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Improving Interoperability of Interlending and Document Delivery Systems

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Abstract:

This workshop, sponsored by the Section on Document Delivery and Interlending, will begin with a brief presentation, in non-technical terms, on the international standard for ILL communication, the ISO ILL Protocol. The main portion of the workshop will feature demonstrations by six vendors of how messages are exchanged. The workshop will conclude with an opportunity for participants to talk with the vendors about their ILL systems.

An international standard for interlibrary loan (ILL) communication was approved by the International Organization for Standardization (ISO) in 1991. This standard, the ISO ILL Protocol (10160 & 10161), permits libraries to exchange ILL requests electronically by defining the format, content, and structure of the ILL request and responses used in an ILL transaction. The Protocol enables two libraries, using Protocol-compliant software from different vendors to exchange ILL transactions.

Introduction

This workshop, sponsored by the Section on Document Delivery and Interlending, will begin with a brief presentation, in non-technical terms, on the international standard for ILL communication, the ISO ILL Protocol. The main portion of the workshop will feature demonstrations by six vendors of how messages

are exchanged. The workshop will conclude with an opportunity for participants to talk with the vendors about their ILL systems.

The ISO ILL Protocol is an international standard for interlibrary loan communication. I will provide a brief overview of the standard in non-technical terms, discuss what this standard is designed to do and not do, and explain why the standard is important for librarians. I will conclude by exploring how the standard offers the potential for librarians to request materials from libraries in other countries, thus improving international document delivery and resource sharing activities.

We have a handout that includes information on the six vendors demonstrating today. In my presentation, I will use the phrase "interlibrary loan" to describe the requesting and supplying of books and microfilm reels, as well as the supply of photocopies of journal articles, articles in conference proceedings, etc. Some librarians in the U.S. use the phrase "document delivery" to describe the requesting of photocopies, but I will use the more general and inclusive term.

Standards for ILL

What are the standards that will improve ILL communication among libraries? At least three are directly relevant:

> 1) Z39.50 for searching (also known as ISO 23950);
> 2) ISO 10160 & 10161 for sending ILL requests; and
> 3) MIME, FTP, HTML, and GEDI for sending documents.

I will focus my talk on the second standard: ISO 10160 & 10161, more commonly known as the ILL Protocol. ISO is the abbreviation for the International Organization for Standardization, a world federation of national standards organizations. ISO has published many well-known library standards, including:

> *International Standard Book Number (ISBN)*
> *International Standard Serial Number (ISSN)*
> *Unicode*
> *Bibliographic Information Interchange on Magnetic Tape*
> *Codes for Representation of Names of Countries*

The ISO ILL Protocol

The ISO standards that most directly relate to interlibrary loan are ISO 10160 and 10161. There are actually three parts to the ILL Protocol, but these three parts are referred to as the ISO ILL Protocol. The three parts are:

10160: 1997 Information and Documentation – Open Systems Interconnection – Interlibrary Loan Application Service Definition

10161-1: 1997 Information and Documentation – Open Systems Interconnection – Interlibrary Loan Application Protocol
Specification

10161-2: 1997 Information and Documentation – Open Systems Interconnection – Interlibrary Loan Application Protocol
Specification -- Protocol Implementation Conformance Statement (PICS) Proforma

All three documents are very technical documents that use specific terminology required by international standards. These standards are aimed at commercial vendors and technical experts, not interlibrary loan librarians. To oversimplify, 10160 describes the process of an interlibrary loan transaction, 10161-1 describes how a structured set of messages are to be coded, and 10161-2 is a document used to evaluate how well an ILL system that claims to be Protocol-compliant actually conforms to the official standard.

The Development of the Standard

The second edition of the ISO ILL Protocol was published in 1997, thus the year in the reference number. The standard originated in Canada in 1983 when the National Library of Canada (NLC) began working on an interlibrary loan standard for use with a variety of communication services. NLC's work on the ILL Protocol was approved as a Canadian National Standard in 1989 and approved as the ISO standard in 1991.

Overview of Protocol

I will now provide an overview of the ISO Protocol and describe several key features. A Protocol is a set of well-defined rules and procedures that specifies the information that needs to be exchanged and how that exchange is completed. The Protocol governs system-to-system communication; the Protocol does not regulate requests send via the post. The words "Protocol" and "standard" are basically interchangeable, though there are some minor technical differences in their meanings, which I will not explain today.

It is important to remember that the ILL Protocol governs behavior between ILL systems, not within an ILL system. By ILL systems, I mean messaging systems such as OCLC, RLIN, and DOCLINE in the U.S., PICA in the Netherlands, British Library Document Supply Centre's ARTTel, or SUBITO in Germany. For example, when these ILL systems implement the ILL Protocol it will possible to send an ILL request from OCLC to PICA, or from SUBITO to RLIN. Implementation of the Protocol by the Research Libraries Group (RLG) and OCLC have enabled libraries to pass a request from one system to another, and for users of RLG's ILL Manager to communicate with libraries using RLIN or OCLC.

Messages, Format, and Sequence

The ISO ILL Protocol defines what messages are to be exchanged, the format of those messages, and the sequence in which they are exchanged. Let's examine each of these phrases in some detail.

First, the Protocol defines what messages are to be exchanged. The messages include the initial request, which is the automated equivalent to one ILL department mailing an ILL form to another library. Other messages include a renewal request to keep the book for a longer period of time, a notification that the book is overdue, and a report that the book has been returned. The Protocol defines 21 such messages, many of which are generally not used in a normal ILL transaction.

Second, the Protocol defines the format of those 21 messages. The message format can be viewed as the equivalent of the content of the paper form mailed to the other library. The form includes information about your library, bibliographic information about the book or article, and information about special requirements such as the amount you are willing to pay or the date by which your patron needs the book or article.

Finally, the Protocol establishes the order in which messages are send. For example, the first message in this sequence is the ILL request, followed by messages that indicate that the lending library has shipped the book, the borrowing library has received the book, the borrowing library has returned the book, and the lending library has checked that book in. The Protocol does not permit the borrowing library to ask for

a renewal if they have already returned the book. The sequence of the transaction follows very closely the normal sequence of what occurs when paper forms are exchanged.

These messages, format, and sequence are critical because the Protocol assumes that the borrowing and lending libraries each maintain a copy of the transaction. This is quite different from some of the online ILL messaging systems in which the borrower and lender each view and update a single copy of the transaction. The Protocol also assumes a distributed e-mail environment rather than a centralized system.

Roles

Te ILL Protocol encompasses a range of complexity of ILL transactions from the most basic in which two libraries exchange a book to one in which one library places ILL requests for another library and the request is forwarded by one potential lender to another. The library can play three roles in this process:

1) requester (the borrowing library)
2) responder (the lending library)
3) intermediary (for example, the central public library placing requests for patrons of a branch library)

ILL departments generally perform functions as a borrower or a lender, therefore can be a requester or responder in Protocol terms. A library that serves as an intermediary may also be a requester and/or a responder. Thus, the roles are not exclusive to one library.

The Protocol defines types of transactions as simple, chained, or partitioned. A simple transaction occurs between two libraries. A chained transaction is one in which, for example, the central public library sends requests for their branch library to one or more potential lenders. A partitioned transaction is one in which the central library sends the request to the potential lender, but all follow up communication is between the branch library and the lender.

Service Types

The Protocol supports five types of requests:

1) Loan: a request to borrow a book;
2) Copy/non-returnable: a request for a photocopy of a journal article;
3) Locations: a request for a list of libraries that own the needed title;
4) Estimate: a request for the amount the lender charges to lend a book or make a photocopy; and
5) Responder-specific: a request for a service unique to the lending library.

Most of the ILL requests are for the first two: request to borrow a book, or asking for a photocopy of a journal article, and those are what we will be highlighting today.

Communication Options

Because the ILL Protocol is a communications standard, the Protocol includes detailed information about the rules to encode data. This is one of the most complex areas of the Protocol, and I will not go into great detail other than to say that the Abstract Syntax Notation - One (ASN-1) is used to specify the data, BER (Basic Encoding Rules) is the required encoding scheme.

Protocol Versus Application

In order to understand what the Protocol does and does not do, it is important to understand the different between the Protocol and an ILL application. The six vendors demonstrating today all have developed software to send messages as well as track other aspects of the ILL process. I encourage you to talk with the vendors present about their products.

In overly simplistic terms, you can think of the Protocol as the equivalent to the mailing of request forms to potential lenders and the subsequent communication with that lender. The application is everything else: your internal paper files, the tracking of current and completed ILL borrowing and lending requests, the tracking of copyright compliance, and the preparation of statistics and reports.

What the Protocol Does

I have given you a very general overview of a very technical and detailed standard. Librarians using ILL messaging systems that use the Protocol do not need to know the details of the Protocol, but rather what the Protocol will permit them to do. I will use the phrase "Protocol-compliant system" to describe any product that uses the ISO ILL Protocol to send and receive ILL requests. I will describe what Protocol-compliant systems will do and then list a few things they do not do.

First, Protocol-compliant systems send and receive ILL requests to other Protocol-compliant systems. The Protocol facilitates electronic, online communication between different systems, regardless of hardware or software used by each system. By standardizing the messages and content of the messages, the Protocol provides information in a format that can be understood by the other components of the software that track statistics, generate reports, or archive completed transactions, etc.

What the Protocol Does Not Do

A Protocol-compliant system does not govern requests sent via the mail or post. The Protocol does not guarantee that a library will be able to communicate with all other libraries or ILL systems in the world. A Protocol-compliant system may be able to send ILL requests to non-compliant ILL system, but only because it uses non-compliant communication software to exchange messages.

For the near-term future it is unlikely that all requests will be sent via software using the Protocol communications. Thus, separate files may need to be maintained to track Protocol and non-Protocol messages. Until there is a critical mass of users of Protocol-based systems, ILL managers will need to use multiple methods to send and receive ILL requests.

The Protocol does not capture statistics, but provides the fields on which statistics may be counted. The Protocol does not prepare annual reports, but again provides transaction-specific data from which the reports can be generated.

The Protocol does not guarantee that books will be loaned or photocopies supplied. The policies of the lending library govern what may be supplied; a Protocol-compliant system simply guarantees that the ILL request will be read and understood.

Finally, the Protocol does not guarantee that internal workflow will be improved or that libraries will save money using Protocol-compliant systems. ILL departments using software that incorporates Protocol messaging capabilities will still need to evaluate how existing manual procedures can be replaced by the software.

Why the Protocol Should be Important to Librarians

In our increasingly global society and with library catalogs around the world accessible via the Internet, ILL librarians are looking beyond their own county for potential lenders. At present, the only way an ILL librarian in the U.S. can send an ILL request to a Danish library is to mail a paper form, fax that paper form, or possibly send the request via free-form email. Rather than requiring all libraries in the world to use one automated ILL messaging system, the Protocol permits libraries around the world to send and receive ILL requests in a format that can be understood by a variety of recipients. However, the Protocol does not translate languages, so if a U.S. library received a Protocol message from a Danish library, and the request was in Danish and not English, staff in the U.S. ILL department would need to translate the Danish to understand what was being requested.

Current Implementations

For most of the 1990s, implementations were limited. Several tests were undertaken, but few libraries used the Protocol to send and receive ILL requests. But the end of the decade, at least a dozen vendors were actively developing Protocol-compliant systems. We will have demonstrations of six of the 40+ vendors who are participating in the Interlibrary Loan Protocol Implementors Group – the IPIG.

The Association of Research Libraries tracks the status of testing between and among vendors. Current information may be found at: http://www.arl.org/access/naildd/ipig/res/ipig9801-stat-test.shtml.

Implementation Barriers

Several important barriers still remain to widespread implementation. First, we cannot assume that all libraries have the ability to send requests electronically. Access to the Internet and electronic mail is still a dream for ILL departments in many libraries around the world. Although they may wish to use the international standard, if they do not have a computer or access to communication networks, ILL librarians will not be able to use the ILL Protocol.

Second, many existing national ILL messaging systems are not currently Protocol-compliant, which minimizes international sharing. Managers of those ILL systems may not realize how continuation of proprietary communication software may actually inhibit interlibrary loan activities and reduce use of their systems rather than increase use.

Third, use of the ILL Protocol assumes use of systems or software that use the Protocol for the communication portion of the transaction. Many libraries in the U.S. use management software to track OCLC requests, but at present, that software cannot accept Protocol formatted messages. Thus, there is less incentive to use libraries that can send requests directly to the library that owns the item and greater incentive to continue to use proprietary messaging systems such as OCLC.

Implementation and use of the ILL Protocol will not solve all of the barriers of national, or international, interlibrary loan, but use of Protocol-compliant systems removes one major barrier to more effective communication between libraries.

Concluding Thoughts

I would like to conclude by looking at what will the next five years might bring. It is always dangerous to predict the future, but I would like to present three realistic possibilities.

First, there will be increasing pressures for effective international interlibrary loan. The establishment of ARL's Global Resources Program is one indication that even the largest libraries in North America are no longer able to build individual collections but must turn to interlibrary loan and resource sharing to meet local demands. The cost of journals, the explosion in publication volume, and increased access to published materials continue to place pressures on libraries to own materials, and to provide access to materials not locally owned.

Second, there will be increased competition among current providers of online ILL systems to implement the ISO ILL Protocol.   We have six vendors demonstrating today, and others will follow.

Finally, although widespread implementation of the international standard for ILL communication will be slower than desired, the potential for sharing of materials via the global network is promising. The use of existing international standards in combination with new technologies and new concepts of interlibrary loan offers the potential for libraries to become key participants in the 21st century society.