

The future of interoperability for ILL and resource sharing

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As the world shrinks and user's demands grow, sending requests to other libraries has not simplified correspondingly. While an international standard has been available for twenty years, the minimal acceptance and use of the standard has not provided the interoperability that we had hoped for and need. Work is currently underway to remedy this situation – a standard for the 21st century. This paper will provide the context in which this new standard emerged and was written, as well as outline what the new standard will look like and the next steps once the standard has been approved.

Interoperability

Once a potential location for a requested item has been found, ILL staff want the request to be sent to this location automatically and via the 'normal' workflow, in addition all appropriate updates should be received and processed through the 'normal' workflow. What ILL staff do NOT want is to have to change gears, to go to a different process or procedure, to deal with some requests in an exceptional way because of limitations in the way requests can be sent and received. It is exception handling that makes ILL services expensive, inefficient and slow.

Interoperability must address what messages are sent, the way they are sent and the content of the messages. Messages must be standardized so that the systems at each end can receive and interpret them in a meaningful way – even if they are **different** systems. With widespread standardized system interoperability, exception handling can be minimized and normal workflows strengthened and optimized.

The lack of standardization and interoperability leads to situations where the sending and receiving of requests and request updates is cumbersome, causes additional work for staff, and potential for error and delays.

Background and history

ISO 10160/1 (often referred to as ISO ILL or the ILL Protocol) is the current international standard for interlibrary loan. It was first approved as an international standard in 1991 based on work and pilots done in the 1980s. This standard predates the internet, the initial work was done when 'email' was emerging and ILL departments still relied on mail and telex. In fact, at that time ILL work was completely manual, the concept of an automated system was just starting to emerge. It was a completely different world and yet this is the same standard that is in use today.

While there are some great success stories surrounding ISO ILL, it was not implemented as widely as had been hoped and it is now clearly out of date.

The 1st edition of the standard was published in 1993 and a 2nd edition in 1997. Substantial work went into a 3rd edition; however, in 2007, this version was NOT approved. There were several key reasons for the no vote. These included:

- Incompatibility with existing V2.0 implementations
- Insufficient difference in functionality to merit existing implementers upgrading from V2.0 to V3.0
- Continued reliance on old underlying OSI technology and ASN.1 BER encoding, so unlikely to attract new implementers

Although the 3rd edition of ISO 10160/1 was not approved in 2007, the existing or 2nd version was blessed as an ongoing active standard for the following 5 years, i.e., up to 2012.

Before going on to look at the new proposed standard, as mentioned there are some success stories associated with the current standard. These include:

- Australia - Libraries Australia Document Delivery (LADD)
- New Zealand – TePuna
- TransTasman
- Canada – peer to peer
- China - CALIS
- Also used in Japan & Vietnam

The limited use and implementation of ISO 10160/1 is attributed to a number of issues including the fact it is based on out dated OSI (Open Systems Interconnection) technology including the terminology and message encoding methods used. In addition, the standard encapsulates its own model of an ILL transaction complete with state tables that dictate the behaviour of a request. The way the standard was published made it very difficult to keep current and relevant as technology and library services evolved, it incorporated billing types and delivery methods that were relevant in the 1980s and 90s.

Emergence of new standard

In 2011 and 2012, three separate discussions were underway for a ‘fresh’ look at interoperability for ILL systems.

- The Danish libraries were looking to replace their current Z39.50/ISO ILL based system
- The British Library was interested in replacing their ARTeMail protocol
- The Rethinking Resource Sharing group was exploring concepts for what a future ILL protocol might look like.

In these independent reviews, common themes emerged. Each group considered simplicity key with a view to encouraging widespread adoption of whatever came next. This approach

implied a minimal set of common messages to get the job done. It was important to base future work on a current web services technology, leaving behind the ASN.1 BER encoding of the current standard. Finally all groups independently agreed the states of ISO 10160/1 be left behind. These states were too rigid and not always relevant in the workflows that are in use today.

These threads merged and at an ISO meeting in Berlin in May 2012 a number of decisions and recommendations were made:

- Version 2.0 (the one currently in use) was ratified for another 5 year. This ensures the existing implementations are valid until 2017.
- Library and Archives Canada (the Maintenance Agency for ISO 10160/1 was asked to make some minor editorial changes. These changes have now been done.
- A group of interested parties was asked to make a formal *proposal* to ISO requesting work on a new ILL standard begin. This was the trigger for the new standard.
- Any new work was to be set in the context of a more generalised review of all Resource Sharing related standards.

An ad hoc group of interested parties was formed representing the following countries: Australia, Canada, Denmark, Finland, Germany, Japan, New Zealand, UK, US (NISO) as well as representatives from The British Library and the Rethinking Resource Sharing Group (which includes OCLC and Relais International). An editor group was formed, led by Leif Andresen (Danish Agency for Culture/The Royal Library), Clare MacKeigan (Relais International), and Ed Davidson (OCLC).

On Oct 31, 2012, this group led by Denmark prepared and submitted a proposal to ISO. Once this proposal was approved a working group was created (ISO/TC46/SC4/WG14 Interlibrary Loan Transactions) consisting of experts nominated by SC4 P members. The editors prepared a Committee Draft version of the standard which was sent to ballot, as comments were received the editors reviewed, responded and edited the draft as appropriate. In parallel with this ballot, editors also continued to work on the new standard adding a transport mechanism and an XML schema. At the same time, the editors were also in contact with the NISO NCIP Standing Committee and as a result the draft standard was reviewed and aligned with NCIP (NISO Circulation Interchange Protocol) where possible, for example the naming conventions for the data elements.

In May 2013, the Committee Draft ballot ended with a result of 22 YES votes, 2 Abstains and 0 no votes. At the annual ISO/TC46 meeting in June 2013, the working group met in person and discussed the comments and concerns voiced during the balloting process. From the comments and discussion further revision and refinement of the standard was done, and on Sep 5, 2013 balloting for the Draft International Standard ISO 18626 began. The balloting closes on Dec 6, 2013.

Following from the earlier recognition that the new standard should be easy to understand and use and with the editor's experiences and understanding of ISO 10160/1 and its complexities, simplicity was a key theme and factor in developing and drafting the new standard. The objective to publish a standard that would be adopted quickly and widely in the resource sharing community around the world was paramount. The editors also balanced the need to allow for communication with known and understood partners to whom a library may send requests on a very regular basis, e.g., where there are agreed upon service levels, but at the same time allow for exchange of requests and messages for 'one-off' situations.

Underlying, ISO 10160/1 is a set of states or rules that dictate when messages can be exchanged and in what order. If a state is broken the request also 'breaks' and typically staff need to take extra steps to deal with such requests outside the system and the regular workflow. These states are based on workflows and procedures from ILL activities in the manual world of the 1980s. ISO 18626 does not rely on states and so does not impose limits or restrictions on any workflows. In addition, this means there will be no need to maintain interconnected state tables in ILL systems.

ISO 18626

The draft standard includes three simple messages: a request, a supplying library message and a requesting library message and corresponding confirmation messages.

Messages

Request message is the message that triggers the ILL process, it includes all of the elements needed by the supplying library to identify the requested item and to fill the request if possible.

Supplying Library message is used by the supplying library and includes a reason for the message, status information, and other information of value to the requesting library. Examples of Reason for Message are Request Response, Renew Response and Cancel Response. Examples of Status are Request Received, Will Supply and Unfilled.

Requesting Library message is used by the supplying library and includes an action element and other information of value to the supplying library. Examples of Action are Received, Renew and Cancel

For each of the above messages, there is a confirmation message that validates the original message was received and provides information regarding any errors in the message or its content – if required.

Open and closed code lists

Throughout the standard, lists are used to codify and standardize the information exchanged.

Some of these lists are 'closed'. These are an integral part of the standard. The use of closed lists was minimized, since it is more difficult to modify and update these lists in the future. Examples of closed lists include: Reason for Message and Service Type

Open lists are used extensively and are in an Annexe rather than part of the standard itself. This allows for additions and changes to these lists in the future as services, technologies and policies evolve (something that was not easily done with the original standard). Open lists can also be customized for use between partners with predefined arrangements. Examples of open lists include Billing Method, Electronic Address Type, Publication Type, Reason Unfilled and Service Level.

Format and Transport

Messages are encoded using XML. The XML schema is provided as an Annex to the standard, once again this allows for modification and updates to the schema if and when required.

Both HTTP and HTTPS are supported as transport protocols.

Use cases and guidelines

Along with the technical descriptions in the standard and annexes there is an annexe dedicated to use cases and guidelines. This provides descriptions of real life examples and to implement them with the new standard. Narrative and explanations are provided to clarify the use of the messages, statuses and other elements of the standard. Additional use cases will be provided as work to implement the standard begins and clarification is required.

Web page

A web page that includes the Annexes and other background information on ISO 18626 is available at <http://biblstandard.dk/ill/>. Included on this page are links to the XML schema, the open lists, the use cases and guidelines, as well as other news related to the standard.

Status and next steps

As mentioned previously, the draft standard is currently at ballot, with a closing date of Dec 5, 2013. Assuming there are no significant negative comments then the standard will be published. The next step will be for vendors and other groups, e.g., national bodies that run ILL or resource sharing utilities to implement. It is at this point that individual libraries and staff will start to see the benefits of the work that has been done, for example, requesting from libraries 'outside' the norm will be easier and can be incorporated as part of your regular workflow. As ILL and resource sharing staff and experts, it is incumbent on you to approach

your system vendor and ensure they appreciate and understand the importance of and the benefits of the standard to you and your operation.

The working group created to develop the standard will remain intact after it has been published. This group will provide guidance and clarification as vendors and libraries move forward with implementations.

At this point it is difficult to say how quickly the new standard will be embraced and ILL practitioners see the results. In 2012, the 'old' standard was renewed for another five years, ideally at the end this five year period there will be no further implementations of the old and we will all be working under the framework of ISO 18626. There will be a more free and easy exchange of requests and messages between all libraries, irrespective of the system they use to run their operation.

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