

**When protocol works:
the state of the ISO ILL Protocol
in the Australian resource sharing environment**

Margarita Moreno
Manager Document Supply Service
National Library of Australia
mmoreno@nla.gov.au

Rob Walls
Director Kinetica Database Services
National Library of Australia
rwalls@nla.gov.au

Abstract:

The ISO Interlibrary Loans Protocol (ISO 10160/10161) is increasingly being adopted by ILMS vendors, who are either developing modules to manage interlibrary loans traffic or incorporating existing systems developed by other vendors to enhance the overall functionality of their product. This paper will provide an overview of the protocol and its importance in supporting peer to peer interlibrary loan/document delivery activities. It will also review the level of protocol compliance of a number of ILL systems implemented, or available, in Australia. When choosing an ILL management system libraries must consider a range of issues, including: volume of transactions, borrowing and lending patterns, the level of automation of ILL partners, internal workflow, and service standards. The paper will consider the importance of these issues in the selection of an ILL system, and the need for, and level of ISO compliance of the system. The role of related standards such as Z39.50, NISO Circulation Interchange Protocol, and ISO2146 the international standard for library directories, will be considered.

This paper has been prepared for the assistance and benefit of the Australian library community. It is based on research done by staff of the National Library of Australia.

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The information contained in the paper is also unrelated to any procurement activity undertaken by the National Library of Australia.

Introduction

At the last VALA Conference Tony Barry asked if document delivery was an 'idea whose time has gone?' [Barry, p.1] He concluded that print collections will continue to exist for our lifetime and that document delivery from these collections will be required. This continuing need is reflected in the growing number of library system vendors who are offering or developing interlibrary loans (ILL) management modules and in the number of software implementation projects underway in Australia and overseas. The ILL Protocol provides an important underpinning for the development of improved systems support for the document delivery process.

This paper reviews the ISO ILL Protocol compliant systems available and evaluates their current level of support for the standard. The paper is current as at 1 October 2001. The pace of development is rapid and the oral presentation at the Conference will provide an update

Sources of information

The information on the software products included in this paper was gathered from a number of publicly available sources, primarily the Interlibrary Loans Applications Standards Maintenance Agency web site, the paper "*Interlibrary loan and Resource Sharing Products: an overview of current features and functionality*" by Mary Jackson, and the web sites maintained by the vendor of each product. The information provided is based on information in those sources. The Library has not verified these claims or that information.

The ILL Protocol

During the 1980s a number of ILL management systems were developed but due to the use of different messaging formats it was not generally possible to exchange requests between these different systems. Libraries used a mixture of manual and automated systems for the internal management of ILL processes and then exchanged requests using a variety of other unconnected systems such as national or regional utilities (including, in Australia, the Australian Bibliographic Network (ABN) and ILANet), telex, facsimile, email or mail.

The Interlibrary Loan Protocol was developed to enable the exchange of messages between the various ILL systems. It provides a standardized model of the ILL process and defines message formats for communication between systems.

The Protocol models all of the stages in the ILL transaction (lifecycle). Each stage is defined as an ILL Protocol 'service'. Services that are essential to the successful completion of an ILL transaction are mandatory while other services are optional. Mandatory and optional services will vary depending on whether the transaction is for a loan or copy. The services that are allowable at any point in the ILL transaction are determined by the status of the transaction. The Protocol specifies the order in which the various services may be invoked. The ILL operator uses the ILL management system to invoke a particular service to indicate the progress, or status, of the request. This may cause a message, called an application-protocol-data-unit (APDU), to be sent to the partner library. For some services the transmission of a message to the partner systems is optional.

Services available to a Requester include:

ILL-REQUEST (request for a loan or copy)

RECEIVED (indicates that an item has been received)

RETURNED (indicates that a loaned item has been returned to the responder)

RENEW (request for renewal of the loan of an item)

CANCEL (cancels an outstanding ILL request)

STATUS-QUERY (request for information on the current status of an ILL transaction)

MESSAGE (transmits a free text message not conveyed by other services)

Services available to a Responder include:

FORWARD (indicates that an unfilled request has been forwarded to another institution)

SHIPPED (indicates that a requested item has been shipped)

ILL-ANSWER (sends a conditional, retry or unfilled response to the requester)

OVERDUE (notification that a loan item is overdue)

STATUS-QUERY (request for information on the current status of an ILL transaction)

MESSAGE (transmits a free text message not conveyed by other services)

The Protocol also specifies the data elements that are to be included in the specific messages for each service. For example an ILL request (ILL-REQUEST service) must include data elements that describe the requester and responder, the item being requested, and delivery and billing information.

The Protocol supports both Email and Internet Protocol (IP) as the communication mechanism for the exchange of messages.

The Protocol was approved as an international standard by the International Organization for Standardization (ISO) in 1991. It consists of two documents:

- *ISO 10160 Information and Documentation – Open Systems Interconnection – Interlibrary Loan Application Service Definition*
- *ISO 10161 Information and Documentation – Open Systems Interconnection – Interlibrary Loan Application Protocol Specification*

ISO 10160 defines the communications aspects of the ILL process in terms of a set of services. It defines what are allowable actions.

ISO 10161 provides a formal description of the rules of behaviour of each of the two or more systems participating in an ILL transaction. It describes in detail the actions to be taken at each stage of the ILL transaction and describes the content and syntax of each message (APDU).

Second editions of both standards were published in 1997.

The Protocol supports two communications models, peer-to-peer transactions directly between two libraries (requester and responder) and transactions via one or more intermediaries such as an interlibrary loan utility. It is this later capability that will enable libraries that implement their own Protocol compliant systems to continue transmitting requests to users of the Kinetica Document Delivery service and to continue to use the Kinetica Payments Service.

Support for the Protocol in ILL software products provides the opportunity for interconnection not only between the ILL management systems of individual libraries but between library ILL management systems, national and regional utilities, payments services, commercial document suppliers and document transmission software such as the Ariel scanning and transmission software available from RLG, and as a result it supports the integration of the variety of ILL processes into a potentially seamless system.

Operation of the protocol is transparent to system users who see only the proprietary interface of their ILL management system. The functionality and usability of the interface is determined by the system designer based on market needs and is not directly determined by the protocol.

Related standards

Development of related standards has also impacted on ILL operations. Support for these standards enable the interlinking of the ILL management system with other modules of the library management system and with remote databases for resource discovery.

The trend towards distributed resource discovery, enabled by the implementation of the Z39.50 standard has provided an environment in which distributed support for document requesting and delivery is essential. Conversely support for Z39.50 is required in library management systems and stand alone ILL management products to support identification of potential suppliers and retrieval of location data.

The NISO Circulation Interchange Protocol (NCIP) (ANSI/NISO Z39.83-200x) supports linking to circulation systems. The standard has been developed from the Standard Interchange Protocol (SIP) developed by 3M to support self-checkout systems. A draft standard is currently available for trial use and discussion prior to formal ratification as an international standard. NCIP describes enquiry and update functions required for the provision of four services:

- Direct consortial borrowing, enabling patrons of one library to borrow from a partner library;
- Circulation/Interlibrary loans interaction;
- Self service circulation;
- Controlled access to electronic resources.

For circulation/interlibrary loans interaction, the standard facilitates the exchange of circulation information between the library management system and the ILL management system thus allowing the circulation system to track all loans to a patron.

The interconnection of distributed ILL management systems requires support for the discovery of potential ILL partners and access to information about those partners. This directory data must include information such as ILL policies, service levels, charges and contact details. While libraries could obtain directory data manually from a range of sources, this would be impractical unless the ILL unit interacts with only a few partner libraries. Preferably directory data should be available from a single source either for real time searching or for periodic downloading and loading into the ILL management system.

While there are a number of protocols that relate to the access and delivery of directory data, ISO/CCITT X.500 is of particular interest in Australia. This is the international standard for systems interconnection for the provision of directory services. It is at the core of a number of current directory projects. The international PRIDE Project, in which Macquarie University is a partner, is using the X.500 framework for the directory component in its development of an international brokering service to support information delivery. The service will support a range of functions including patron authentication and an ILL directory.

To support resource sharing, the National Library of Australia has recently redeveloped the Australian Interlibrary Resource Sharing (ILRS) Directory (<http://www.nla.gov.au/ilrs/>). A continuation of this project will provide an X.500 version of the directory that will enable ILRS data to be supplied to ILL management systems and the Kinetica Document Delivery system.

Future standards developments

Directory standards are an area where there is significant ongoing development. ISO 2146 is the international standard that defines the data elements required in library directories. Standards Australia/Standards New Zealand Technical Committee IT/19 is currently revising the ISO 2146 standard. Also the ILL Protocol Implementors Group (IPIG) is currently working on an Extensible Markup Language (XML) schema to support the creation and sharing of ILL directory data.

Access to patron data can be a vital part of many ILL management system implementations. Currently this data is batch loaded into the ILL system or input manually. Ideally libraries would prefer to maintain patron data in a central database resident in an Intergrated Library Management System (ILMS) or administrative system that could be accessed from the ILL management system when required. This is an area that lends itself to further standards development.

ILL Protocol Implementors Group

Much of the development of the Protocol was done in Canada. It was championed by the National Library of Canada but was little used outside Canada until taken up by the Association of Research Libraries' (ARL) North American Interlibrary Loan and Document Delivery (NAILDD) Project. [Shuh, p.1] The NAILDD Project established the ILL Protocol Implementors Group (IPIG) in 1995. Since then the number of systems that support the Protocol and the number of implementations of those systems has increased significantly.

The ILL Protocol is a relatively mature standard and is broad in scope, modelling the entire ILL process. It also supports a high level of configuration. It is this broad scope and flexibility that can create difficulties for implementors. To ensure interoperability between Protocol compliant systems the IPIG has developed an application profile that defines a subset of the options which are available within the standard. Thus compliance with both the Protocol and the Profile is necessary to guarantee that two systems can interoperate.

The configurability supported by the Protocol is demonstrated by the range of Protocol compliant systems that have been developed to meet the needs of different library markets. Larger libraries generally require more complex functionality to manage operations with larger numbers of patrons and larger volumes of transactions while for a smaller library the emphasis may be on providing basic support for a small number of transactions through a simplified interface that can be easily used by non-specialist staff. Likewise the needs of net lending libraries may be met by systems with different functionality to that required by libraries in which ILL borrowing is the focus.

Application of the profile in Australia

The new *Australian Interlibrary Resource Sharing (ILRS) code* (<http://www.nla.gov.au/initiatives/ilrscode/index.html>), launched by the National Resource Sharing Working Group (NRSWG) in early 2001, contains specific information needed for the successful interconnection of ILL management systems in Australia. The code was developed to improve services to patrons and describes the recommended ILL service level standards for Australian libraries.

The ILL Protocol defines a service level data element as a one character code that represents the service level in a request message. While the IPIG Profile defines a series of symbols that are used to represent abstract levels of service, the ILRS Code specifies a series of specific service levels for Australia. The IPIG Profile requires systems that support specific service levels to also support specific codes to represent those service levels. The NRSWG has recently approved a series of codes for use in ILL systems in Australia.

Implementation of the Protocol

A recent report by Mary Jackson [Interlibrary Loan and Resource Sharing Products], reviewed 23 interlibrary loans systems, some of these were not ISO ILL compliant and others did not support the full ILL life cycle. The web site of the ILL Application Standards Maintenance Agency (<http://www.nlc-bnc.ca/wbin/illcntct/survsee>) lists 15 products or projects that have implemented the Protocol. Of these 9 are actually software products, the remainder being implementations of those products.

This paper examines 10 systems that support peer to peer requesting using the ISO ILL protocol. Many Australian libraries rely on the Kinetica Document Delivery (KDD) Payment Service therefore an important aspect of the implementation of peer to peer systems is the provision of a gateway to support continuing use of this service.

The recent NRSWG Interlibrary Loan and Document Delivery Benchmarking Study identified a number of factors critical to maximising ILL/DD performance. These include:

For requesting:

- Patrons are able to request items electronically
- A union catalogue (or catalogues) is used to identify sources of supply
- Items are requested electronically from supplying libraries

For supplying

- A majority of requests are received electronically
- A majority of holdings are reported and regularly updated on an easily accessible union catalogue
- An automated ILL system is used for receiving and tracking requests

Choosing an ILL System

When choosing an ILL management system libraries must consider the following questions:

- How does the ILL unit receive requests from patrons? How many patrons does the unit need to manage?
- What is the likely volume of ILL transactions?
- What are the borrowing/lending patterns? Is the library a net borrower or net lender?
- Which libraries are the usual ILL partners? What level of automation have they implemented? Do they use Protocol compliant systems? Do they manage their ILL transactions through an ILL utility such as Kinetica?
- What are the skill levels of staff? What training will be required?
- What are the current workflows in the ILL/DD department? What re-engineering of work flows will be required?
- What service standards are required (eg. turnaround time)?
- Does the system provide the functionality to meet the requirements of Australian copyright law?
- Does the ILL management system need to be integrated with a library management system or other systems such as electronic document transmission or financial management systems? Does the library need to acquire a complete library management system that includes support for ILL management, an add-on product that can

interconnect with an existing library management system, or a stand-alone ILL management system?

- What supporting infrastructure will be required, eg. computer hardware, internet connection?

Answers to these questions will enable you to prioritise the importance of the functional requirements described in the following section.

This paper includes products developed to meet a range of needs. The fact that a product does or does not include a particular feature does not make it more or less desirable. The library must make the product choice after careful consideration of a range of issues including functionality, cost, service availability and customer service.

ILL management system requirements

In considering options for automating ILL activity, a library will need to consider the answers to the questions in the previous section and the system functionality described below and give them appropriate weighting. For example a small library with few patrons may prefer to use a simple web or paper form to gather the request information from patrons and then manage the request through Kinetica Document Delivery (KDD). A library with a large patron base may need a more sophisticated system that provides end to end automation of the ILL process including support for complex business rules such as the ability to limit the number of requests or expenditure by each patron.

Support patron requesting

The system should allow the patron to create an online request and send it to the ILL unit, preferably after searching the catalogue to confirm the item is not held in the library. The patron should also be able to see the list of items they have already requested and cancel an existing request (provided it hasn't been processed). The patron will need to be registered with the library however the registration could be handled through the system or manually and legal requirements will need to be considered especially for copyright purposes. Ideally the library should be able to send alerts to the patron when the material is available for collection, both through the system and/or through an email alert as part of processing the requests. The patron should be able to view their requesting history and ask for renewals through the system.

Support library requesting

The library as a requestor needs to be able to create an ILL request and/or forward a request received from a patron. It should also be possible to update the ILL request at this stage. Copyright information should be collected on the request and stored in the system to meet legal requirements. The library should be able to search either the National Bibliographic Database (Kinetica) and/or potential suppliers' individual catalogues to identify potential suppliers and obtain location data to add to the request automatically. The library should then be able to send the request to the first potential supplier using the ILL ISO protocol and if needed continue down the list of suppliers without ILL staff intervention. The library should

be able to receive ISO ILL responses from the potential suppliers concerning the status of the request, for example “will supply”, “shipped”, “cannot supply”. The ILL unit should be able to respond to those messages through the system, for example to indicate the material has been received, lost etc. ILL Staff should be able to interrogate the system to determine the status of any request at any time. Options for searching requests should include at least, ILL request number, patron name, title, author, article/chapter title, article/chapter author, ISBN, ISSN, and supplying library’s unique identifier. To support the ILL unit services the system should allow the library to load data that describes patrons and potential suppliers. These files should also be searchable, by name, barcode and/or National Union Catalogue (NUC) symbol. The system should also support an alerting facility to allow the ILL unit to communicate with patrons, advising them for example when the material they have requested has arrived at the library.

Support library supplying

The library as a supplier needs to be able to receive ILL requests. These requests should be searchable, preferably by status and service however they should also be searchable by title, author, article/chapter title, article/chapter author, ISBN, ISSN, NUC symbol, ILL number and date due. ILL staff should be able to print the requests retrieved through the previous search. The library should be able to send/receive messages based on the ISO ILL protocol, to/from the requesting library concerning the status of the request. When the material is ready for dispatch it should be possible to print a label with the requesting library’s delivery address. The supplying library should be able to bill the requesting library through an automated process. Here there are advantages in using a utility such as the KDD payments scheme or interacting with the utility via a gateway. The supplying library will want to update requests either one at a time or in batch and update the local ILMS at the same time, using the SIP/NCIP protocol. To support these services the library may need requesting library information loaded to the system or capture the data from the request. This data should be searchable, at least by library name and NUC symbol.

Interface design and general characteristics

The system should have an “easy to use” interface however the choice of Web or graphical user interface (GUI) will depend on the patron groups and library staff needs. The system should allow the library to set up controlled access to functions and this can be based on user groups. It should also allow authorised operators to override permissions. Depending on the needs of the organisation the system may need to be networked, with each user having access to the desired functionality. Each request should have a separate entry on the database and the system should support both the requestor and supplier functionality (unless your organisation only requires one of these). It should also allow for centralised and/or decentralised ILL activity. The system should be ISO ILL and IPIG profile compliant, supporting the full life cycle of the request. And ideally it should be able to interact with the KDD Payments Service.

Financial management and reports

The library may prefer to charge for requests via the KDD Payments Service wherever possible, however support for the invoicing of non-participating libraries may also be required. The system must enable the creation of invoices, either from within the system or by exporting a file of data to a financial management system. The system must also support reporting. Options could include support for an external reporting tool, eg Crystal Reports, or a range of predefined reports. Examples of report selection parameters could include the number of requests sent or received, by service level, by loans or copies, or by delivery method.

Peer to Peer systems

There are a number of ILL products available but only a handful of systems are ISO ILL Protocol and IPIG profile compliant. The following is a brief summary of the systems that support peer-to-peer ILL transactions. Information on the “Wings” system produced by Pigasus Software Inc has not been included as this product is no longer available.

Aleph 500™ Integrated library automation system

Vendor: ExLibris

<http://www.exlibris-usa.com/>

This is an integrated system, with powerful Z39.50 searching capability. The web interface is customisable for Patron searching however library staff use a Windows interface. The system supports Application Program Interface (API) and can be configured to interface with third party software or systems. Standard reports are included however the library can also design their own. The library can customise the alerts (emails) sent on Status changes to patrons. The ILL module is a component of the ExLibris ILMS and is not available as a stand-alone product. Fines and lost item fees are handled in the Aleph circulation module and the patron database for ILL is based on the circulation patron file. The system is expected to interact with Ariel soon.

Support for standards

Support for the ISO ILL Protocol, the IPIG profile and the NCIP protocol was expected in the June 2001 release. Z39.50, Broadcast Z39.50 with de-duplication of result sets, and interaction with Ariel was also expected in this release. The system also supports Code 39 that defines the font for the printing of barcodes on ILL requests. In addition, it includes ADA (Americans with Disability Act) compliant features to support text readers and Braille printing based on the text format. The ExLibris web site had no information on this release at the time this paper was written.

Clio 3.0

Vendor: Clio Software

<http://cliosoftware.com>

Clio is available either as a stand-alone ILL system or through Voyager. It was originally designed to act as a management system for OCLC requests and uses the OCLC micro-enhancer software to retrieve requests from OCLC for processing. The system is available for a single workstation or on a network and has the flexibility to incorporate local work processes. There is a web interface for patrons and a Windows based interface for staff. The system provides an automated interface to OCLC and Docline ILL services as both requester and supplier. Barcodes are printed on requests and can be used to locate and update requests. Patrons can submit requests, check on the status and, with the ClioWeb product, receive a PDF copy of the article requested to their desktop. Clio can check requests received from other libraries against the local catalogue for holdings information. It can support financial management activities including invoicing, IFM (payment service for OCLC) and deposit accounts. It can automatically send patron email alerts. Clio also supports the printing of mailing labels, coversheets, bookstraps, statistics and reports. It has an Ariel to PDF conversion program. The new module, ClioAutoUpdater, monitors both the outgoing and incoming Ariel files. When an Ariel document is received this program automatically updates the request to "Received Copy" status in Clio and it can send an email message to notify the patron. The request is also updated in OCLC if you have already received a "Shipped" message. Clio is based on Microsoft Access 2000 and a licence is provided with the software.

Support for standards

Clio version 3 supports ISO ILL Protocol messages especially Direct Request with OCLC. The level of ISO ILL Protocol supported is unclear at this stage. This product is listed on the IPIG Implementors Products and Projects web pages however the individual product page was last updated over 6 months ago prior to the release of Version 3. It is also not clear from documentation, whether it supports Z39.50 searching of desired target as a requestor although it does support searching of the local ILMS as a supplier. Previous reports implied version 3 should support the ISO ILL Protocol and IPIG profile, NCIP (Circulation) and Code 39 (for barcodes). The system will support 1-25 workstations.

GeoWeb OPAC

Vendor: Geac Computer Corp Ltd

<http://www.geac.com>

This system has incorporated Fretwell Downing's VDX product as its ILL management system. Patron requests are electronically sent to VDX. The GeoWeb OPAC supports the creation of ILL requests, which are then sent to VDX for processing. See the VDX entry for more information on features and support for standards.

ILL manager

The Research Libraries Group (RLG)

<http://www.rlg.org>

ILL manager is a stand alone ILL product designed to support peer to peer interlibrary loans activities. This product can be networked. It has an ILL Web form for Patron requesting and uses Eureka for Z39.50 searching. Access is password controlled, with 4 different levels of access. ILL manager can be set up to send emails to Patrons when ILL status change. The system supports batch processing of requests and barcodes are printed on each request to facilitate access. The system includes finance tracking. Apart from simple and advanced searching of the transactions database, which includes a history display, it is also possible to access requests via the different ILL statuses. The system can also be used to track manual requests. ILL manager can also send an alert automatically to staff when no activity has taken place on a “pending” or “in-process” request over a given period. The size of the database is determined by the server capacity so the library will need to consider carefully their requirements. Standard reports are included in the product, however ILL manager also includes the ability to create your own reports using a third party report writer eg Crystal report. RLG can load known suppliers however any new ones would need to be entered locally. Patrons would need to be entered locally, as there isn't a patron load interface. At the moment ILL manager does not include archiving however it will be possible soon.

Support for standards

ILL manager supports Z39.50 searching and de duping provided the target supports these (eg RLIN, OCLC). The system is fully ISO ILL Protocol and IPIG profile compliant and supports both email and direct connect exchange of ISO ILL messages. The NCIP will be adopted when the protocol is finalised. ILL manager interacts with Ariel. It uses the Code 39 for barcodes and with the appropriate software is ADA compliant.

OCLC ILLiad Version 5.2

Vendor: Atlas Systems distributed by OCLC

<http://www.Atlas-sys.com>.

<http://www.illiad.oclc.org/index.stm>

This product was originally designed to act as a management system for OCLC requests and uses the OCLC micro-enhancer software to retrieve requests from OCLC for processing. It is also possible to retrieve requests from Docline and RLIN using similar techniques. OCLC ILLiad lets users easily send and track requests electronically through a Web interface. It is also possible to generate requests from OCLC's First Search. There is no limit to the number of email alerts that can be set up to notify patrons on status changes. It has electronic delivery of articles via the web by converting the Ariel document to PDF format. This system has customisable invoice tracking and billing feature.

Support for standards

ILLiad does not have Z39.50 searching capability and uses Macros with OCLC's passport software to copy bibliographic data into a request. This system is ISO ILL Protocol compliant and testing with OCLC is underway. It uses Code 39 for barcodes and Atlas systems do not know if it is ADA compliant.

Impact/ISO ILL - AVISO

Auto-Graphics

<http://www.auto-graphics.com>

Impact/ISO ILL is a stand alone ILL product that supports the peer to peer ILL requesting. It is a web based product. Finance data can be downloaded and imported into an account system. Impact/ISO ILL supports interlibrary loans and document delivery as a requester and as a supplier. Bibliographic information and holdings data can be captured from an external database. Standard reports can be generated from the system or a reporting package, for example Crystal reports, can be used to produce customised reports. Patrons are able to generate requests and check the current status of their requests.

Support for standards:

A Z39.50 search client, with an Impact/z39.50 gateway is part of this product. Impact/ISO ILL supports Version 2 of the ISO ILL Protocol via TCP/IP or Multipurpose internet mail extensions (MIME) and complies with the IPIG Profile. It will implement the NCIP when it is finalised. This product is not ADA compliant and would appear not to support code 39 for barcodes. This product does not interface with Ariel.

Innovative Interlibrary loan

Vendor: Innovative interfaces Inc

<http://www.iii.com>

This product is a component of the Integrated Library system. It operates very well with other Innovative libraries. The INN Reach product also from III is specifically designed for the consortia environment and allows libraries within the same system to request from each other.

Support for standards:

The Innovative integrated Library system can include Z39.50 capacity. It supports the ISO ILL Protocol for the requestor role and it is expected that sometime in 2001 it will be IPIG profile compliant. The system will interact with OCLC, RLIN and Docline in placing requests to these systems. The system is not designed to support lending procedures.

Library.Request

Vendor: The Library Corp (TLC)

<http://tlcdelivers.com>

The Library.Request management system can be used as a stand alone ILL module, a part of the integrated library management system or a Web to Z39.50 option with messaging. It is designed to support a consortial model of ILL or a Z39.50 model, where the multiple targets can be searched for locations information. Both the patron interface and the library staff administration client are accessible through the web. Library.Request provides the patron with an easy to use interface to search the library system. The patron can initiate and submit a request from an item in the catalogue and check the status of requests throughout the entire loan process. The patron can cancel requests at any time, and the system will notify the

institution administrator immediately. The system supports both requesting and supplying activities. The interface can be customised. Reports and statistics are also customisable. Requests are searchable via a number of fields. Library.Request does not interact at present with Ariel and does not handle fines or lost items notices. It supports mediated and unmediated requesting based on business rules. This system includes a patron database and supplier records for participating libraries. At present this product only handles loan requests from patrons. Article requests are entered on the system by the ILL unit. TLC also offers a hosting service for Library.Request. This product is based on the Library.Connect (toolkit), an ISO ILL Protocol application package used by a number of organisations including, RLG, NLM, CISTI and National Library of Canada.

Support for standards

Library.Request is Z39.50 compliant although it does not currently support de-duplication of results sets although this is under investigation. This product is ISO ILL Protocol and IPIG profile compliant. It will adopt the NCIP protocol when it is available. Library.Request does not print barcodes and is not fully ADA compliant.

RSS Resource Sharing System

Vendor: Epixtech Inc

<http://www.epixtech.com>

RSS is a stand alone ILL product that will also operate with other *epixtech* products, such as Web Pac. Patrons can search Z39.50 database targets and generate a request. Patrons can also check their requests and receive alerts on the status of their requests. The library staff client is Windows based while patrons use a web interface. The system offers a library with multiple processing units the choice of centralising or de-centralising their interlibrary loan activities. Patrons can use their barcode or other system ID to access the system. Different levels of access can be set for staff accessing the system. RSS does not include a patron database rather it uses the ILMS patron database files. It does print labels and request retrieval slips. The system does not currently handle financial transactions fees but it does allow for costing information to be added to the request. This functionality is expected this year.

Support for standards:

RSS allows library staff to add Z39.50 targets on the fly and allows library patrons to search any of the listed Z targets available to them. The system is ISO ILL Protocol and IPIG profile compliant. The system currently supports the SIP2 protocol including remote patron authentication and is committed to supporting the new NCIP protocol when it is finalised. RSS does not print barcodes. The URSA product also from *epixtech* allows consortia members to use the NCIP (draft) standard to view detailed holdings information and then request the item via the ISO ILL protocol.

VDX Virtual Document eXchange

Vendor: Fretwell Downing Inc (FDI)

<http://www.fdgroupo.com/fdiusa>

The VDX system is a stand-alone ILL product. It provides library control over screen content for the web interface and the Windows based staff client. The staff client is also available through a web interface. The system has been designed to allow flexibility in setting up complex business rules and interlibrary loan policy. Patrons can search Z39.50 targets to initiate a request or fill in a blank screen. Depending on the library configuration these requests can be mediated or sent directly to the first potential supplier. Patrons can check the status of their requests at any time. Access to the system can be set via permissions usually allocated to user groups. The library can set up alerts to inform patrons of status changes. VDX supports a patron database and suppliers database. Suppliers can be loaded to the database or entered manually. Any field in the ILL request, patron record or supplier record can be searched. VDX can communicate with Ariel either in a close couple or loose couple configuration and patrons are able to access the scanned request via the interface. VDX does not include predefined reports but includes the ability to create your own reports using a third party report writer eg Crystal report.

Support for standards

VDX supports Z39.50 searching. FDI also have products like Z2Web and Zmbol which extend Z39.50 searching to non Z targets and can present all of the information together on the one screen. Patrons can design their own landscape for searching or use the generic one. VDX is ISO ILL Protocol compliant (Version 2) and according to the literature will be IPIG profile compliant by Oct 2001. VDX supports all SIP2 message pairs including the "creatitem" and "deleteitem" extensions, and plans to support the NCIP protocol as soon it is released. VDX does not print barcodes. It also does not handle fines and over due notices, as these would be handled by the ILLMS. VDX supports the fair dealing and record keeping requirements needed for compliance with Australian copyright law.

Conclusion

Support for the ISO ILL Protocol provides the opportunity for interconnection between the ILL management systems of individual libraries, national and regional utilities, and commercial document suppliers. Support for related standards enables the interlinking of the ILL management system with other modules of the library management system. While support for the ILL Protocol is an important criterion in the selection of an ILL management package, libraries must also consider the full range of functionality and usability provided by the software. The ISO ILL Protocol is incorporated in an increasing number of ILL software products however there are varying levels of compliance. The Protocol is currently used to support transactions between only a small number of Australian libraries however this is likely to increase significantly in the next few years.

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Appendix 1. System requirements.

This list of requirements is included to assist libraries in preparing specifications for an ILL system. The list is not exhaustive but is offered as a starting point.

General system requirements

System should be web based or have an easy to use Graphical User Interface (GUI).
Supports access for people using assistive technologies by meeting appropriate guidelines such as W3C Web Content Accessibility Guidelines or ADA (Americans with Disability Act) Section 508.

Ability to customise the interface

Ability to control access to the system and allow authorised operator to override ill blocks or limits

Ability to network the system and each user to have access to all of the functionality

Each request should be a separate entry on the database

Support both requester and supplier functionality

Should allow both centralised and decentralised ILL activity

Ability to exchange requests with other ISO ILL compliant systems

Ability to exchange requests with Kinetica Document Delivery (KDD) and use the KDD payments scheme

Support Z39.50 searching

Support ISO ILL Protocol and IPIG profile

Support SIP protocol (NCIP when finalised) to update the ILMS circulation system

Patron support

Support patron requesting with Z searching capabilities or OPAC searching linked to the ILL system through the web

Ability to view items requested

Ability to cancel material requested but not yet processed

Ability to view requesting history (for a time)

Ability to request a renewal

Allow patron self registration (optional?)

Library staff

Ability for ILL staff to search multiple Z-targets (including Kinetica)

Ability to view holdings following a Z-search

Ability to generate a request (including holdings information) based on a Z-search

Ability to add multiple locations to the rota of a request

Ability to receive non compliant requests as formatted emails (could be created from a web page)

Ability to create a request from a blank request screen

Ability to create a request on behalf of a patron.

Ability to mediate requests

Ability to modify a request including billing information

Ability to downloading bibliographic data from a bibliographic utility or other library catalogues into a request

Supports fair dealing and record keeping requirements needed for compliance with Australian copyright law (N.B. Copyright information should be kept for 5 years)

Requests must be searchable by:

- Patron name,
- Patron identification (could be barcode)
- Request number
- Library transaction number
- Title of the journal or monograph
- Author of the monograph or journal
- Author of the article or chapter
- Date due
- ILL statuses
- ISBN
- ISSN
- NUC symbol
- Date of Creation
- Catalogue number (eg Amicus number)

Note this list is not exhaustive. It should also be possible to search these fields in combination using Boolean operators.

Support access to potential supplier information eg

- Name
- Address
- Contact numbers
- NUC symbol
- ILL policy (could include turnaround time information)

Potential supplier information should be searchable via name and NUC symbol

Support requester information (could relate to an individual or a library)

- Name of individual or library
- Address
- Contact numbers
- Delivery address
- Billing address
- Email address
- Ariel address
- NUC symbol
- Category of requester
- Copyright information ?

Requester information should be searchable via name, NUC symbol and/or system identifier

Single or batch updating of requests through the different statuses eg Shipped, received, returned, etc.

Ability to Cancel a request after its been sent to the potential supplier (prior to the supplier shipping the item requested)

Ability to update a request based on the ISO ILL protocols

Support the ILRS code, service levels, ie Core, Priority, Rush and Express requests

Ability to print requests as a requester

Ability to print labels as a requester

Ability to print retrieval slips/requests as a supplier

Ability to print address labels as supplier

Ability to send alerts to patrons and other Libraries based on certain status changes eg received (material available for collection)

Financial management and reports

Ability to generate ILL invoices or a file of data that can be loaded to a financial management system (for libraries not participating in the Kinetica Payments scheme)

Ability to preset charges for different levels of service

Ability to generate reports or access the data via a report writing utility. Should be able to use any data in the system in reports including requester and supplier information