Submit one electronic copy and one signed and dated original to:

<table>
<thead>
<tr>
<th>Jym Wroblewski/LSTA Grant Coordinator-Administrator</th>
</tr>
</thead>
<tbody>
<tr>
<td>F30</td>
</tr>
<tr>
<td>State Library Services</td>
</tr>
<tr>
<td>1500 Highway 36 West</td>
</tr>
<tr>
<td>Roseville MN 55113-4266</td>
</tr>
</tbody>
</table>

Due to the State Library Agency 30 days after close of the grant program

<table>
<thead>
<tr>
<th>PH:651-582-8805; FAX: 651-582-8752</th>
</tr>
</thead>
<tbody>
<tr>
<td>e-mail: <a href="mailto:jym.wroblewski@state.mn.us">jym.wroblewski@state.mn.us</a></td>
</tr>
</tbody>
</table>

**Minnesota LSTA FFY2006-Final Report.** Follow the exact form, contents and pagination provided.

A separate report must be completed for each LSTA project for which you received funding.

1. **Name and address of grant recipient:**
   a. MINITEX, U of M, 15 Andersen Library, 222-21st Ave. S, Mpls., MN, 55455 (Bill DeJohn, Director), on behalf of the Minnesota Digital Library coalition.
   b. **Grant Partner(s):** MINITEX, Learning Resources & Technology Services at St. Cloud State University, University of Minnesota Libraries, Minnesota Historical Society, College of St. Benedict/St. John’s University, Minnesota State University, Mankato, Minnesota State Colleges and Universities – Office of the Chancellor, Minnesota Educational Media Organization, Iron Range Research Center, Winona State University, St. Paul Public Library, Nicollet County Historical Society

2. **Name, title, phone, fax and e-mail address of administrator:**
   Mary Parker, Associate Director
   MINITEX, University of Minnesota, 15 Andersen Library, 222 21st Ave. S, Minneapolis, MN, 55455-0439
   Phone: 612-624-4002; fax: 612-624-4508
   Report compiled by:
   Keith Ewing, Systems Librarian, Learning Resources & Technology Services
   St. Cloud State University, 720 Fourth Avenue South, St. Cloud, MN 56301-4498
   Phone: 320-308-4824; fax: 320-308-5623; kewing@stcloudstate.edu

3. **Name of Project:** Minnesota Digital Library Maintenance and Development

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: _____
   b. LSTA Plan Goal number: _____2A, Program 4____
   c. LSTA Plan Activity letter: _____
   d. Federal Congressional District(s) _____

5. **People Served:** Give the actual (real) number of end users directly served by this project.
   Two ways to measure number of end users: participating institutions and number of people who used the “Minnesota Reflections” database. Total number of participating institutions: 38 libraries, archives, museums, or historical societies participated in digitization during this grant cycle; a total of 78 institutions now have content delivered through “Minnesota Reflections.”

   A total of 36,912 unique visitors used the “Minnesota Reflections” Website between 1 July 2006 and 30 June 2007. (Note: Statistical data is incomplete due to a technical problem on “Minnesota Reflections” during September and October 2006. We estimate the number here is about 20% low, based on statistical averaging of all other months.)

**Minnesota LSTA FFY 2006-Final Report** (Follow the exact form, contents and pagination provided.)
6. Narrative report for project.

A. Project Purpose: See Directions

The Minnesota Digital Library Coalition was awarded an LSTA grant to sustain and expand upon the digitization of photographic and graphic images; to sustain and expand the digitization of textual objects, including letters, diaries, pamphlets, and books; to develop additional curricular resources to promote the use of digital resources in the K-12 community; to conduct some studies of the Minnesota Reflections interface and of MDL participants; and to begin moving the MDL from a “project” stance funded and sustained through a series of grants to a “program” stance with stable funding for basic maintenance operations and grant funding to provide supplemental project specific funding. When ingest to CONTENTdm and conversion to JPEG2000 (j2k) of all photographic and textual objects is complete in early August 2007, MDL will provide access to more than 20,000 objects through Minnesota Reflections. (Note: an object is defined as a scanned file such as a photograph, one side of a page in a book, or one side of a postcard). The MDL again contracted with Sandbox Studio to develop curriculum packages using the Pachyderm software and based on content available through Minnesota Reflections; these will be available online in August 2007. As part of this latter project, the MDL is working with the University of Minnesota and MnSCU to further develop and enhance the capabilities of Pachyderm as a learning objects authoring environment. While the target population for Minnesota Reflections is every resident of Minnesota, more than 40,000 unique visitors accessed the collection online during the grant year.
B. Project Activities/Methods: See Directions

Pre-grant Goal:
Prior to initiating Phase 3 of the MDL project, the Management Team met to discuss and address a major concern raised by users of Minnesota Reflection, namely the inability to view either images or text larger than their default screen display. Providing better images in Minnesota Reflections initially had been raised in Phase 1 of the project, the number of comments grew throughout Phase 2, and was implied although not directly stated in the LSTA application for Phase 3. However, several participants were concerned that larger images would be too much a temptation for “abuse” by users. During Phases 1 and 2, images were outside of copyright (that is, created prior to 1923) so that potential for copyright violation was low, but from a participant’s perspective the potential for “abuse” (use without attribution and/or payment) was high. The potential for unauthorized use of images continues to be an issue of concern, especially for those historical societies and archives that have not participated in MDL projects to date. The MDL Steering Committee, however, felt that improved images would be critical to the long-term success of the project. The best option would be to use the TIFF master images from the more than 10,000 previously created images and convert the reference images in CONTENTdm to the JPEG2000 (J2K) compression standard. Several concerns were raised during discussions throughout Fall 2006, focusing on whether or not the images would be of such quality to support republication without notification. The J2K standard allows users to zoom in on image details, but does not allow easy download of the larger and more detailed images. In the end, the benefits to users of the images outweighed the concerns of participants. Conversion required upgrading the CONTENTdm license to support J2K images; developing a process and script to convert images already in Minnesota Reflections; then actually convert the images. All digitization efforts throughout Phase 3 would be loaded to CONTENTdm using the J2K standard.

Goal 1:

a) Upgrade CONTENTdm license.
b) Upgrade CONTENTdm maintenance agreement.
c) Upgrade CONTENTdm back-up and recovery.
d) Support and maintenance
e) Conduct usability testing.

a. **License Upgrade.** On behalf of the MDL, the University of Minnesota procured and applied license key to upgrade the MDL installation from 16,000 objects to 50,000 objects maximum, which is expected to cover MDL’s anticipated growth for another two years. This is the last tier in CONTENTdm’s pricing structure before the “Unlimited” level. With completion of the FY06 phase, the project expects to hold 20,000 objects.

b. **Software Upgrade and Maintenance.** Concurrent with the migration to a new server, the MDL installation of CONTENTdm was upgraded from version 4.0 to 4.2, and now to 4.2010. This upgrade includes the JPEG2000 Extension (server side, installed), and 2 - JPEG2000 and 2 - OCR Acquisition Stations.

With the upgrades (server and software), we encountered significant permissions configuration issues that proved difficult for both OCLC/DiMeMA and our systems staff to diagnose. Resolution took an inordinate amount of time and trial and end. The problem was diagnosed (and then resolved) through an in-depth analysis of the system’s behavior through the entire data acquisition/ingest process.

In order to migrate to CONTENTdm 4.2, each individual collection and its corresponding object records were first exported from the current version as tab-delimited text files. The data was then normalized and prepped for ingest into the new version of the software. Every text file was then loaded into the new version of CONTENTdm, with their corresponding master images files reloaded as J2K images. A total of 12,575 objects in 65 separate collections were exported and then reloaded, one collection at a time, as J2K object records.

With the upgrade from CONTENTdm 4.0 to 4.2, the vast majority of customized interface files which the MDL had created ceased to function. Knowing that interfaces would need to be re-built work with each software upgrade, MDL investigated options that could immunize our interface files from version changes in the future. Continued on page 7.
C. Project Outputs:

MDL Annual Meeting: 114 people registered; evaluations have not been tallied.

MDL and participating institutions digitized 7,915 images under this grant as detailed below.

<table>
<thead>
<tr>
<th>Number</th>
<th>Number of Institutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Photos scanned by MDL</td>
<td>4,100</td>
</tr>
<tr>
<td>Photos scanned by Participant</td>
<td>507</td>
</tr>
<tr>
<td><strong>total photos:</strong></td>
<td><strong>4,607</strong></td>
</tr>
<tr>
<td>Document pages scanned by MDL</td>
<td>2,529</td>
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<tr>
<td>Document pages scanned by Participants</td>
<td>169</td>
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<tr>
<td><strong>total document pages:</strong></td>
<td><strong>2,698</strong></td>
</tr>
<tr>
<td>Map pages scanned by MDL</td>
<td>607</td>
</tr>
<tr>
<td>Map pages scanned by Participants</td>
<td>0</td>
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<tr>
<td><strong>total documents:</strong></td>
<td><strong>607</strong></td>
</tr>
<tr>
<td><strong>Total images scanned by MDL:</strong></td>
<td><strong>7,239</strong></td>
</tr>
<tr>
<td><strong>Total images scanned by Participants:</strong></td>
<td><strong>676</strong></td>
</tr>
<tr>
<td><strong>TOTAL SCANS</strong></td>
<td><strong>7,915</strong></td>
</tr>
</tbody>
</table>

**SCANNING CENTERS**

| Minnesota Historical Society: | 2,315 | 14 |
| University of Minnesota: | 4,924 | 21 |

The MDL scanned 11% more images than during the FFY 2006 LSTA grant; participants, however, scanned 79% less images. Consequently, the total scanning for the project was down about 18%. Previous participants who did their own scanning needed a “breather” from last year’s effort. The MDL scanning centers undertook 91% of the digitization effort for participating organizations during this LSTA grant period. Despite the belief by some that scanning is becoming ubiquitous and that in the near future many participants will be able to scan their resources locally and reduce dependence upon the MDL, the experience of this grant indicates that this may be further off than expected, confirming the statement heard during MDL assessments described above.

Two curriculum packages developed in the Pachyderm authoring environment were created for the MDL by Sandbox Studio.

D. Project Outcomes:

All of the assessment effort during this grant was dedicated to understanding the impact of the MDL projects upon participating institutions. This is described in detail under B. Project Activities/Methods: Goal 5 p.12.
7. Expenditures on the project from all sources (Break down expenditures for all funds used on the project to include LSTA funds):

<table>
<thead>
<tr>
<th></th>
<th>Federal-LSTA</th>
<th>State Funds</th>
<th>Local Funds</th>
<th>Member Funds</th>
<th>Other</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
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<td></td>
<td>$150,340</td>
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<tr>
<td>Library Materials</td>
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<tr>
<td>Online Resources</td>
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<td></td>
</tr>
<tr>
<td>Equipment and Furniture</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Telecommunications</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$1,000</td>
</tr>
<tr>
<td>Telecommunications Equipment</td>
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<td></td>
<td></td>
<td></td>
<td>$1,000</td>
</tr>
<tr>
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<tr>
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<tr>
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<tr>
<td>Supplies</td>
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<td>$7,293.64</td>
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<td></td>
</tr>
<tr>
<td>Totals</td>
<td>$221,674</td>
<td></td>
<td>$157,179</td>
<td>$1,000</td>
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<td>$379,853</td>
</tr>
</tbody>
</table>

8. Continuation: See Directions

Transition of the MDL from project to program, implying long-term sustainability, has been discussed in detail during this grant period. Operating as a purely collaborative venture since its inception, the MDL had difficulty establishing an identity or status that would allow it to pursue some grant opportunities or funding from state sources. During spring 2007, the University of Illinois conducted a study (yet to be published) that identified the MDL as unique among statewide initiatives; the MDL operates independent of a state library, without direct state subsidy, and largely without membership fees that could preclude the participation of many organizations. Moving the MDL project administratively under the MINITEX gave the MDL a home within which to establish its programs for the long-term.

As a consequence of the administrative change, a line for modest financial support was inserted into the MINITEX funding request to the Minnesota Legislature for FY 2008. While insufficient to support all the ongoing program needs, the funds are welcome and allow the MDL more flexibility of action. Grant funds, from LSTA, MnSCU, and other sources, remain critical to support the core mission and programs of the MDL. The MDL continues to pursue long-term solutions to solve the funding riddle while continuing to meet the digitization and presentation needs of small, under funded, local libraries, historical societies, museums, and archives.

One major goal of the MDL, identified at its very first conference, has become a Bush Foundation funded project of the Minnesota Historical Society. The MHS “Great Rivers Cultural Heritage Network” project creates a single search interface to digitization projects, as well as other databases of historical records, for cultural heritage organizations in Minnesota, North Dakota, and South Dakota. This multi-year project is in the early stages of development and implementation.
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., **attach a minimum of three copies of each item.**

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.

<table>
<thead>
<tr>
<th>Date</th>
<th>Library Board President/School Superintendent/University Dean</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Date</th>
<th>Library Director/Media Specialist</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

FFY2006 Final Report due to the State Library Agency by 4:00 p.m. Tuesday, July 31, 2007 or postmarked July 31, 2007.
University of Minnesota staff consulted with DiMeMa support to investigate best practices, especially through leveraging the PHP Applications Programming Interface. They responded by recommending that administrators “do a clean install of the latest version and apply their customizations to the new templates. Each release of CONTENTdm sees some fairly significant reworking of the PHP code so it is always possible that customizations that used to work will need to be modified.” They continued:

> We do have some guides detailing the process for migrating each bit of code from one version to the next, but I tend to think that is more tedious than doing a global re-customization. As far as making customizations upgrade-proof, I don’t even think that is theoretically possible. Because form and function are fundamentally intermingled in CONTENTdm’s PHP code, it would be extremely difficult to isolate user modifications completely. We have discussed ways of changing CONTENTdm in the future to try to create a cleaner barrier between our code and user code, but there’s only so much that we can do on our end since the user is always free to modify whatever they wish. We could try to be much more draconian in what we “allow” users to modify, but I think the overwhelming majority of CONTENTdm users prefer the freedom to do whatever they want to with their web templates.

DiMeMa says they are trying to appeal to a broader market of customers, more of whom could manage html templates and PHP modifications than XSL Transformations, but this inability to separate code from presentation reveals a significant weakness in the CONTENTdm design.

Before any future server migration, the MDL should seek recommendations from the application vendor (i.e., CONTENTdm), regarding options for the local OS platform to anticipate behaviors under different hardware options. The MDL also might want to reconsider CONTENTdm as its database platform and investigate more robust options that would provide stronger digital asset management as well as support separate content and presentation modules.

In addition, due to the expense in rebuilding the customized interface with each software version upgrade, the MDL should evaluate a) the extensiveness of local customizations and determine their cost/benefit for the interface; and b) the software upgrade itself to determine whether there’s sufficient value to be gained in upgrading with each and every release, or being selective about when we accept upgrades. This latter issue may become a background concern in future software maintenance negotiations with DiMeMa/OCLC.

c. **Back-up and Recovery.** The MDL, through the University of Minnesota Libraries’ Central Operations, implemented a mature back-up system for MDL’s online master file storage system. The data repository and backup model using a combination of "Full" and "Incremental" backups. A “backup” is a copy of the data from primary or active media to a second or inactive media which allows restoration of data after a data loss event. A full and incremental repository allows for storing several copies of the source data. A full backup is a complete copy of the selected files at a point in time. An incremental backup is a copy of only those selected files that have changed since the last backup. Once a backup, either full or incremental, is completed, a Recovery Point Object (RPO) is created. An RPO is simply a point in time that data can be recovered from a backup. Full backups are conducted weekly and retained for 17 weeks at offsite location (17 versions); incremental backups are conducted overnight daily and retained for one month (~30 versions).

The University Libraries’ Central Operations uses two tape libraries as "Near-Line" storage (tertiary storage) for server backups. Near-Line storage is an automated device capable of handling multiple tapes without human intervention and helps to ensure efficient and complete services in this critical area.

Note: The original plan for data back-up was to contract with the University’s Office of Information Technology Data Management Services. Due to this office’s accommodation of several large storage projects this past year, capacity for new projects became scarce. With this news, we decided to leverage the University Libraries’ backup infrastructure and services, rather than wait for capacity at the enterprise level. This would have created an undesirable vulnerability.

d. **Infrastructure Support.** On behalf of the MDL, the University of Minnesota installed, configured, and migrated to a new MDL applications server, provided ongoing systems and security support, expanded the MDL networked storage system, improved the network infrastructure for faster master file transmission rates, and maintained logging statistics services. Please note that in an effort to streamline ingest workflow, the metadata ingest and JPEG200 conversion tasks were shifted from Infrastructure Support to the area of MDL operations that oversees digitization and metadata
quality control. These tasks are reported on by Jason Roy elsewhere.

The project upgraded to a Sun Microsystems T2000, with a 1.0 GHz Sparc T1 Processor @ 4 Core, 8 GB RAM, and 2 73GB SAS hard disks. The server is configured using Solaris 10 zones to create 5 virtual servers and runs on an installation of Apache 2.2.2. The system package includes PHP 5.0.5 (note: this is not the most current version of the software (i.e., 5.1.x) but was installed because CONTENTdm requires version 5.0.x). The T2000 model was selected for its ability to resist performance degradation under concurrent use. The MDL continues to experience some difficulties in optimizing the performance of the server under the CONTENTdm application; this work continues.

The application server functions with the MDL primary storage system, a Sun StorEdge 3511 SATA Array. At the beginning of this phase of the project the MDL storage logical disk was made up of three 400GB SATA drives in a hardware-based RAID V configuration. Total disk employed is 1.2 TB but only 800 GB is available. The advantage to this configuration is that additional disks can be added either one at a time or in groups. As this phase of the project progressed, it became apparent that the project would exceed current storage disk capacity (846 GB is currently used to store digital masters). Consequently, a budget adjustment request was submitted and approved to acquire additional disks. As a result, an additional seven (7) 400GB Serial ATA 7200 RPM disk drives were procured and installed for the MDL in May 2007.

MDL benefited from a general University Libraries infrastructure upgrade in the spring of 2007. This involved the upgrade of the server that runs the Libraries’ Samba networking protocol installation. This greatly improved the transmission rates of digital master files from digitization centers to the primary storage system.

Staff involved in fulfilling the above aspects of this goal included: John Butler, Jason Roy, and Jeff Johnson (UM).

e. **Usability Testing and Interface Management.** The MDL conducted professional usability testing, with additional consultant support from Sandbox Studios, at the University of Minnesota’s Usability Lab (http://web.umn.edu/ead/eadUsabilityLab.html) on May 21-23, 2007. At a usability planning meeting on April 23, the MDL identified three primary areas to be addressed by the usability testing: a.) that users can easily locate content by place, person, or topic; b.) that users are able to discover ways to use the content at another time; and c.) that users find the content and layout of the home page to be useful and valuable.

Eight evaluators were used during the usability study: 2 Library Media Specialists who work with K-12 students, 2 current undergraduate students at the University of Minnesota, 2 members of the general public (represented by staff from the University of Minnesota), 1 faculty member who teaches lower-level classes, and 1 current high school student.

After all eight evaluation sessions had been completed, the team and the usability consultants met for three hours on May 23rd to review the usability results spreadsheet. Using a consensus approach, the team discussed each identified issue, assigned it a severity level, determined who would take responsibility for the issue, and considered what actions might be taken to address it. These team decisions were documented in the usability results spreadsheet which is appended to this report along with consultant reports by the University of Minnesota’s Usability Lab and Sandbox Studio.

The information gained from the usability study is being incorporated into changes to the Minnesota Reflections interface in preparation for a re-launch in August 2007. Additional changes will be implemented as necessary during Fall 2007 pending further analysis of the study reports. See Appendices 1 & 2.

Staff involved in fulfilling this goal included: Jason Roy and Jen Tantzen (UM), Scott Sayre and Kris Wetterlund (Sandbox Studio), Scott Hreha and Kristen Mastel (MINITEX), Marian Rengel and Keith Ewing (MDL), and David Rosen and staff of the UM Usability Lab.

**Goal 2:**

a. **Add content to the Minnesota Digital Library:** i.) Digitize 500 maps; ii.) Digitize 3,000 images; iii.) Digitize 1,250 document pages.

The digitization goals the MDL set in its grant application were 3,000 images, 1250 document pages and 500 maps--the quantities in each category were intended to assist in budget estimates rather establish specific targets. When the granting agency supported the full budget request, but removed funding from the “Other” category and inserted into the “Digitization” category, the MDL adjusted its digitization goals to accommodate the additional funds and added
transcription costs for some text objects. Working goals for the year then became 3,760 images, 2250 document pages, 500 maps and 339 pages of transcription. By the end of the grant period, the MDL had fulfilled or exceeded digitization working goals in all categories, except for transcriptions where 84% of the target was completed. Overall, the MDL achieved 103% of total digitization goals.

<table>
<thead>
<tr>
<th>Object Digitization plans and accomplishments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
</tr>
<tr>
<td>Images</td>
</tr>
<tr>
<td>Document pages</td>
</tr>
<tr>
<td>Maps</td>
</tr>
<tr>
<td>Transcriptions</td>
</tr>
</tbody>
</table>

The MDL completed digitization projects with 38 organizations. Of these, 35 (92 percent) were “Type A,” organizations for which the MDL does the digitizing, and 3 (8 percent) were “Type B,” organizations that do their own digitizing and provide digital copies to the MDL to add to Reflections. Of the 35 organizations for which the MDL digitized projects, 15 (42 percent) were first time participants. Represented here are public libraries (1), area historical organizations (2), state agencies (3), organizational archives (5), and county historical societies (4). County historical societies (12) dominated the organizations that had participated in Phase 1 or Phase 2 Minnesota Reflections. Also completing projects for the second or third time were academic libraries (4), a public library (1), state agencies (1), organizational archives (2), and area historical organizations (1).

Each of the two MDL digitization sites provided similar support to “Type A” participants, assisted by the MDL Outreach Coordinator. For example, staff from MHS arranged meetings with individual participating institutions and discussed general issues about the MDL project and their particular collections. Material was inventoried, itemized, and prepared for digitization. The scanning process involved creating TIFF master files and creating derivative J2K scans for reference images to be added to the Minnesota Reflections website. Copies of all formats were burned on CDs and delivered to the project participants. A few oversize items were sent to the University of Minnesota for digitization and then transported back to the Society. The MHS scanning center was responsible for digitizing 54% of the images. The Outreach Coordinator solicited and developed these projects, working with the MDL Selection Committee, a group of eight volunteers, to assess the projects and recommend them for digitization.

Despite making numerous improvements to our processes, not all partner projects were completed prior to the end of the grant period. In some instances, partners did not provide unique identifiers for digital objects, making it difficult for scanning centers to properly inventory and identify each image. A greater impediment, however, was that despite completing the scanning portion, partners were slow in supplying the associated descriptive metadata. In order to more effectively manage the workflow processes and to ensure that all projects are completed and available online prior to the end of the grant period, the MDL is recommending a 1 April deadline for submission of project proposals. It is hoped that this will allow time for the scanning centers to complete their work and for the participating organizations to complete the descriptive metadata portion of the project. The lack of completed metadata by some participating organizations was one of the delays in uploading all of this year’s projects to Minnesota Reflections, and another delay was caused by the CONTENTdm upgrade that was necessary to complete.

Staff involved in fulfilling this goal included:
For MHS: Irene van Bavel and Monica Ralston, Project Managers; and Janet Christianson, Patrick Blaine, and Nicole Delfino, Scanners.
For UM: Jason Roy, Project Manager; Jennifer Clayborne Torkelson, Ahnna Mahoney, and Matthew Hawbaker, Scanners.
For MDL: Marian Rengel

**Goal 3:**

a. Conducting the first two steps in a project to understand the technical issues associated with making publicly available existing and developing digitization and online projects through the statewide services of the Minnesota Digital Library.

Step 1 will be to assess or survey the status of digitization work across Minnesota – who is putting resources online, and who needs help in making those resources publicly available? – and to identify three to four partners who will be willing to work with the MDLC on developing an implementation strategy.

Step 2 will be to investigate and to evaluate possible methods for developing a single-search mechanism for the general public to access these digital resources. The University of Minnesota Libraries and the Minnesota
Historical Society will collaborate to complete this project.

a. This goal of the original grant application received less attention than originally planned. In part this was a consequence of the changing environment in which the MDL operates and the receipt by MHS of a major Bush Foundation grant award.

Step 1 ended up in the hands of the MDL Outreach Coordinator, Marian Rengel. In part, this resulted from considerable miscommunication among members of the MDL management team, some initial confusion about Step 2, and the Outreach Coordinates efforts to contact all potential partners in Minnesota Reflections. The Outreach Coordinator researched LSTA funding at the State Library Services Web site, gathered a list of organizations that had received funding under Minnesota LSTA Goal 2, compiled a spreadsheet of these projects and began contacting organizations to assess the current status of the work accomplished with that funding. (Excel spreadsheet attached.)

No formal attempt was made to identify collections other than those funded by LSTA grants. The Outreach Coordinator did attempt to learn which of the organizations she was working with on projects for “Minnesota Reflections” have their own digital collections, but this research was not systematic and did not yield tangible results. She is now, however, aware of several organizations that could be participants in this project should it develop further in the future. The following table identifies LSTA grant-funded projects in Minnesota that would be of interest in a single search initiative for access to statewide cultural heritage content.

<table>
<thead>
<tr>
<th>Title</th>
<th>Amount</th>
<th>Project Date</th>
<th>What is it?</th>
<th>Current availability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carver County History Newspaper Index</td>
<td>$25,000.00</td>
<td>2002</td>
<td>Index</td>
<td><a href="http://www.carvercountyhistoricalsociety.org/newspaper/search.php">http://www.carvercountyhistoricalsociety.org/newspaper/search.php</a></td>
</tr>
<tr>
<td>Cataloging Dakota County HS City and Township Files</td>
<td>$25,000.00</td>
<td>2002</td>
<td>Index</td>
<td>Cataloger created MARC records to files and incorporated that into Dakota County Public Library database</td>
</tr>
<tr>
<td>Web-based Minnesota periodical index</td>
<td>$25,000.00</td>
<td>1998</td>
<td>Index</td>
<td><a href="http://www.mplib.org/dbtw-wpd/magsrc.htm">http://www.mplib.org/dbtw-wpd/magsrc.htm</a></td>
</tr>
<tr>
<td>Song index</td>
<td>$20,000.00</td>
<td>2001</td>
<td>Index</td>
<td>Searchable only by staff for the public</td>
</tr>
<tr>
<td>Web-based biography file pilot</td>
<td>$24,990.00</td>
<td>1998</td>
<td>database</td>
<td>MHS stuff is at <a href="http://people.mnhs.org/authors/">http://people.mnhs.org/authors/</a> but links are to Web PALS and need updating</td>
</tr>
<tr>
<td>Incorporating a MN Digital State Publication</td>
<td>$19,730.00</td>
<td>2004</td>
<td>database?</td>
<td>Helped create Minnesota E-docs project at <a href="http://www.leg.state.mn.us/lrl/mndocs/edocs/overview.asp">http://www.leg.state.mn.us/lrl/mndocs/edocs/overview.asp</a></td>
</tr>
<tr>
<td>Searchable index on the Web of Finnish community newspapers of New York Mills</td>
<td>$25,000.00</td>
<td>2002</td>
<td>Index</td>
<td>Available at <a href="http://historymuseum.com/search.html">http://historymuseum.com/search.html</a> Created index of newspapers. Project has grown significantly over the years</td>
</tr>
<tr>
<td>Web Indexing for Winona County HS</td>
<td>$9,344.00</td>
<td>2003</td>
<td>Cataloging</td>
<td>Added catalog holdings of Winona County HS to SELCO regional catalog.</td>
</tr>
<tr>
<td>Digitize newspaper indexes – Rochester Newspaper Biographic and Subject Index Project</td>
<td>$25,000.00</td>
<td>1998</td>
<td>Index</td>
<td>Comprehensive index of Rochester area newspapers 1859-1912. Available at [<a href="http://www.selco.lib.mn.us/apps/ochs/wpasub.cf">http://www.selco.lib.mn.us/apps/ochs/wpasub.cf</a> m](<a href="http://www.selco.lib.mn.us/apps/ochs/wpasub.cf">http://www.selco.lib.mn.us/apps/ochs/wpasub.cf</a> m)</td>
</tr>
<tr>
<td>Honor their commitment: Military service at home and abroad</td>
<td>$24,400.00</td>
<td>2001</td>
<td>Index online Database?</td>
<td>Database of 128,684 military personnel and family from southeastern MN. Indexed information. Searchable at [<a href="http://www.selco.lib.mn.us/apps/ochs/military.cf">http://www.selco.lib.mn.us/apps/ochs/military.cf</a> m](<a href="http://www.selco.lib.mn.us/apps/ochs/military.cf">http://www.selco.lib.mn.us/apps/ochs/military.cf</a> m)</td>
</tr>
</tbody>
</table>
Step 2 of this goal became moot when the Minnesota Historical Society received a Bush Foundation grant award to develop and implement the Great Rivers Cultural Heritage Network, a multi-state initiative to provide a single entry point to a variety of online historical resources. MHS identified several principle partners in the beta implementation phase, including MHS collections, Nicollet County Historical Society, and the State Historical Society of North Dakota, among others. While Minnesota Reflections is in its future plans and the MDL has observed with interest the development of this project, we have not participated directly. MHS acquired Autonomy “Idol,” an Intelligent Data Operating Layer Server, making it possible for MHS to automatically process digital content and allow applications to communicate with each other. In the MHS instance, “Idol” will operate in a multi-state, multi-institutional environment, providing access to numerous unique and diverse resources, including birth and death records, photographic and art images, full text documents, library resources, and almost any type of cultural object that can be stored in a database. To a large degree, this MHS project fulfills and enlarges upon one of the earliest goals of the MDL—a single entry to Minnesota’s diverse cultural heritage. The scale and complexity of the project required a single institution’s resources to consistently support the infrastructure. The largely collaborative and voluntary nature of the MDL meant that such an initiative was largely beyond our means if not beyond our technical capabilities or dreams. We look forward to working with MHS as the Great Rivers Cultural Heritage Network develops.

Goal 4:

a. Developing under contract with Minnesota Historical Society or another organization with expertise, such as Sandbox Studios, which conducted the 2005 MDLC survey of K-12 social studies teachers, educational packages for teachers who want to use the resources of the Minnesota Digital Library in their classes. These packages will focus on content now part of or under development for the Minnesota Digital Library.

Due to focus on other goals and redistribution of the grant allocation received, this goal got a late start. The Outreach Coordinator developed this project with Sandbox Studios and provided MDL project oversight and management. After negotiations with Sandbox Studios, a contract for the development of two educational modules using Pachyderm software was signed. Based on a previous study of K-12 curriculum issues conducted for the MDL, Sandbox Studio consulted with K-12 teachers on appropriate topics to develop into packaged resources. The two selected topics were “Foot in Two Worlds,” a unit of native peoples during the late 1800s and early 1900s, and “History Mysteries,” a unit on how to imaginatively view and read historic images to uncover the past. Once the modules were complete, the K-12 teachers reviewed the final products and offered editorial revisions. The two packages are under revision as this report is written, but should be available online by late August 2007.

As a consequence of MDL involvement with investing in the continuing development of Pachyderm templates and MnSCU and the University of Minnesota’s interest in using an open source package to support faculty development of learning objects, the MDL received $35,000, including $10,000 from MnSCU, and a $25,000 grant for the next fiscal year to support the UM on template development and enhancement, implement a focus group to further develop Pachyderm, and provide Pachyderm training to all potential user communities. John Butler (UM/MDL), Todd Digby (MnSCU/MDL), and Keith Ewing (SCSU/MDL) have been involved in discussions with the technology staff at UM on this development.

Goal 5:

Contract with an MDLC member organization to provide an outreach coordinator to:

a) Work directly with existing and potential partners to acquire more content
b) Work with existing and potential partners to identify the social, organizational, economic, institutional, and educational constraints to participation in the MDL and to develop plans and strategies for overcoming those constraints.
c) Work with regional library networks, county and local historical societies, special collections, archives in the state’s higher education institutions, reference and special collection libraries, and other possible resources, to gain a full understanding of the needs of these organizations and the resources and services that the Minnesota Digital Library can develop to meet those needs. Write a detailed report of these needs and opportunities. This work and this report will inform the vision and strategic planning work of the Minnesota Digital Library Steering Committee as it develops its 3-year plan for the MDL (see 6 below)
d) Draw upon the work in a-c above to assist in the work of Project 3, to gather information on existing digital collections and to solicit partners willing to continue work toward developing a single-search method for accessing a variety of statewide resources.
Bringing more content into “Minnesota Reflections” became a larger part of this LSTA grant project when the funding agency moved $25,609 from the “Other” budget category into the “Contractual – Digitization” category, effectively increasing the amount to be spent on acquiring content by 150 percent and thus increasing the time and work needed to accomplish this goal by an equal percentage. This also effectively diminished the amount of time the Outreach Coordinator could spend on other initiatives, such as those in goals 5) b) and 5) c). Where the plan was to have the Outreach Coordinator spend 50 percent of time bringing collections on target, the Outreach Coordinator could spend 12 percent of time on other initiatives, such as those in goals 5) b) and 5) c). Where the plan was to have the Outreach Coordinator spend 50 percent of time bringing collections onto “Minnesota Reflections,” this change in budget required 75 percent of time on collection recruitment. As a result, and since there is no staff to shift responsibilities to, we were unable to address some projects described in the original grant application.

a. Once grant funding was in place at MINITEX, staff there worked with Marian Rengel, who as grant project developer in Learning Resources and Technology Services at St. Cloud State had served as MDL grant project coordinator for previous grants, and staff at St. Cloud State University to develop a contract for SCSU to provide the Outreach Coordinator services. Negotiations over contract details took longer than expected, but by 23 August 2006, Ms. Rengel was working full time on the MDL project. The time needed to develop the contract took seven weeks, effectively 12 percent of the grant period, effectively changing the terms of the service contract. Instead of working the 85 percent time proposed in the grant, Ms. Rengel worked full time until the end of the grant period to compensate for the lost time and the increase in digitization funding.

Ms. Rengel took a broad and inclusive approach to seeking out participants in “Minnesota Reflections.” The Outreach Coordinator set three goals: 1) draw upon the contacts and resources in the library community and in organizations with collections in Reflections to identify potential participants who had not previously been contacted; 2) seek broader participation from organizations that had been contacted previously but had not yet deposited collections in Minnesota Reflections; and 3) nurture past, current, and potential participants so that if they were not ready this year, they would be prepared for to participate in a future grant.

Mass e-mail messages, news releases and working with the publicity and education staffs at MINITEX and the Minnesota Historical Society were used to canvass the state and inform organizations of the MDL project. All of the regional and multitype library directors and as many of the historical societies for which she could find current phone numbers were contacted by telephone. Ms. Rengel also sent personal e-mail invitations to organizations that had established local projects online, inviting them to participate and expand their available digital collections.

The four-year universities in the Minnesota State Colleges and Universities system became a particular focus of attention. Three of those universities – SCSU, Minnesota State University, Mankato, and Winona State University – were charter members of the Minnesota Digital Library Coalition and have collections in Minnesota Reflections. Work with three of the others led to a strong project from the Northwest Minnesota Historical Center at Minnesota State University Moorhead and potential projects for 2007-08 from Bemidji State University and Southwest State University.

All of this contact work led to 25 trips across Minnesota to meet with staff from historical societies, libraries and academic organizations, from large groups such as the CLIC technology advisory board, the SELCO/SELS membership, and a group of seven historical societies from northwest Minnesota, to one-on-one sessions with the Renville and McLeod County Historical Societies, and the Danube Area Historical Society.

The Outreach Coordinator worked from August 23, 2006, through May 31, 2007, to bring projects into Minnesota Reflections. Approximately 50 percent of the organizations contacted submitted applications. Awareness of the Minnesota Digital Library and its mission was increased with all current and potential participants.

b. The MDL faces several significant challenges to bringing projects into Minnesota Reflections. At a most basic level, many potential participants are not aware of the MDL’s availability to assist them with digitization initiatives, providing both digitization and hosting services at no cost to the participant. The Outreach Coordinator frequently encountered people who assumed that the MDL was receiving numerous applications, too many for the MDL to handle, and their project would not be considered. Despite information in the requests for proposals, many people continue to be confused about costs for the participating organization and often who or what the MDL is. Personal contact by the Outreach Coordinator or a previous participant continues to be the most effective means of overcoming miscommunication,
misunderstanding, and apprehensions.

As a consequence of the LSTA grants received, the MDL has not required participating organizations to pay membership dues, cover digitization costs, or charge annual fees for image hosting; there are nonetheless costs to participation. Prospective participants with limited resources are wary of any potential costs. Costs borne by the local organization include selecting objects to digitize, packaging to shipment to a scanning center, and providing appropriate and accurate descriptive metadata; there are real costs associated with these activities and they often strain available resources. Experience is showing that many participants do not understand digitization as one step in a collection development and access project. The MDL, largely through the Outreach Coordinator needs to implement a stronger public relations and educational program to inform organizations about the project planning required for a digitization project: how to reconsider their collections and audience in a digital environment, how to anticipate uses of digital objects, how to prepare and normalize their descriptive metadata within MDL guidelines, and how to explore Minnesota Reflections to see how their collections could fit into the overall MDL program. The MDL needs to sustain participant enthusiasm throughout this important, but sometimes tedious, educational process.

c. The MDL compiled two studies that summarized attitudes and impressions about digitization in general and participation in Minnesota Reflections specifically.

One document resulted from a survey of MDL participants conducted by Michael Kathman, Keith Ewing, and Marian Rengel (SCSU). The survey, purposefully brief to encourage responses, attempted to understand how current participants felt about MDL services, the value of participation in Minnesota Reflections, and what the MDL could do to improve services. The survey showed that

i. The majority of respondents are pleased with the exposure their collections are getting as part of Minnesota Reflections. While a few are now considering or have started locally hosted digitization initiatives, the majority cannot undertake a digitization project on their own. Collectively, enthusiasm for the MDL is unabated—the ease of participation and exposure of collections were noted as particular benefits.

ii. Participants feel that the interaction that the Minnesota Digital Library creates between their collections and the collections of other participants is proving very valuable to researchers, including students.

iii. Participation does take time, in some cases more than was expected to select the material to be included and to prepare the metadata. This confirmed a long-held belief of the MDL Management Team, but remains an exasperating conundrum for participants and MDL leadership alike.

iv. As with any new project, there were some bumps in the road as we refined the processes and procedures. The MDL has worked on improving documentation, project forms, metadata forms, and digitization processes; local organizations have likewise been challenged to better assess their collections and provide adequate metadata, often depending upon volunteers to provide the labor. The MDL needs to continue to improve its efforts to reduce participant confusion and anxieties.

v. Participants felt it was important to be part of this statewide project. Several organizations were concerned about potential loss of revenue or diversion of interest from local societies; this has not occurred. Nicollet County Historical Society reports receiving an inquiry from Europe requesting permission to use an image in a publication there; this would not have happened without access to the collection through Minnesota Reflections.

vi. Participants would appreciate more help with metadata preparation, the ability to include more formats including audio and video, and the ability to receive comments from users to improve their metadata.

vii. Participants would like to receive comments from users on objects from their collections available through Minnesota Reflections in an effort to improve their descriptive information. The MDL is discussing several options that may support such social participation; however, the structure of CONTENTdm, as described in Goal 1 above, makes this a difficult and time consuming modification.

The survey was completed by 36% of participating organizations.

The second report was compiled by the Outreach Coordinator and resulted from her direct interactions with current and potential participants. Her assessment largely confirmed results found in the above study.
i. Few organizations have sufficient staff to participate in MDL projects at this time. Many are planning local sesquicentennial exhibits and events that preclude digitization initiatives. Some believe that once those celebrations are over, more time for participation will be available.

ii. Related to insufficient time is lack of adequate staff. As noted previously, many local organizations are dependent upon volunteers to provide much of the support for operations; digitization is a priority and likely to remain so for the foreseeable future.

iii. Even for organizations where time and staff are adequate, processing of local materials is slow and interesting collections wait in a perpetual backlog.

iv. Some organizations have so much that they would like to digitize, they are ill-prepared for where to start—it’s often difficult to distinguish purely local interests from broader statewide interests.

v. Geography, especially in delivery of fragile and unique resources to appropriate digitization centers, is difficult to overcome.

The MDL has used the results of these reports to consider how to address the major concerns raised. These include:

- Increasing the efforts of the outreach coordinator to meet face-to-face with the leadership of local organizations. While outreach efforts have increased each year of the Minnesota Reflections project, more is needed. Most people’s concerns and fears are allayed through working with the outreach coordinator.
- The MDL needs to consider appropriate ways to offer financial or staff assistance to local organizations to help them do the work. The MDL is considering several options that would remain consistent with grant agencies’ requirements, including drawing on the experiences of organizations that have already successfully participated in digitization projects with the Minnesota Digital Library.
- The MDL needs to broaden its project selection criteria to allow organizations to contribute the types or ages of objects they feel their audiences most want to have available online. To date, the MDL has used project constraints to gain experience with skills and processes to assure long-term success. Each succeeding grant has relaxed constraints on images and text if not format.
- At the request of some current and potential participants, the MDL needs to begin to experiment with digitizing video and audio formats. The MDL Management Team has submitted an IMLS planning grant to investigate the use of Flash as an appropriate medium to deliver video and audio formats through Minnesota Reflections.

d. See Goal 3 above.

**Goal 6:**

1) Develop a five-year plan and vision for the Minnesota Digital Library and formalize the governance structure of this organization. The MDLC Steering Committee will be responsible for this project, particularly the members who serve their organizations as administrative leaders. The vision and plan will serve as the basis for our request to the Minnesota Legislature for ongoing funding for the MDL.

1. Over the course of several meetings among a core group of MDL participants and later discussed among the MDL Steering Committee, working committees that would carry out the work of the MDL between meetings of the Steering Committee were established. Participation in the working committees has to date been voluntary.

- Strategic Planning and Visioning Committee
- Management Group
- Assessment & Evaluation Group

During the year, the Strategic Planning and Visioning Committee developed a concept vision that was adopted by the Steering Committee and appears below.

The MDLC Steering Committee continues to be responsible for this project, particularly the members who serve their organizations as administrative leaders. The vision and plan served as the basis for a request by MINITEX to the Minnesota Legislature for ongoing state funding for the MDL.

The MDL is very pleased to receive a LSTA grant award for FFY 2007 from the Minnesota State Library using federal funds from the Institute of Museum and Library Services (IMLS). This provides the MDL with
continuing funding to develop the Minnesota Digital Library concept and provide it with more sustainability for the future as the MDL moves from a project to a program. The MDL also received a small amount of state funding in state appropriations to MINITEX through the Minnesota Office of Higher Education. This funding will cover some of the maintenance costs for hardware and software along with some staffing and administrative costs. The greater LSTA grant funds will be used to support digitization and additional development activities.

The Minnesota Digital Library Coalition Steering Committee approved two important goals as it continues moving forward.

1. MDLC should continue its leadership role in digitization by:
   1) Promoting standards, guidelines, and best practices;
   2) Increasing its outreach and educational efforts on digitization including helping local organizations manage the digitization of their own materials;
   3) Continuing providing digitizing services as a transition; and,
   4) Examining alternatives to centralized scanning.

   This goal provides a blueprint for what needs to be done in the coming years. There is a strong emphasis on educational activities as well as promoting standards, guidelines and best practices for organizations interested in developing local digitization projects. It also provides for continuing digitizing services where appropriate, but not excluding outsourcing. There was a survey conducted earlier in 2007 among organizations involved in the MDL projects over the last few years and it was very helpful to the Steering Committee in formalizing its five-year plan.

2. The Minnesota Digital Library (MDL) will become the umbrella brand for a range of online information resources, including the Electronic Library for Minnesota (ELM), MnLINK Gateway, and Digital Minnesota (encompassing the several activities of the previous MDL, including Minnesota Reflections, education and outreach, and digitization standards, guidelines, and best practices).

   The following ‘concept’ was approved by the MDLC Steering Committee and the MINITEX Advisory Council so that MINITEX and the MDLC can move forward with reorganizing the various Websites and establish the branding of the umbrella and its components. The Minnesota Digital Library will be portrayed as an umbrella concept that would include ELM, MnLINK Gateway, and Digital Minnesota, which will include Minnesota Reflections and be the vehicle for digitization activities in Minnesota. This is something we would be working on during FY08.

**Minnesota Digital Library**

A program of the MINITEX Library Information Network, open to all residents of Minnesota that provides and enhances access to digital resources. This includes but is not limited to:

- **Electronic Library for Minnesota (ELM)** - Search ELM for magazine, newspaper, and journal articles, eBooks, and information from reference sources—available to all Minnesota residents at no charge!

- **MnLINK Gateway** – A virtual library that electronically links to Minnesota’s rich information resources, including online library catalogs – you can initiate an interlibrary loan request.

- **Digital Minnesota** – providing access to Minnesota’s unique and rich resources
  - Standards, guidelines, and best practices
  - Digitization Projects, including establishing best practices for new media
  - Minnesota Reflections (image database and presentation)
  - Education and outreach, including archived Webinars and tutorials
  - News and Events
  - Documentation
  - Links with MN History Center (including their evolving Great Rivers Cultural Heritage Network multi-state meta-search), University of Minnesota, Iron Range Research Center, College of St. Catherine, Carleton College, Nicollet County Historical Society, Minneapolis Public Library, and many other Minnesota sites with collections of digital resources.
3. **Establish a Five-Year Plan and vision.** The following outline describes in general terms some of the activities identified for the MDLC to pursue over the next five years.

### 2007-2008
- Identify specific objectives and activities to begin carrying out the four activities identified in the statement adopted by the MDLC Steering Committee.
- Expand vision to include more current digital projects.
- Re-brand the Minnesota Digital Library and Digital Minnesota with new Web pages.
- Fulfill project objectives identified for LSTA grant received for FFY08.
- Implement state funding received by MINITEX from Legislature for project support.
- Join the pilot project being developed by the Minnesota Historical Society, the *Great Rivers Cultural Heritage Network*.
- Strategic Planning and Visioning Committee will discuss how Digital Minnesota should:
  - Seek partnerships and alliances where appropriate.
  - Determine how social networking tools can be utilized by Digital Minnesota and incorporated into *Minnesota Reflections*.
  - Review and suggest changes in governance, including the roles and responsibilities of the Steering Committee and various committees now in existence.
  - Review and determine how different formats can be digitized and incorporated into existing projects successfully.

### 2008-2009
- Discuss and develop a pilot project to help local organizations outsource digitization work to organizations and/or vendors that have expertise in digitization.
- Apply for LSTA grant to support further digitization and expansion.
- Determine other formats to be added to *Minnesota Reflections*.
- Assess the continuing durability and viability of CONTENTdm as the primary database and presentation environment for *Minnesota Reflections*.
- Continue to support and maintain *Minnesota Reflections*.
- Review and study usage patterns and relationship of Digital Minnesota with the MnLINK Gateway and *Minnesota Reflections*.

### 2009-2010
- Move *Minnesota Reflections* from project status to a program of Digital Minnesota.
- Request additional support funds in MINITEX budget request to the Minnesota legislature to further reduce reliance on LSTA funds for administration and support of digitization projects.
- Apply for and fulfill project goals of LSTA grant.
- Continue to support and maintain *Minnesota Reflections*.
- Assess how *Minnesota Reflections* can fit into the MHS service program for continued support and growth; consider transfer of *Minnesota Reflections* to MHS.

### 2010 – 2011
- Make recommendations to Minnesota State Library Agency on future funding of Digital Minnesota and how local organizations can continue to participate and add to *Minnesota Reflections*, the statewide database of digitized objects developed in previous years.
- Based on previous assessment and recommendation of participants, transfer support, maintenance, and digital curation of *Minnesota Reflections* to MHS.
- Review and study governance and determine if any changes need to be made.
- Review stability of funding for range of projects.

Despite a server problem that stopped tracking usage data on CONTENTdm during September through October 2007, overall use of *Minnesota Reflections* was up 18% over the previous 12 month period. The table below provides usage statistics for *Minnesota Reflections* since going live to the public in August 2005.

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<thead>
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<th>Pages</th>
<th>Hits</th>
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<td>Apr-07</td>
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<tr>
<td>Totals</td>
<td>57055</td>
<td>91407</td>
<td>1208940</td>
<td>7578037</td>
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</tr>
</tbody>
</table>

E. Other Results

Not applicable.
APPENDIX 1

Minnesota Reflections Web Site

Usability Evaluations
Summary Report

May 25, 2007

Prepared by:

David Rosen
Usability Consultant
University of Minnesota
Usability Evaluation Summary

Project: Minnesota Reflections Web Site
Date: May 21-22, 2007
Consultant: David Rosen

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1. Usability Team Members.................................................................2
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Appendices

Appendix A: Minnesota Reflections Web Site Usability Results
1. **Usability Team Members**

The Minnesota Reflections usability team was comprised of the following team members:

<table>
<thead>
<tr>
<th>Role</th>
<th>Name</th>
<th>Organization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Usability Consultant</td>
<td>David Rosen</td>
<td>Usability Svcs</td>
</tr>
<tr>
<td>Usability Svcs Manager</td>
<td>Alice de la Cova</td>
<td>Usability Svcs</td>
</tr>
<tr>
<td>Participant Recruiting/Lab Support /Lab Receptionist</td>
<td>Rachel Broscoff, David Buchert, Michael Diener, Katie Sandgren</td>
<td>Usability Svcs</td>
</tr>
<tr>
<td>MDL Coordinator for this project</td>
<td>Marian Rengel</td>
<td>Minnesota Digital Library, Outreach Coordinator</td>
</tr>
<tr>
<td>Web Designer</td>
<td>Jen Tantzen</td>
<td>U of M Libraries Digital Collections</td>
</tr>
<tr>
<td>MDL responsibility for usability of the design</td>
<td>Scott Sayre</td>
<td>Sandbox Studios</td>
</tr>
<tr>
<td>Content Experts</td>
<td>Kris Wetterlund</td>
<td>Sandbox Studios</td>
</tr>
<tr>
<td></td>
<td>John Butler</td>
<td>U of M Digital Library Development Lab, Director</td>
</tr>
<tr>
<td></td>
<td>Keith Ewing</td>
<td>Minnesota Digital Library, Project Director</td>
</tr>
<tr>
<td></td>
<td>Scott Hreha</td>
<td>U of M, MINITEX Web Coordinator</td>
</tr>
<tr>
<td></td>
<td>Kristen Mastel</td>
<td>U of M, MINITEX Reference Librarian</td>
</tr>
</tbody>
</table>

For questions related to this report, please contact:

David Rosen  
Usability Consultant  
University of Minnesota  
Phone: 612-626-0073  
Email: rose0414@umn.edu
2. **Description of Web Site**

The site was designed to provide access to the MN Reflections collections of the digital library, as well as digitized resources (images, text, objects) from organizations around the state. The site is intended to be a resource for students, educators, and the general public.

3. **Purpose of the Usability Evaluations**

This evaluation’s purpose was to examine the usability of the Minnesota Reflections Web site and to identify potential usability issues for its varied users.

Specifically, the usability team had agreed upon the following usability goals for the site:

- That users can easily locate content by place, person, or topic
- That users are able to discover ways to use the content at another time
- That users find the content and layout of the home page to be useful and valuable
4. Evaluation Methodology

A task-based usability assessment was conducted using a cross-functional evaluation team consisting of members from Usability Services, the Minnesota Digital Library, University of Minnesota Libraries, MINTEX, and Sandbox Studios.

At the usability kick-off meeting on April 23rd, the team jointly established the usability goals, determined participant recruiting criteria for evaluators, and determined representative tasks for the evaluators to use in trying out the Minnesota Reflections site. Subsequent to this meeting, several team members wrote the tasks and scenarios, thus providing a suitable context for the evaluators to assess the design. On May 9th, there was a scenario review meeting where the team and the consultant went through the scenarios using the Minnesota Reflections Web site. Revisions to the scenarios or the site were made as needed.

Eight evaluations (up to 90 minutes each) took place on May 21-22, 2007 at the Usability Services Laboratory on the Minneapolis campus. The breakdown of the eight evaluators was as follows: 2 Library Media Specialists who work with K-12 students, 2 current undergraduate students at the University of Minnesota, 2 members of the general public (represented by staff from the University of Minnesota), 1 faculty member who teaches lower-level classes, and 1 current high school student.

Each evaluation session began with an evaluator briefing and an eye-tracker calibration procedure, followed by the evaluator's completion of a number of typical tasks involving the Minnesota Reflections Web site, and finished with a debriefing session with the evaluator. There were a total of 10 scenarios with tasks the evaluator was asked to complete using the site.

During the evaluation sessions, the evaluators were asked to use a “thinking aloud” method to communicate their actions and thoughts to the usability team, in order to provide insight into the evaluator's intentions and perceptions about the process. Eye-tracking data was used to determine whether evaluators saw various features within the site.

The usability team observed the evaluation sessions inside an observer room separated from the evaluation room by a one-way mirror. Cameras and microphones in the evaluation room, and separate computer monitors for observers, allowed the team members in the observer room to see the evaluator’s computer screen, mouse / keyboard actions, and facial expressions, and to hear the evaluator’s comments throughout each session. In addition, the usability team was able to see eye-tracking data in real time, showing the evaluators' eye fixations (where they looked for at least 100 ms.) and the paths between the fixations.

After each evaluator completed his/her tasks, the usability consultant asked the evaluator a series of debriefing questions to have the evaluator summarize the experience of using the Minnesota Reflections Web site, as well as gain additional feedback on desired features of the site. Evaluators were also asked to complete a desirability matrix worksheet that contained 44 adjectives that were roughly 60% negative and 40% positive. The evaluators were asked to choose the five words that they thought most accurately described the Web site, and then were asked to explain why they chose the words that they did. The words each evaluator chose are
documented in the second sheet of Appendix A – Minnesota Reflections Web Site Usability Results.

Among the usability team members observing each session, one team member narrated significant observations about the session while another team member recorded those observations in a usability activity log. Another team member took notes specifically about what the evaluators had seen or not seen on the computer screen, as revealed by the real time eye-tracking data. Another team member played the role of a Help Desk, for any evaluators who would have called a help desk about the use of the Minnesota Reflections site. In addition, video/audio recordings were made of each session for the benefit of the usability consultant. After each evaluation session, the usability team members printed and reviewed the usability log, as well as their notes, and the usability consultant recorded issues identified by the team into a usability results spreadsheet.

After all eight evaluation sessions had been completed, the team and the usability consultant met for three hours on May 23rd to review the usability results spreadsheet. Using a consensus approach, the team discussed each identified issue, assigned it a severity level, determined who would take responsibility for the issue, and considered what actions might be taken to address it. These team decisions were documented in the usability results spreadsheet. A preliminary version of the spreadsheet was sent to all team members by email on 5/24/07. The spreadsheet was revised for the final version included with this report.
5. **Evaluator Tasks**

Evaluator tasks were presented in the following scenarios. The scenarios have been paraphrased:

**Scenario 1:** Determine how many different images of automobiles you can find. Use as many different keywords as you can think of to find them all.

**Scenario 2:** Find out how many primary source images are related to Indian Boarding Schools.

**Scenario 3:** Find out whatever you can about the life of your great uncle, Alfred Wilson, who lived in Donnelly, Minnesota.

**Scenario 4:** Find 25 images related to snow and save them as a set.

**Scenario 5:** Find old photographs of places in the Twin Cities.

**Scenario 6:** Determine who you would call or write to find out what more is known about the photo of the collapse of the Board of Trade building in Duluth, Minnesota.

**Scenario 7:** Using the advanced search, find a mechanical drawing of a safety bell for a mining car.

**Scenario 8:** Determine how many historic pictures of New Ulm, Minnesota, you can find.

**Scenario 9:** Determine where you can find what organizations have provided materials to the Library.

**Scenario 10:** Determine the best way to find the earliest photo in the Minnesota Digital Library of a Native American.
6. Significant Issues

Issues can be defined as significant in several ways. The primary approach is to assess the implications of the issue for a user in completing the tasks successfully, regardless of the issue’s frequency among the evaluation sessions. This is indicated by the severity level on the usability results spreadsheet, as decided by the usability team.

We also note the frequency with which an issue occurred. Although we don’t use the frequency of an issue for drawing statistical conclusions, if an issue is encountered very frequently by evaluators, it becomes more significant even if there is a work-around for it.

The most significant issues the team recorded are listed on the next page. See Appendix A, “Minnesota Reflections Web Site Usability Results", for a comprehensive spreadsheet of issues documented in the usability evaluations (including positive comments).

Evaluators made a large number of positive comments about the Web site during the sessions. The following comments were frequently repeated by the evaluators:

• Several evaluators mentioned that they liked having the basic search and advanced search options available on the home page

• Several evaluators mentioned that they thought the record view was “very rich” and had a lot of good information

• Some of the evaluators mentioned that they liked the background image on the home page

• A couple of evaluators mentioned that the “Browse by Topic” option on the home page would be a “good starting point” and “really good for kids”

• A couple of evaluators said that the images on the site were “really cool”

• One evaluator really liked the slideshow option on the “My Favorites” page and said it would be good for presentations
**Most significant issues:**

<table>
<thead>
<tr>
<th>Issue</th>
<th>Next Steps</th>
</tr>
</thead>
</table>
| **Wanted a Date Range option for the Search and to be able to sort by date in the Search Results (Issues #1 and #8)** | Referred to OCLC  
Idea:  
1. Normalize the data in the database (actual dates to search. Defining "circa")  
2. Add a field to "Selected Fields"  
3. Determine if there is a way to add ">", "=" or "<" to the search  
4. Determine if there is a way to search date ranges (possibly adding a dropdown)  
5. Sort order and number of results per page should be on the Search Results page |
| **Dropdown in "Selected Fields" Advanced Search unclear (Issue #2)** | Ideas:  
1. Align the names of the fields with the actual terms in the metadata  
2. In the advanced search and the metadata, allow the option of clicking something (maybe a question mark symbol) to get more information about a particular field |
| **The use of "Profiles" was unclear (Issue #3)** | Idea:  
1. Change the name of the "Profiles" link to "Contributors" |
| **Wanted to Restrict by Format (Issue #4)** | Ideas:  
1. In the Format Medium field provide a controlled vocabulary rather than free-text, and make it mandatory rather than optional  
2. Determine how to convert the data that is already there |
| **Search Terms aren't highlighted in the metadata (Issue #7)** | Referred to OCLC  
Idea:  
1. See if OCLC would be interested in adding the feature of highlighting the search terms in the metadata |
| **Evaluators wanted to narrow the search results (Issue #9)** | Referred to OCLC  
Ideas:  
1. Include a limiting function on search results  
2. Include a search within a search |
| **Evaluators expected quotations to keep terms together (Issue #6)** | Referred to OCLC and the team  
Ideas:  
1. Allow proximity searching in the basic search  
2. Add a "Search Tips" link near the Basic Search and Advanced Search |
APPENDIX 2

The following items were summarized and organized from the larger set of usability lab findings. The finding are organized into two major sets: 1) those that may be addressed directly by MDL staff and; 2) those that will most likely need to be passed-on to and addressed by OCLC.

### Items to be addressed by MDL staff

#### MN Reflections Homepage & Global Navigation

<table>
<thead>
<tr>
<th>Issue:</th>
<th>Recommendations:</th>
</tr>
</thead>
</table>
| Users could not easily find information on the MDL contributors and how to contact them. | - Change the name of the "Profiles" link to "Contributors"  
- Add link to contributor contact info in metadata record  
- Change "Contact" link to "Contact MDL" |
| Users confused by link in MN Reflections to the MHS Map project which is not contained within MN Reflections | - Remove MHS Map ink from MN Reflections page and put on MDL page.  
- Consider adding MHS maps to MN Reflections |
| Users found the text size too small and text to background contrast too low on certain pages for some users | - Make sure that font size can be increased on all pages  
- Fix the contrast issues (Top Navigation, My Favorites page, etc) |

#### MN Reflections Advanced Search

<table>
<thead>
<tr>
<th>Issue:</th>
<th>Recommendations:</th>
</tr>
</thead>
</table>
| Users were confused by the field selection in advanced search since it did not correlate with the titles of displayed metadata in records | - Align the names of the fields with the actual terms in the metadata  
- Add help links next to each field in the metadata and advanced search to help user better understand how it is being used or defined |
| Users wanted to restrict search by format (photo, illustrations, documents, etc.) | - Add controlled vocabulary for these items to metadata and the ability to select this in basic and advanced search |
| Users wanted to be able to search and sort by creation date | - Normalize the search date data in the database and develop a way to define "Circa" |
| Users wanted an “ANY” field as an option within advanced search | - Create an option for "any" or "all" in the selected fields dropdown menus |
| Users did not seem to see modal switch on top of advanced search page that would allow them to switch search modes | - Make the links for the different modes bigger or replace with a radio button or more graphical tab  
- Consider if the location of this functionality can be changed  
- Increase visibility (background color, boxed-in) |
<p>| Users wanted a location field in the advanced search to help search for | - Determine if a &quot;Location&quot; field could search the metadata that has to do with location |</p>
<table>
<thead>
<tr>
<th><strong>MN Reflections Search and Returns</strong></th>
<th></th>
</tr>
</thead>
</table>
| Users found the display of individual document pages to be overwhelming in the search results, particularly since the pages were named only by page number | - Suppress compound documents and only display one compound instance of a document rather than all of the related pages in search return.  
- Consider how a document only search would work with this change |
| Users wanted some tips, feedback or at the minimum, another search box if their current search returned zero results | - Add search tips such as “1) Check your spelling; 2) Try other related terms such as synonyms, etc.”  
- Add a search box to the area where there were zero results |
| Users were often not finding all related items because they used a synonym variant not used in records | - Explore Web 2.0 tagging options  
- Extend search capability with Thesaurus, or other form of term expansion  
- Add more Browse by Subject options |
| Users thought that the search box in the upper right was searching within the current result set | - Change the label on the search box to "New Search" |

<table>
<thead>
<tr>
<th><strong>MN Reflections Compound Documents</strong></th>
<th></th>
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</thead>
<tbody>
<tr>
<td>Users found the search within a document feature confusing. Some thought it was a new overall search</td>
<td>- Make the text above the box more visible and clearly related to the document viewer</td>
</tr>
</tbody>
</table>
| Users did not seem to see the option for viewing documents in different modes (OCR text, etc.) | - Set default to “page & text”  
- Show all three options and allow people to choose between them without having to dropdown  
- Determine if there are any better names for the options in the document view dropdown |

<table>
<thead>
<tr>
<th><strong>MN Reflections Metadata</strong></th>
<th></th>
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</thead>
<tbody>
<tr>
<td>Users found the large number of blue highlighted links in record metadata difficult to read.</td>
<td>- Remove the linking from the description, but keep it in the areas with a controlled vocabulary</td>
</tr>
<tr>
<td>Some users found the layout of the metadata confusing to read, particularly which information was relevant to the asset versus which was about the record or contributor</td>
<td>- Insert paragraph breaks or horizontal rules between information about the image and the information about the contributing organization</td>
</tr>
<tr>
<td><strong>MN Reflections My Favorites</strong></td>
<td></td>
</tr>
<tr>
<td>--------------------------------</td>
<td>---</td>
</tr>
</tbody>
</table>
| Users found the procedure for using MyFavorites to be confusing because of its unusual design and instructions | - Re-order the instructions so that the "create" button is the last thing listed  
- Add instructions for saving to the page that pops up after hitting "create"  
- Adjust the size of the pop-up window  
- Change instructions so that they don't refer to "File" menu (IE doesn't have one anymore)  
- Take out instructions of saving it to the server and ContentDM  
- Rename the "Make Favorites" button to "Reload to My Favorites in Minnesota Reflections"  
- Add instructions to close the page when user is done |
<table>
<thead>
<tr>
<th>Issue:</th>
<th>Recommendations:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Users wanted to be able to search and sort by creation date</td>
<td>OCLC - Add a field to advance search fields - Add &quot;&gt;&quot; &quot;=&quot; &quot;&lt;&quot; capabilities to the search - Add dropdown menu operators for searching a range of dates</td>
</tr>
<tr>
<td>Users expected to be able to use common search strategies such as Boolean operators, quotation concatenation and search phases.</td>
<td>OCLC - Add more Google-like search functionality to future release</td>
</tr>
<tr>
<td>Users were confused by program inconsistent use of found term highlighting, which appeared to only work in documents and only some of them</td>
<td>OCLC - Add functionality to all search returns</td>
</tr>
<tr>
<td>Users could not understand how search returns were sorted and how they could be changed</td>
<td>OCLC - Add ability to specify the sorting of results to both the search and result pages</td>
</tr>
<tr>
<td>Users wanted to be able to narrow the search results after performing queries that returned a large number of results</td>
<td>OCLC - Add ability to filter search results - Add ability to search within a set of search results</td>
</tr>
<tr>
<td>Users found a bug when using the Back button while in the document viewer. The button looked like it was stuck in the document without any data on the page (needed one more back button click)</td>
<td>OCLC - Fix back button so it goes back to the results page upon one browser back button click  Note: Check if fixed in new version</td>
</tr>
<tr>
<td>Users lost selected images in MyFavorites when moving to the next page of returns without choosing to save to My Favorites</td>
<td>OCLC - Add a warning prompt when a user tries to move to the next page with items checked, asking whether they want to add them to their favorites before moving on</td>
</tr>
<tr>
<td>Users were finding limited or no results when using word variations (plural, tense, etc.) not identical to those contained within the record they were looking for</td>
<td>OCLC - Provide automatic stemming and truncation of search terms and the methods by which potential results are processed</td>
</tr>
<tr>
<td>Users discovered that the Return to Search Results button was not available on all views of individual records</td>
<td>OCLC - Add Back to Results to My Favorites page</td>
</tr>
<tr>
<td>Users found that they could use select all to add items to their Favorites if one or more item already existed in my favorites</td>
<td>OCLC - Change functionality so if an image already exists in MyFavorites it will be automatically overwritten if added again rather than generating an error</td>
</tr>
</tbody>
</table>