1997 IFLA Conference

ILL Protocol Standard: Interlending in an Open Networked Environment

Date: Tuesday, September 2

Overview of North American Interlibrary Loan Protocol Activities

Mary E. Jackson

Association of Research Libraries, Washington, DC, USA

copyright 1997, Mary E. Jackson

Introduction

The ISO Interlibrary Loan Protocol evolved from the National Library of Canada's strong commitment to support interlibrary loan (ILL) on a national scale. Any overview of Protocol-related ILL activities in North America must therefore begin in Canada. This paper also provides background on current ILL activities in Canada, past and current ILL activities in the United States (U.S.), and summarizes current Protocol-related activities of the North American Interlibrary Loan and Document Delivery (NAILDD) Project.(1)

The Development of Automated Interlibrary Loan Messaging in North America

To understand better why the ILL Protocol was developed in Canada, it is necessary to understand the nature of Canadian interlibrary loan. In the early 1980s, the National Library of Canada (NLC) identified the development of an automated method for transmitting ILL requests as a key component of national level support of interlibrary loan. The introduction of Bell Canada's Envoy 100 electronic mail service in the early 1980s enabled that vision to become reality. NLC's earliest efforts resulted in the development of electronic mail (email) "scripts" to generate ILL requests and transmit them to the National Library of Canada. This early development work ultimately resulted in the Canadian National Standard for ILL messaging, which was subsequently advanced into the international arena and adopted in 1991 by the International Organization for Standardization (ISO) as the ILL Protocol (ISO 10160 and 10161). (2)

Also during the mid 1980s, the Canada Institute for Scientific and Technical Information (CISTI) developed a similar script, not based on the Canadian National Standard, but nevertheless, widely used by Canadian libraries. UTLAS, then a Canadian bibliographic utility, also offered its own interlibrary loan messaging system. Thus, even in an environment that fostered standardization, multiple, and non-interconnected, ILL messaging existed.

In 1979, OCLC introduced the ILL "subsystem" to U.S libraries. This ILL messaging system very quickly replaced the U.S. postal service as the preferred method for sending ILL requests. By the early 1980s, RLIN, WLN, and DOCLINE also introduced automated, comprehensive ILL messaging systems. Each was proprietary, resulting in the use of multiple ILL messaging systems by some libraries. It was, and still remains today, impossible to transmit an unfilled ILL request electronically from one ILL system to another. The ILL systems in the United States were also developed prior to the formal adoption of the ISO ILL Protocol, and there was little incentive for the vendors to upgrade their ILL systems to become Protocol-compliant.

The Current North American ILL Environment

In the U.S., OCLC is still the most widely used ILL messaging system, transmitting approximately 8 million ILL requests annually. RLIN, WLN, and DOCLINE continued to be used by libraries of the Research Libraries Group, in the Pacific Northwest, and medical libraries respectively.

In the 1990s many regional public and/or multitype library systems created CD-ROM union catalogs with a range of ILL capabilities. The most basic permitted libraries to search the union catalog for holdings, and then proceed with the manual process of typing and mailing the ILL request form. More sophisticated systems printed ILL forms for mailing or faxing. The most advanced systems offered email transmission of requests, but without subsequent online follow-up or tracking.

Innovative Interfaces, Inc. and AutoGraphics were among the first vendors of online public access catalogs (OPACs) to provide online, albeit proprietary, ILL capabilities to libraries using those systems.

Patron-initiated ILL systems such as OhioLINK or Illinet Online permit patrons to search catalogs and place requests for items owned by other libraries. Materials are sent to the patron's local library. Some consider this capability a form of circulation rather than interlibrary loan, but it is an innovative example of the future possibilities and evolution of interlibrary loan.

Commercial document delivery suppliers including UnCover and UMI encourage ordering through either a dedicated ordering system (UnCover) or as part of a bibliographic utility (UMI's availability through OCLC's First Search). These systems enable patrons or libraries to order copies of articles directly from commercial document suppliers.

In Canada, although some libraries use OCLC, RLIN, or DOCLINE, most libraries continue to send ILL requests via email directly to the owning library. Canadian libraries generate over 2 million requests annually. Databases maintained by the National Library of Canada and ISM provide holdings information.

NLC's AMICUS also features a Protocol-compliant, online ordering ILL capability, although it only permits requests to be sent to the National Library or CISTI, not to other Canadian libraries. Once a potential supplying library is identified, ILL staff then use Protocol-compliant software such as AVISO or InterLend to send requests to the owning library; use AVISO, InterLend, or AMICUS to send requests to NLC; or use AMICUS or the CISTI emulation of the Protocol ILL request to send requests to CISTI.

The Canada Institute of Scientific and Technical Information (CISTI) accepts ILL requests via the Internet or Envoy using a predefined EDIFACT-encoded form. These forms emulate the Protocol ILL request format, although CISTI is working toward full implementation of the Protocol.

Increased interest in regional and provincial interlibrary loan has resulted in the formation of a variety of online union catalogs and new ILL messaging capabilities. The Council of Prairie and Pacific University Libraries and INFO: The Information Network for Ontario are two examples of regionally-focused ILL systems based on Protocol-compliant software.

A comprehensive summary of current interlibrary loan activities can be found on the National Library of Canada's home page <http://www.nlc-bnc.ca/resource/cirs95/esharing.htm>.

The NAILDD Project

Established in 1993 by the Association of Research Libraries (ARL), the NAILDD Project seeks to facilitate the development and use of standards, software, and system design capabilities to improve interlibrary loan and document delivery operations for users, and to make these services more cost effective for libraries of all types and sizes. The operating philosophy is to seek practical and creative technical solutions and to begin to introduce unmediated services in a networked environment. The strategy is to seek actions on the part of private sector developers that will respond to the short-term priority needs identified by the Project.

The Developers/Implementors Group (DIG) was established in June, 1993 to facilitate development of products and services that focus on the NAILDD Project's three technical priorities: management software, accounting/financial tracking, and standards. The DIG is the vehicle by which the Project communicates needed technical developments to ILL/DD vendors and system providers. Nearly 60 organizations are currently represented on the DIG.

Working Groups have been established for each priority. The Standards Working Group was formed to encourage vendors to collaborate using non-proprietary methods to transmit requests, follow-up messages, and documents. Interconnectivity among all systems used in the ILL/DD process is an essential component

of the NAILDD Project. However, vendor implementation of the ISO ILL Protocol, especially in the United States, was slower that first anticipated. The Triangle Research Libraries Network's (TRLN) Document Delivery Project was the only U.S. implementation of the ISO ILL Protocol as of mid-1995.

The ILL Protocol Implementors Group

Evolving out of discussions at the June, 1995 DIG meeting, the ILL Protocol Implementors Group (IPIG) was formed in late 1995 to explore ways in which the ISO ILL Protocol can be more widely implemented in the United States. Twelve organizations and libraries were invited to a November 1995 meeting to discuss the feasibility of implementing the Protocol in the U.S. Because it manages the largest ILL messaging system in the U.S., OCLC's public commitment at that meeting to implement the Protocol was essential in moving this effort forward. In December 1995, a formal Request for Participation was issued and over fifteen (15) vendors and organizations responded.

In early 1996 and with encouragement and technical support from the National Library of Canada (NLC), the IPIG identified specific ways in which U.S. vendors and organizations could improve their services by adopting the ILL Protocol. At the first IPIG meeting in February, 1996, a two-phase implementation strategy was established. The first phase focuses on the implementation of a subset of the Protocol messages that permits a BER-encoded ILL request to be passed from one system to another using either connection-oriented or store-and-forward communication. Phase Two, the longer-term objective, calls for implementation of the complete functionality of the Protocol.

In spring 1996, OCLC was the first IPIG member to bring up a testbed to test the transfer of messages. Also during the spring, The Library Corporation (TLC) began development of a new ILL system incorporating complete Protocol functionality.

The IPIG was initially focused on vendors based in the United States because it was critical to maintain pressure on the group of private-sector vendors that provide ILL systems to the U.S., and also internationally. However, that spring, several organizations in Australia and Europe expressed specific interest in participating in the NAILDD Project, and the IPIG in particular, in large part because of the international dimensions of interlibrary loan and document delivery. The NAILDD Project was encouraged to expand the IPIG to include all vendors and projects, regardless of location, implementing the ISO ILL Protocol. The NAILDD Project responded to these requests by extending an invitation to join the IPIG to all actively implementing the Protocol. As of mid-1997, the IPIG includes over thirty for-profit and not-for-profit organizations and projects in the United States, Canada, Australia, the United Kingdom, Singapore, Italy, India, and Sweden.

The IPIG held two meetings in 1996, and has scheduled quarterly meetings in 1997. The IPIG sustains work between meetings by active discussion on the TRLN-sponsored listserv. The IPIG has begun to explore ways to facilitate involvement of IPIG members beyond North America by exploring the feasibility of holding meetings outside North America.

IPIG's Current Status and Issues

This paper focuses solely on North American implementations of the ISO ILL Protocol. Current Implementors of the Protocol include the National Library of Canada, the University of Quebec, TKM (InterLend), and ISM (AVISO). As of mid-May 1997, the following IPIG members were actively testing the Protocol: OCLC, The Library Corporation, Innovative Interfaces, Inc., DRA, Triangle Research Libraries Network, Canada Institute for Scientific and Technical Information, and Ameritech.

The Library Corporation is leading IPIG members in full implementation. TLC has coded all Protocol messages in BER, EDIFACT, and MIME in both connection-oriented and store-and forward. TLC also has implemented the Protocol state machine and as of mid-May has turned to the development of the application. TLC and CISTI have partnered to develop a transponder to enable BER and EDIFACT encoded messages to be exchanged, thus eliminating one of the barriers to North America interlibrary loan. OCLC accepts two Protocol messages (ILL-Request and Status-or-Error) and through two projects, is implementing the remaining. As of mid-May, Ameritech was the most recent IPIG members to test sending and receiving messages successfully.

Also as of mid-May, North American-based vendors that report that they are preparing to implement the Protocol, many by the end of 1996, include Auto-Graphics, CARL Corp., CPS Systems, EBSCO/Document Services, EOSInternational, Gaylord, GEAC, Network Support, Inc., National Library of Medicine, Research Libraries Group (RLG), SIRSI, Silver Platter, VTLS, and WLN. Implementations may vary: RLG will first use the Protocol for it's Ariel document delivery software, with a longer-term goal of implementing the Protocol in the RLIN ILL System.

Issues and Challenges

In discussions and early testing a series of issues emerged that are being considered by the IPIG. The first issue is that of transfer syntax, or encoding schemes. The mandatory encoding scheme for the Protocol is the Basic Encoding Rules (BER). Existing Canadian implementations have used EDIFACT, included in an appendix to the Protocol. IPIG members agreed to use the mandatory encoding scheme, BER. The

transponder developed by CISTI and The Library Corporation will permit Canadian and U.S. implementations to exchange either BER or EDIFACT encoded ILL messages.

A second issue emerging from early discussions is that of version number. Existing Canadian implementations use Version 1, while the IPIG is using the current version, Version 2. Only minimal differences exist between the two versions, but successful interoperability will need to address both versions.

The IPIG is also addressing the complexity and difficulty of the implementation, especially for vendors with no or little in-house expertise in implementing ISO standards. A final issue relates to the extent to which the ILL Protocol supports patron-initiated requesting, a feature many U.S. local system vendors are currently developing.

The IPIG is developing a profile that documents the choices made and agreed upon by IPIG members. The desirability of working on a directory service to support the Protocol and provide information on lending policies of libraries is another priority of the IPIG. Finally, the IPIG is exploring options for interoperability and conformance testing.

Future Possibilities Supported by the Protocol

Recent acceptance and heightened awareness and excitement about the ISO ILL Protocol by many North American vendors confirms their commitment to removing existing barriers to North American, and by implication international, interlibrary loan and document delivery. Libraries in the United States and Canada are increasingly looking for libraries around the world to fill ILL requests. Use of the Internet to search specific library catalogs, regional union catalogs, or national union catalogs has increased knowledge of libraries potentially able to fill ILL requests. This increased access to holdings is not equally well supported by standards-based electronic ILL requesting capabilities. Although there is some use of electronic mail, many North American libraries still mail paper ILL request forms to international suppliers. Delays in postal services contribute to a reluctance by some North American libraries to request, or supply, materials beyond North America. Widespread implementation of the ISO ILL Protocol can and will minimize or eliminate those delays, and thus the fears of those reluctant to participate in international ILL.

The Association of Research Libraries established the Global Resources Program to address the decline in the collective ability of North American research libraries to acquire and ensure access to a wide range of foreign materials at a time of strict budgets. As part of the Latin Americanist Project, OCLC agreed to develop a standards-based linkage from the table of contents database hosted by the University of Texas at Austin, Latin Americanist Network Information Center (UT-LANIC). This is a first example of how the

inclusion of the ILL Protocol could facilitate the ordering process for patrons of U.S. and Canada libraries seeking Latin Americanist materials held by North American research libraries. (3)

The final example of how the Protocol will improve the delivery phase of the ILL process is the use of the ILL Protocol by the Research Libraries Group in the Ariel document delivery software. RLG is collaborating with partners in Australia and the United Kingdom to incorporate the Protocol in the newest version of the Ariel software. RLG's longer-term strategy will enable the Ariel software to send Protocol messages (request, shipped, received, etc.) to ILL utilities, including RLIN or OCLC. This capability would eliminate the need for ILL staff to update online ILL requests in all messaging systems that support the complete Protocol.

Conclusion

Implementation of the ISO ILL Protocol is progressing rapidly in North America, especially by vendors based in the United States. Within the past eighteen months, real progress has been recorded, although much development yet remains. Although the Protocol has been used in Canada for nearly a decade, U.S. vendors are just now realizing the benefits of using the international standard, rather than proprietary systems, for ILL communication.

Currently U.S. libraries use multiple methods, all proprietary, to send and track ILL requests. Canadian libraries have led North American efforts in the use of standards-based ILL communication, although even Canadian libraries are required to use non standards-based communication methods to send ILL requests to some libraries. Although it is reasonable to forecast that U.S. libraries will continue to rely on national ILL messaging systems and Canadian libraries will still prefer electronic mail, North American implementation of the ISO ILL Protocol will permit these different approaches to ILL messaging to interoperate.

Significant and recent development by the members of the ILL Protocol Implementors Group will ultimately benefit libraries worldwide, as a number of the ILL systems developed by these vendors are used by libraries in other countries. Thus, widespread support of the ISO ILL Protocol by the North American library community will expedite use of global, standards-based ILL communication.

NOTES

(1) Additional information on the NAILDD Project, including up-to-date information on the implementation of the ILL Protocol by North American vendors can be found at ARL's home page: <http://arl.cni.org/access/access.html>.

(2) "Information and Documentation - Open Systems Interconnection - Inter-Library Loan Application Service Definition" (ISO 10160) & "Information and Documentation - Open Systems Interconnection - Inter-Library Loan Protocol Specification" (ISO 10161). 1993. Unofficial text for version 2, 1997 is at:<http://www.nlc-bnc.ca/ifla/documents/libraries/resource-sharing/illprotocol/10160ed2.doc or .pdf>.

(3) Additional information on the UT-LANIC Project can be found at:<http://www.lanic.utexas.edu/project/arl/>.