of the awarded amount.

H. Contractual
Contractual costs represented 73 percent of our original project request. At the end of this 18-month project, they represented 74.3 percent of our final expenses in this category, which came to $219,059.92. Because this is such a large portion of our budget, we have provided this breakdown of our contractual expenses.

MDL Leadership
St. Cloud State University contracted with the Minnesota Historical Society to provide project management to the “Minnesota Reflections” development portion of this grant project. The contract for $100,000 included travel expenses, which were originally awarded under the Other budget category. Our original request for MDL Leadership services, including travel expenses, was for $105,386.80. MHS completed this contract. Actual spending on project management services represented 95 percent of our original total request for project management needs.

Building Minnesota Reflections
The Minnesota Digital Library Coalition spent $41,236.92 to digitize photographs for “Minnesota Reflections,” or 101.25 percent of our original budget of $40,725. Costs over our original estimate came from savings in other Contractual budget lines.

Infrastructure Development and Support
The MDLC spent 92.6 percent of the funds allocated for this need. St. Cloud State University contracted with the University of Minnesota Libraries to provide these services to this grant project. When the MDLC made its application for this LSTA funding, we anticipated the UofM refining database management software it had developed; however, developments in DiMeMa’s CONTENTdm software made purchasing that existing product more advantageous than refining the UofM’s IMAGES software. We purchased two copies of CONTENTdm, one for the UofM and one for MHS, for $11,360 or 35 percent of our total cost for infrastructure development and support. Final spending figures show an actual savings of $2,567.75 by choosing a commercial product to meet this project meet. Because this service was part of this contractual item and we purchased CONTENTdm through the UofM, we left this cost in this budget category. Actual infrastructure support provided by the UofM for CONTENTdm installation and development completed the spending in this budget category at a cost of $29,963.

Web development
Choosing CONTENTdm significantly decreased our need to spend funds on Web interface development. The UofM included work with CONTENTdm interface development in its infrastructure support costs. We contracted with a designer to redesign the main Minnesota Digital Library Web page – www.mndigital.org – and to design a logo, wordmark and color palette for the MDL. We spent $2,500, or 25 percent of our original $9,938.50 budgeted funds on these design services and transferred the remaining $7,438.50 to Automation Hardware.

Web presence
St. Cloud State University contracted with Bonnie Wilson, former photographic archivist at the Minnesota Historical Society, to write two introductory essays to “Minnesota Reflections” to help people learn to use the collection and to study historical photographs. We spent $3,000 or 100 percent of this budget line on this service.

Prototype project
St. Cloud State University contracted with the Minnesota Historical Society to conduct a complex objects digitization prototype project at a budgeted and actual cost of $21,800.

End-use collaboration
St. Cloud State University contracted with Sandbox Studios to conduct a survey and focus groups of K-12 social studies teachers. These services cost $18,200, which was $450 more than budgeted, with extra funds coming from savings in other consultant areas. Finding a consultant to do this work allowed MDLC committee members to
concentrate on other tasks needed to develop MDL projects.

Other
Other spending covered a variety of needs including mileage, lodging, food, and parking for MDLC committee and annual meetings, project management, and training, MDLC support for the MINERVA conference, and publicity. Overall spending in this category came to $20,996.36 or 56.73 percent of the requested amount. However, $10,000 of the amount requested covered project management costs, which were included in the contract with the Minnesota Historical Society. We transferred $5,528.47 to Automation Hardware. Our final Other expenses represented 97.75 percent of the remaining budgeted amount.

8. Continuation: See Directions
MDLC submitted an LSTA grant application for 2005-06 and was awarded $113,810 to expand the date coverage of digitized historic photographs from 1908 through 1923 and introduce a prototype digitization of documents important in Minnesota history (to be determined by a selection committee). The project is meant to be ongoing and continues to investigate sustainable funding options.
9. **Attachments:** Attach to this form any materials relevant to this project evaluation, such as survey questions, comparative statistics, news clippings, testimonial letters, reports, and reactions from participants or residents of the community. If your project resulted in bibliographies, brochures, handbooks, A.V., catalogs, etc. please attach a minimum of three copies of each item.

Attachments:
- “Making History: the Minnesota Digital Library and the K-12 Teaching and Learning Community.” Report of research conducted by Sandbox Studios on behalf of the MDLC.

10. **Signatures:** We, the undersigned certify that the data and information contained in this report are true and correct to the best of our knowledge and belief.

__________________________________________
Date
Library Board President/School Superintendent/University Dean

__________________________________________
Date
Library Director/Media Specialist

**FFY2004 Final Report due to the State Library Agency by 4:00 p.m. Monday, October 31, 2005.**