Higher Education Library Technology

New approaches to resource sharing: transforming library collections and the user experience

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InterLibrary Loan - the present landscape

InterLibrary loan (ILL) is an essential library service. Even the largest, most well-funded library cannot meet, from its own collections, all the resource needs of all its users. Nick Ripatrazone, a columnist at Lit Hub a daily literary website, remarked in 2019, 'You would be hard-pressed to find an acknowledgments page in a book of academic scholarship that doesn't include the phrase *interlibrary loan'*. [1]

In 2017 librarians at University of Central Florida declared, 'Interlibrary Loan services are a key strategy in ensuring that scholars and researchers have the opportunity to study, teach, and conduct research in a resource-rich environment, enabling discovery, analysis, and reflection leading to the creation of new knowledge'.[2]

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The Reference and User Services Association, acting for the American Library Association, publishes an InterLibrary Loan code that lays out the responsibilities of both requesting and supplying libraries. 'In the interest of providing quality service, libraries have an obligation to obtain material to meet the informational needs of users when local resources do not meet those needs'. [3]

A complex, inefficient ILL environment

However, InterLibrary loan (ILL) and document delivery (DD) workflows and software solutions can be complex with staff intensive workflows. Obtaining resources can be expensive, and so universities may use quotas to limit access to the service. [4] 'Interlibrary loan (ILL) is notoriously labor-intensive, making it one of the more expensive services typically offered by libraries'.[5]

> There are several factors that may affect the cost of an ILL service, including the cost of labour, the geographic location of the library, the use of a ILL software, and membership to a library consortium. We find that there is a wide range of estimates for ILL cost, from $3.75 (USD) to $100.00 (USD). However, [the] figure of $17.50 (USD) per transaction remains the guideline for most researchers and librarians.[6]

The ILL landscape for Higher Education (HE) in most countries is diverse. Laws, notably about copyright and the right to supply electronic/digital copies of material, differ and a variety of software solutions, standards, and reciprocal borrowing arrangements abound. National and regional shared catalogues can help locate a resource but there may not be an integrated ILL capability. For example, Jisc's Library Hub Discover brings together the catalogues of 189 institutions in the UK and Ireland. 'In a single search you can discover the holdings of the UK's National Libraries (including the British Library), many university libraries, and specialist research libraries. [7] However, it tells users, 'If you wish to access materials … you must contact the library which holds the material directly (or speak to your

own local library about an inter-library loan)'. [8] Analysing the US situation in 2018, Kurt Musson portrayed a landscape of 'siloed systems with weak integrations and poor interoperability. Discovery happens in one system. Requests are managed in a separate ILL management system which ties to an external ordering system for sourcing items.' [9] In 2019 the Australian ILL landscape was characterised as having 'evolved without coordination, planning or structure leading to increased complexity and potential disorder.'[10] A UK librarian listed just some of the frustrations with ILL management systems:[11]

- Inadequate interoperability with circulation
- Too complicated set ups – needs Systems/IT intervention
- Inability to edit requests at all points in the workflow
- Inadequate reporting/statistics functionality
- Ineffective messaging/range of notifications
- Inability to manage a quota system
- Inflexibility – workflows have to be adapted to fit constraints of the system

Almost a decade ago Marshall Breeding summarised the landscape in the following terms:

A long-standing model of interlibrary loan involves a centralized service that brokers requests among very large groups of libraries. OCLC stands as the best-known and largest organization providing this type of service….. Many national libraries, including those of Australia, New Zealand, and most countries in Europe, operate centralized interlibrary loan services. Others, such as CISTI in Canada, Docline, operated by the National Library of Medicine, and the British Library, operate large-scale document delivery services. [12]

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He went on:

The main disadvantages of this model of interlibrary loan involve high expense and relatively long times to fulfill requests. Costs might include transaction fees assessed by the interlibrary loan service broker, charges assessed by the lender, and shipping. A request might cycle through multiple potential suppliers before it is completed, and shipping from distant locations will extend the fulfillment interval even further.

The need to create a more efficient environment for ILL is exemplified in IFLA's Guidelines for Best Practice in Interlibrary Loan and Document Delivery.[13] It makes the following general recommendations:

- Streamline the process within your own library
    - Define performance indicators for service levels and turnaround time and monitor your performance against them
    - Evaluate your own routines and change them accordingly
    - Reduce the number of hands through which the requests are passing

- All requests should be handled in one electronic system, preferably with the ability to interoperate with other ILL/DD systems
- Keep statistics to suit national monitoring schemes and local needs
- Make holdings available on Union Catalogues and keep them up to date, with an indication of availability for resource sharing
- Explore reciprocal arrangements

Resource sharing – new approaches

A new generation of library resource sharing solutions is helping libraries transform legacy ILL practices and systems and challenge past assumptions.

Peer-to-peer resource sharing across ISO ILL compliant library systems
For many years, ILL/DD functionality was typically not included in local library management systems. The UK was an exception, but functionality was focussed on placing requests with the centralised British Library document supply service (BLDSS) that uses a bespoke Application Programming Interface (API).

The development of a workable *international* standard for ILL 'has an interesting history of pioneering development, spotty implementation, and growing obsolescence. The rise and fall of ISO ILL illustrate the long-standing and ongoing need for a standard method to route requests related to ILL among diverse systems as well as the incredible complexity involved'.[14]

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In May 2012 it was recommended that a new international standard be drafted. 'As opposed to the complex and fragile nature of the current ISO ILL, the new protocol is intended to be as simple as possible and based on current stateless Web services technologies in order to foster wide implementation'. [15]

The ISO ILL 10160/10161 standard was developed to 'provide uniform procedures for handling peer-to-peer interlibrary loan operation between two ILL systems. The standard defines a number of messages that can be sent between the requesting site and the supplying site in order for the requester to have access to different services and material that might be offered by the supplying organization'. [16] Only after it was redeveloped was it more fully embraced and thus opened up the opportunity for improved approaches to ILL.

For example, in Wales a consortium of eight higher education libraries (WHELF) has taken advantage of the implementation of the ISO standard in the Ex Libris Alma library system to work together to enable both digital and physical resource sharing. [17] No fees are charged and a rota system ensures that the spread of requests is equitable and no institution

receives a disproportionate number of requests. This peer-to-peer arrangement has generated an estimated cost saving of more than £30,000 by avoiding British Library ILL fees. Furthermore, digital ('non-returnables') and physical ('returnables') fulfilment speeds match or exceed the BLDSS service level agreement. Unsurprisingly there are plans to welcome other Alma libraries into the arrangement.

<u>Extending interoperability - new open system solutions</u>
A next generation of resource management solutions is enhancing efficiency by enabling peer-to-peer interoperability across institutions that may have different local library systems. For example Ex Libris's RapidILL solution integrates with ILL systems such as Clio, ILLiad, RelaisILL and OCLC's Tipasa resource sharing solution. PTFS-Europe has also developed integration with the open source Koha library system.[18] Integration at the LMS level (to manage loans and user records for example) is typically enabled by the use of the NISO NCIP standard.[19]

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needs are to be met. In the last few years three main resource sharing options have emerged that, though still developing, exemplify this wider interoperability.

Rapid ILL
RapidILL was developed by InterLibrary loan staff at Colorado State University and subsequently acquired by Ex Libris. It facilitates quick, reciprocal resource requesting for 'pods' of libraries and interfaces with software solutions from a variety of vendors. [20] It is especially optimised for electronic resources ('non-returnables'). At November 2022 Ex Libris reported there were 500 customers worldwide with a 95% fulfilment rate and a 11.2 hours turnaround time on 1.5 million requests.

RapidILL pods are groups of libraries that have agreed to freely share journal article and e-chapters and commit to supplying these within 24 hours. Their holdings are loaded into RapidILL via automatic, monthly OAI-PMH harvesting. Each pod member can define what is loanable and what may be restricted so a library will only get requests for what it can loan.

RapidILL provides load balancing to ensure that each library receives as many copies as they supply. When sourcing items, it selects the holding library with the lowest net number of requests. Once requests are fulfilled, details are transferred to and held within the local library management/ILL/DD systems with which RapidILL interfaces. Requests are managed and user data is held on the local library management system.

Tipasa

Tipasa is supplied by OCLC and described as 'an ILL management system for individual libraries to share and obtain materials through different resources and systems as well as to provide an exceptional experience for the library user'.[21]

At present, Tipasa integrates with OCLC WMS [22] and non OCLC solutions such as Ex Libris Alma [23] and CLIO. [24] It uses a 'proven sender' concept, with libraries designated as proven senders that have demonstrated they provide good quality documents quickly. Optionally, Tipasa offers Article Exchange, a secure area for article delivery where staff can place requests for users to download. [25]

Tipasa uses the NCIP protocol [26] to integrate with local circulation systems to create temporary records in circulation systems. Tipasa can also manage requests made to fee-based services such as Reprints Desk. Conversely, libraries which charge for document supply can be excluded.

Tipasa can be implemented as part of the OCLC WMS library system or deployed separately. Library holdings are uploaded to WorldCat. Rotas and load balancing are managed by 'smart lender strings'. The library selects the locations that go into strings. Tipasa calculates turnaround time so it works out which library can supply fastest and undertakes load balancing so that no library gets more requests than it can handle. Libraries that demonstrate they can achieve a quick turnaround can be included in an 'express program' group.

User data is ingested into Tipasa from the library systems that are integrated with Tipasa. An initial upload is part of the implementation process. Updates managed by batch loads or an online API. Articles (PDFs) can be emailed to users or OCLC's 'Article Exchange' may be used as the delivery mechanism.

ReShare

Project ReShare is an open-source community driven project 'creating a new and open approach to library resource sharing systems that sets the standard for how we connect library patrons to the resources and information they require. Project ReShare is designing an open source, highly-scalable platform that supports discovery, fulfilment, and delivery workflows, with a focus on user-centered design'. [27]

Although not formally part of the Folio open source library system initiative,[28] Project ReShare uses the same core developers and technical infrastructure. [29] ReShare supports consortial, peer-to-peer borrowing between defined resource sharing groups. The initial focus has been on returnables. In 2021 the PALCI libraries was first consortium to deploy

ReShare returnables. More than 150,000 physical items are borrowed and lent via their consortial borrowing program.[30] While enabling the sharing of non-returnables is 'not yet scheduled' (December 2022) key requirements have been published. [31]

Solving problems

Equity
A barrier to taking part in peer-to-peer arrangements has been the concern that a library may be overwhelmed by requests or treated unfairly. A key principle governing the Welsh resource sharing project is 'Equitability – a rota system ensures that no institution receives a disproportionate number of requests'. Load balancing reduces or eliminates this concern and although implemented in different ways is a key feature of the new tranche of resource sharing solutions.

Reducing costs
Some UK libraries are considering elimination of ILL charges for users.[32] A contributing background factor to enabling or justifying this decision is the reduction in ILL costs that new resources sharing solutions can help to achieve.

Making resource sharing equitable can enable significant cost reductions. As noted above, the Welsh consortium and RapidILL 'pods' start from the assumption that equity means no need to makes charges to institutions for requests. This potentially eliminates the costly

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infrastructure to manage those charges. Automating the processing of requests and therefore removing the need, for the most part, of staff mediation is another way of significantly reducing costs.

Improving the user experience
The ability to integrate ILL functionality into library discovery solutions enhances the value of that service by enabling users to obtain, easily and quickly, resources not in the library's collection. Birmingham University in the UK informs users, 'Electronic Articles can normally be obtained in 2-3 working days'.[33] Being part of consortium using a new generation resource sharing solution can improve performance. The N8 consortium of research libraries[34] conducted a series of large scale test runs of how their ILL mechanism (based on RapidILL) would perform. Originally they 'worked on an assumption of a two hour delivery time. In fact the median delivery time was 36 minutes'.

In 2021 Ex Libris introduced Rapido, its new 'brokering' solution. For all but the most complex situations, it eliminates the staff overhead of mediating user requests. It

automatically finds the best lender to fulfil requests. Rapido integrates, via standard and open system interfaces, not only with Ex Libris's own RapidILL, but also with other non Ex Libris resource sharing solutions. The user can expand their search from their institutional or consortium library discovery layer to external resources and get a choice of fulfilment options in a manner analogous to how Amazon offers the user format choices such as hardback, paperback, new or second hand and varying delivery options. A brokering solution can, for example, offer the user the option of the physical copy delivered in days or an electronic chapter available in hours. Importantly, the user decides.

Taking new directions

The impact of digital

Journal articles

The move to electronic articles has revolutionised the academic journal landscape. However, journal subscription costs remain high. The nature of electronic documents makes document delivery between libraries cheaper and much more efficient. Publishers permit ILL. For example, Elsevier has a standard ILL clause that is included in all their academic ScienceDirect subscription agreements. It 'permits delivery of

> **Libraries have been looking for way to reduce their dependency on these big deals and working in a resource sharing consortium based on a new generation resource sharing solution offers new ways forward**

journal articles and book chapters to other academic libraries in the same country for the use by the receiving library's user'.[35] But barriers remain. In the US, the Commission on New Technological Uses of Copyrighted Works (CONTU) Guidelines aim to define the point at which a library should subscribe to a journal rather than rely on ILL. A 'typical crossover point for the … decision is four or five uses per journal title per year'. [36] Although established in the 1970s, the guidelines remain embedded in ILL practice despite the fact they have no force in law.

Open access (OA) is changing the landscape, but subscriptions continue to consume a large proportion of library budgets often in the form of packages of journals provided by publishers. These *big deals* 'remain the dominant mode by which research libraries have provided maximum journal access as cheaply as possible.' [37] Libraries have been looking for way to reduce their dependency on big deals for some time.[38] Working in a resource sharing consortium based on a new generation resource sharing solution offers new ways forward.

The University of Liverpool, part of the N8 consortium studied how electronic interlibrary loan could be deployed to mitigate the adverse consequences of a big deal cancellation. At the UKSG conference in 2022, Phil Sykes from the University of Liverpool described their

findings from a series of large scale test runs of how their RapidILL solution would perform in cancellation scenarios.

> On the basis of the data we got together for a potential Elsevier cancellation the median delivery time in that modelling was 36 minutes! In other words, if you're an academic at Manchester, and you want an article from Liverpool's post-cancellation holdings, the lapse of time from when you request the article to it arriving in your inbox will be – on average – 36 minutes. The other significant outcome of that trial was that, on average, it took just over a minute's work to supply that loan. [39]

Sykes went on to conclude:

> What the 31 members of N8+ would have been able to say, if the Elsevier deal had been cancelled was: "You can have 65% of what you want instantly. And another 30% will come to you, not in days, not in hours, but in minutes. The remaining 5% will take a bit longer."

Ebooks

The move to ebooks has been slower but also offers major possibilities for efficiencies.

> Lending a print book to another library involves costs related to processing, mailing and storage. A print book can be damaged in transfer, and if this happens, the borrowing library has to replace it. When a print book is issued to another library it is unavailable to the library's own patrons. The requester has to wait several days for the book to arrive by post. By making an e-book available to another library/libraries can avoid all the above. [40]

Restrictive licences and digital rights management militate against e-books being part of the traditional ILL model. Licensing agreements, as well as pricing and access models, place

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constraints on how e-book collections are used. This has limited the ability of libraries to use ILL as a mechanism to reach beyond the resources of their institution. ProQuest, an ebook aggregator/platform gives the following guidance:

> Library Customers may loan digital or print copies of materials retrieved from the Service to other libraries, provided that (i) loans are not done in a manner or magnitude that would replace the receiving library's own subscription to the Service or purchase of the underlying work (e.g., newspaper, magazine, book), (ii) Customer complies with any special terms governing specific content or licensors as described in this Agreement, (iii) with respect to e-books, copying is limited to small portions of a book, and (iv) Customer complies with all laws and regulations regarding ILL.[41]

ProQuest goes on to recommend that:

> Given the high costs traditionally surrounding administration of ILL programs and the need for libraries to track DRM, we recommend the borrowing library use an Ebook Central Short-Term Loan (STL) as an alternative; this allows libraries to borrow entire ebooks directly from Ebook Central at a fraction of the cost of buying.

Nevertheless, some progress towards ebook ILL is being made. The Collection Strategies team at the University of Alberta is optimistic 'that as more libraries work with vendors on this issue, whole ebook lending could become the new standard.' Similar work is being done by other libraries such as Virginia's Academic Library Consortium [42] and the State University of New York. SUNY's eBook Lending Project collaborates with ProQuest to design processes for lending eBook titles.[43]

Controlled Digital Lending

Controlled Digital Lending (CDL) is a method for libraries to loan digitized items from their print collection to their patrons in a "lend like print" fashion.[44]

> Using this method libraries digitize an owned physical item from their collection, then lend out this secured digital version to one user at a time while the original, printed copy, is simultaneously made unavailable to other users. Technical controls in CDL interactions ensure a consistent "owned-to-loaned" ratio, meaning the library circulates the exact number of copies of a specific title it owns, regardless of format, putting controls in place to prevent users from redistributing or copying the digitized version.

The potential for CDL is significant. The IFLA Position on Controlled Digital Lending states that it 'has helped to fulfil the mission of libraries to support research, education and cultural participation within the limits of existing copyright laws.' [45]

As more libraries work with vendors on this issue, whole ebook lending could become the new standard

However, uncertainties remain about how CDL can be applied in the context of resource sharing. The first effort of the CDL Co-Op, a group of US-based libraries, was to examine CDL as a mechanism for supporting interlibrary lending. Resource sharing solution vendors are already exploring how CDL can be implemented. For example, in 2021 Ex Libris announced 'the company is planning to implement CDL for general circulation loans, and through the Ex Libris Rapido™ discovery-to-delivery resource sharing platform'.[46] Project ReShare also has plans 'to define a future roadmap for CDL that works toward a production release and consortial support'.[47]

The provision of Fair Use clauses in US copyright law gives greater certainty to US universities and allows them to pursue CDL more vigorously than other countries. David Prosser, Executive Director of Research Libraries UK (RLUK) lamented, 'Differences in copyright frameworks could result in the US universities moving to a 21st Century model of library lending, while we in the UK are left behind'.[48]

Conclusion - a new view of library collections

In the past, key factors limiting efficient ILL/DD were the complex nature and poor interoperability of ILL systems and the resultant staff intensive workflows and costs. As we move into the second quarter of the 21st century, technology has transformed ILL/resource sharing. A laudable advance is the speed and efficiency with which requests can be fulfilled and delivered.

While Open Access is widely acknowledged as having challenged conventional subscription publication models, a full solution to enabling the free flow of research is still to be found. OA combined with persistent work by

As we move into the second quarter of the 21st century, technology has transformed ILL/resource sharing

librarians collaborating regionally, nationally and internationally to break down barriers to sharing resources, creates potential for a dramatically new approach. New approaches to resource sharing will encourage a reassessment of library collections and drive forward a more open research agenda.

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He set up his consulting business in 2007 to help make libraries and archives more effective. His consulting activities include help with strategy, innovation, improving the user experience, reviewing/auditing library IT infrastructure and systems, and the procurement of new and replacement systems. His work also encompasses ebooks, resource management and discovery, open and linked data, repositories, archives and research management solutions. In addition, he provides market intelligence and horizon scanning services for and about the information and library technology sector.

Ken is a member (MCLIP) of CILIP and ALA. For six years to 2016 he was a main committee member of UKSG and until 2016 was a committee member of the NISO Open Discovery Initiative (ODI). He set up and manages a number of free, open community resources including Higher Education Library Technology (HELibTech) and Local Government Library Technology (LGLibTech)

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