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The Maine Electronic Document Delivery Project: a Cooperative Project of Maine Hospital Libraries and the NN/LM New England Region

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INTRODUCTION

New information technologies have greatly improved access to health science collections in the state of Maine. This was the conclusion arrived at following completion of the "Maine Electronic Document Delivery Project" in May, 2002. Although the conclusion should come as no surprise to anyone with an internal or external track to the field of medical librarianship, it will be instructive for other information professionals, especially for those residing in rural areas of the country, to learn and benefit from the details of the project. This article divides those details into six segments or perspectives, describing: [a.] the history; [b.] the document delivery process; [c.] the statistics; [d.] the successes; [e.] the pitfalls; and [f.] the future.

A. THE HISTORY

In the spring of 2000, the idea for a pilot project to improve access to health science collections throughout the State of Maine was initially proposed. Present at the meeting were Elaine Martin, Director of the Lamar Soutter Library at the University of Massachusetts Medical School, and representatives of HSLIC (Health Sciences Libraries Information Consortium.) One year later, in May, 2001, the University of Massachusetts Medical School Library was awarded a contract with the National Library of Medicine to become the new Regional Medical Library (RML) for the New England Region (NER). Subsequently, the HSLIC Consortium from Maine invited the RML to attend their 2001 Fall Meeting, both to discuss project particulars and to define project participants. A total

of seven member libraries attending the meeting agreed to participate, and the "Maine Electronic Document Delivery Project" was officially launched.

The project's "Maine" goal simply stated: to improve access to health science collections statewide through the implementation and beta testing of new electronic document delivery (EDD) technology. To accompany this single goal; there were five objectives:

> [1.] To have RLG's Ariel® electronic document delivery (EDD) software installed at all participants for both send and receive functions;
>
> [2.] To provide health science librarians with first-hand experience with EDD technology;
>
> [3.] To minimize the turnaround time for filling interlibrary loan (ILL) requests;
>
> [4.] To provide sufficient disk storage for requested documents; and
>
> [5.] To increase resource sharing among rural members within the state.

In the weeks that followed, a six-month project timeline was established (December 1, 2001 – May 31, 2002) and guidelines for the Maine Electronic Document Delivery project were then drafted into formal Letters of Agreement, individually co-signed by both the Director of the RML and the Director of each participating library.

The Guidelines set forth in the Letters of Agreement included a list of key provisions to which the RML and the participating libraries would commit for the duration of the project. The Maine participants agreed to send to the Lamar Soutter Library's interlibrary loan (ILL) services a normal volume of borrow requests for processing during

the test period. If it was determined that an increase in the volume of requests would be required, then the RML would call on the participating library to modify their Routing Tables in the DOCLINE system. Lastly, every participant was required to forward their document delivery statistics weekly to the RML.

As part of a traditional quid pro quo arrangement, the RML promised to fill all incoming interlibrary loan requests free of charge for the six-month duration of the project. In addition, the RML offered a $1,000 award to each participant, to be applied toward the purchase of either Ariel® software or a piece of related equipment. Four of the seven participants (Central Maine Medical Center, Eastern Maine Medical Center, Mercy Hospital and Penobscot Bay Medical Center) applied their award to the purchase of the Ariel® software. Of the remaining three participants, The Jackson Laboratory, and Husson College opted to purchase related equipment, since they already had Ariel® installed prior to the project; Maine Medical Center declined receiving their award. All seven participants were on board for the start of the project's kickoff date (December 3, 2001):

1. Central Maine Medical Center (Lewiston);
2. Eastern Maine Medical Center (Bangor);
3. Husson College (Bangor);
4. Maine Medical Center (Portland);
5. Mercy Hospital (Portland):
6. Penobscot Bay Medical Center (Rockport); and
7. The Jackson Laboratory (Bar Harbor).

B. THE PROCESS

The process adopted for the project involved seven steps:

Step1. Library patrons search the PubMed database, routing borrow requests through the DOCLINE system.

Step2. DOCLINE borrow requests are routed to the Lamar Soutter Library(LSL).

Step3. DOCLINE requests are receipted by LSL's ILL staff and transferred to their ILL management system, ILLiad®.

Step4. The LSL staff begins "filling" requests: pulling, photocopying, and scanning full text of the requested articles.

Step5. The LSL staff completes "filling" requests, as the Ariel® software converts scanned image files from a "TIFF" format to a more readable "PDF" format; PDF files are transferred to document archives stored on the LSL Web server.

Step6. The Ariel® software sends e-mail messages to patron inboxes that include assigned PIN numbers and URL links to the LSL Web server.

Step7. Library patrons retrieve the PDF files from the LSL Web server with their assigned PIN numbers and URL links. Files reside in document archives on the LSL Web server for two weeks.

For a graphical representation of the seven-step process, please see Figure A., below.

[Insert Figure A. "MRSQ (Figure A).gif"]

Figure A. Seven--step process.

There are additional highlights to the process that should also be noted:

- **LSL had access to a Web server that resided outside of the "firewall".**

  Prior to the project's inception, the Lamar Soutter Library (LSL) had opportune access to a public Web server that resided outside of the institutional firewall. A firewall may be defined as "a set of related computer programs (located at a network gateway server) that protects the resources of a private network from users in other networks." The purpose of the firewall is to prevent outsiders from accessing the institution's private data resources. A public Web server whose IP address "resides" outside of the firewall will not compromise data security, and patrons outside of the institution may freely access their requested documents. For libraries who do not have access to a public Web server of their own, the vendor (RLG) offers a free service to all Ariel® customers, a "store-and-forward" server, that essentially acts as a host (similar to a public Web server) for storage of requested documents.

  To accommodate most firewalls, RLG's Web site also provides users with "the option of sending a document as an e-mail attachment, as long as factors such as file size limitations are taken into account." The newest 3.3 release of RLG's Ariel® product provides new option settings for improving firewall compatibility: [1.] an optional setting for users who operate behind a Network Address Translation (NAT) firewall or router; and [2.] several different optional settings to limit the data port range. Please refer to the RLG Web site (www.rlg.org) for further details.

- **LSL elected a two-week period for archived documents.**

  Due to the fact that pages stored in the PDF format may occupy on average anywhere from 50KB to 500KB in disk storage capacity, LSL decided on a maximum length of two weeks (14 days) for all archived documents.

- **Lending requests were filled only from materials found in print format.**

  Lending requests would not be filled from articles found in electronic journals. This was largely decided due to licensing restrictions placed on e-journal subscription agreements that override provisions made in the copyrights laws. For copies made from scanned documents initially procured from articles in print format, it was decided by the LSL staff that the borrower would be allowed access to archived documents up to five times.

- **Several workstation requirements were met for remote access to documents.**

  Library patrons from participants were required to have: [1.] a copy of Adobe Acrobat Reader® residing on their personal computer's local hard drive; and [2.] access to an electronic mail system, to include sufficient disk space on a POP3 server. The first requirement ensured that local software was readily available to interpret (or read) files stored in PDF format; the second requirement responded to the need to apprise the library patron of the assigned PIN number and appropriate password for retrieval of the requested document.

C. THE STATISTICS

Statistics were collected for twenty-six consecutive weeks from all seven participants in the Maine Electronic Document Delivery project. As shown in the table below (see Figure B.), the ILLiad® software maintained lending statistics for the Lamar Soutter Library (LSL).

[Insert Figure B. "MRSQ (Figure B).doc"]

Figure B. Statistics collected by ILLiad® at the Lamar Soutter Library.

D. THE SUCCESSES

There were three obvious successes of the project:

- **Faster turnaround time for document delivery.**

  With the introduction of new technologies in the document delivery process, patrons have witnessed astonishing drops in the turnaround time for requested documents. Prior expectation levels for an average turnaround time in document delivery that were measured in days are now measured in hours. The immediate benefit to libraries: a shorter turnaround time will lead to increased satisfaction for both the patron and librarian.

- **Increased legibility ("cleaner copies") to scanned material.**

  Patrons have commented that there has been a noticeable increase in the legibility of documents generated from the electronic document delivery process. This is particularly important with respect to research articles that rely on detailed graphical representations of molecular and anatomical drawings to convey information. One need only compare the output from a scanned diagram (first by facsimile; second by an average flatbed scanner) to appreciate the difference in the quality of output. An improvement in document legibility also may be a contributing factor to increased patron satisfaction.

- **Enhancement of library services for project participants.**

  As part of the Letter of Agreement, project participants were each awarded $1,000 for the purchase of new Ariel® software or a piece of related equipment. In each case, award recipients were able to enhance document delivery services for their respective library.

E. THE PITFALLS

To provide a balanced view, there were also some problems or "potential pitfalls" encountered during the project:

- **The firewall may initially be an issue, but it is no "showstopper."**

  Health care institutions (such as hospitals and medical centers) as well as academic institutions (colleges and universities) must have an effective firewall in place to protect their private data interests from outside intruders. The firewall, however, need not be an obstacle for any library to introduce and take advantage of the new information technologies now available and in widespread use.

  The newest release of the Ariel®3.3 software contains several new options that greatly improve firewall compatibility. As mentioned earlier in this article: RLG offers the store-and-forward server as a free service, designed to circumvent any "firewall" issue.

- **Collaborate and work with the I.S. department.**

  Librarians should work in close collaboration with their local Information Services (I.S.) department when introducing new technologies for the library. To implement an electronic document delivery system, it is necessary to collaborate with: network administrators, web administrators, mail administrators, desktop support, and possibly the Help Desk. Please keep in mind that many I.S. departments do not operate in a "monolithic" fashion, but rather, often have a reporting structure that is largely decentralized, with work teams defined by their specialization. Determine the proper channels and contacts that will be required to get the job done. The I.S. Department is an invaluable resource to any institution – solicit their support well in advance and maintain a collaborative approach at all times.

- **Be mindful of the interface between Ariel® and the respective ILL management system.**

  There are a number of ILL (interlibrary loan) management systems in the marketplace. The Lamar Soutter Library (LSL) uses ILLiad® to handle their borrowing and lending activities. Please take the time to review the vendor's web site (or contact them directly) to pick up relevant information on equipment compatibility and set-up before installing the Ariel® software.

- **Every new technology introduces a learning curve.**

  Make certain that both the library staff and the user community are educated in the new technologies introduced. New processes should be clearly defined and documented, from the perspectives of the patron and the library staff.

- **Watch out for cumbersome procedures that diminish productivity.**

  As new procedures are instituted along with the introduction of new technologies, be prepared to eliminate cumbersome procedures that may diminish staff productivity – encourage feedback to rework and redraft procedures to streamline work processes. The best people to offer suggestions for improvement are usually those members on the staff closest to the "bottleneck" or problem.

F. THE FUTURE

During the current fiscal year, an announcement of five awards (each for $1,000) has been issued to the NER (New England Region) membership. Monies may be applied towards the purchase of either Ariel® software or supporting hardware for a dedicated workstation. To date, four member libraries have received awards. Three of the libraries elected to purchase Ariel®; the fourth library decided to acquire a new scanner. The application process instituted was both clear and concise: [a.] completion of a single application form; [b.] submission of a cover letter outlining the need; and [c.] inclusion of two letters of support. The first letter of support involved a simple statement of commitment from the local I.S. department to install the Ariel® software and to "enable" the Ariel® workstation; the second letter of support was a

simple statement of commitment from the librarian's supervisor to support the library's participation in the project.

Many of the members within the New England Region (NER) network are hospital libraries. There are hospital certification requirements that follow a strict code of compliance for network resources operating within a hospital environment. Since these requirements mandate that network resources must be both reliable and secure, many hospital I.S. departments have been hesitant to allow for adequate network access (opening ports) to support use of the Ariel® software. With that in mind, the NER office has begun funding the purchase of several document senders for hospital libraries who want to use electronic document delivery, but find that their network administrators are operating within a very restrictive environment. Document senders allow for scanning and sending documents via the Internet or a phone line. Delivery is fast and the article quality is excellent. One group of five libraries has elected to participate in a project that will test a machine interface between two such document senders.

It is important in our world of fast connections and quick information that libraries continue to investigate new technologies and new delivery mechanisms to provide the fastest and best service possible to our customers. These new technologies are providing answers (and new questions) regarding document delivery and its efficiencies for the future.

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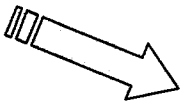
The NN/LM provides outreach for National Library of Medicine programs throughout the country; the New England Region serves the six New England states. This initiative was supported by funding from the New England Region of the National Network of Libraries of Medicine under contract NLM-00-101/SMS.

MONTH	ILL's	QTY FILLED	QTY UNFILLED	% FILLED	% UNFILLED
NOV	10	6	4	60.0	40.0
DEC	111	91	20	82.0	18.0
JAN	311	284	27	91.0	9.0
FEB	354	332	22	94.0	6.0
MAR	316	290	26	92.0	8.0
APR	280	236	44	84.0	16.0
MAY	163	144	25	88.0	12.0
TOT	1,551	1,383	168		

Process Overview

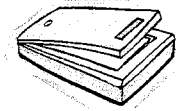


Step 1.
Library patrons search PubMed, route ILL borrow requests via DOCLINE ®

Step 2.
DOCLINE requests routed to LSL in Worcester, MA

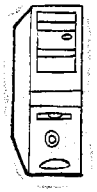
Step 3.
Requests receipted and transferred to ILLiad system

Step 4.
LSLstaff fills requests: pull, photocopy & scan



Step 5a.
Ariel ® converts files TIFF to PDF

Step 5b.
PDF files sent to LSL Web server



Step 6.
Ariel ® sends e-mail to patrons with assigned PIN + URL links to Web server

Step 7.
Patrons retrieve PDF files from Web server. Files archived for two weeks