USING STANDARDS TO SHARE RESOURCES GLOBALLY: IMPLEMENTING THE ISO ILL PROTOCOL

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INTRODUCTION

It is a honor to be invited to speak at the Sixth National Conference of Librarians, Archivists, and Document Officers. I would like to thank members of the Organizing Committee for extending the invitation, and express particular appreciation to Maria Ines Lopes who attended my presentation on interlibrary loan standards at the IFLA Conference in Copenhagen last summer and who believed that her Portuguese colleagues would benefit from a similar presentation.

The focus of my presentation is an international standard for interlibrary loan communication. I will provide an 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 interlibrary loan and resource sharing activities.

I will use a number of technical terms which are defined in a handout. I will also 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.

My interest in interlibrary loan comes from my previous position as Head of the Interlibrary Loan Department at the University of Pennsylvania Libraries in Philadelphia, Pennsylvania, I worked at Pennsylvania from 1973 to 1993, and was ILL Department Head from 1978 to 1993. In the 1980s I chaired a U.S. standards committee that developed a list of terms (data elements) for interlibrary loan transactions. NISO Z39.63, Interlibrary Loan Data Elements, described and defined the content of the various terms used throughout an ILL transaction.

In May 1993, I was granted a leave of absence from Pennsylvania to serve as a Visiting Program Officer for the Association of Research Libraries (ARL). ARL is a not-for-profit membership organization comprising 121 libraries of North American research institutions. My assignment focused on improving interlibrary loan operations. The North American Interlibrary Loan and Document Delivery Project — the NAILDD Project — was established to promote private sector developments to maximize access to research resources while minimizing the costs associated with such activities.[1] The NAILDD Project seeks collaboration between libraries and a broad constituency of private sector companies and organizations to advance the three priority technical goals:

1) comprehensive management software;
2) improvements in billing and paying for ILL transactions; and
3) use of standards to facilitate system interconnectivity.

My temporary assignment changed to a permanent one at the beginning of 1995. The focus remains the same: encouraging companies and organizations to develop products and services for ILL operations. Encouraging progress has been made in the first two priorities, but it was in the area of standards that has captured much of my attention during the past two years.

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. Portugal is represented by the Instituto Português da Qualidade. Please excuse my pronunciation! ISO's Technical Committee 46 (TC 46) is responsible for information standards, the area of particular interest to librarians. ISO has published many well-known 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, known as the ISO ILL Protocol. 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. Even after reading these documents for more than a decade, I am still puzzled by the use of some of the terminology! These standards are aimed at systems librarians 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 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. But, I would like to take us back to the early 1980s in Canada and describe how an identified need for a standard to facilitate sending and receiving of interlibrary loan requests resulted in the development of this international standard. In the early 1980s the use of electronic mail to send ILL requests rapidly gained acceptance in Canada. Unlike the United States, Canadian libraries did not use the centralized ILL systems of OCLC, RLIN, WLN, or DOCLINE. Rather, Canadian libraries used one email system to send requests to the National Library of Canada, and another, incompatible, messaging system to send requests to the Canada Institute for Scientific and Technical Information (CISTI). Thus, ILL staff had to learn two different ways of sending ILL requests to the two largest libraries in Canada.

Also during that time the Open Systems Interconnection (OSI), a conceptual and reference model to permit different computers to communicate with each other, was gaining support as the solution to permit different computers to interwork. In 1983, the National Library of Canada (NLC) began working on an OSI-based 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.

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 ART, 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. At present, it is impossible to pass ILL requests between these ILL systems.

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 equivalent to an ILL form an ILL department mails to another library. Other messages include a request to keep the book for a longer period of time, a notification that the book is overdue, and the report that the book has been returned. The Protocol defines 21 such messages, not all of which are generally 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, and information about special requirements such as the amount you are willing to pay or the date by which your patron needs the book.

Finally, the Protocol establishes the order in which the messages are send. For example, the first message in this sequence is the ILL request, followed by messages that indicate that a notice 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

The 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 terms of the Protocol. 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 is also comprehensive in what types of requests can be made and defines five:

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

5) Responder-specific: a request for a service unique to the lending library

Most of the ILL requests are for the first two: requesting to borrow a book, or asking for a photocopy of a journal article.

COMMUNICATION OPTIONS

Because the ILL Protocol is a communications standard, the Protocol includes detailed information about the rules to encode the 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, and EDIFACT is an alternative encoding scheme. I can provide more information in the question and answer period if desired.

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. I will use an example to describe the difference. In North America two ILL software packages are Protocol-compliant: AVISO and InterLend. These software programs track current and completed ILL borrowing and lending requests, track copyright compliance, send and receive ILL requests, and capture statistics and produce reports. All of this functionality is considered the application, of which only sending and receiving of requests is governed by the Protocol. The application is equivalent to all of your current and completed paper files, your annual statistical reports, and any special reports you are asked to prepare during the year. The Protocol is equivalent to the mailing of request forms to potential lenders and the communication you have with that lender during the course of the transaction.

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 a bibliographic utility, ILL messaging system, or software 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 will not do.

First, Protocol-compliant systems sends and receives 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 pieces of the software that track statistics, generate reports, or archive completed transactions.

WHAT THE PROTOCOL DOES NOT DO

A Protocol-compliant system does not govern requests sent via the 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 example, at present a Canadian library using the National Library of Canada's ILL system cannot generate a message on that system and send it to an American library that uses the OCLC ILL system.

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 only 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 Portuguese library is to mail a paper form or fax that paper form. 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 Portuguese library, and the request was in Portuguese and not English, staff in the U.S. ILL department would need to translate the Portuguese to understand what was being requested.

CURRENT IMPLEMENTATIONS

As I mentioned above, the ISO ILL Protocol was approved in 1991 and published in 1993. Use of the Protocol has been limited, with most of the use centered in Canada. The British Library, LASER (Great Britain), Pica (Netherlands), and SUNIST (France) experimented with the Protocol in the early 1990s, but the first half of the decade saw no regular use of the Protocol outside Canada.

In June 1995, a National Library of Canada representative challenged the NAILDD Project to focus more on the standards technical priority. In late 1995 an invitational meeting was held for selected U.S. companies and organizations. The ILL Protocol Implementors Group — the IPIG — was formed as a result of that first meeting. Initially aimed at encouraging U.S. companies and organizations to commit to implement the Protocol, the IPIG was expanded in 1996 to include companies and groups worldwide willing to implement the Protocol.

As of early 1998, 45 companies and projects representing 10 countries are IPIG members. In the U.S. all four bibliographic utilities (OCLC, RLIN, WLN, and DOCLINE) are implementing the Protocol. RLG plans to implement the Protocol in it's RLIN ILL system as well as the Ariel Internet-based document delivery software. The British Library Document Supply Centre recently announced it will develop an Protocol-compliant interface to it's automated, but proprietary, document requesting system, ARTTel. LIBRIS and PICA are two European utilities that will implement the Protocol. Unfortunately, Portugal is not represented on the IPIG, but I would like to explore how we can facilitate such participation.

In 1997, ISO appointed the National Library of Canada the official Maintenance Agency for the ILL Protocol. The Maintenance Agency has an excellent web page that includes a variety of resources relating to the Protocol.[ii]

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, including Portugal. Although they may wish to use the international standard, if they do not have a computer or access to communications 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 communications 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 communications portion of the transaction. Many libraries in the U.S. use management software to track OCLC requests, but that software cannot accept a Protocol formatted message. 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.

As David Millson of the British Library Document Supply Centre (BLDSC) asserted a decade ago, "widespread acceptance of the Protocol will clearly depend on international acceptance of standardized messages reporting the progress of ILL transactions."[iii] In 1998 discussions about the use of the Protocol were just beginning in the U.K. It has taken almost a decade for BLDSC to agree to implement the Protocol.

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

FUTURE DEVELOPMENTS

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. The announcement by the British Library to implement the Protocol was watched very carefully by many North American libraries and bibliographic utilities. The National Library of Canada is studying how it will upgrade it's existing system to comply with the requirements defined by the ILL Protocol Implementors Group.

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.

It has been a real pleasure to talk to you about the international standard for interlibrary loan communication. Thank you again for inviting me.