# Proceedings of the 16th IFLA ILDS conference:

## Beyond the paywall -
## Resource sharing in a disruptive ecosystem

held at the National Library of Technology in Prague, Czech Republic, October 9-11, 2019

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**Editors:** Peter D. Collins, Stephanie Krueger, and Sasha Skenderija

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# A Progressive Approach to Reducing Barriers to Resource Sharing: A Canadian Example

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**Abstract:**

*The University of Alberta Library (UAL) holds one of the largest collections in Western Canada and recently opened a storage facility with capacity for five million volumes. UAL's collection and staffing capacity make us a significant net lender of materials to other libraries. Being cognizant of this role, UAL is attempting, via consortial bodies at the local, provincial, regional, and national levels, to advance a progressive approach to resource sharing by reducing administrative burden and strategically working towards new ways of resource sharing via digital means. This presentation outlines our context and approach, offering a sense of adaptability and scalability that could be replicated in other contexts.*

*Scaling and extending the work UAL does at the provincial level to the regional and national level requires us to demonstrate a high degree of commitment to our partners. Often, net lenders can be hesitant to open the gates to their collections for fear of creating unmanageable demand. We accept that risk and, in general, are trying to develop a stronger sense of risk tolerance. One strategy we pursue is to remove barriers in resource sharing, via concrete actions such as the elimination of fees that generate small amounts of income from lending, longer and more flexible loan periods, and controlled digital access to unique materials. UAL is developing digitization priorities in part to support this practice, facilitating greater access to our consortial partners and anyone needing access to materials we may uniquely hold. Within a complex global environment, UAL continues to look for ways to reduce barriers to information, and to share our resources widely in keeping with our University's raison d'etre of "uplifting the whole people".*

**Keywords:** resource sharing, collaboration, interlibrary loan

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## Introduction

The University of Alberta Library (UAL) is a leading research library in Canada, serving approximately 38,000 students and 15,000 employees stretching over 5 campuses and 18 faculties. The Libraries have 10 locations that house library collections. We actively contribute to and help shape many initiatives that create research and scholarship and make them accessible, ensuring that access is available now and in ways that can be sustained for generations to come. UAL leverages its tremendous physical and digital collections, including rich special collections and archives, to provide learners of all levels, wherever they might be, the opportunity to grow and succeed.

UAL is the second largest research library in Canada, and serves a key role within Western Canada, given Canada's geographically dispersed population. The University of Alberta is located in the city of Edmonton, in the province of Alberta. Edmonton is Canada's fifth largest city, and the northernmost city in North America with a population of over one million. UAL is looked to as a leader within the region for advancing library initiatives that benefit others within the region as well. We frequently work with consortia in order to collaborate with other institutions on agreed upon initiatives of shared importance. We have a local consortium called NEOS which consists of 18 multi-type libraries that share a catalogue. Our other key consortia partners in Alberta are the Alberta Association of Academic Libraries (AAAL) and The Alberta Library (TAL), which is a multi-type library consortium with members throughout the province of Alberta. Regionally, we are members of the Council of Prairie and Pacific University Libraries (COPPUL), and nationally the Canadian Association of Research Libraries (CARL) and the Canadian Research Knowledge Network (CRKN). We actively participate in all these consortia in areas such as resource sharing, licensing scholarly content, professional development, and collecting statistics.



## Moving resource sharing towards a more progressive approach

For the past several decades, or perhaps longer, the resource sharing landscape has tended to operate based on several key, if often unspoken, assumptions. First, some institutions, particularly those with large and rich collections, felt the need to limit demand for fear of being overwhelmed with requests for items. This is akin to fees elsewhere in the organization that were intended--again, whether explicitly stated or not--to limit usage of a particular service (Murphy and Lin 1997, 128). One example of this would be high fees and/or complex request procedures for reproductions of items in special collections, well in excess of the actual cost of delivery. Additionally, some libraries operated under the assumption that when they perform interlibrary lending on an outgoing basis they are not serving their own users, thus such a service must cover its costs. In fact, various rules and policies mandated that the borrowing library cover all costs (Line 1976, 81). Whether it ever did so is beside the point; it was more a question of mindset. Staffing levels for interlibrary loan have been shown to be quite erratic even among libraries of similar type, indicating perhaps a varying conception of the centrality of ILL within the organization's service portfolio (LaGaurdia and Dowell 1991, 373-374; Beckendorf 2007, 24-26). Lastly, interlibrary lending requires the use of third-party

providers for shipping, which underscored and reinforced the notion that such a service needed to be cost recovery.

This brief description both oversimplifies the mindset and may unintentionally imply that these were conscious decisions on the part of individuals, rather than more subtle and instinctive responses to pressures and costs. In any event, these factors combined to place interlibrary lending outside of the realm in which we perform myriad other services without charging users. Libraries have routinely assessed fairly arbitrary fees to each other and have, in many instances, passed on these costs to users or at least explicitly made it clear to users the costs of such transactions, with the intent being to recover costs and/or reduce utilization. With the advent of digital content, many of the pressures that led to this mindset have decreased. We no longer see the volume of requests we once did (de Jong and Frederiksen 2015). Large digital collections and journal packages purchased via consortial and, in some instances, national licenses, have created broader access across a larger set of institutions (Koyama et al. 2011, 38).

At the University of Alberta, placing unnecessary restrictions on interlibrary lending fundamentally contradicts a founding principle of the institution and the substantial message of its current strategic plan, namely, that the university exists "for the public good" and should serve the cause of "uplifting the whole people" (https://www.ualberta.ca/strategic-plan, https://www.ualberta.ca/promise). While it is a university in and for the province of Alberta, these messages apply in spirit to all of humanity. As we will outline in some detail, this has led the University of Alberta to take a leading role in Canada in reducing the complexity and cost of interlibrary transactions, for example, by eliminating unnecessary fees that deter usage. By creatively managing our resources and collections, we can sustain an active and generous lending program without incurring significant costs that would merit specific attention.



**Examples of how the University of Alberta is leading resource sharing efforts**

In keeping with our goal to be more progressive within resource sharing and uplift the whole people, the following are examples of concrete actions the University of Alberta Library is taking to drive change.

***Interlibrary Loan process***

UAL has a history of building resource sharing relationships. In the 1990s, UAL was key in the establishment of the NEOS consortium, focused on a shared ILS. In the early 2000s, UAL became the hub for all NEOS partners connecting the sharing of print collections, a role it still carries out to this day. The NEOS consortium members do not charge each other for the lending of print materials nor document delivery.

In 2012, members of the AAAL were hoping to extend reciprocal interlibrary loan and document delivery privileges to the members of this province wide association. The UAL provided its support for this initiative; fees charged were negligible to the overall budget of the UAL and the belief that charging libraries changes requesting behaviour of borrowing libraries was no longer seen as relevant. With the support of the UAL as the

largest net lender in the province, AAAL was able to establish a pilot agreement in 2013. During the pilot years between 2013 and 2015, the members evaluated whether there would be any negative impacts on the net lenders. In 2015, it was determined that there was no significant change in requesting behaviour, which definitively proved to us that the argument that charges are required to curb the number of requests was unfounded.

In May of 2016, the University of Toronto Libraries (UTL), which is the largest research library in Canada, shared the news that they were stepping away from consortial agreements that had provided for free interlibrary loan and a nominal charge for document delivery to academic libraries outside of the province of Ontario. UTL implemented a $15 charge for both loans and copies. If other institutions would have taken UTL's lead on dealing with the economic climate, this could have been seriously harmful to resource sharing across Canada. The UAL took this as an opportunity to reaffirm its belief in the resource sharing agreements across the country and removed any charges for document delivery, in addition to the already free interlibrary loan, for all academic libraries who are members to our consortial agreements. This news was welcomed by the resource sharing community and conversations were started about how institutions would reciprocate the generous offer by UAL.

Although UAL's approach was a matter of principle--it hoped to influence the resource sharing community to become stronger--UAL had to deal with the reality of what this would mean for their budget. Based on the experience with AAAL, there was no concern that request numbers would increase from borrowing libraries. Also, consortial agreements require institutions to borrow from local libraries first and UTL's change in fees did not impact institutions in Ontario. The loss of revenue from net lending activity also meant that we did not have to manage the indirect costs of charging academic libraries; invoicing, handling payment, follow ups, and errors are all indirect costs of charging fees. Considering that most institutions were charged up to a couple of hundred dollars, it was often not enough to recover the indirects costs. Many institutions offered to reciprocate UAL's no charge policy, which meant that UAL didn't have to handle their invoices and provide payment, further reducing expenses.



In early 2019, the various consortia of academic libraries across Canada came together to discuss the possibility of eliminating the charging of document delivery fees for all consortial members. In addition, various consortia brought forward additional recommendations that would improve resource sharing, such as increasing loan periods and allowing renewals. Members of the consortia worked together to provide evidence based recommendations that included these proposals to their boards of directors for each consortium. UAL is optimistic that each consortium will approve the recommendations that will result in no charges for document delivery--in addition to the already free interlibrary loans--and extended loan periods with renewals.

***Special Collections material***

Special Collections material has been restricted from resource sharing between institutions for many decades due to their uniqueness or high value. Hickerson & Kenney discussed the problem in a 1988 paper where they stated that "[b]ecoming active

partners in shared resources programs is an essential step which will both strengthen the library as a whole and serve the interests of special collections themselves." In recent years, this topic has seen more interest with the development of the ACRL/RBMS Guidelines for Interlibrary and Exhibition Loan of Special Collections Materials in 2012 (http://www.ala.org/acrl/standards/specialcollections#research), the OCLC Research report named Tiers for Fears, Sensible Streamlined Sharing of Special Collections in 2013, (https://www.oclc.org/content/dam/research/publications/library/2013/2013-03.pdf), and the Big Ten Alliance PRINCIPLES AND PROTOCOLS for Interlibrary Loan of Special Collections Materials of 2018 (https://www.btaa.org/docs/default-source/library/btaa-principles-and-protocols-for-interlibrary-loan-of-special-collections.pdf?sfvrsn=9bbe4bf3_4).

The UAL's Bruce Peel Special Collections (BPSC) has focused on making Special Collections items available through various digitization projects. One such project, was the digital exhibition named Tinctor's Foul Treatise (https://omeka.library.ualberta.ca/exhibits/show/tinctor/imagining). As part of this digital exhibit, a fifteenth century manuscript of Johannes Tinctor's *Invectives contre la secte de vauderie* was digitized, making freely available to researchers worldwide a text that would otherwise see very limited exposure. UAL is also working closely with Internet Archive (IA), a nonprofit digital library, to make freely available BPSC material in a digital form through their platform, such as the digitized UAL Historical Postcard Collection (https://archive.org/details/albertapostcards). An upcoming project with IA will include the digitization of English Playbills. Using a digitization scribe located right beside the BPSC, the physical material will only be removed from its controlled environment for the duration of the scanning process. The digitized form will then be used to assign metadata to the objects. Making these objects discoverable and freely available in digitized form creates unprecedented access.



The UAL ILL department has worked closely with BPSC and the UofA Copyright Office to be able to fill requests for Special Collections items. A guideline has been established for providing controlled access to an out-of-print work for an approved purpose. As long as a requested item meets the criteria of the guideline, the ILL department may scan an entire work and provide controlled access to the work to the requesting library. The criteria include that the item must be out-of-print, non-circulating, part of BPSC, and an authorized digital version is not commercially available. The controlled access is created through uploading the scanned item to Google Drive as a PDF and restricting the item in the settings from being able to print or download the item, and assigning an expiration date to the document. The requesting library is then provided with a link that can be shared with the patron who requested the item. This enables the ILL department to satisfy more requests for materials from the BPSC.

***Controlled digital lending***

In January 2019, UAL began participating in the Internet Archive's (IA) controlled digital lending project. Controlled digital lending is the "digital equivalent of traditional library lending" (https://controlleddigitallending.org/faq), wherein a library can digitize a print book it owns, and lend a secure digital version in place of the print version, while

maintaining an “owned to loan” ratio that does not exceed the number of print copies owned, and where the print copy does not circulate when the digital version is available for loan. UAL currently uses IA secure infrastructure to loan digitized version of books within our Wiedrick Historical Education Curriculum Collection, consisting of textbooks that were authorized for use in Alberta’s elementary and secondary schools from 1885-1985, and were largely inaccessible in print format as part of a unique, non-circulating collection.

The decision to participate and pilot CDL was a relatively easy one in terms of it being a reasonable means to support our goals of removing barriers and enabling access to the collections that the university has invested in. In keeping with our goal of uplifting the whole people, we knew we could do better to share this important resource more widely. Our role and mission as a library at a public institution is to find ways to sensibly provide and manage access to those items of research and teaching value, while reducing barriers to access. For a non-circulating collection like Wiedrick, CDL allows us to responsibly and reasonably deliver books from our shelves to prospective readers.

As of August 2019, UAL’s Wiedrick online collection holds a total of 3923 items, with 1367 available for borrowing using CDL, and another 2556 of them being openly available to read at any time because titles are in the public domain. Of the titles made available via CDL since January 2019, more than half have been loaned at least once, representing 1839 circulations. There are 118 titles that are currently in use and on the waitlist to be borrowed. This use has exceeded expectations, showing us that there is greater interest in this material than we might have imagined, and certainly a population beyond our UofA campus community using it now that it has been opened up beyond its previous print-only restricted access availability.



***Ebook lending***

Digitization of UAL print collections will greatly improve access to scholars outside of the Edmonton region. However, while the shift in acquisition of books in print to digital format has improved access for our own users, it has created difficulty in sharing these resources beyond our own institution. Our Interlibrary Loan department provides chapters from digital books when permitted by licences; however, as digital collections increase, Interlibrary Loan departments must address the issue of sharing whole ebooks with other libraries. UAL has recently reviewed our licences for clauses that permit the sharing of a whole ebook and this work guides the Interlibrary Loan staff with filling requests for such items. Our Collection Strategies team continues to work with vendors to address this issue by requesting that interlibrary loan of whole ebooks is permitted in licenses. Similar work is being done by other libraries, for example, VIVA, Virginia's Academic Library Consortium (https://vivalib.org/c.php?g=836990&p=6137355). We are optimistic that as more libraries work with vendors on this issue, whole ebook lending could become the new standard.

***Shared print participation***

To facilitate the long term preservation and use of print materials, UAL has been an active partner in a number of shared print programs. We have entered into these arrangements in the spirit of wanting to be one of the institutions regarded as an Archive Builder, an institution that will commit to retain and hold desired materials for a significant period of time. We believe it is beneficial to hold and then lend materials to our consortial partners. We have been very active with the COPPUL Shared Print Archive Network (SPAN), which began in 2012, as well as with HathiTrust where we have committed approximately 850,000 print items to match the existing digital surrogates within HathiTrust. We are currently involved with a national effort in Canada to form a national shared print model to cover Canadiana materials across the country, and a partnership with other consortia in the U.S. and Canada to align principles of such programs.

At the centre of our ability to do so much with shared print is our new Research and Collections Resource Facility building which opened in the spring of 2018. It is a state of the art climate controlled facility with capacity for 5 million items (https://library.ualberta.ca/locations/rcrf). By funding the construction of such a facility, the University has shown its commitment to the print materials we have acquired and will continue to acquire, as well as archives and materials that need special handling. We can translate this good fortune to help others reduce their own collections while knowing they can borrow from UAL. Key next steps in this space will be to align with digitization efforts and make better linkages between different formats, which is currently lacking to a large degree. Doing so will enable greater lending of existing digital copies for print books that we hold, and will help us determine what unique print materials we have, which can help determine future digitization priorities.



**Conclusion**

As we have demonstrated in this paper, UAL's progressive approach to resource sharing is one that requires us to demonstrate a high degree of commitment to our partners. Often, net lender libraries such as ours can be hesitant to open the gates to their collections for fear of creating unmanageable demand. We accept that risk and, in general, are trying to develop a stronger sense of risk tolerance. By eliminating resource sharing fees for Canadian academic libraries, investing in digitizing collections through various partnerships, and participating in new structures for making available our materials, we are reducing barriers to access and promoting resource sharing. We also feel that this approach provides consistency by supporting many libraries in fostering an open, global scholarly environment where the principles of increased access take precedence over revenue generation. Libraries are collectively acting in many ways to bring about this change, for example setting up library-based publishing services for which we often do not charge the end users. We are working to apply these same principles of openness and service to resource sharing in order to reduce barriers to information, and share our resources widely, in keeping with our University's raison d'etre of "uplifting the whole people".

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# SESSION 02 - Perspectives: Digital Divide, Open Access, Collaborative Networks

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Babaryka-Amelchanka, V., Muravitskaya, R., & Shakura, N. (2019). Aside from Payment: The Experience of Acquisition and Mutual Use of Resources in the Belarus Agricultural Library. In P.D. Collins, S. Krueger, & S. Skenderija (Eds.), *Proceedings of the 16th IFLA ILDS conference: Beyond the paywall - Resource sharing in a disruptive ecosystem* (pp. 48-55). Prague, Czech Republic: National Library of Technology. Retrieved from http://invenio.nusl.cz/record/407836?ln=en

# Narrowing the Gap of the Digital Divide: How NSTL Contributes

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**Abstract:**

*In China, a digital divide results from geographical conditions, unbalanced economic development, individual differences, and other factors. To bridge this gap and to weaken the polarisation between the "information wealthy" and the "information poor," a federal, Internet-based library, the National Science and Technology Library (NSTL), has been founded. This paper will introduce what NSTL is and how NSTL contributes to narrowing the gaps in order to reduce differences between the two groups in access to science and technology information and resources.*

*NSTL consists of 9 library members, all of which are national authoritative libraries in different disciplines, respectively covering the natural sciences, engineering, agriculture, medicine, standards, and other fields. First, to narrow the gap caused by geographical conditions, NSTL has built 40 service stations covering 29 provinces, thus forming a nationwide information service network with the help of local and industrial scientific information institutions. This action not only guarantees resource sharing to the whole country, but also improves the service abilities of local providers. Second, to narrow the gap caused by unbalanced economic development, approximately 25,000 types of print resources that are state-funded can be unconditionally supplied to the public at reasonable prices, especially with low prices for remote and poor areas. Document delivery services are ordered over 400,000 times every year. Nearly 4,000 kinds of electronic journals are free for all domestic welfare and educational group users via Internet protocol address permissions. Third, to narrow the gap caused by individual differences, NSTL provides an integrated discovery system on the basis of unified cataloguing so that everyone can search literature easily. NSTL also organises trainings and seminars across the country, introducing and promoting resources to all communities. In addition, NSTL strives to explore approaches to international information access and to foster cooperation opportunities in order to close the gaps between countries.*

**Keywords:** Digital divide, Academic libraries, China National Science and Technology Library (NSTL)



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## 1. What is digital divide

The level of information access has become an important symbol for measuring modernisation levels and the comprehensive national strengths of countries. One of the problems caused by the rapid development of information technology is the digital divide. This issue, which has drawn global concern, is essentially due to unfair distribution and use of information resources.

Lloyd Morrisett came up with the term “digital divide” in 1995 [1] and it has been analysed from different perspectives [2-4]. Researchers have stated that economic power and socio-demographic factors are the most important elements that cause the gaps between and within countries [2, 5-6] and libraries are considered as potentially playing one of the most important roles in bridging the digital divide [7-11].

For China, the reasons for digital divide can be summarised as resulting from geographical conditions and differences in economic development and socio-demographics [2, 6, 12]. Under such circumstances, National Science and Technology Library (NSTL) has been established to try to narrow the digital divide within mainland China.

## 2. What is NSTL

The National Science and Technology Library (NSTL) was formally established in Beijing in 2000. It is a non-profit institution that is fully funded by the national government. It is a virtual information unit based on a network platform composed of 9 core members: the National Science Library, Chinese Academy of Sciences (NSLC); the Institute of Scientific and Technical Information of China (ISTIC); the China Machinery Industry Information Institute; the China Metallurgical Information & Standardisation Institute; the China National Chemical Information Centre; the Agricultural Information Institute of Chinese Academy of Agricultural Sciences (AII, CAAS); the Institute of Medical Information/Medical Library (CAMS&PUMC); the National Institute of Metrology, China; and the National Library of Standards, China.



Since its establishment, NSTL has collected scientific and technological literature resources in the fields of science, engineering, agriculture and medicine in accordance with the principles of unified procurement, standardised processing, joint cataloguing, and resource sharing, all of which serve public scientific and technological development.

## 3. How NSTL contributes to narrowing the digital divide

According to the three aforementioned causes of the digital divide in China, NSTL (in its role as a national academic library) contributes to narrowing the digital divide within the country, both the “access divide” and the “use divide”. It also makes efforts to narrow the international gaps between China and other countries.

### 3.1 Elimination of the geographic divide

In the early 21st century, few users had access to the Internet in China. Network servers

and other relevant facilities were insufficient. Advanced technology was not applied widely yet and it was difficult to set up network facilities in some complex terrain. According to the earliest statistics on National Bureau of Statistics of China, the number of Internet users in China was less than 1.8% in 2000 [13]. Most people could only access local networks.

In order to provide convenient access to NSTL and to share its resources, NSTL service stations were established in important provinces and potential cities, depending on the number of pre-existing local scientific information institutions and libraries. This action not only managed to establish regional academic liaisons across the country but also was beneficial in dispersing visit flow and balancing network load levels. NSTL Information and resources were mirrored to local sites from the primary station. People were able to view all data smoothly from different local branches and registered users were managed by each regional station. During this period, service stations decreased network stress and management complexity at the primary station.

With the rapid popularity of the Internet in mainland China, network infrastructure has improved dramatically. A 1000Mbps broadband optical fibre network has been built between the management centre and each member institution. Today, the number of Internet users in China is over 55.3% [13] and there are 400,000 registered users of NSTL [14]. Resulted from the upgrading high-speed network, the roles of service stations were changed. All Internet users are able to access the NSTL primary web page directly. In addition to being responsible for user management, local stations have participated in NSTL key tasks and activities, such as projects, research, and promotions. With the help of NSTL, they contribute to the development of regional science and technology, working together and making better use of the power of provincial governments and local scientific research institutions.



At present, there are 40 NSTL service stations covering 29 provinces of mainland China [14]. The national distribution of service stations is shown in Figure 1 below. To make the range of coverage clear, there is only one red point marked in each city in the figure, but some cities such as Chengdu, Tianjin, Lanzhou, and Wuhan have more than one service station. In particular, there are two service stations located in Beijing, a transportation service station and an electronic technology service station, built in accordance with its industrial characteristics of physical distributions. These two tangible and intangible approaches to every corner of the country provide advantages for the spread of information.

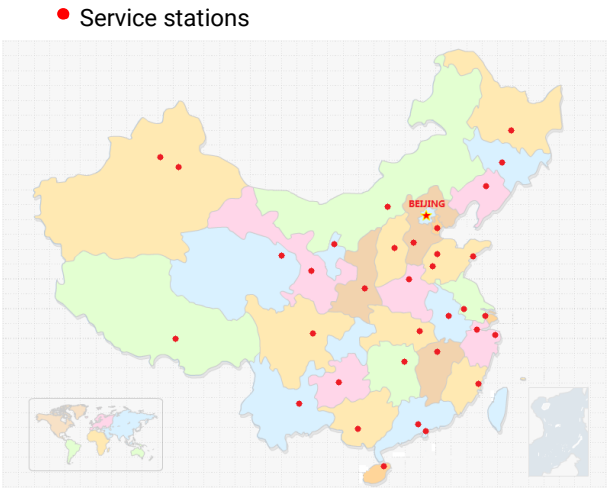


Figure 1. National Distribution of NSTL Service Stations

In recent years, NSTL has focused on enhancing the service capabilities of local stations. By evaluating service quality and strategic expectations, some stations are encouraged to provide policy support to the local government so that they can expand their fields of service and improve service levels, while some stations that are not good enough need to rectify and reform themselves. For national strategic areas, such as the China (Hainan) Pilot Free Trade Zone, the Zhangjiang High-Tech Park, and the Greater Bay Area (GBA), new service stations have been established or are under preparation to serve local information service requirements in the future.



Nowadays, both the number of registered users of service stations and the proportion of services provided by the service stations all account for nearly half of NSTL's whole operations.

Apart from service stations, NSTL resources are also shared by 28 management platforms for universities, as well as 42 interfaces for group users [14] that together form an "information bridge" on the national scale, narrowing the digital divide resulting from geographical conditions.

### 3.2 Elimination of the economic divide

Due to China's economic structure, the results of economic planning, geographical conditions, traditional customers and other factors in different regions of mainland China, the problems of unbalanced economic development are already constitute an objective reality.

Similar to the terraced distribution of China, the degree of economic development in different regions of China also presents a graded distribution, but the direction is entirely opposite, which shows that eastern coastal cities are developing rapidly (most quickly, the Guangdong Province) and the western regions are lagging behind in comparison (the Xizang Province exhibits the slowest growth). As a result, two provinces, the Guangdong and Xizang Provinces, have been selected to be representatives for comparing gaps in Gross Domestic Product (GDP) per capita. GDP per capita in these two provinces in

2000 and in 2018 is shown in Table 1. It can be found that the GDP per capita in the Guangdong Province is about 2 times higher than that in the Xizang Province in both 2000 and in 2018.

| Region | Representative Province | GDP (RMB per person) in 2000 | GDP (RMB per person) in 2018 |
|---|---|---|---|
| East | Guangdong | 12,418 | 85,738 |
| West | Xizang | 4,566 | 42,954 |

Table 1. GDP per capita of the Guangdong and Xizang Provinces in 2000 and 2018 [13]. The reasons for the years selected are: 2000 statistics show the level of GDP at the beginning of NSTL's operation; 2018 statistics are the latest on the website of National Bureau of Statistics of China to show the current level of GDP.

With increasing, massive needs for foreign literature and its high price tag, it is not affordable for individual users to purchase foreign articles, even in 2018. To save money and to encourage scientific research, NSTL (fully supported by state funds), organises 9 members who purchase foreign scientific and technological literature and information resources, according to the division of disciplines. The number of various foreign resources purchased each year is nearly 25,000. The proportion of different types of new print resources in 2018 [14] is illustrated in Figure 2, which shows that journal and conference literature, both of which are serial resources, are the top two major resources purchased.



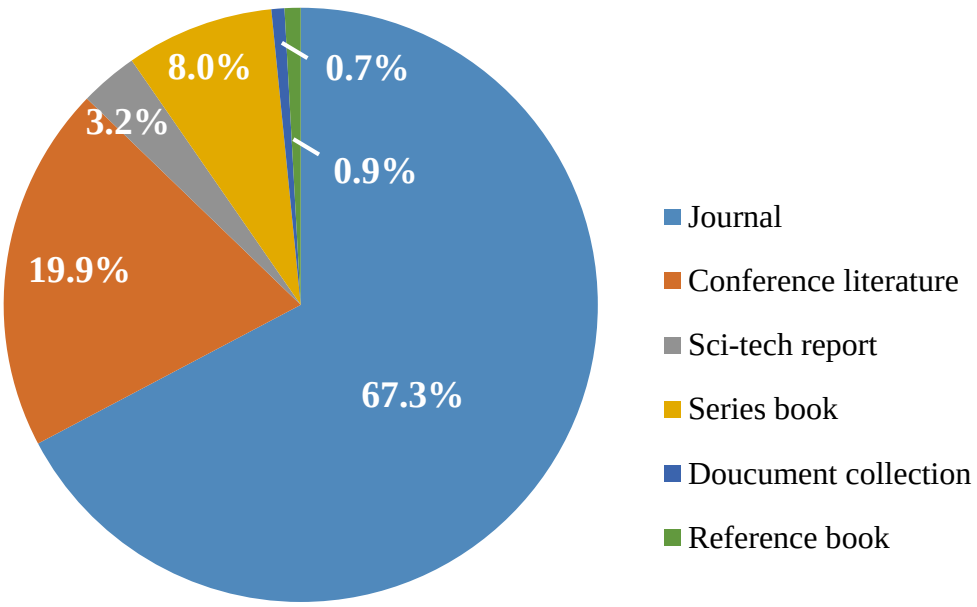


Figure 2. The Proportion Distribution of Different Types of Print Materials Purchased by NSTL in 2018.

Nowadays, NSTL has become an important base of national scientific and technological literature for the whole country. In addition to ensuring full support for Chinese

materials, the number of foreign print resources ranks first in China. According to NSTL official statistics, the total number of types of print literature that NSTL embraces is over 275,000 [14]. All of these full-text resources can be searched on the NSTL website and can be ordered for non-commercial use at reasonable prices. For poor areas, especially remote west regions, their limited access to information and lower income is taken into account and a specific price policy is supported. Document delivery services, for example, are offered at half-price in poor areas, which is much helpful for local researchers. In total, each year there are over 400,000 orders that NSTL supplies to the public [14], solving the contradiction between the urgent need for a large amount of literature and its high price. Since NSTL is a non-profit institution, the price of document delivery has been stable for several years so that more users can use NSTL without any unexpected financial burdens.

In addition, NSTL has purchased electronic resources since 2002 in the form of "national licenses" to make up for domestic historical deficiencies. So far, NSTL has nearly 4,000 kinds of electronic journals (either current or past issues), all of which can be accessed freely by public welfare and educational group users. For current journals, full-text documents can be accessed from databases via internet protocol address permissions. Some articles are downloaded over 10,000 times annually [14]. For older journals, a retrospective platform was established and it can be visited by non-profit organisations. In total, there are more than 900 scientific research institutions, including universities and colleges in mainland China, that have applied for access to NSTL electronic resources [14]. And NSTL is continuing to expand to qualified non-profit users in southwest, northeast, and northwest China so that resources can be shared with more researchers and maximise the economies of scale.



With consideration to national strategy, authority, and comprehensiveness, NSTL focuses on integrated planning and scientific management to minimise duplicate resource purchasing, aiming to build a collaborative resources platform and to develop a sustainable process and to narrow the digital divide resulting from unbalanced economic development. It also improves the level of support to national long-term and medium-term science and technology developments such as supporting the development of subject priorities, key planning studies, and some basic frontier fields by comprehensively and continuously adjusting and increasing purchasing varieties.

### 3.3 **Elimination of socio-demographic differences**

Although the digital divides resulting from geographical and economic factors have been alleviated through various measures, socio-demographic factors are also vital causes of the gap. Even in rapidly developing regions, individuals—due to gender, age, background, experience, and so on—have uneven access to information in different fields.

To provide the public with an easy-to-use online environment, an integrated retrieval system has been built and is continuously improved. With the system, print journals, books, proceedings, dissertations, and other kinds of physical resources purchased by NSTL can be searched freely. All of these resources are processed with abstracts and

catalogued in a joint way. In addition, over 7,000 kinds of open access documents have also been assembled into the NSTL page [14], which helps the public to achieve one-stop information discovery. It is worth noting that dynamic tracking and monitoring on national key industries, frontier areas, and potential research directions are reported periodically on the website, which encourages all people to acquire the latest information from different scientific fields. Therefore, NSTL tries to improve ease of use of the discovery system and decrease the threshold of use so that both teenagers and elders can operate it smoothly. NSTL received 154 million hits and 9.67 million searches in 2018 [14].

Meanwhile, improving individuals' information literacy and their ability to acquire information is conductive to overcoming digital divide. NSTL organised approximately 120 events in 2018 [14] for different types of users across the country, such as literature retrieval courses for college students, training for using software tools for research institutions, and introductions to deep information services for enterprises. All events have received positive responses.

Furthermore, a special team concentrating on providing scientific and technological information for the Xinjiang and Xizang Provinces has been set up. The working group is tasked with realising the local needs and requirements and to provide full support to them. On the one hand, brief reports of selected topics on western development are pushed periodically to over 20 local institutions [14], which helps them to obtain information about current development situations and relevant policies. On the other hand, to create opportunities for local librarians to broaden their horizons, librarian exchange trainings are held twice a year. Librarians, through these sessions, have the chance to have good experiences and to learn skills that they can apply to their local development. To benefit more local users, the working group also organises field visits and offline courses. For example, two members of NSTL, NSLC, and AII of CAAS—together with the Lanzhou service station—have held some activities locally. Training sessions on the utilisation of EndNote software and Web of Science were prepared for people who work in local scientific research institutions; activities of science popularisation, such as modern agricultural science videos and donated books, were warmly welcomed by local children and teenagers.



In this way, the digital divide resulting from socio-demographic differences has been narrowed by building an easy-to-use discovery system and improving individuals' information literacy skills.

### 3.4 **Elimination of international gaps**

With the development of the society and increasing international connections, new needs for accessing information emerge as each original gap is filled. Sometimes users want to be able to access documents from other libraries, and even foreign libraries, with the help of NSTL. Therefore, NSTL strives to explore information access approaches and develop international cooperation.

Take NSLC as an example: as a core member of NSTL and information centre of the

Chinese Academy of Sciences, document delivery access covers not only institutional libraries within the Chinese Academy of Sciences, but also domestic public libraries, university libraries, and other specialised libraries such as the National Library, the Shanghai Library, the Academic Library & Information System (CALIS), the National Geological Library of China, and so on. For foreign approaches to information acquisition, NSLC has established cooperative relationships with Subito, the British Library, and the East Asian Library of Pittsburgh University. There have already been over 100 orders for international literature delivery this year.

It is worth pointing out that the cooperation between NSLC and Subito has achieved mutual benefits. The two parties established a relationship in 2006 whereby users registered with NSLC can apply for document delivery services. Since 2010, NSLC has become a supplier library which provides Chinese articles through Subito. The number of annual materials that NSLC ordered and supplied is shown in Figure 3. It can be seen that the number of orders has been increasing rapidly since 2017, while the number of supplies shows a downward tendency. It seems that the needs of Chinese researchers for accessing international information are significantly increasing over the past few years. It is also worth noting that all documents that NSLC supplied are focused on Chinese medicine and medicinal drugs.

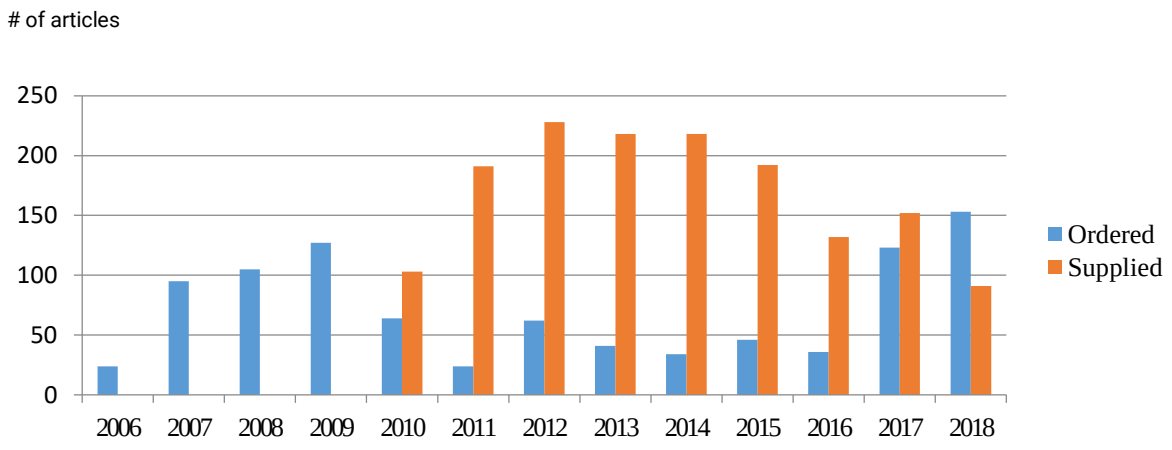


Figure 3. The number of orders and supplies by NSLC through Subito.



This section discussed how NSTL contributes to narrowing the digital divide in mainland China in three main areas and how it is closing international gaps, which strongly support domestic science and technology development. NSTL has adopted diverse, pragmatic approaches to bridging the digital divide in China and has achieved significant effects.

## 4. Future expectations

In the future, NSTL will continue to contribute to improving access to resources to the public, especially in “information backward” areas. In fact, NSTL has already made plans for field trips to certain areas, such as the Guizhou and Shanxi provinces and other cities

in Midwest China.

Other planned activities include finding solutions to “long-tail” users’ needs, expansion of international access to information and cooperation, and expanding the variety of service models for different researcher groups as follows:

(1) At present, the users who use NSTL frequently are focused. Some users order a large amount of articles for their institutions’ studies. The number of these orders accounts for the most of proportion of the total number. This results in that the number of satisfied orders is large seemingly, but actually the number of satisfied people is small. The rest of users, the number of which is large, whose requirements are personalised, are so-called “long-tail” users. Their needs should be given more attention to in the future.

(2) Sometimes users ask for foreign articles that are not included in NSTL’s collection or that are even unavailable in China. However, the present international approaches to document delivery are still limited and the price of international delivery is unaffordable for many Chinese people. Such international gaps that block access to information should be discussed and solved. It seems that NSTL should continue to expand national and international information acquisition so as to meet the needs of more users.

(3) Expanding the diversity of service models for different user groups should be explored, including special customised service for institutional groups, information tracking for key laboratories and academics, and accurate information support for implementing national governmental strategies.



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# The conundrum of resource sharing in Zimbabwe: Case of academic libraries

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**Abstract:**

*Resource sharing has gained impetus among academic libraries as they seek novel and innovative ways to provide for the dynamic and complex needs of users. Zimbabwe is not an exception to the global trend of resource sharing in support of teaching, learning and research as evidenced by the establishment of sector-specific library consortia. This article explores the challenges and opportunities encountered by academic libraries in their endeavour to provide quality services. It will examine how resource sharing through library consortia, namely the Zimbabwe University Library Consortia (ZULC) and the College and Research Libraries of Zimbabwe (CARLC), have been able to provide for the information needs of their users at a time when budgets are low or inadequate and subscription costs to journals remain unaffordable. The article will examine the extent to which library consortia are exploiting trendy initiatives, for example Open Access (OA to enhance resource sharing). It will also examine how academic libraries, through resource sharing platforms, have been able to exploit ubiquitous technologies and build on from traditional interlibrary loan (ILL). The article recommends a strategy to strengthen access to scholarship through resource sharing.*



**Keywords:** Resource sharing; library cooperation; open access; networking

## Introduction and contextual background to the study

The proliferation of digital technologies has strengthened the capacity of academic libraries to share resources irrespective of time. Igwe (2010) has highlighted the voluminous growth of published documents, increasing cost of information resources, the impact of the global economic downturn, and technological advancements that offer newer methods of information processing, retrieval, and dissemination as some of the

factors necessitating resource sharing among academic libraries. Pina (2017) noted that access to knowledge and to culture was becoming more democratised since technological developments were making it easier, regardless of the scale, to access, reproduce, and disseminate works throughout the cyberworld. The proliferation of library ecosystem systems is transforming the academic landscape by blurring geographic and time boundaries. The digital revolution has promoted the creation of organized collections of information stored in digital formats and accessible over a network that, in a broad sense, are known as digital libraries. In the same vein, Muthu (2013) cites the voluminous growth of published documents, increasing cost of information sources, techniques, advancements that offer newer methods of information processing, retrieval, and dissemination as key factors necessitating resource sharing. Lawal, Bassey, and Ani (2008) argued that it was universally impossible for a single library to claim bibliographic completeness in its collection development, but when placed in the context of an academic library's collection, resource sharing serves as a viable option for a library to offer its users. Generally, resource sharing activities among libraries, for example, interlibrary loan or document delivery have long provided access to information resources beyond what is available to a local community (Bailey-Hainer., Beaubien., Posner., & Simpson, 2014). Resource sharing encompasses all the activities that emanate from formal or informal engagements among a collective of libraries to share data, collections, infrastructure, and human resources for the benefit of their users and to realise economies of scale. The ultimate goal of resource sharing is to maximize the availability of materials and services at the minimum expense. Library resources comprise human capital, materials, functions, methods, and services. The essence of resource sharing is underpinned by reciprocity, responsibility, and sharing.



According to Muthu (2013), the objectives of resource sharing through library consortia are as follows:

1. To share the burden of purchasing materials and processing the materials;
2. To share services and human expertise;
3. To extend the accessibility of resources;
4. To reduce costs;
5. To avoid duplication; and
6. To increase the availability of resources and promote the full utilisation of resources

Academic library consortia consist of those that serve universities and those for polytechnics. This dichotomy has not been helpful in enhancing resource sharing among different types of academic libraries. Resource sharing among academic libraries should be free from any limitations, for example, type of institutions, size, programmes, and resources. The universities and polytechnics have different areas of focus, clientele, and organisational politics. However, the mission of these libraries to support the learning, teaching, and research activities of their parent institutions is a common goal.

The factors mentioned in the preceding paragraph have made it difficult for libraries in developing countries to fulfil the dynamic and complex information needs of users. According to Ali, Owoeye, and Anasi (2010), resource sharing serves as a solution to optimise their resources. Resource sharing in its traditional sense is characterised by

interlibrary loans, delivery of locally held materials, and the use of commercial document suppliers to fill borrowing requests. Accordingly, the technological developments in the information landscape have transformed resource sharing from a service to request and deliver physical information resources not available locally to one that delivers a variety of resources in multiple formats with workflows connected to the key library functions (Bean and Rigby 2011). The cooperative purchasing model provides academic libraries irrespective of their location to access databases or journal packages at a discount because of higher volumes of sales. Academic libraries in Zimbabwe can benefit from a cooperative purchasing model irrespective of their geographic location or size. Academic libraries are dotted around Zimbabwe's provinces. The benefits of a cooperative purchasing model would be increased buying power and access to scholarly content at a reduced cost. It is imperative that at a time when academic libraries in Zimbabwe are facing budgetary constraints they can realise economies of scale by collaborating to share resources. However, the challenges of the cooperative purchasing model relate to the different financial capacities of the member libraries. The academic libraries in Zimbabwe differ in terms of size, mandate, infrastructure, and financial capacity. There are academic libraries whose history dates back to the pre-independence era and those established after 1980.

Muhonen, and Saarti (2016) notes that the role of the library will require redefinition to accommodate the changes resulting from the shift from traditional interlending to resource sharing in the post digital era. The shift from ownership to sharing provides academic libraries with an opportunity to integrate their services and bridge the lacunae between the resources endowed and resource starved libraries. It is through cooperation and collaboration that academic libraries can enhance resource sharing and overcome the challenges of the paywall at a time when financial resources are dwindling.



Academic libraries in Zimbabwe are no exception in responding to the growing resource-sharing trend as evidenced by the formation of academic library consortia. Resource sharing in Zimbabwe encompasses sharing costs for the library to access e-resources and shared library materials. The digital era has enabled academic libraries to develop new strategies to overcome numerous challenges such as underfunding and increasing costs of library resources (Chisita, 2017) and Kalbande (2018). Thus, the development of models of library consortia on a global scale has provided lessons for Zimbabwe on how to leverage resource sharing into higher education. The variety of library consortia models adapted in different countries, including but not limited to: the multitype, the tightly knit federation, the regional, and the national centralised models (Chisita, 2017). Posner (2016) noted that libraries were lacking adequate resources to fulfil the information needs of users due to shrinking budgets, rising costs of subscriptions to electronic journals, and the technological challenges of the digital era. However, the little that libraries have is optimisable through adapting resource sharing models for mutual benefit. It is through sharing information and services that librarians can contribute towards knowledge creation. According to Singh (2014) it is impossible for a library to acquire all the bibliographic materials at one place. Singh (2014) and Posner (2016) highlight budgetary constraints due to the liberalisation and privatisation of processes as a factor compounding effective delivery of library services information activities.

Economic factors are cited as major reasons why libraries should strategise on how to do more with less; and resource sharing is an opportunity to realise such a goal (Leon & Kress, 2012).

Although a recent phenomenon, the idea of library cooperation through a consortia has always been rooted in the library profession (Straw, 2004). Library consortia represents the height of library cooperation. According to Galyani Moghaddam, and Talawar (2009, 94-104), library cooperation has several merits: shared access to information, site-wide access to all members, a common interface regarding resources, and possible global impact. The authors cited the duplication of effort and reduced buying power as some of the disadvantages of library consortia. Farrow (2011) noted that library consortia were established through formal agreements in order to improve services and gain mutual benefit through resource sharing. Neal (2012) stated that it was important to ensure that resource sharing is reciprocal by ensuring that each library provided the same level of access to its collections. Moreover, continuous changes in the working environment of libraries have increased the need for and the benefits of cooperation through cost savings and the division of labour between various stakeholders (Farrow, 2011).

Kalbande (2018) notes that Information and Communication Technologies (ICT's) have replaced the traditional methods of information collection, storage, and retrieval. According to Kalbande (2018), libraries are morphing into hybrid environments networked for resource sharing. The emphasis has thus shifted from owning resources to sharing them. The traditional concept of ownership in collection development is being replaced by access to information and knowledge regardless of location and format (Onwuchekwa, 2015).



Library cooperation manifests itself in various forms and phases. Interlibrary loans (ILL) have been the norm since the twentieth century, followed by the rise of consortia after the second world war (1939-1945), regional and cooperative initiatives among libraries in the 1970s, the computer revolution and subsequent development of databases and improved storage devices, the internet, and the digital revolution (Straw, 2004). Lungu (1987) views networking as the most modern form of information resource sharing where ICT is used to transmit information or data from one library to another. According to the author, the widely used library networks around the world offer the following types of services: shared cataloguing, on-line references, shared circulation, and interlibrary loans. Library resources refer to any materials, functions, and services that constitute a modern library system. They also refer to an amalgamation of processes, people, ideas, materials, and money that forms the substance of a library (Onwuchekwa, 2015).

**Statement of the problem**

The development of library consortia in Zimbabwe has given impetus to inter-institutional cooperation among academic libraries. However, the absence of a consortium that provides nationwide access to scholarly communication undermines resource-sharing initiatives that cut across different consortia. The gap between the existing library consortia among Zimbabwe's academic libraries threatens the potential to enhance resource sharing. While, ZULC has made tremendous progress to enhance

resource sharing among their members through library consortia, the same cannot be said of CARLC. Consortial licences are beneficial to libraries because they provide affordable access to titles. Libraries provide other participating libraries with flexible licence terms for the use of articles for teaching and research. ZULC and CARLC members stand to benefit from consortial licences by offering members access to scholarly communication to support learning, teaching, and research. The proposed model is useful as it enables affordable access for academic libraries in developing countries like Zimbabwe. The model is also useful for common e-resource procurement for different libraries. The libraries can select one institution or consortium to be the account holder that will then be responsible for the procurement of resources for the other members. The consortium subscription with cross-resource sharing and a universal licence agreement for all members will save costs by pooling funds to access the shared resources required. The consortium can also save the libraries time, as only one common licence agreement needs to be signed with regard to the publishers' terms and conditions.

This article seeks to explore the challenges of resource sharing among academic libraries. It will recommend a strategy that enhances resource sharing among the different groups of academic libraries to support teaching, learning and research. This article envisages a resource-sharing model independent from the fetters of institutional silos.

**Research questions**



The study will be guided by the following research questions:

1. What is the status of resource sharing among academic libraries in Zimbabwe?

2. What are the barriers that undermine resource sharing?

3. What is the role of library consortia in resource sharing among libraries?

4. How can resource sharing among academic libraries be enhanced?

**Research methodology**

The researchers opted for a multi-method approach to collect data for the study. The multi-method approach provided the researchers with qualitative and quantitative data. Multi-method approaches are useful in studying complex social phenomena. A purposive sample of 32 participants drawn from 10 academic librarians located in Zimbabwe's ten provinces was used to collect the information. The participants were chosen because of their involvement in resource sharing activities. The participants were drawn from the two library consortia, namely: The College and Research Libraries Consortium (CARLC) and the Zimbabwe University Libraries Consortium (ZULC). The research sample consisted of 22 participants drawn from ZULC and 10 drawn from CARLC. Data for the study was collected using structured interviews and literature review. The literature review enabled the researchers to develop an understanding of the

subject and as a tool for data gathering. The interview questions were designed to seek answers to current issues surrounding resource sharing among academic libraries. The research questions covered the following themes: status of resource sharing, factors affecting resource sharing, role of library consortia in resource sharing, and strategy to enhance resource sharing among academic libraries in Zimbabwe. Thematic analysis (TA) was used to analyse the qualitative data. TA provides an interpretation of participants' meanings (Crowe, Inder and Porter, 2015).

**Literature review**

According to Mavodza (2014), cooperation and collaboration at institutional, national, and international levels is key for the success of academic libraries. The author cites the International Network for the Availability of Scientific Publications (INASP) and the Electronic Information for Libraries (EIFL.Net) as classic examples of partnerships that have contributed towards resource sharing in Zimbabwe. The Open Society Institute of Southern Africa (OSISA) encouraged and supported the establishment of the first library consortia - the Zimbabwe University Libraries Consortium (ZULC) - in 2001 to promote cooperation and resource sharing among academic libraries. It was the International Network for the Availability of Scientific Publications (INASP) that introduced electronic resources through their Programme for the Enhancement of Research Information (PERI) and sponsored many training programmes for librarians (Ndlovu, 2011). According to Munatsi (2009), ZULC stands out in Zimbabwe as the most successful e-resource project. Another consortium was also formed, The College and Research Libraries Consortium (CARLC), which was formed in the early years of the 21st century to provide library services for college and research libraries.



According to the INASP (2015) report, the organisation initially worked to strengthen library consortia in developing countries through the Programme for the Enhancement of Research Information (PERI, 2002–2013). The Strengthening Research and Knowledge Systems (SRKS) programme (2013–2018) replaced the PERI project. The purpose of the SRKS programme is to enable library consortia to secure, provide and manage access to online research literature. The PERI and SRKS programmes are aimed at supporting access to e-resources and promote resource sharing among academic libraries in Zimbabwe. According to Mavodza (2019), partnerships between academic libraries in Zimbabwe and INASP facilitate access to national and international scholarly information and knowledge in support of learning, teaching and research. It provides an opportunity to optimise information and communication technologies (ICT) usage for wider access to scholarly research. The shifting landscape of resource sharing is manifested through strategy and initiatives in the deployment of dynamic and new discovery-to-delivery systems, in the evolution and development of best practices, and in the new roles for resource-sharing practitioners, as well as in new innovative models for collaboration (Bailey-Hainer, Beaubien, Posner, and Simpson, 2014).

According to Khiste (2017), ICTs are an integral part of all aspects of the library and their adaptation in libraries has enhanced resource sharing. According to the author, the changing dimensions of library resources have also radicalised the modes of resource

sharing for better results. For Khiste (2017), e-resources remain key to online resource sharing, with the e-journal assuming a central role in the process.

The need for access to information to support academic activities depends on but not limited to the availability of money, work force, library resources, space, commitment, and internet connectivity. As a result, libraries started organising networks and consortia with the aim of resource sharing (Geronimo and Aragon, 2005).

According to Ali, Owoeye, and Anasi (2010), the traditional concept of ownership in collection development is fading and making way for access to information and knowledge without regard to location and format. Thus, resource sharing among libraries is a strategy for survival at a time when resources are scarce.

Library consortia operate as buying clubs even though they can be developed into platforms for sharing valuable resources available in different libraries of the country in multi format (Muthu, 2013). They are also useful in initiating several other activities for the mutual benefit of the participating libraries.

The essence of cooperative library work is the ability to access resources, services, and expertise from other places (Straw, 2004). Therefore, some of the critical issues that have shaped resource sharing initiatives in its genesis were interlibrary lending, uniform cataloguing, and a central borrowing library.

Goldner and Birch (2012) view the internet as a competitor for the library and as a special vehicle for increasing the value in service delivery. They thus underline that it is important to work together to leverage all shared resources such as materials, data, workflows, software, and expertise in order to keep pace with the changes in the information landscape.



The object of resource sharing has thus revolutionised resource sharing due to the multi-dimensional growth of published documents in the recent past, the increasing cost of books and subscribing to periodicals, the advancement of new technology for information processing and dissemination which are some of the fundamental factors that require information resource sharing among libraries (Muthu, 2013).

Goldner and Birch (2012) note that the transition from print to electronic collections has brought new challenges for resource sharing. They believe that the search for what is electronically available in other libraries is currently labour intensive because of the lack of a union catalogue.

According to Muthu (2013), resource sharing in traditional libraries is affected by barriers of information communication such as the indifference of the lending library, conservative attitudes, distance, language, cost, and time. However, the barriers may be eliminated by a digital interlibrary loan system. Muthu (2013) observed that in traditional libraries open access to shared resources was impossible, service was dependant on library performance, and access to shared resources was costly.

**Status of Resource Sharing Among Academic Libraries in Zimbabwe**

Resource-sharing activities among ZULC members take different forms that include interlibrary loan (ILL), e-resource sharing, conferences, workshops, and workplace learning. Interlibrary loan still plays a central role for libraries despite the advent of digital technologies, and they continue to provide for the unmet needs of users. Williams and Woolwine (2011) distinguish between two types of ILL transactions, namely where the library as an institution borrows material from another institution, and where the library as an institution lends material to another institution. Their study conducted in the United States of America confirmed that even though libraries subscribed to licensed databases with full-text content, ILL remained a constant for service. The response of the participants of the study confirmed that ILL remains an important resource-sharing activity as either academic libraries borrow material from other institutions or they lend to other institutions. The responses from the participants indicated that ILL was still being practiced even though there were no formal arrangement to support it: "…ILL has been the cornerstone of resource sharing but however with the advent of digital technologies, we share resources through the consortia" (ZULC participant). The second participant also echoed similar sentiments "our resource sharing model has changed as a result of current development in the information landscape, for example, through ZULC, we share resources to access electronic scholarly communication for the benefit of our students and researchers" (ZULC participant). This corroborates the findings of other recent studies done by (Khiste, 2017) and (Williams, and Woolwine, 2011). Interlibrary loans are thus still popular among academic libraries. The form of ILL is characterised by informal arrangements between libraries according to the participants of this study. Even though the advent of digital technologies heralded the demise of traditional ILL, academic libraries nevertheless continue to be engaged in key functions that have characterised the library service for ages.



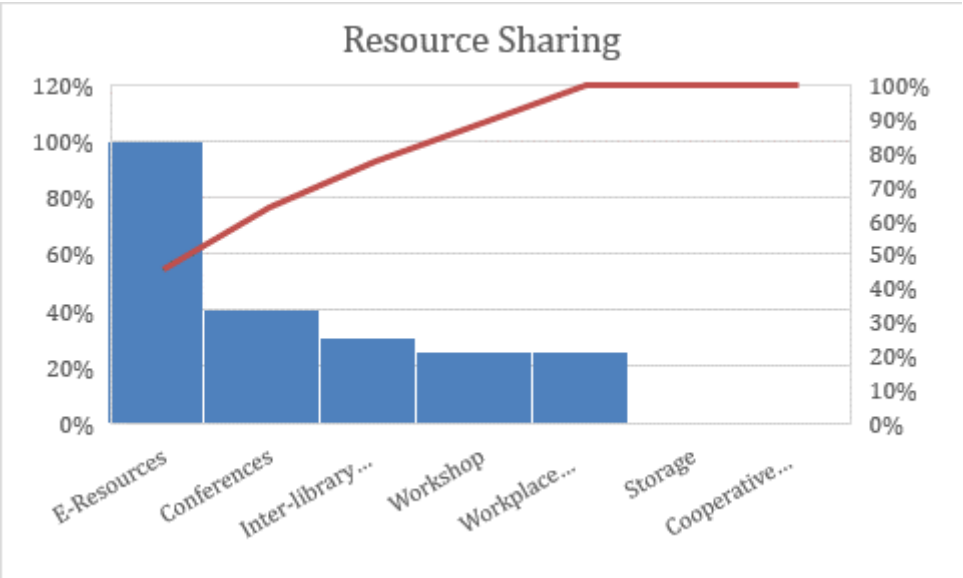



Figure 1: Resource sharing activities among ZULC

The other resource sharing activities among ZULC members include conferences (40%n=8), workshops (25%, n=5), and workplace learning (25%), n=5. It is worth noting that other potential areas for resource sharing, for example shared storage and cataloguing have not yet been exploited because of a lack of adequate resources. However, respondents confirmed that shared storage and cooperative cataloguing were some of the areas members were looking forward to exploiting as part of their future development plans. Bailey-Hainer, Beaubien, Posner, and Simpson (2014) note that major libraries and multi-type library consortia are deploying shared discovery and delivery platforms that bring together catalogues from partner institutions under one search. In a study of Australian library consortia, (Bailey-Hainer et al. (2014) noted that libraries worked together to develop ISO-ILL interoperable systems making it possible to share resources across national borders.

According to the INASP (2016) report, ZULC serves as a network for shared knowledge and experience, whereby the more established organisations are able to offer advice to those still growing. Knowledge is shared through conferences, workshops, and mentorship programmes. The participants from ZULC confirmed that "...conferences serve as knowledge sharing platforms and every year we participate in the annual conference to share knowledge on current trends in resource sharing" (ZULC, participant).

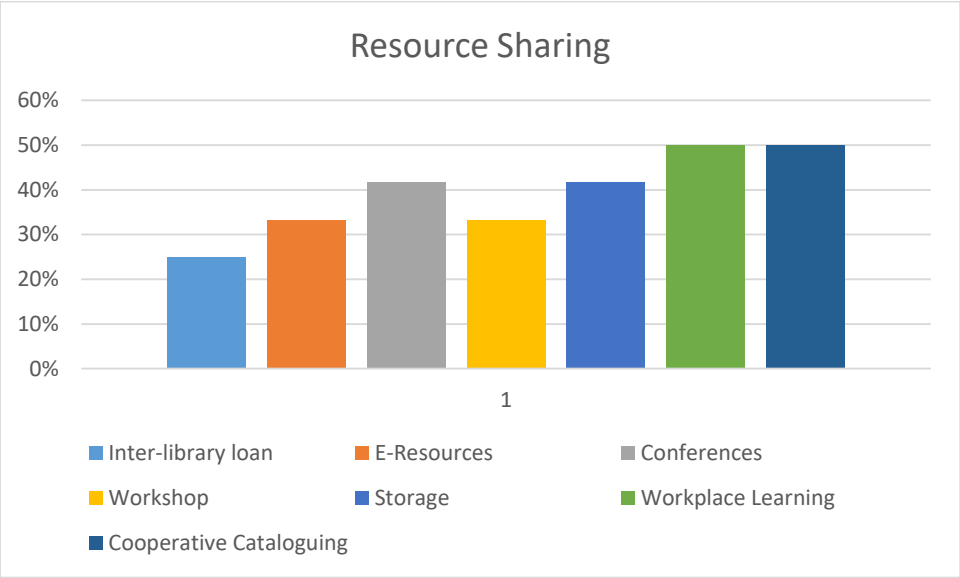



Figure 2: Resource sharing activities CARLC

Interlibrary loans constitute a significant percentage (25%, n=3) of resource sharing activities among CARLC members because most of the institutions have not yet embraced e-resources to the fullest when compared with ZULC. Interlibrary loan activities are not formalised but rather primarily function through informal arrangements between librarians. The tradition of interlibrary loan has been carried over as a tradition since the establishment of libraries in Zimbabwe in the 1890's. As a resource-sharing activity, ILL are infrequent and librarians respond to requests as they come. E-resource sharing is still in its infant stage because CARLC is still developing and its ICT

infrastructure is not yet fully developed to support a robust e-resource sharing programme. The digital era provides opportunities for academic libraries to share e-journals through interlibrary loan. The adaptation of a consortium purchasing model can enable wider access to E-journals. Such resources can help to fill interlibrary loan requests for the benefit of library users as well as eliminating the time used to scan or photocopy requests. However, this implies that contracts for e-content should be negotiated with copyright considerations that accommodate interlibrary loan. One participant from CARLC noted "our institutions need to learn from ZULC on how best to develop capacity for sharing electronic resources..." (CARLC, respondent). The participants confirmed that the costs of internet connectivity were high making it unaffordable for them. However, there is an alternative for CARLC and ZULC to take advantage of non-commercial internet service providers, for example the National Research and Education Networks (NRENS). Generally, NRENs serves as a specialised internet service provider dedicated to supporting the needs of the research and education communities within a country. Currently, Zimbabwe has two NRENs, namely the Zimbabwe Academic Research Network (ZARNET) and an emerging Zimbabwe Research and Education Network (ZIMREN). It was found that there was need for academic institutions to subscribe to appropriate bandwidth packages that are commensurate with the number of students enrolled at the particular institution. Resource sharing through e-resource projects was highlighted by the participants as one of the most popular ways of accessing knowledge (100%, n=20). The academic libraries targeted for the study all belong to the Zimbabwe University Library Consortium (ZULC), which is a pioneer in resource sharing. ZULC was formed in 2001 to promote access to knowledge and promote information resource sharing and networking in support of 'human capital development'. E-resource sharing activities among ZULC members date back to 2001 when academic libraries collaborated on the Electronic Information for Libraries Network (EIFLNET). This partnership has enabled academic libraries to provide access to a wide range of scholarly e-resources. The consortial package consists of access to e- journals and databases. It is interesting to note that these resources do not only benefit ZULC members but also the affiliate members drawn from the CARLC membership. The only disadvantage is that it is the bigger universities that benefit because they have more programmes covering the humanities, commerce, arts, and science engineering and technology (STEM), while the small universities or affiliate institutions are limited by their mandate since they only focus on specific areas. Secondly, not all CARLC members are affiliates of ZULC.



| **EIFLNET E-RESOURCE PACKAGE FOR ZULC** | |
|---|---|
| **Resource** | **Description** |
| ASTM | Collection of ASTM's industry-leading standards, 1,700 technical e-books, 8 journals, and assorted research information. |
| Cambridge Journals Online | An extensive peer-reviewed publishing list comprising 45,000 print titles covering academic research, over 24,000 e-book titles and more than 300 research journals in a wide range of subject areas. |

| | |
|---|---|
| EBSCO | EBSCO is a global aggregator of full-text journals, bibliographic databases, magazines, and other resources, providing quality database products and services. |
| JSTOR | This is a digital library of more than 2,000 academic journals, 20,000 books, and 2 million primary source objects. |
| Oxford University Press | Oxford publishes over 4,600 new books each year. It provides access to online information to libraries, institutions, and individuals worldwide. |
| SAGE | SAGE publishes more than 1,100 journals. It has an expanding range of online databases. |

Table 1: Sample of EIFLNET e-resource package for ZULC

The figure below illustrates the percentages of the EIFLNET e-resource package for ZULC members. There are 10 databases that constitute 37% of the package, for example, the AST Compass provides ZULC members with access to a full collection of ASTM's industry-leading standards, 1,700 technical e-books, 8 journals and assorted research information.

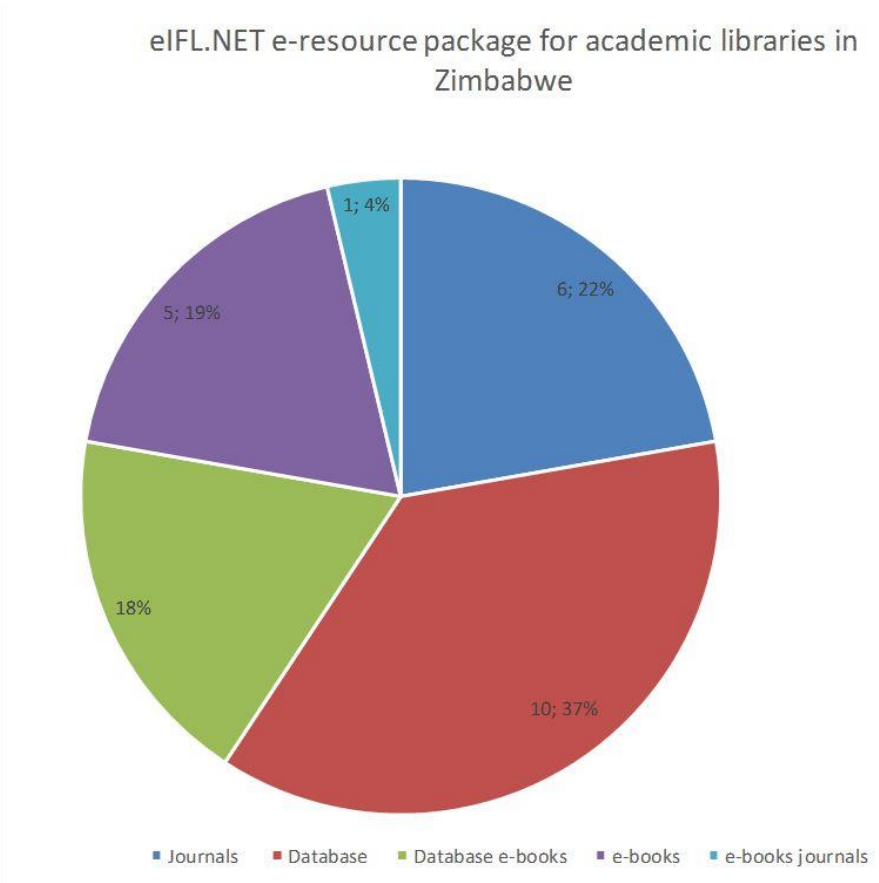
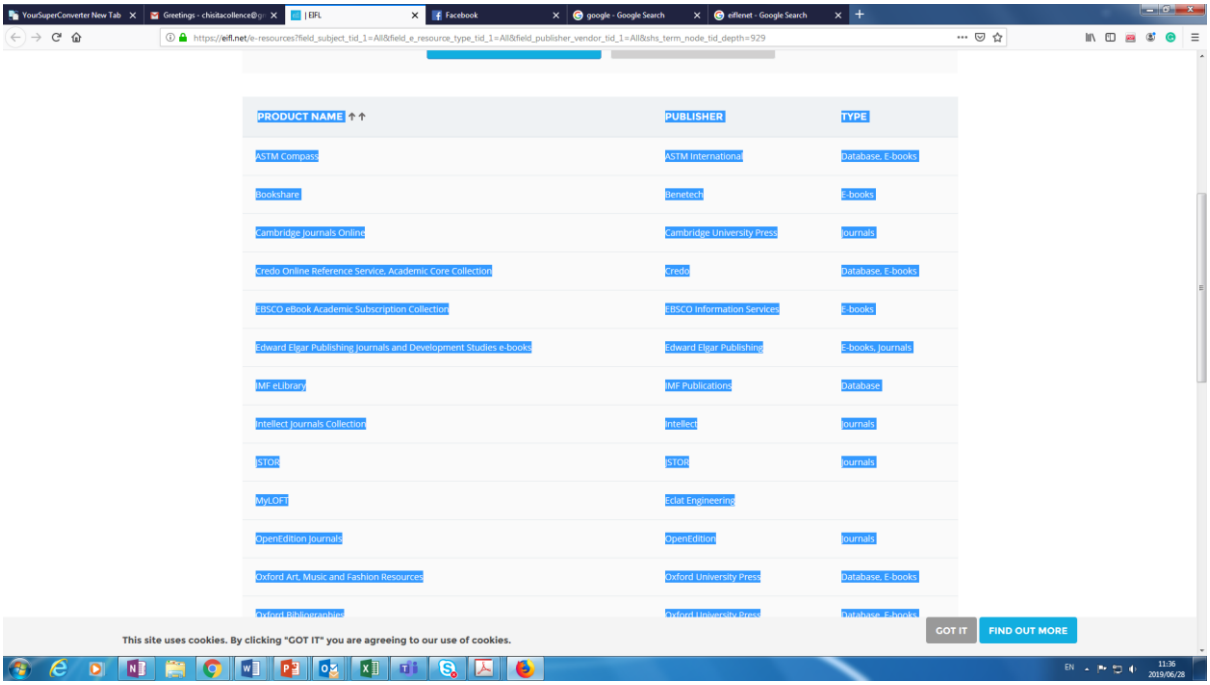



Figure 3: EIFLNET e-resource package for ZULC

**Screenshot Eiflnet licensed resources for ZULC**

The screenshots below show that the ZULC and EIFLNET partnership has paid off dividends. One can see that there are more than ten databases with links to a number of scholarly journals. Furthermore, EIFL has promoted an awareness on national and institutional level regarding open access and advocacy workshops resulting in a number of open access repositories in the country. In fact, EIFL supported the first open access electronic thesis and dissertations (ETD) mandate in Zimbabwe. Currently, there are over 19 universities with ETD using DSPACE. However, CARLC members have not yet developed institutional repositories (IRs) nor ETDs despite having a web presence. It is also noted that since CARLC members do not have access to e-resources from online publishers of scholarly content, they only have e-resources available within their institution's network infrastructure. This points to a need to adapt a virtual private network (VPN) link in order to enable students to have access to the electronic resources from outside the university network.

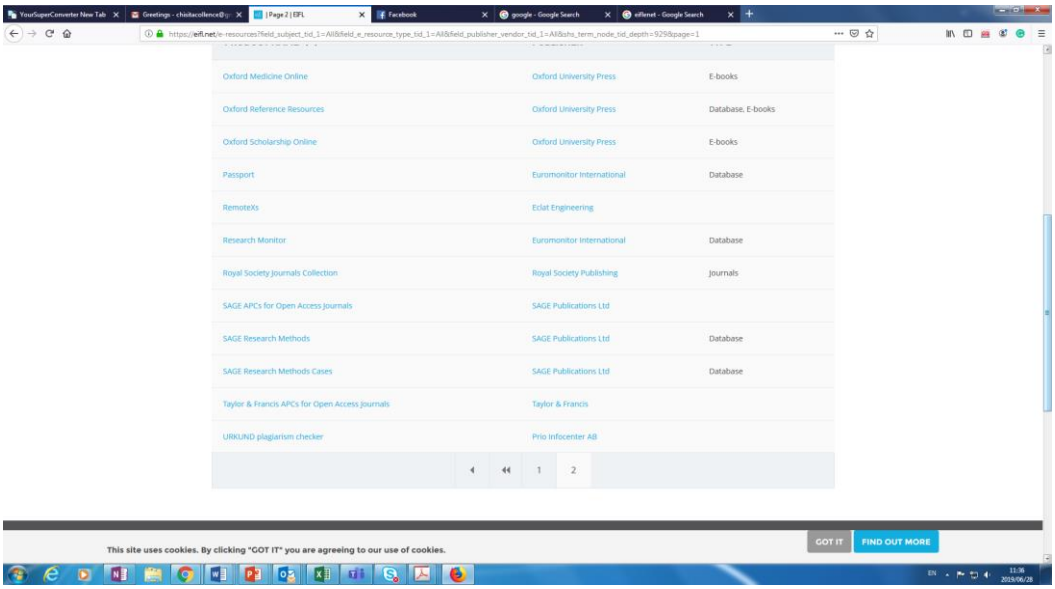


| PRODUCT NAME | PUBLISHER | TYPE |
|---|---|---|
| ASTM Compass | ASTM International | Database, E-books |
| Bookshare | Benetech | E-books |
| Cambridge Journals Online | Cambridge University Press | Journals |
| Credo Online Reference Service, Academic Core Collection | Credo | Database, E-books |
| EBSCO eBook Academic Subscription Collection | EBSCO Information Services | E-books |
| Edward Elgar Publishing Journals and Development Studies e-books | Edward Elgar Publishing | E-books, Journals |
| IMF eLibrary | IMF Publications | Database |
| Intellect Journals Collection | Intellect | Journals |
| ISTOR | ISTOR | Journals |
| MyLOFT | Eclat Engineering | |
| OpenEdition Journals | OpenEdition | Journals |
| Oxford Art, Music and Fashion Resources | Oxford University Press | Database, E-books |



Figure 4: Licensed resources for ZULC

**Screenshot Eiflnet licensed resources for ZULC *(cont'd)***



| | | |
|---|---|---|
| Oxford Medicine Online | Oxford University Press | E-books |
| Oxford Reference Resources | Oxford University Press | Database, E-books |
| Oxford Scholarship Online | Oxford University Press | E-books |
| Passport | Euromonitor International | Database |
| RemoteXs | Eclat Engineering | |
| Research Monitor | Euromonitor International | Database |
| Royal Society Journals Collection | Royal Society Publishing | Journals |
| SAGE APCs for Open Access Journals | SAGE Publications Ltd | |
| SAGE Research Methods | SAGE Publications Ltd | Database |
| SAGE Research Methods Cases | SAGE Publications Ltd | Database |
| Taylor & Francis APCs for Open Access Journals | Taylor & Francis | |
| URKUND plagiarism checker | Prio Infocenter AB | |



Figure 5: Licensed resources for ZULC

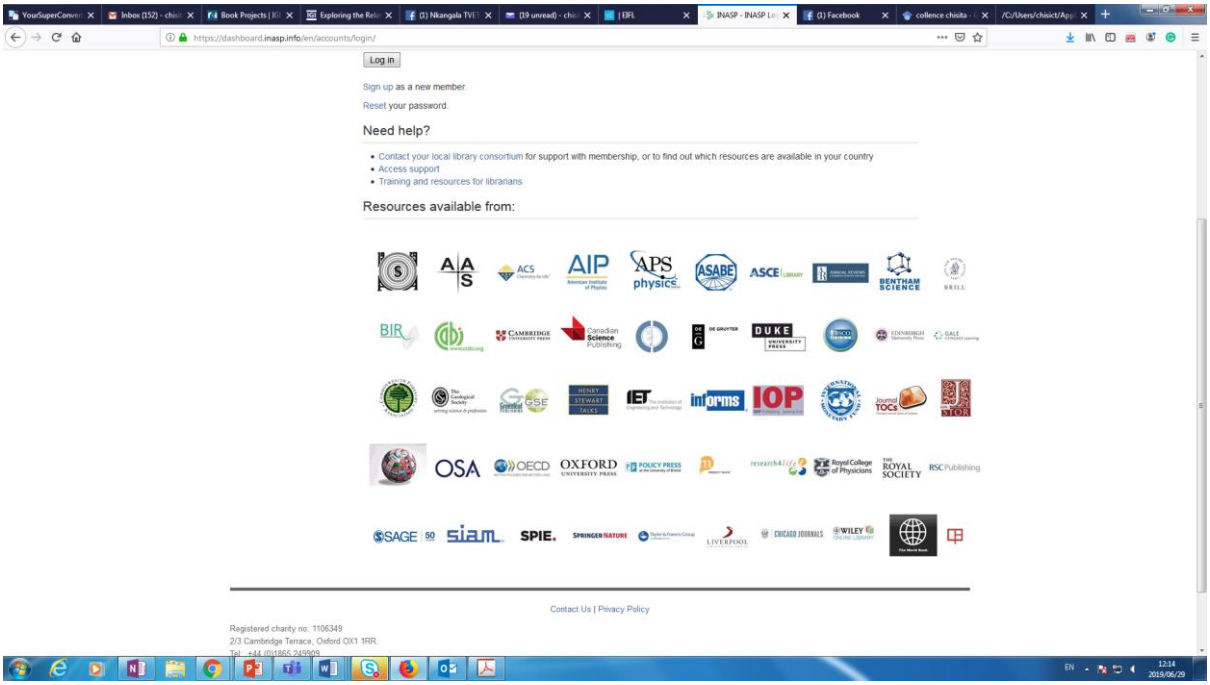




Figure 6: Screenshot INASP access to online research dashboard (adapted from *Welcome to INASP's Access to Online Research Dashboard*, INASP, 2019)

The above screenshot reflects the various publications that the INASP in collaboration with the library consortia has facilitated in support of teaching, learning and research in Zimbabwe. The INASP has collaborated with national library consortia to negotiate

affordable access to research. The INASP negotiates with publishers across many disciplines to provide researchers and libraries in developing countries with the journals, books and databases that they need at affordable prices.

**What are the barriers that undermine resource sharing?**

There are a number of factors that affect resource sharing among academic libraries in Zimbabwe, for example, the lack of technological complexity, geographical and economic barriers, legal imperatives, and restrictions in lending library materials, poor internet connectivity, bureaucracy, retrogressive policies, inadequate ICT infrastructure, and a silo mentality. However, ZULC has proven that such barriers can be eliminated or overcome through adopting silo–busting strategies that emphasise how the benefits of cooperation outweigh disunity.

**What is the role of library consortia in resource sharing among libraries?**

The development of library consortia has been spurred by a variety of factors including the need to find efficient ways to acquire and share e-journals and books. The consortium thus serves as a special vehicle or instrument for sharing multi-format resources to support teaching, learning, and research in academic libraries. Library consortia in Zimbabwe namely ZULC and CARLC have been instrumental in promoting access to e-resources using web–based platforms. ZULC is a classic example of a consortium that has managed to build a platform for sharing e-journals and books for its members, while CARLC is still in developing its ICT infrastructure to realise effective and efficient systems for resource sharing. The consortia are involved in the cooperative processing of resources acquired through a purchasing license for the benefit of members. However, they are still working towards the development of a virtual library that will provide access to all the resources of its members. Academic libraries should move beyond just sharing costs for e-resources but sharing other resources that each library has, for example, the printed books, space, and expertise. The researchers noted that even though library consortia in Zimbabwe were benefitting their members through the consortia purchasing license, there was still more to be done to add value to the cooperation. The development of a network or document delivery system for sharing print and electronic resources would widen access to library resources for the benefit of library users. However, library consortia have been successful in encouraging members to develop institutional repositories and digital collections of electronic thesis and dissertations. The research findings confirm that all members of ZULC have developed institutional repositories and collections of electronic thesis and dissertations, while CARLC members are still working to develop such platforms. The other area of focus for library consortia is the development of interoperable systems to enhance resource sharing among members' information systems and databases.



**Findings regarding the question, 'How can resource sharing among academic libraries be enhanced?'**

The study recommends an inclusive resource sharing model based on a consortial licence that enables libraries to access content based on a single licence. The group

usually establishes a negotiating team with appropriate legal counsel. The responses from a CARLC participant indicated that "…there is need for a common license to enable our members to access electronic scholarly publications..." The participating libraries then enable their users to access the resource. This model can accommodate homogenous and heterogeneous libraries, for example, academic, public, and special libraries. When these libraries work as a consortium they will be able to negotiate collective licences for the use of electronic scholarly content and other forms of digital information. Roth (2013) argues that there is power in numbers when negotiating with vendors. The cooperative purchasing model has been adopted due to the following factors:

1. The growing demand for information to support learning, teaching, and research

2. Licence negotiations between publishers and consortia rather than with individual libraries

3. An increase in the volumes of digital scholarly communication

4. The need to bust institutional silos and bureaucratic hurdles

5. Its ability to provide for the diverse needs of academic libraries considering the variations of size and financial capacity

6. The model's ability to promote equal access to scholarship



7. Opportunity for cross-resource sharing

ZULC members do share library resources through the consortium. They share financial, material, physical, infrastructure, and human resources for capacity building. According to INASP (2015), ZULC among many other consortia in Africa has been successful because it used economies of scale to negotiate with publishers: "the subscriptions and e-resources have been a major success for our respective institutions. We have saved many a dollar through cooperative acquisition schemes. Our institutions have been able to afford taking out subscriptions to a whole suite of online research". (INASP, 2015)

According to INASP (2015), library consortia in Africa have shown a confident and coherent approach in response to manipulative publishers by utilising social media groups to share experiences and agree on a common response to negotiate deals. The consortia are now in a position to build on and develop the management of their online research literature for advocacy purposes (interview with the chair of ZULC**).**

**The following are some of the advantages of consortial licensing:**

1. Provision for prompt infiltration of electronic scholarly content and an increase in the utilisation of the content for research.

2. Member libraries will have access to an infinitely increased pool of content and users will be able to access a wide range of resources.

3. There is a return on investment with regard to developing resources for supporting research and improvements in research output for the academic institutions.

4. Libraries can benefit from budgetary stability and manifold year deals with agreed-upon inflationary increases.

5. Opportunities to access servers and software that are part of the big-deal arrangements.

6. There is always room for negotiation for better deals.

**The following are some of the disadvantages of consortial licensing:**

Big deals may result in low quality journals dominating the collection and this might consume a big portion of the budget leaving little to buy other important titles from other sources. Particular disadvantages are listed below:

1. The future trajectory of collection development may be undermined by a lack of collection development and opportunity for self-archiving.

2. The collection may consist of e-resources without a core collection in the traditional sense of practical librarianship.



3. The 'big deal' does not provide libraries with possibilities for preservation and guarantee of perpetual access.

4. The 'big deal' leaves library consortia vulnerable to monopoly publishers.

However, despite the success of library consortia in enhancing resource sharing in Zimbabwe, there are still challenges that require the concerted effort of all academic institutions in coming up with a model that best provides for the diverse needs of members with regard to resource sharing. Some of the challenges are the following:

1. The failure to pay for online subscriptions for online scholarly content by some members will undermine efforts to ensure unlimited access.

2. Economic instability may prevent members from being consistent in remitting membership dues.

3. Dependency on development partners should have its limits and thereafter a consortium should be able to sustain its activities through membership funds and other infopreneurial activities apart from grants from parent institutions.

4. High costs of internet connectivity by commercial internet service providers.

5. The exclusion of other academic institutions (technical and vocational colleges) from resource sharing initiatives.

The proposed consortia model as illustrated in figure 4 provides for the interests of institutions that have different sizes of user populations and the members may have different financial capacities. It is thus a cost-sharing model that will take into consideration the size of the academic institution. This will provide a formula for determining the payment model. ZULC members have advocated for a rethink on the current situation of cost and resource sharing and have proposed a cost-sharing model that will benefit all members depending on their resources and population. The lead account holder can be a ZULC institution since it is at an advanced stage in terms of experience and capacity. ZULC will help or assist CARLC to develop its capacity to manage resource sharing projects in support of teaching, learning, and research. The proposed model will be based on a cross-resource sharing structure and will take into account the abilities of members. It will also accommodate members from CARLC who have to date not been able to benefit from any resource-sharing initiatives.

**Proposed model for resource sharing among academic libraries in Zimbabwe**

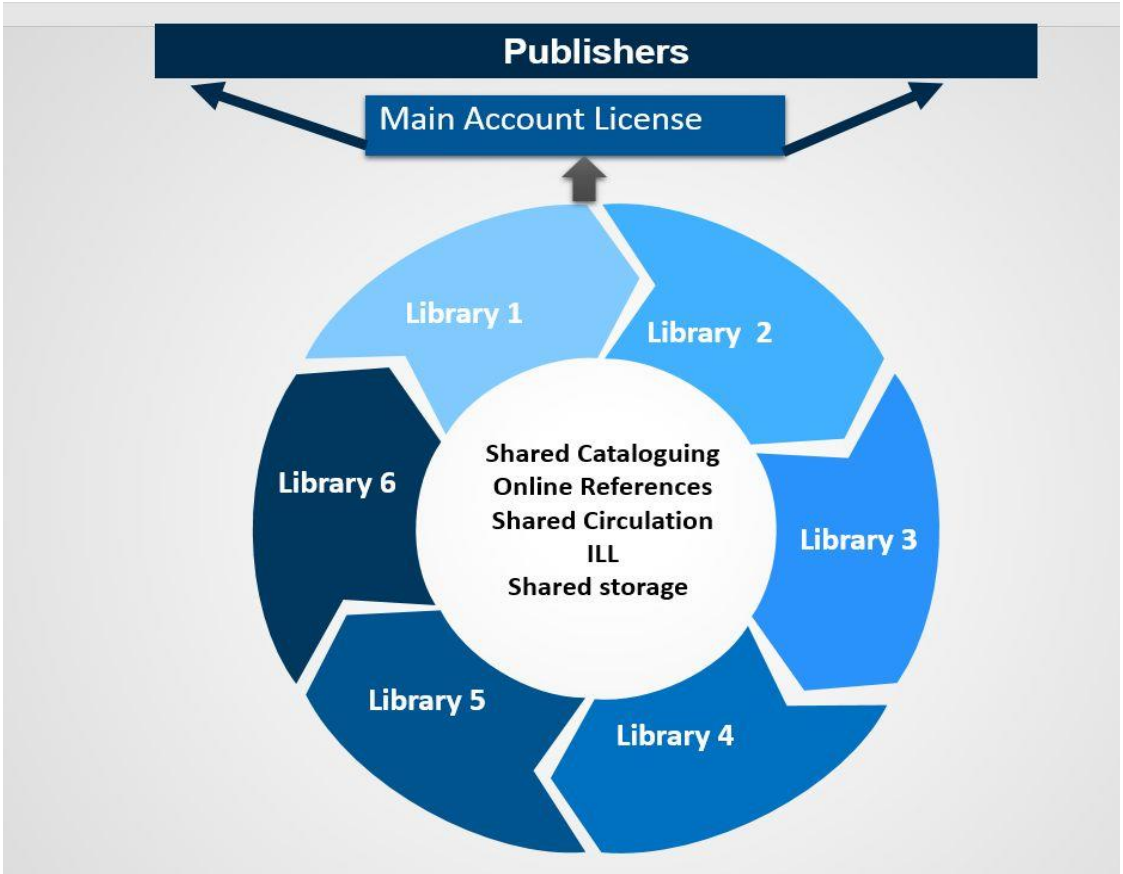



Figure 7: Proposed model for resource sharing among academic libraries in Zimbabwe

The proposed model places member libraries on the same level despite their status in terms of funding and other resources. The model is a strategy based on the principle of egalitarian access to scholarship. It builds on the strengths of all members to build capacity for self-sustenance and bargaining power in negotiating a licence to scholarship. It serves as a bulwark against the paywall by building capacity to share resources among libraries in a developing country. Gunjal (2020) argues that, due to the lack of adequate funds and growing users' demand for resources to support the core academic activities, the adoption of a single subscription with cross-resource sharing among similar institutes and a universal license agreement for all institutions will result in economies of scale and duplication of effort among consortia members. The model envisages a consortium working in collaboration with the National Research and Education Network (NREN) for affordable access to internet connectivity. It requires academic libraries to work together to overcome the monopoly by commercial internet service providers. The cooperative purchasing model can be customised to accommodate the specific subject areas of interest for each participating member library and also eliminate replication of effort in collection development. The participating member libraries should nominate a resource endowed library to undertake the technical processes of acquiring resources on behalf of the members. The advance towards the sharing economy and collaborative consumption provides academic libraries with an opportunity to rethink strategies to overcome institutional insularity and paralysis. This implies innovative mind-sets in order to leverage on already existing grey literature. The open access initiatives should serve as pillars in the long cherished goal to provide an egalitarian model for wider access to scholarship in Zimbabwe. It is through collaboration that limitations to access of scholarship can be demolished and a new future free from the caprices of market forces will emerge courtesy of resource sharing initiatives that support the survival and sustenance of libraries, scholarship, and inclusivity.



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# Aside from payment: the experience of acquisition and mutual use of resources in the Belarus Agricultural Library

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**Abstract:**

*In order to provide users with quality information in conjunction with the optimization of financial costs for information resources, libraries try to use the opportunity of free acquisition and to develop active cooperation with other libraries and information centers.*

*In I. S. Lupinovich Belarus Agricultural Library of the National Academy of Sciences of Belarus, there is functional system which includes, along with fee-based acquisition, mechanisms for free replenishment of its collection and shared use of documents. Free acquisition of the collection is possible both thanks to acts regulated by the state and the National Academy of Sciences of Belarus, and through the development of partnerships with other libraries, organizations, and individuals through international exchange of documents, functionality of FAO depository, and gifts and donations. Resource sharing is based on the national and international interlibrary lending, participation in the World Network of Agricultural Libraries, and cooperation agreements with other libraries.*

*The existing mechanisms contribute to ensuring access of Belarusian users to the world information resources in the field of agriculture, as well as integration of the national sectoral information into the international scientific communication with reduced financial costs.*

**Keywords:** free sources of acquisition, FAO depository, international document exchange, resource sharing, AGLINET, Belarus

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## Introduction

The possibility to provide high-quality user access to information for libraries and information centres, as a rule, involves serious funding. In this regard, every library seeks to expand free sources of collection development, as well as to develop mutually beneficial cooperation through resource sharing and document delivery. I.S. Lupinovich Belarus Agricultural Library of the National Academy of Sciences of Belarus (BelAL) is a national scientific agricultural library with the national repository of agriculture and forestry literature, that performs a function of the national industrial information centre in the field of agrarian sciences and directs its activities to the information support for research and development in the field of agricultural sciences and agro-industrial complex of the country and to providing every resident of Belarus with open access to national and international information resources on agriculture and related industries.

Belarus Agricultural Library provides users with more than 170 thousand documents every year and seeks to satisfy the requests of users as much as possible using its own resources, free access information sources, as well as sharing resources with other national and foreign libraries and information centres (Fig. 1).



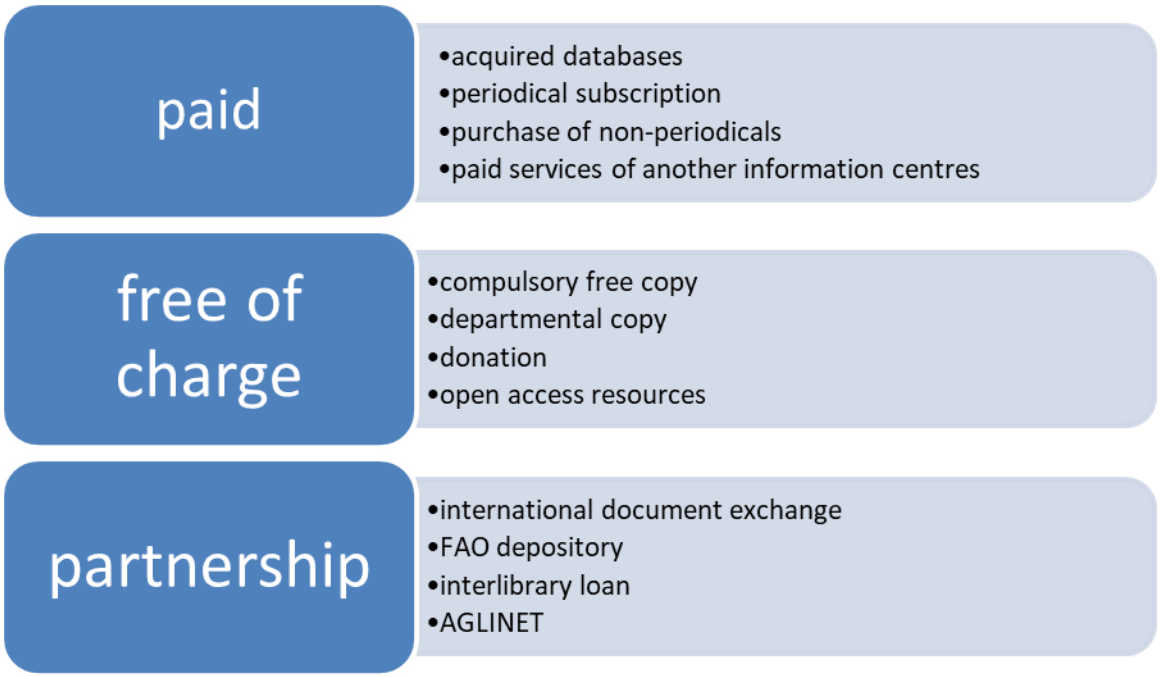


Fig. 1. Ways of acquiring information resources in BelAL

The purpose of this article is to present the existing mechanisms in BelAL that allow to replenish the collection with national and foreign publications free of charge, find information on agricultural science and production in open access (OA) resources, satisfy user requests as much as possible through interlibrary loan and through participation in the World Network of Agricultural Libraries.

**Library collection development on a cost-free basis**

The library has collected and continues to work at replenishing the most representative Belarusian collection of documents on agriculture and forestry, food industry, natural resources and environmental protection. The BelAL collection contains about 0.5 million of print documents, as well as subscription to international scientific electronic resources, such as full-text, abstract and scientometric databases. Free sources of acquisition take an important place in the collection development of BelAL. Under free sources of acquisition, we understand the sources that do not include payment for a document or for access to information, but may include related expenses (for example, postal services): legal deposit, publications of the Department of Agrarian Sciences of the National Academy of Sciences of Belarus, international book exchange, publications of the Food and Agriculture Organization of the United Nations (FAO).

Free acquisition of ***national scientific resources*** is regulated by regulatory acts of the Republic of Belarus and Bureau of the Department of Agrarian Sciences of the National Academy of Sciences of Belarus, which includes BelAL. A system of *mandatory free copies of documents* is legally established and successfully functioning in Belarus. These mandatory free copies include copies of various types of documents produced (created, manufactured, issued) in the Republic of Belarus as well as outside its territory by citizens of the Republic of Belarus. The free copies are subject to distribution to the relevant state bodies and organizations according to established order. In accordance with the Resolution of the Council of Ministers of the Republic of Belarus, BelAL receives non-periodicals and periodicals in print, electronic publications, combined publications on agro-industrial sector, agriculture, food and processing industries, forestry, natural resources, and ecology with a circulation of 100 copies or more[1]. In addition, in accordance with the decision of the Bureau of the Department of Agrarian Sciences of the National Academy of Sciences of Belarus of 20 December, 2010, No. 17, the organizations of the Department donate five free copies of their printed publications to BelAL.



Continuous on-line monitoring with the Information System of the State Bibliographic Information of the National Book Chamber of Belarus, allows to most fully track the publication of Belarusian print documents which satisfy to BelAL profile of collection

[1] On approval of the Regulations on the mandatory free copy of documents and recognition of certain decrees of the Government of the Republic of Belarus: Resolution of the Council of Ministers of the Republic of Belarus of September 3, 2008, no. 1284. Available at: http://www.pravo.by/document/?guid=3961&p0=C20801284 (accessed 15.06.2019) (in Russian).

development and to control the timely acquiring of free mandatory and departmental copies of documents to the BelAL collection (Karakulko and Dembovskaya, 2018).

International book exchange has been proved to be economically profitable way of the collection development with ***foreign scientific publications*** compared to their purchase prices (because financial charges include only mailing costs) (Khrenova, 2015). This type of cooperation is realized in the form of bilateral agreements on voluntary equivalent exchange of publications. In accordance with the agreement, libraries provide each other with information about scientific publications in the field of agriculture and related branches available in their exchange collections; send each other the requested publications from their exchange collections (postage is covered by the sending organization); inform of receipt of publications[2]. Within the framework of the international book exchange BelAL cooperates actively with 75 organizations from 15 countries (Fig. 2). The main partners are agricultural libraries, research libraries, university libraries, research institutions.

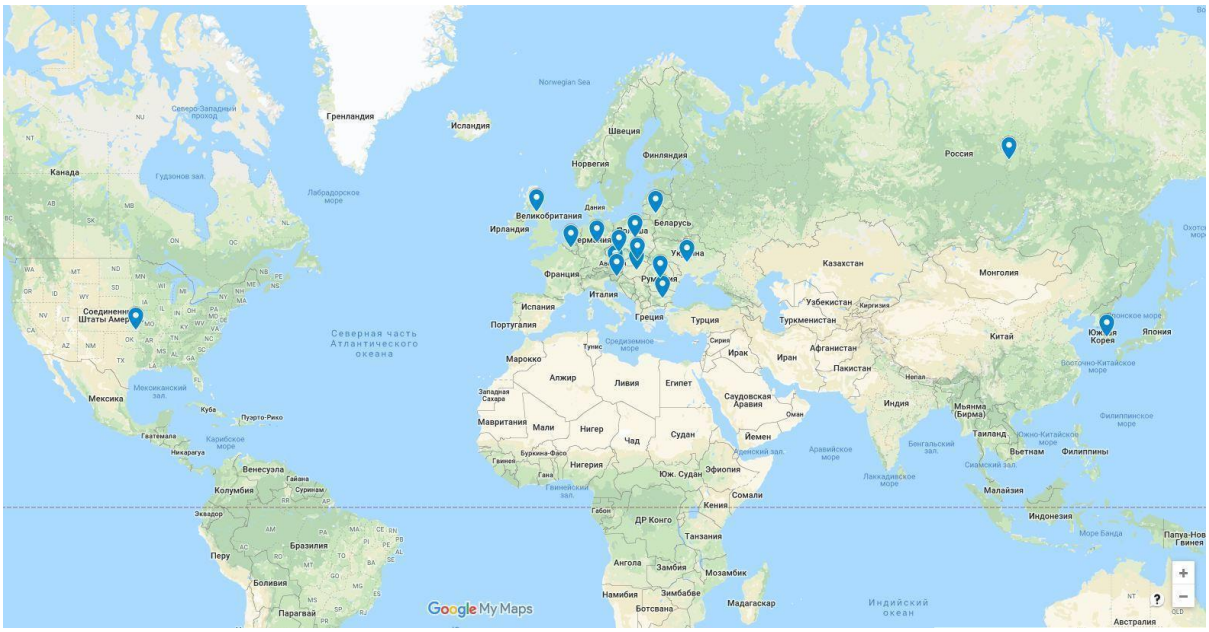


Fig. 2. Partner countries of BelAl on international document exchange

In the process of the equivalent exchange BelAL receives free foreign scientific documents free of charge, paying only shipping cost, it thus is many times cheaper than buying (Dembovskaya and Khalvita, 2018). Moreover, the international exchange of documents makes acquisition of small-circulation foreign publications possible and also contributes to dissemination of Belarusian scientific knowledge through the transfer of national publications to libraries and information centres of many countries.

BelAL has become *a repository of documents of the Food and Agriculture Organization of the United Nations* (FAO) in Belarus and receives free FAO documents on food,

[2] http://belal.by/uslugi/dokumentoobmen (accessed 05.09.2019)

agriculture and forestry, fisheries, agrarian economy, veterinary medicine, statistics since 2006[3]. During this time, the library received about 2 thousand FAO publications in various world languages.

**Use of OA resources**

In addition to the BelAL collection, library staff and users use **sources of open access information** on agriculture and related topics in order to obtain the most complete information. Full-text open access documents can be presented in databases, websites of publications, open repositories of universities and research organizations, scientific social networks. On the BelAL website some OA Internet resources are grouped into sections for more user-friendly navigation:

*Databases*[4]: this site section presents an annotated list of available in BelAL databases including open access resources, such as eLIBRARY.RU – an electronic library of scientific publications which provides more than 6,5 thousand full-text electronic versions of Russian, Ukrainian, Belarusian and Kazakh scientific journals for public access[5]; AGRIS – the International System for Agricultural Science and Technology providing access to more than 10million biographic records as well as to more than 2 million links to full-text information resources[6]; FAO Document Repository (access to more 68 thousand full-text books, journals, conference papers, technical reports published by the FAO offices)[7]; Core Historical Literature of Agriculture (a full-text collection of landmark agricultural texts published between the early nineteenth century and the middle to late twentieth century in the USA and Western Europe)[8], etc.



*Dissertations and Theses*: this site section provides reference information on some resources containing information on dissertations and theses, full texts of dissertations on agriculture and related industries, defended in Belarus, Russia, Ukraine, Western Europe, the USA, Latin America and Japan, as well as links to these resources[9].

*Research and Development Projects*: the section provides information on some significant domestic, foreign and international Internet resources on research and development in agriculture and related industries, provides relevant links to these resources[10].

*Rare Publications*: this site section provides links to electronic catalogues and full-

[3] http://www.fao.org/publications/fao-depository-libraries (accessed 05.09.2019)
[4] http://belal.by/resursy/bazy-dannykh (accessed 05.09.2019)
[5] https://elibrary.ru/defaultx.asp (accessed 05.09.2019)
[6] http://agris.fao.org/agris-search/index.do (accessed 05.09.2019)
[7] http://www.fao.org/documents/search (accessed 05.09.2019)
[8] https://digital.library.cornell.edu/collections/chla (accessed 05.09.2019)
[9] http://belal.by/resursy/agroweb-navigator-2/informatsiya-o-dissertatsiyakh (accessed 05.09.2019)
[10] http://belal.by/resursy/agroweb-navigator-2/informatsiya-o-niokr (accessed 05.09.2019)

text digital collections of rare and valuable agricultural publications of the XV – the beginning of the XX centuries of some libraries of Belarus, Russia, Poland and the USA[11].

**Resource sharing and document delivery**

If information requested by users is not available at BelAL and is not available on the Internet, the library staff does search in other libraries and information centres (Babariko-Omelchenko, Muravitskaya and Aksyuto, 2017). BelAL is the national *interlibrary loan* and document delivery center in the field of agriculture and on related topics. In the system of the national interlibrary loan, BelAL most often cooperates with the National Library of Belarus, leading state libraries (Yakub Kolas Central Scientific Library of the National Academy of Sciences of Belarus, the Republican Scientific Medical Library, the Republican Scientific and Technical Library, the Presidential Library of the Republic of Belarus), libraries of scientific and practical organizations of the Department of Agrarian Sciences of the National Academy of Sciences of Belarus and the institutions of agricultural education.

The right to deliver documents on agriculture and related industries from international information centres to the library was obtained in 1995 due to joining the World Network of Agricultural Libraries – *AGLINET*. During the entire period of participation in the AGLINET project, BelAL has established partnership with more than 40 libraries and information centres. Belarusian scientists thus obtain the necessary information resources from almost any country in the world.



The libraries included in AGLINET, in accordance with the Charter of this organization, are obliged to provide a requested document published in their country, or its copy, as well as any other bibliographic information to partner libraries as soon as possible and, as a rule, free of charge. AGLINET was founded on the basis of the International Association of Agricultural Information Specialists – IAALD in Rome in November, 1971[12]. AGLINET has its coordination centre, which has been located at David Lubin FAO Memorial Library in Italy since its organization. Today AGLINET has 68 members from 56 countries[13].

BelAL has established the closest partnership in AGLINET with the Central Scientific Agricultural Library of Russia. During participation in AGLINET, more than 40% of all documents from abroad were received from this library. It is also worth to mention such a partner as the National Agricultural Library of the USA, which has been cooperating

[11] http://belal.by/resursy/agroweb-navigator-2/inormatsiya-o-redkikh-izdaniyakh (accessed 05.09.2019)

[12] AGLINET Statutes. FAO. Available at: http://www.fao.org/fileadmin/templates/library/pdf/Aglinet_statutes.pdf (accessed: 28.08.2019)

[13] AGLINET: Agricultural Libraries Network. FAO. Available at: http://www.fao.org/library/library-aglinet/en/ (accessed: 28.08.2019).

fruitfully with BelAL for 24 years. For more than two decades BelAL has received over 5 thousand documents for Belarusian scientists from this participant.

BelAL also established a system for delivery of Belarusian publications to foreign institutions and patrons, increasing the interest for and authority of Belarusian research. Today more than one thousand documents a year are requested by users not only from neighbouring countries, but also from elsewhere (Belgium, Cuba, Canada, Finland and others). And the number of requests keeps growing every year.

**Conclusion**

The BelAL collection, its information resources and high-quality services are one of the main information access-points to the national agro-industrial complex (Fig. 3).

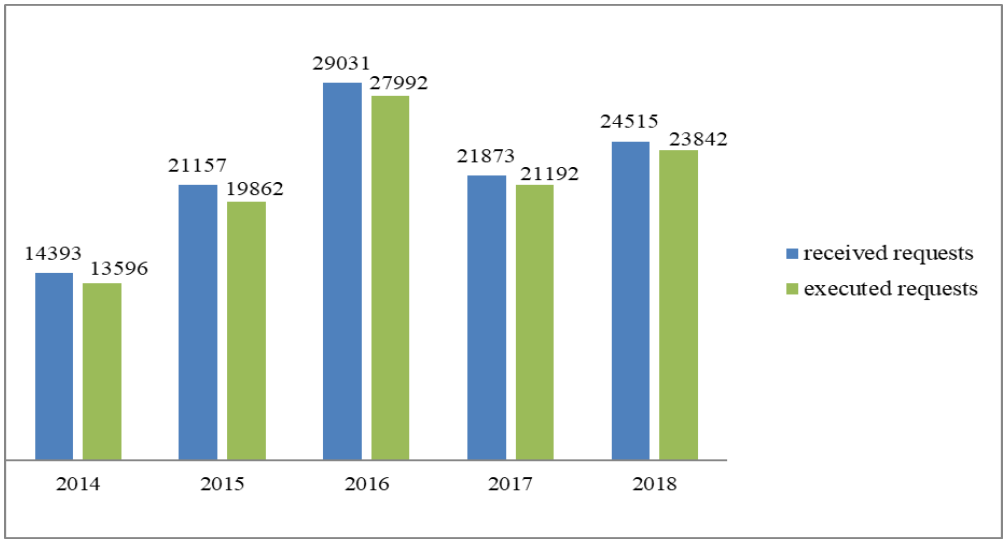


Fig. 3. Efficiency of executing remote user requests for delivery of full-text documents

Reviewed in paper mechanisms for free replenishment of BelAL collection and shared use of documents have several advantages:

- Free mandatory and departmental copies of documents allow the most complete BelAL collection development with national scientific resources;

- International document exchange contributes to replenishment of collection with foreign book publications, which are not always available even for a fee;

- FAO documents provide information on research for sustainable development from around the world;

- OA resources supplement of BelAL collection; and

- Interlibrary loan and resource sharing allow to receive information, which absent in BelAL collection.



Collins, P.D., Krueger, S., & Skenderija, S. (Eds.). (2019). *Proceedings of the 16th IFLA ILDS conference: Beyond the paywall - Resource sharing in a disruptive ecosystem*. Prague, Czech Republic: National Library of Technology in Prague.

In this way free sources of acquisition and partnership development in the field of resource sharing and document delivery contribute to ensuring access for users from Belarus to the world information resources on agriculture and the integration of national industry information into the global information space, reducing financial costs.

**Acknowledgments**

We express our gratitude to the MOST Project – Mobility Scheme for Targeted People to People Contacts (which organizes professional exchange and mobility actions between Belarus and the EU for promoting mutual understanding and exchange of best practice) for their support of our participation in ILDS Conference.

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# SESSION 03 - Perspectives: The Needs of Scholars

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Xu, H. (2019). Challenges and Opportunities for Research Data Management in the Chinese Library Community. In P.D. Collins, S. Krueger, & S. Skenderija (Eds.), *Proceedings of the 16th IFLA ILDS conference: Beyond the paywall - Resource sharing in a disruptive ecosystem* (pp. 69-84). Prague, Czech Republic: National Library of Technology. Retrieved from http://invenio.nusl.cz/record/407836?ln=en

# From interlending to resource sharing between scholars? – An analysis of recent developments

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**Abstract**:

*Even though resource sharing between scholars is evolving rapidly, we still have paper-based interlibrary lending (ILL) procedures in use. However, the current business model of acquiring toll-access journals and e-books does not seem to fit very well with traditional ILL practices. In addition, the new models of peer-to-peer resource sharing between academics seem to be much more effective than ILL. Scholars arrange access to the needed publications by using legal (buying, exchanging) and illegal means (Sci-Hub, etc.) for accessing the publications they need. Furthermore, the demands for open access (OA) have increased, voiced not only by librarians and science funders but also by politicians. This development might change the scholarly publication ecosystem, even though older publications are still likely to remain closed. In the present paper, we contrast the ILL and usage statistics of Finnish university libraries with the use of ResearchGate, a popular academic social network, which we treat as an example of a peer-to-peer sharing service. Based on the data, we attempt to understand how resource sharing, on the one hand formally between institutions, and on the other hand informally between scholars, will develop in the digital and increasingly open future.*

**Keywords:** university libraries, researchers, resource sharing, interlibrary lending, academic social networks, open access, ResearchGate, Finland.



## 1. Introduction

The operational environment of traditional ILL activities began to evolve rapidly during the 1990's. Due to the spreading of internet technologies and network-based services, scholarly communication tools changed and we moved from print journals to e-journals. From the beginning of this millennium, we have witnessed the transformation of

monographs from physical documents to e-books. Recently, we have also seen a rise of different types of digital services for academic communities to share their ideas and published results (Muhonen & Saarti 2016) as well as emergence of MOOCs and other kinds of digital learning environments.

Advancements in technologies and social practices have led to a paradigm change in scholarly publishing. The printed era provided a quite closed environment where library premises and different types of collections of physical entities were of utmost importance in enabling research activities. Digital technologies revolutionised these paper-based processes. In principle, it is nowadays possible to publish, disseminate and discuss research results in real time and without gatekeepers.

We have previously characterised the ongoing change as a move from the printed world via digital to the post-digital operating environment of science (Saarti & Tuominen 2017). The recent policy discussion and policy initiatives around open science have speeded up this process. Policy makers and research funders have started to emphasize the need for opening the whole research process and making the publicly funded results of the academic work openly available (see European Commission 2012). The goal of these pursuits is to increase the societal and scientific impact of the scholarly activities.

The changing nature of the operating environment of scholars has also affected our conceptions of ILL practices. We have had to broaden the paper-based era's views. *Resource sharing* means much more than lending and sending paper copies or faxes between libraries. Resource sharing includes all the types of activities that try to ensure, within the academic and academic library community, the access to all the information resources needed in scholarly work.



The changes are so vast that they have also transformed the role of academic libraries, which no more have a monopoly for providing access to digital materials. The digitalization of scholarly publications means, among other things, outsourcing some of the traditional library functions to commercial actors. Furthermore, the rise of social media makes it easier for researchers to distribute and share publications and other documents. It is now wonder why the question of *who is actually in charge of providing information resources for the academia* pops up every now and then. There seems to be a need for reframing the collection policies in the academic library community and, especially, reflect upon how to make these policies more effective, coherent and up-to-date (Baraggioli 2018, Bjørnshauge 1999, Vattulainen 2018).

Another thread of the conversation is the role of the research libraries in ILL or in resource sharing activities more generally. At the turn of the millennium, the consensus seemed to be that libraries are and will be the primary actors in ILL. Some library professionals even predicted that the amount of ILL would be growing in the future. Many of us expected that new digital services would help to manage the ILL processes (Connolly 1999). At the same time, some authors saw that the digital operating environment is not without pitfalls. The use of digital tools might lead to new kind of problems or obstacles, for example, within the realm of copyright law, and that is why

libraries should perhaps specialise only in the so-called hard-core ILL, i.e. in the distribution of the printed, less-used materials among institutions (cf. Prowse 2000). The discussion on the role of academic libraries as nodes in the evolving post-digital resource sharing environment and the role of the so-called end users still continues (Saarti 2018).

In the present paper, we concentrate on analysing the changes that have taken place in Finland because we know the Finnish library system and the infrastructural and political context of academic work and library activities in our native country (Tuominen & Saarti 2012). However, we suppose that our remarks are not specific to the Finnish situation but reflect the general changes of scholarly practices and research environments. In essence, we ask how have the Finnish resource sharing landscape and ILL practices changed in the past few decades. We utilise the Finnish Research library statistics database and analyse ResearchGate (https://www.researchgate.net/) as an example of the kinds of resource sharing tools that Finnish researchers use in disseminating their research and for generating more visibility to it. To complement our views, we utilise the statistics generated by the Finnish National Exchange Centre of Scientific Literature.

## 2. Changes in ILL and document exchange activities in Finland

The Finnish Research library statistics database (https://yhteistilasto.lib.helsinki.fi/?lang=en) gives a comprehensive picture of the Finnish academic libraries. The libraries collect the data annually according to the international library statistics standards and the online version of the database offers statistics from the year 2002.



Figure 1. shows the development of ILL in all Finnish universities. A rapid decrease is evident both in national and international ILL. The biggest change has happened in national ILL activities. It seems that the amount of traditional ILL is diminishing although ILL seems still to be important for some research purposes.

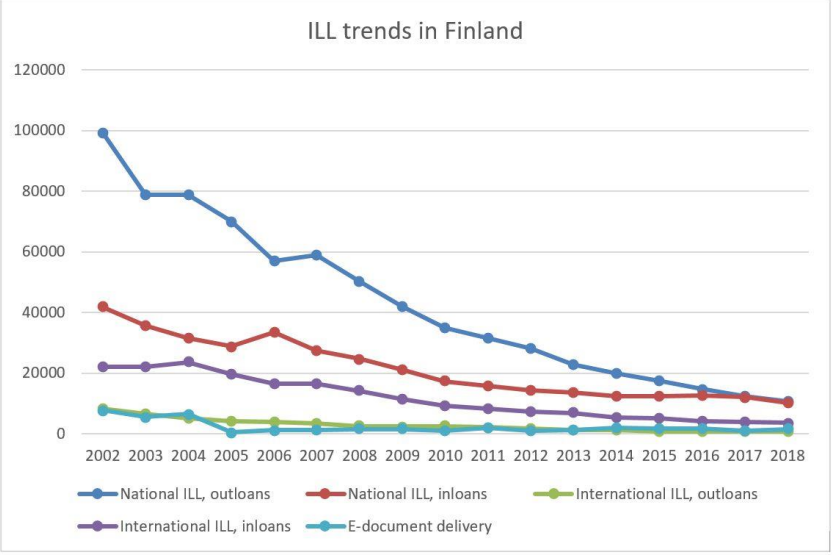


Figure 1. ILL trends in Finland 2002 – 2018.

Figure 2. shows the most central reason to the decreasing of ILL in Finland. The use of digital resources has been growing dramatically during the last two decades. Especially, e-book revolution seems to have taken place in the Finnish universities. Researchers and students use nowadays more e-books than e-journals.

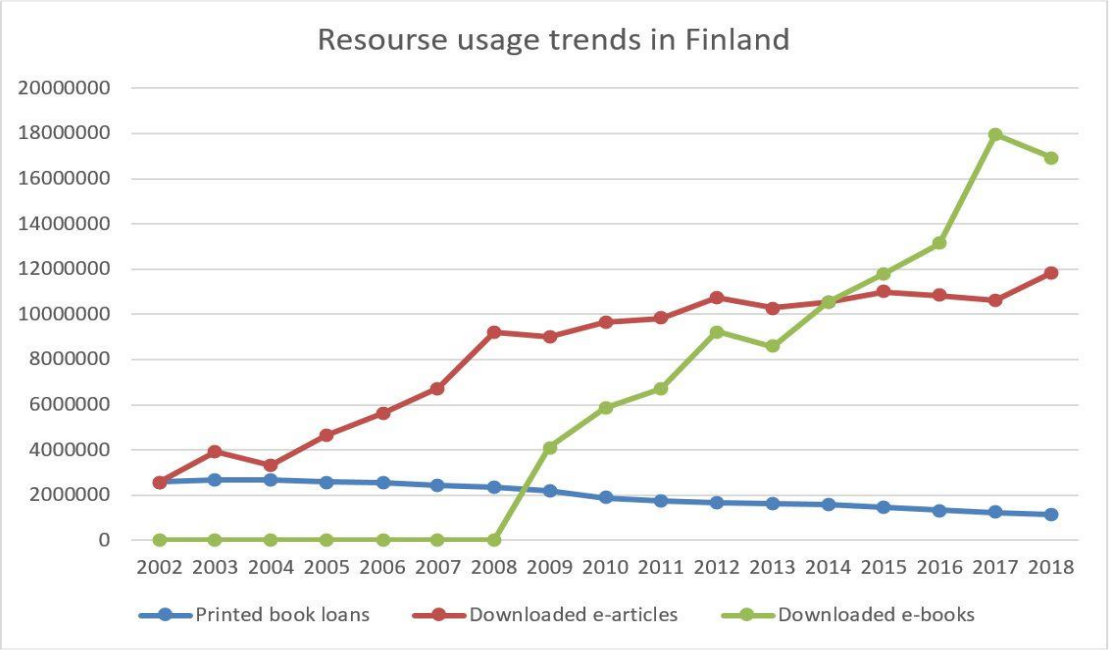




Figure 2. Trends in the digital and printed resource usage in Finland 2002 – 2018.

When comparing the usage of e-books with the traditional printed book loans, one should note, however, that renewals are not included in the numbers of traditional loans. In addition, the usage numbers of digital materials do not take in the account how many times the same person has downloaded the same e-book, i.e. there is no distinction between the first use and the re-use in the download numbers of digital materials. Another unfortunate fact is that we do not have national statistics of e-book usage before 2009. However, it is clear that the number of the first loans in printed collections has fallen at the same time as the usage of
e-books has increased.

One reason for the extensive use of digital resources in Finnish libraries is the FinELib consortium, which has been so far able to help Finnish universities in making the big deals and acquiring toll-access journals. Larger universities, of course, buy many e-resources outside the consortia, too. University libraries have made e-books and e-journals more familiar to users through different kinds of digital services, marketing efforts and information literacy education. Most of the users nowadays prefer digital media, even though there might still be some academics who love the exquisite scent of dusty papers.

Finland has a national Exchange Centre of Scientific Literature (ECSL) (https://www.tsv.fi/en/services/exchange-centre-scientific-literature), which belongs to the Federation of Finnish Learned Societies. The Centre sends the new publications of

the Finnish publishing bodies immediately to its exchange partners. When ECSL receives publications from the partners, it forwards them free of charge to the academic libraries that have ordered them from the Centre. Most of the publications are serials, but ECSL exchanges research monographs and monograph series, too.

The authors asked and received statistics concerning the trends in the development of Finnish scientific literature exchange. The trend seems to be similar than with ILL in Finland. When the centre started its activity, it had almost 6000 international and national exchange points. The number of these points has been diminishing all the time and 2012 was the first year that the number was below 3000. In 2018, the number of these points went below 2000 and the number seems to fall yearly at the rate of -5 %. When the Centre had 13270 arriving serial publications in 1989, this number has currently decreased to 4057. Because of the historical changes of the Centre and its customer base, these numbers show the direction but are not as exact as the data we have of the trends in the Finnish ILL.

The organized exchange of publications is an old and traditional form of scientific communication. Digitalization has affected this practice but it has not completely disrupted it in Finland. There still seems to be researchers, research areas and libraries that benefit from scientific literature exchange, even though there are fewer and fewer of them. It is interesting to see what will happen to publication exchange if most of the new scholarly papers are going to be available not just digitally, but also in OA.



**3. The Finnish researchers and peer-to-peer resource sharing**

The digitalization of the research environment has made it possible to build social media services for researchers and to use general social media (Facebook, LinkedIn, Twitter, etc.) for research-related purposes. Many social media sites facilitate the peer-to-peer sharing of publications and other documents. *Academic social networks*, like ResearchGate and *Academia.edu*, aim their services specifically for researchers. They enable networking and document sharing, within and across institutional and national boundaries. Some of them are quite loose with copyright, even though they are not breaking the law as clearly as
Sci-Hub, which is a digital “library” of pirated publications.

On the right side of the law are those pure OA journals and mega journals that often base their business models on Gold OA and article processing charges (predatory publications might be exceptions in this respect). In addition, preprint servers like *arXiv* as well as the emergence of institutional repositories (and Green OA) also contribute to the fall of ILL numbers. *Google Scholar* is the most used tool for researchers (van Noorden 2014) and its search results often contain publications originating from discipline-based and institutional repositories. Services like *Unpaywall* and *Open Access button* are becoming mainstream too.

Perhaps in a 100% OA world, ILL for *new* scholarly publications would no more exist. It is, of course, debatable, when and how this kind of complete flip-over is going to happen or if it is going to take place at all.

The consequence of these developments is that the need for ILL decreases. Unfortunately, we do not have reliable statistics of the informal peer-to-peer resource sharing. Researchers have circulated scientific documents via email and file sharing servers as long as the internet has existed, but academic social networks enable resource sharing in a much larger scale and more effectively and easily than has previously been possible. The most popular academic social network is ResearchGate (van Noorden 2014). It has especially gained users from medicine, physical sciences, life sciences, and engineering (Thelwall & Kousha 2016), but also researchers in many other domains are using it widely. As an academic social network, ResearchGate has other functions besides document sharing. These functions include asking and answering questions, browsing for new publications and finding collaborators and job announcements. However, resource sharing and increasing the visibility of one's own work seem to be the leading motives for using ResearchGate.

Table 1. depicts the status of the ResearchGate use in Finland. It includes the number of the ResearchGate users at each Finnish university, the number of their publications and the number of the weekly reads of them.

| | ***Users*** | ***Publications*** | ***Publication reads (week 25)*** |
|---|---|---|---|
| **Aalto University** | 6257 | 1553 | 47520 |
| **University of Helsinki** | 10180 | 57398 | 71401 |
| **UEF** | 4012 | 5099 | 22253 |
| **University of Jyväskylä** | 3899 | 3821 | 27206 |
| **University of Lapland** | 798 | 239 | 1989 |
| **LUT** | 1942 | 1604 | 17356 |
| **University of Oulu** | 4182 | 15855 | 29145 |
| **Hanken** | 679 | 89 | 4149 |
| **University of the Arts** | 146 | 9 | 281 |
| **Tampere University** | 5473 | 16243 | 33899 |
| **University of Turku** | 5308 | 19139 | 28447 |
| **University of Vaasa** | 958 | 331 | 5263 |
| **Åbo Akademi** | 2005 | 4686 | 9823 |

| | | | |
|---|---|---|---|
| **Total** | **45839** | **126066** | **298732** |

Table 1. ResearchGate use at the Finnish universities (data collected in June 2019).

We have collected the data for Table 1 from the institutional statistics pages of the Finnish universities at ResearchGate. People might express their institutional affiliations in many different ways. However, we do not take account of these potential variations in the present paper, i.e. we use only data based on the official name of each university and on how the ResearchGate users describe themselves. Thus, the data might be somewhat unreliable (although ResearchGate checks the authenticity of institutional e-mail addresses).

Table 1. shows that the largest and most research-intensive Finnish universities have the most active user population in ResearchGate, i.e. the number of users and publications positively correlates to the general size of the university. Finnish researchers seem to be using ResearchGate widely for increasing the visibility and accessibility of their publications and for finding potential collaborators.

Even though most of the users are whole-time researchers, the users might also hold other positions as librarians, students or administrative personnel in their respective universities. We do not know how many of the publications are available as full texts but preliminary scanning shows that at least researchers with high *RG scores* (the visibility metric used by ResearchGate) seem to add full texts to ResearchGate regularly. If full text is not included, ResearchGate offers a possibility to request a copy of the publication directly from its author.



The researchers in Finnish universities annually publish about 38000 scholarly articles (https://vipunen.fi/en-gb/university/Pages/Julkaisut.aspx). Even though it is hard to estimate the coverage of Finnish publications on ResearchGate based on these numbers, it is safe to say that substantial number of papers is available in ResearchGate, and through it, one can easily request more papers from the authors. ResearchGate is currently a much larger distributor of Finnish scientific publications than the ILL system of Finnish University Libraries as a whole, and ResearchGate might even contain some publications that would be difficult to get via traditional ILL means.

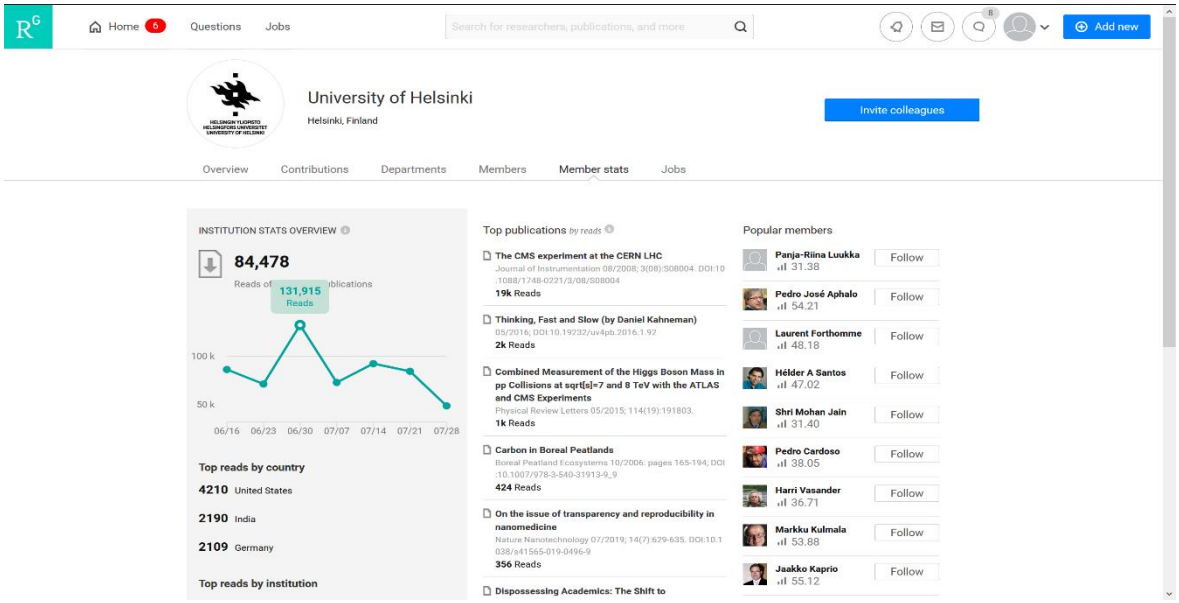


Figure 3. The University of Helsinki institutional page of the member statistics (https://www.researchgate.net/institution/University_of_Helsinki) in July 26, 2019.

ResearchGate collects the number of reads, the top reads by country and by institution weekly. The second top publication of the week 31 is a one-page book review of a popular-scientific book published in *UV4 Plants Bulletin*.



Even though some researchers might assume that the papers available in ResearchGate are OA, this is not the case because ResearchGate requires authentication and breaches copyrights in many cases (cf. Piwowar & al. 2018). To use ResearchGate, one has to reveal one's identity (or invent a fake one). As we know, the activities, contacts and interests of online identities are the real currency of the Internet Age. In this sense, the social media offers no free lunches to us.

One might wonder how permanently ResearchGate stores full texts. Can we be sure that all the imported files will be available in the future? We do not know how the business model of ResearchGate will evolve and if the whole service even ceases to exist one day. One possible scenario might be that, as has happened with Mendeley, one of the big publishers acquires ResearchGate. Furthermore, it is possible that ResearchGate will not always be as open as it is today. Academia.edu – one the main competitors of ResearchGate – has decided to offer much more services to those users who are willing to upgrade their membership status and to pay for it.

Legal problems might hinder the use of ResearchGate in the future and endanger the permanent availability of all the documents it contains. Seventeen publishers – including Elsevier, Wiley, BMJ and ACS – formed the Coalition of Responsible Sharing in October 2017 to "address the copyright infringing practices of the ResearchGate site." The coalition is aiming for "a solution that is in the interest of all stakeholders – ResearchGate, publishers and researchers – and consistent with access and usage

rights." As no one has yet found this solution, the Coalition has forced ResearchGate to remove 1.4 million articles from its site. Nevertheless, the Coalition still sees that ResearchGate contains millions of copyrighted articles "in contravention of agreements between publishers and authors" and that the service is "taking no responsibility for this illicit activity." (Coalition for Responsible Sharing 2019.)

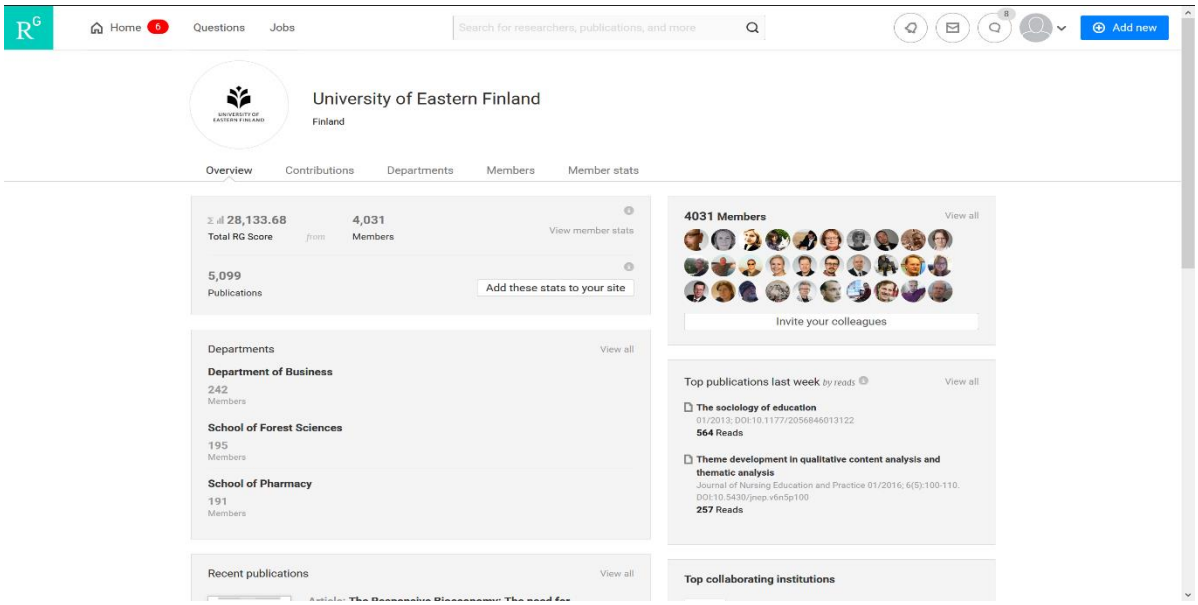




Figure 4: The institutional page of the University of Eastern Finland (https://www.researchgate.net/institution/University_of_Joensuu) in July 26, 2019.

## 4. Conclusions

The analysed data shows the falling of ILL and printed loans as well as the rise of the usage of e-books and e-journals. It seems that ILL has transformed in Finland into a complementary, niche market service. The scholars rely on ILL mostly when they have special needs for printed and rare documents. This kind of a detective work for finding exotic, old or peripheral publications seems to be the current and future role of ILL professionals.

Finnish researchers have adopted academic social networks where they can disseminate publications and promote their expertise without institutional intermediaries. The reasons for the popularity of ResearchGate seem to be its' ease of use and the intuitive nature of the user interface. The researchers might be aware of the copyright problems with ResearchGate but they do not seem to care for them too much. Researchers are especially active in using the networks in peer-to-peer resource sharing, which might be another factor decreasing ILL. Furthermore, if the 100 % flip over to OA happens, as some have prophesied, or if the amount of OA publications continues to grow as it has been growing (Laakso & Björk 2016, Piwowar et al 2018), ILL numbers might fall even faster than thus far.

Because of Plan S and country-based OA mandates, national consortia negotiations have become more difficult than they have been. It is probable that no-deal situations between consortia and big publishers are increasing. This might amplify ILL in the future. Anyhow, it is more likely that the researchers will use other legal or illegal means to get the information they need. ILL seems to be too slow for the researchers who are used to the immediate response from the services like Amazon and Google.

The described developments have consequences to academic libraries, their daily work and services as well as for the resource allocation within the libraries and their host universities. Recently, many Finnish academic libraries have faced funding cuts and devised various kinds of survival strategies. In some cases, the libraries have ceased to exist as separate organisations.

The rise of academic social networks as informal resource sharing tools generates new kinds of problems. Besides legal challenges with copyright and user privacy, academic social networks pose other strategic risks to universities. The business models and black-box algorithms of the networks might not align with the basic academic goals and values. The recent landscape analysis of the changes in academic publishing specifically warns that outsourcing certain key functions to private companies may upset the power balance and lead to a situation where the companies are able to influence too much the decisions of the universities. The risk is that the private sector gets too great a role in the analytical assessment of the universities and the performance of their staff and students. (SPARC 2019.)



Document sharing, reading and the contact networks of researchers are the kinds of data that academic social networks generate and utilize. When this kind of big brother data gets into the hands of one of the central players in publishing and information analytics businesses, e.g. through company acquisitions and mergers, it might provide an enormous competitive value when combined with other kinds of data and indicators (SPARC 2019). This may lead into an unhealthy situation in which the publisher knows more about the university than the university itself. As the information professionals realise, it is a short route from knowledge to power.

Research librarians should be more aware of the development and current nature of academic social networks. We should be able to give our academics relevant information on the potential and possible problems of informal resource sharing.

Even though ILL is not able to compete with academic social networks, it might still be the last resort for our users. Is it not true that we should be able to offer our users a legal way to get the information they need?

## Acknowledgments

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# Challenges and Opportunities for Research Data Management in the Chinese Library Community

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**Abstract:**

*Based on the three models of research data publishing, this paper presents an investigation and analysis of Chinese research data management and sharing, including China's national research data management and sharing platforms, institutional research data repositories, Chinese data publishing journals, and data publishing practices. Based on the analysis of China's research data management and sharing environment, the paper will further examine the challenges and opportunities of research data management and sharing services offered by the Chinese library community. Finally, it will provide suggestions for how Chinese libraries can create implementation paths in order to conduct research data management services more effectively.*



**Keywords:** research data management, research data sharing platform, data publishing, RDM

## Introduction

China has witnessed a "growth spurt" in the amount of research data generated in domestic in recent years, and the quality of data has increased substantially. According to incomplete statistics, the total amount of research data effectively managed and preserved in China is approximately 80PB (1PB = 1,024 TB = 1,048,576 GB =1,125,899,906,842,624 bytes). The national research data management and service platforms based on the independent publishing mode, the universities' research data repositories constructed by university libraries jointly with other sections, and publication of data papers by data journals are three typical representatives of Chinese research data management practice.

The gap between scientific and technological innovation needs for research data management and China's research data management policies and practices in process is the main contradiction at this stage. In 2018, the State Council issued "Research Data Management Measures" at the national level to promote the high quality management and sharing of Chinese research data. For libraries, what is the library's role in the development of the national research data management? How to find the new emerging

point of appropriate service development? The library's accurate role in positioning, strategic planning, and deployment will be critical in the next stage of development.

**China's research data management related policy system**

China joined the Committee on Data for Science and Technology (CODATA) in 1984 and established the CODATA China Committee. [1] In 2001, the Ministry of Science and Technology proposed to the State Council the "Implementation of Research Data Sharing Projects to Enhance National Science and Technology Innovation Capabilities." In 2002, the implementation of research data sharing projects began. [2] In 2006, the State Council issued the "National Medium- and Long-Term Science and Technology (S&T) Development Plan (2006-2020)" proposing the development of digital S&T platform to promote the sharing of research data.[3-4] In 2008, the Ministry of Science and Technology issued the "Converging and Management Measures for the Data of Projects in the Resource and Environmental Fields of the National Key Basic Research and Development Program," which implemented the converging and sharing of batch data. [5] After that, the Ministry of Land and Resources and other ministries successively released management methods for data management and sharing in various disciplines and fields. [7-10] In 2015, the State Council issued the "Action Plan for the Promotion of Big Data Development" and proposed actively promoting open data and sharing of research data obtained and generated by public welfare research supported by the state's public finances. [11] Later, the Ministry of Agriculture, the Ministry of Land and Resources, and the Ministry of Transport issued implementation policy documents on the development of data applications in agriculture, land and resources, and transportation, respectively. [12-16, 17-19] In 2016, the State Council issued the Interim Measures for the Management of Government Information Resources Sharing. [17] The above-mentioned policies issued by the State Council are mostly guiding policies; the policies issued by ministries are both guiding and operational and are mostly data management methods or data norms and standards.



In 2018, the General Office of the State Council issued the "Research Data Management Measures" as the first national level policy to regulate the management and sharing of research data, the policy focused mainly on responsibility, research data collection, exchange and preservation, sharing and utilization, and confidentiality and security. [20] In February 2019, the Chinese Academy of Sciences issued the "Research Data Management and Open Sharing Method of the Chinese Academy of Sciences (Trial)," a policy which operates at the research institution level and which clarified the overall principles, responsibilities, management requirements, guarantee mechanisms, security and confidentiality of research data management and open sharing. [21]

The policies mentioned are mostly formulated by the State Council or national ministries and commissions. Compared to the data management policy systems in some other countries, the research project funding agency is responsible for formulating specific policies for funded research projects, including regulations on the responsibility of the researcher undertaking a project, research data ownership, scope and duration, sharing methods, rights and obligations, and publishing and citation mechanisms. The research institutions are responsible for the management and the creation of sharing policies for

their own data, including intellectual property rights, academic norms, data confidentiality, data quality guarantees, researcher duties and responsibilities, data preservation, and so on.[22] It can be predicted that research project funding agencies and research institutions will release data management policies and methods for the projects or institutions funded, Which will be supplementary policies to the "Research Data Management Measures" to further clarify data standards, intellectual property and ownership rights, and duration of open availability, and publishing and citation mechanisms and so on.

Table 1: Policies related to research data management and sharing services

| Policymaker | Policy name | Release date | Policy attributes |
|---|---|---|---|
| The Chinese Academy of Sciences | Research data management and open sharing measures for the Chinese Academy of Sciences | 2019.2 | Research institution policy |
| National Standards Committee | Information technology research data reference (GB/T 35284-2017) | 2018.7 | National policy |
| The State Council | Research data management measures | 2018.3 | National policy |
| State Oceanic Administration | Management measures of polar survey data in China | 2018.3 | Industry policy |
| National Defense Science and Technology Industry | Interim management measures for satellite remote sensing data for major projects involving a high-resolution earth observation system | 2018.1 | Project policy |
| The State Council | Interim sharing and management measures for government information resources | 2016.9 | National policy |
| Ministry of Transport | Implementation comments on promoting the open sharing of data resources in the transportation industry | 2016.8 | Industry policy |
| Ministry of Land and Resources | Notice on Printing and Distributing Implementation Opinions for Promoting the Development of Big Data Applications of Land and Resources | 2016.7 | Industry policy |
| General Office of the State Council | Notice of the implementation opinions for promoting and regulating the application of big data in health care | 2016.6 | Industry policy |

| | | | |
|---|---|---|---|
| The Ministry of Agriculture | Implementation opinions for promoting the development of big data in agriculture and rural areas | 2016.6 | Industry policy |
| National Marine Information Center | Procedures for sharing marine ecological/environmental monitoring data (trial) | 2015.12 | Industry policy |
| The State Council | Action plan for promoting big data development | 2015.9 | National policy |
| China Meteorological Administration | Administration Measures for meteorological information services | 2015.3 | Industry policy |
| Hydrographic Bureau of the Ministry of Water Resources | Management measures of research data sharing of hydrology and water resources (trial) | 2011.7 | Industry policy |
| State Oceanic Administration | Implementation Opinions for data sharing of marine environmental monitoring | 2010.10 | Industry policy |
| Ministry of Land and Resources | Interim management measures for land and resources data | 2010.9 | Industry policy |
| China Meteorological Administration | Management measures for sharing meteorological data | 2008.6 | Industry policy |
| Ministry of Science and Technology, Ministry of Finance | Interim Converging and Management Measures for the Data related to Projects in the Resource and Environmental Fields of the National Key Basic Research and Development Program | 2008.3 | Project policy |
| China Earthquake Administration | Sharing and management measures for seismic research data | 2006.7 | Industry policy |
| The State Council | Outline of the national program for medium and long-term scientific and technological developments (2006-2020) | 2006.2 | National policy |

**National research data management and sharing platform based on independent publishing mode**

With the implementation of the research data sharing project by the Ministry of Science and Technology in 2002, the Ministry of Science and Technology and the Ministry of Finance have supported the establishment of national science and technology resource and sharing platforms in eight areas: Basic science, agriculture, forestry, oceanography, meteorology, seismology, earth science, and population and health. The data from the eight platforms come from long-term systematic observation and monitoring, national science and technology plan projects, scientific investigations, major research facilities, major scientific projects, and so on. On June 11, 2019, the Ministry of Science and Technology and the Ministry of Finance carried out optimization and adjustment work on the original national platforms and twenty national science data centers were established, the National High-Energy Physical Science Data Center, the National Genome Science Data Center, the National Microbial Science Data Center, and the National Space Science were formed to conduct research together with the Data Center, National Astronomical Science Data Center, National Earth Observation Data Center, National Polar Science Data Center, National Qinghai-Tibet Plateau Science Data Center, National Ecological Science Data Center, National Material Corrosion and Protection Science Data Center, National Glacial Frozen Soil Desert Research Data Center, National Meteorology Science Data Center, National Earth System Science Data Center, National Population Health Science Data Center, National Basic Science Public Science Data Center, National Agricultural Science Data Center, National Forestry and Grassland Science Data Center, National Meteorological Science Data Center, and the National Marine Science Data Center.[23] The former eight research data management and sharing platforms and twenty national science data centers belong to the data independent publishing mode. [24] The eight platforms are shown in Table 2.[25-32] The eight platforms and twenty data centers were established in order to integrate research data from various departments, localities and units, and to make full use of international research data resources, develop a series of data sets and products, and to build an intelligent and networked research data management and sharing service system for the whole society. [33]



The system architecture of the eight research data management and sharing platforms is distributed into center- disciplinary or regional sub-centers. They integrate decentralized research data and provide “one-stop” discovery services. However, the disadvantage of integration here mostly means providing a link address instead of true data fusion with the exception of the Earth System Data Platform, which provides an “International Data Resources” search function. Furthermore, most of the platforms only index data and data sets and rarely use the uniform resource identifier (URI) to name data entities.

The eight platforms adopted discipline-specific metadata standards with high levels of specificity instead of common metadata standards such as Dublin Core (DC) or the DataCite Metadata Schema. Thus, the metadata fields for each platform are quite different. Keywords describe the subjects/themes of data housed on the platforms and

these keywords are searchable. However, the data standards and regulations for each platform do not have corresponding specifications for keywords and most of them use free-word indexing.

Each platform has its own data standards and regulations. The earth science data platform even has published books about the standard specifications for the platform. Three types of regulations were developed for the platforms. The first type is regulations related to the operation of a platform: Platform operation management specifications, data sharing regulations, data management methods, and so on. Another type of regulations set data management standards including data collection standards, data quality control specifications, data recording specification, data classification and coding standards, metadata standards, data submission procedure specifications, and exchange format specification. The last set of regulations involves platform development and user service regulations such as data classification systems, software coding specifications, platform interface specifications, and data sharing service specifications. Approximately 18 national research data standards related to these eight fields have been formed, such as the Basic Regulations for Basic Geographic Information Standards (GB21139-2007) and Soil Science Data Metadata (GB/T 32739-2016).

When compared to the four-stage research data management life cycle suggested by the UK Data Monitoring Center (DCC)[34] and the UK Data Archive's [35] six-stage research data management life cycle he, the platforms in China provide functions for data creation and processing, data collection, data storage, data sharing and access control, as well as data analysis and data visualization but lack research data management planning functions. This is because the aforementioned Chinese policies focus primarily on the preservation and sharing of research data and do not include requirements for submitting data management plans in the early stages of a research project.



The platforms support user services such as user registration, search and browsing, downloading data, and data usage applications. However, the scope and quantity of data access by non-registered users is limited and users must submit an application and be authorized to access APIs. The data service volume for each platform is at the TB (1TB=1024GB, 1B=8bit) level, but the download volume for most platforms stays at the GB (1GB=1024MB, 1B=8bit) level. This indicates the sharing services should be improved.

Table 2: National research data management and sharing platforms

| No | Platform Name | Institution | Administration Department | URL | Amount of databases and data volume | Data service volume |
|---|---|---|---|---|---|---|
| 1 | National Population and Health | Chinese Academy of Medical Sciences | Health and family planning commission | http://www.ncmi.cn | 7192.38 TB | None |

| | | | | | | |
|---|---|---|---|---|---|---|
| | Science Data Platform | | | | | |
| 2 | National Earth System Science Data Platform | Institute of Geoscience and Resources, Chinese Academy of Sciences | Chinese Academy of Sciences | http://www.geodata.cn | 24,431,150.08 TB | Number of platform users: 115,206 Page views: 21,539,917 Total service quantity: 530.25 TB |
| 3 | National Forestry Science Data Platform | Chinese Academy of Forestry | State Forestry Aadministration | http://www.cfsdc.org | 1,682.06 TB | User visits: 1,162,980 Registered users: 31,298 Downloads: 52GB |
| 4 | National Agricultural Science Data sharing Service Platform | Institute of Agricultural Information, Chinese Academy of Agricultural Sciences | The Ministry of Agriculture | http://www.agridata.cn | 686,362.15 TB | Total downloads: 1,685 GB Total visits: 2,342,005 times Registered users: 26,010 |
| 5 | National Seismic Science Data Platform | China Earthquake Network Center | China Earthquake Administration | http://data.earthquake.cn | 11,912 TB | Registered user: 94,212 Service quantity: 93.53TB; Service projects: 2,453 |
| 6 | National Meteorology Science Data Platform | National Meteorological Information Center | China Meteorological Administration | http://data.cma.cn | 1,051,116 TB | None |
| 7 | National Basic Science Data Platform | Computer Network Information Center, Chinese Academy of Sciences | Chinese Academy of Sciences | http://www.nsdata.cn | 77,546.83 TB Relational data volume: 7.28GB File data volume: 46.83TB | Total number of visitors: 25,814,832 Cumulative visits: 702,267,722 Cumulative downloads: 795,761.95 GB |
| 8 | National Marine Science Data Platform | National Marine Information Center | Oceanic Administration | http://mds.nmdis.org.cn | 1,580.75 TB | Page views: 197,396 times |

**University data repositories based on the independent data publishing model**

Beside the platforms mentioned above, university libraries have practices related to institutional data repositories (data management and sharing platforms), including Peking University, Fudan University, Wuhan University, and the Shanghai Foreign Studies University[36-39] (see Table 3). The data repository of Fudan University is not led by the library, but the library provides data management related consulting and training services. The other three repositories are mainly led by the library. For its repository, Wuhan University uses DSpace and the other three libraries use Dataverse. In terms of the volume of data, the digital scholarship research platform at the Shanghai Foreign Studies University Library has the largest data space and data set, with 5,108 data sets. The Wuhan University repository is a demonstration project of research data management platforms for colleges and universities and has only 9 data sets The number of data sets in the other two data repositories is under 1,000. The Peking University, Fudan University, and Wuhan University data repositories support both social science and natural science data management; the Shanghai Foreign Studies University Library digital scholarship platform mainly supports social science data management. These four repositories (with the exception of the Wuhan University repository, which only supports data storage and preservation), support data creation and management, data collection, data storage, access control, and data analysis and visualization. All four repositories support retrieving, browsing, and download services. The Fudan University and Shanghai Foreign Studies University repositories have data standards, data utilization and sharing specifications, data access and citation specifications, and so on., but the other two repositories do not. All four provide data management-related consulting and training services.



In addition to the research data repositories supported by these four libraries, some universities also have other databases or data management platforms such as the China Economic and Social Data Center at Tsinghua University, the Academic Research Database Sharing Program at Zhongshan University, and the China National Survey Database at the Renmin University of China. [40] However, the data on these platforms is mainly social science data and survey data, so the data structure is relatively simple and will not be discussed further here.

Table 3: University data repositories (research data management and sharing platforms)

| Data management platform | Implementing institution | Resources | Data services | Data policy | Technology |
|---|---|---|---|---|---|

| | | | | | |
|---|---|---|---|---|---|
| Peking University's Open Research Platform | Peking University Library, Natural Science Foundation of China, Peking University Management Science Data Center, Peking University Research Department, Peking University Social Science | 39 data spaces, 241 data sets including social sciences, life sciences, geographic information, software and microelectronics | Data storage, publishing, storage, DOI identifier, digital fingerprint, data correlation, online analysis, data retrieval and download, data citation, consulting and training | User guide: data specification, data utilization, data sharing, data access | Dataverse |
| Social Science Data Platform at Fudan University | Data Research Center of Social Sciences, Fudan University | 152 data spaces, 645 data sets in social sciences, earth and environmental sciences, pharmaceutical health and life sciences | Data collection and integration, data storage, data publication, data verification and transformation, online analysis, data exchange and harvesting, data retrieval and download, data-related paper publishing, consulting and training services | None | Dataverse |
| Wuhan University Research Data Management Platform | Wuhan University Library | 9 data sets in life sciences, social sciences | Data submission, preservation, data retrieval and access | Specifications of data submission, organization, preservation, sharing and use, general and discipline metadata standards, and indexing system | DSpace |

| | | | | | |
|---|---|---|---|---|---|
| Shanghai International Studies University Digital Academic Research Platform | Shanghai International Studies University Library | 1,042 data spaces, 5,108 data sets in social sciences | Specifications of data storage, handle identifier, data sharing, online analysis, data cite, data retrieval and download, training guide | None | Dataverse |

**Journal data publishing based on the data paper publishing mode**

In recent years, China's pioneers in data paper publishing are three data journals. *China Science Data* (Chinese and English Online Edition) is sponsored by the Computer Network Information Center of the Chinese Academy of Sciences. In 2015[41], it became China's first academic journal for the publication of research data in multidisciplinary fields. The *Journal of Global Change Data*, hosted by the Institute of Geographical Resources of the Chinese Academy of Sciences started in 2017[42], relies on the "Global Changes Research Data Publishing System" and together, the journal and the system conduct correlative publication of metadata, entity data, and data papers. In 2018, the International Digital Earth Society, the Institute of Remote Sensing and Digital Earth of the Chinese Academy of Sciences, and the British Taylor & Francis Publishing Group jointly began publishing an international academic journal, *Big Earth Data*[43], an open access journal that relies on the strategic pilot science project at the Chinese Academy of Sciences entitled "Earth Big Data Science Engineering." There are some other journals setting up special articles or columns for data papers or publishing paper data but these are beyond the scope of this article.



The National Standard for Information Technology Research Data Citation [44] was issued in 2018 by The National Standardization Management Committee, which mandates that research data should be cited in a standardized manner by peers in academic papers.

**SWOT analysis and recommendations for data management and sharing services in the Chinese library community**

The data service paths of domestic libraries are mainly five types: (1) research data management platform based on data curation life cycle, such as the data management platforms at Peking University, Fudan University, and Wuhan University introduced above; (2) data resource discovery system such as the "Shuimu Search" discovery system based on Primo at Tsinghua University Library[45] (in addition to traditional resource types, it integrates data sources such as research datasets, statistical datasets, maps, audiovisual materials, and so on); (3) data management-related consulting and training services (Peking University Library, for example, provides data management consulting services)[46]; (4) data visualization services such as the data analysis software and data analysis services[47] provided by the Chinese University of

Hong Kong; (5) open access data navigation services (the Library of Chinese Academy of Sciences, for example, provides integrated navigation for a large number of data platforms, journals, official statistics, and open access data of international organizations).[48]

Compared with the data management and sharing service paths of some foreign libraries, the research data management platform service of Chinese libraries emphasize platform-based data management and utilization more, while foreign library platform such as the Data Conservancy at the Johns Hopkins University (JHU) Library [49] emphasize its function as a data curation and management infrastructure. The JHU platform has software for metadata capture, data organization and description, and data visualization such as Rmap, Fedora API-X, and packaging, specifications. Consulting and training services of domestic libraries are more focused on data policies, open data access, data rights, data intellectual property, data licensing, instead of data management plans and data curation infrastructure. Some data service practices, like the data management services for the pre-research, middle and post-research stages provided by York University;[50] the DOI registration service provided by the German National Science and Technology Library;[51] and the German National Library of Medicine data storing service in the Dryad data knowledge base, [52] are rarely carried out the same good by Chinese libraries.

Based on summary of research data publishing and sharing in China presented above, external opportunities and challenges for data management and sharing services in the Chinese library community are analyzed. Opportunities include: (1) Research and innovation needs: Scientific and technological innovation is increasingly dependent on the comprehensive analysis of research data. (2) The demand for China's research today: China's research data growth spurt, But China has only started shortly in the managing and sharing of research data, compared with the management and sharing of research data in developed countries such as those in Europe and in the United States. (3) China attaches importance to data management and the release of the "Research Data Management Measures" reflects the importance China attaches to the development of research data management and sharing capabilities. (4) Developing opportunity: The research data repository of research institutions affiliated with libraries has not been implemented widely; the management of research data at many universities and research institutions has not yet started or has only just started in a short time and there is an urgent need to establish or further improve institutional data repositories.



The challenges include: (1) the library playing a central role in the implementation of research data management has not been recognized at the top administrative level. For example, the implementation unit of the eight research data management and service sharing platforms mentioned above are the IT departments at the research institutions. As another non-library example, the "Research data Management and Open Sharing Measures of the Chinese Academy of Sciences (Trial)" indicates that the designated legal entities, the research institutions, are the responsible units for data collection, processing and sorting, and regular publication of catalogues. The Academy Science Data Center is a professional unit specializing in research data management and open

sharing and is responsible for integration of data, research data classification, data processing and analysis, and establishing a technical platform and service system for open data sharing. (2) Libraries are not adequately prepared for transforming their service models for the new research paradigm: Chinese librarians have published a large number of papers about digital humanities, digital scholarship, and research data management in recent years, but there is not a strong voice or agile implementation plan for data services emerging from the domestic library community and few libraries have responded quickly by making great pilot cases for data services.

The internal advantages and disadvantages of data management and sharing services in the Chinese library community are analyzed. The advantages include: (1) the library community realizes that research data management is a new area of service growth, and some libraries are actively carrying out data research and data services practices. (2) Libraries have proven experience in information organization, management and service development. For example, academic libraries have experience in establishing institutional repositories, and research data is only one more type of information resource which could be managed in a repository. (3) Libraries have experience in information infrastructure development, management, and operation. Most libraries already have a large amount of local data, systems, and applications to be maintained. (4) There are many commercial platforms available for data sharing services, such as the Ex Libris Esploro research repository, Dataverse, or DSpace. The disadvantages include: (1) The domestic library community has no corresponding strategic deployment and implementation steps for data services to support the new research or new learning paradigms. (2) Libraries have not yet identified their role and positioning within the existing research data management system. (3) Lack of research data management talent in domestic libraries: Data literacy has just started in recent years and most of research data management staffs have a background in library science, information management, or computer science and qualified top talent refuse to enter the low-paying library profession.



Based on the status of Chinese research data publishing and the current data management service environment, the following recommendations are proposed for the implementation of data management services by the Chinese library community:

(1) Strengthen dialogue with stakeholders: Library alliances, such as the China Academic Library and Information System (CALIS), the Chinese National Science and Technology Library (NSTL), provincial and municipal library alliances, should actively engage in dialogues with top administrators to make them aware of the library's professional advantages in data management. Meanwhile, they should develop a convincing strategic deployment and implementation plan for data management and sharing services.

(2) Research priorities: Continue with research and analysis in multiple areas such as data management policies and measures undertaken by research funding institutions and research institutions as well as domestic and foreign research data management mechanisms and systems, domestic and international research data management

platforms, data repositories, and implementation paths for library research data management.

(3) Priority to consulting and training services: Based on existing conditions, establish a virtual part-time or full-time data management and service team to provide corresponding services for data policies, data intellectual property, data publishing, data standard specifications, data usage and citation, or improving instructions for existing data repositories and research data centers.

(4) Data discovery and access services priority: Establish open data navigation, integrate data management and analysis tools, make efforts to become a service node for the large research data centers, and provide users with one-stop data discovery, correlation, and access services by making data localized and by authorizing data services.

(5) Establish data repository: According to the current policy, entities such as research institutions are the main bodies for data management implementation and are responsible for data collection, production, processing, and long-term preservation. Chinese libraries should actively seek cooperation with institutional research projects, receive tasks as collaborators with researchers, to begin playing a core role in development of data repositories, and provide consultation services for project data management plans, data processing, publishing, data preservation, and data rights scenarios.



(6) Establish domain subject digital scholarship platforms: Building on existing data repositories, libraries should establish digital scholarship platforms or develop digital research ecosystems in specific areas. Such platforms should support data discovery and data correlation, provide data analysis tools and software, support online data analysis, and have interactive functions such as supporting collaborative research processes and sharing of data.

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# SESSION 04 - Perspectives: Sharing, Copyright

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# Cooperative Storage Library Switzerland (CSLS): Sharing of content and resources - providing quick and modern services

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**Abstract:**

*In the Speicherbibliothek/CSLS libraries of ZHB Luzern, UB Basel, ZB Zuerich, UZH Zuerich and St. Gallen University Library store parts of their holdings. Storage room is tight and expensive in the cities and holdings are growing faster than sorting out of duplicates is being made.*

*A centralized storage unit in a rural area with good traffic connection seemed a logical solution. In 2016 the Speicherbibliothek came into gear. It is built and equipped like a modern high density fully automated storage unit. (https://de.wikipedia.org/wiki/Kooperative_Speicherbibliothek_Schweiz)*

*With regard to monographs and anthologies, ownership of the stored items is retained by the giving library and still appear in their catalogue system. These items are the so called individual stock of the partners and can be borrowed. With regard to journals things are different. Most of them are now part of the so called collective stock. The goal is a complete series of a stocked journal title. When a user requests a copy from a journal, the pages will be copied and sent via a workflow system either to the reader or a library. The journal volume itself will not leave the storage unit anymore.*

*The partners of Speicherbibliothek use the same workflow system (MyBib eDoc®) to manage and monitor their lending processes. In the background this system routes the incoming lending or copy requests from the library patrons to CSLS and manages the automated delivery of scanned pages.*

*In addition to the above, the presentation will include the following:*

*Restrictions of copyright*
*Conservational issues*

*Deduplication (virtual and physical)*
*Visibility of stored items in the catalogue and for the user/impact on requests*
*Financial aspects vs. librarian wishes*

**Keywords:** Storage Library, Resource Sharing, Document Delivery, Copyright, Workflow Management System.

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## Introduction

The Cooperative Storage Library Switzerland (CSLS) started working in January 2016 after a building process of approximately two years.[14] It is situated in Büron near Lucerne and stores the print collections of five University and Cantonal Libraries in the German speaking part of Switzerland. The partners decided to collaborate after intense calculations of financial and land resources needed to build different types of storage buildings made by the cantonal government of Lucerne.

## Sharing of a High-Bay storage

An automated high-bay storage area with a capacity of approximately three million items resulted in being the most cost-effective model. Three partners – the University of Basel, the Canton of Lucerne and the Foundation of the Central Library of Zurich - founded a PLC to finance the building which rents it to a cooperative of the six libraries that currently archive their collections in the CSLS. Land reserves allow for building three additional storage modules, resulting in maximum capacity of 14 Million items, in the future. Since a significant part of the scientific journals are duplicates in two or more libraries, there is a substantial potential for savings of storage space and costs. In order to realize these savings, the partners agreed to deduplicate these holdings and keep one complete run of each journal. This copy must never leave the CSLS.



## The Deduplication of the collective collection

All partners use Aleph 500 as their library management system, but each has a separate database that is not connected to the others. This will change in 2021 with the switch to ALMA[15] and when for the first time a nationwide union catalog of Swiss University libraries will be realized. Since all partners were in urgent need of storage space, there was no possibility of waiting for this date, so they decided to merge their journals metadata and holdings in a separate database called bIS (begleitendes Informationssystem in German). After an automatic and intellectual deduplication

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[14] A brief outline of the building process can be found in Tschirren, Niederer 2018 https://www.degruyter.com/view/books/9783110553796/9783110553796-019/9783110553796-019.xml

[15] In the course of the project SLSP (Swiss Library Service Platform) all libraries of the participating member institutions will switch to ALMA. For more see: https://slsp.ch/en.

process the winning record had to be controlled on site for its completeness and its conservational status. Only after this time consuming process and the actual archiving in the CSLS could the duplicate holdings be discarded, which resulted in an average saving of 30% of space. The agreement to fund this collective collection doesn't affect the actual e-only strategies of the partners, because none could guarantee to keep printed journals in the future. The CSLS is not a substitute for the cooperative print archiving initiative being planned in Switzerland over the last several years, but it still could be the nucleus of a future Swiss journal archive. Apart from this collective collection of journals which belongs to the cooperative, all partners are free to archive journals and monographs in their individual collection. These items can be loaned by users and libraries and the partners are free to withdraw them if necessary. A withdrawal of journals from the collective collection is not desirable.

**Behind the scenes - legal matters**

Background: Between 2012 and 2014, the Swiss Federal Institute of Technology in Zurich (ETH Zürich) and Elsevier, with the support of Wiley and Thieme, fought over document delivery and its rightfulness within Swiss copyright rules. The publishing houses questioned the lawfulness of ETH's document delivery service. With jurisdiction of 28th of November 2014 the federal court of Switzerland in Lausanne declared the document delivery service legal.[16] Without this ruling in favor of this core service of libraries there would have been no further discussion regarding a workflow system for the CSLS. To make it clear: if the court had ruled in favor of the publishing houses this would have been the end of any document delivery service in Switzerland. But with the libraries document delivery service strengthened by the ruling the planning for the architecture of the workflow system could proceed .



**Shared resources and copyright**

Digital or paper copies can be ordered from the complete collection, according to Swiss copyright law, libraries are allowed to send copies of journal articles in every form (including scans) to individuals or libraries within Switzerland for scientific or private use. Once successfully delivered, these files must be discarded. Libraries are not allowed to build up electronic archives of material protected by copyright. All partners use MyBib eDoc® as their Document delivery management system, but in different databases. These databases are connected to each other so copy requests can be routed to the library in possession of the ordered item.

**Lean administration**

The CSLS team consists of only 8 employees, including a CEO, his assistant, an accountant, a facility manager, three logisticians and a librarian. Most workflows are triggered by the Warehouse management system or the document delivery system and

16 https://www.bger.ch/files/live/sites/bger/files/pdf/de/4A_295_2014_2014_12_18_T_d_09_46_33.pdf and http://www.servat.unibe.ch/dfr/bge/c3140616.html

run semi-automatically. Human interaction is needed to commission the ordered items from their storage containers and ship them to their destination or scan a copy. Economies of scale can already be counted: as the number of items stored is rising significantly due to new partners joining the cooperative, the storage costs per item are sinking rapidly. The Central and University Library of Lucerne for example will next year pay about 20% less than calculated, which allows them to order new services at the CSLS, e.g. the handling of 50,000 orders of items for mass digitization with Google Books.

**Document Delivery and its workflow system**

The workflow management system, MyBib eDoc has a 15 year old history. It is a development of the company ImageWare Components GmbH from Bonn in Germany. In its origin it was merely designed to manage the workflows of the - at that time brand new - library service of sending copies via ILL in an electronic and digital way. The system is web based and works on a LAMP basis. A library can run its own system or it can rent the system which in that case is run by the company or hosted by a library service network. Over the years the scope has extended from document delivery to workflows like catalogue enrichment, mass digitization,[17] specific delivery services like *subito*,[18] returnable ILL and OCLC's World Cat Resource Sharing.[19]

The latest improvements are: automatic extraction of pages from e-books or e-journals; streaming based solution MyBib eL® for providing digital copies cross border according to the very strict copyright rules such as in Germany, Switzerland or France; implementation of routines for anonymization (according to GDPR).[20]



The purpose of using MyBib eDoc is to steer, monitor and track a workflow from the very beginning to the end. So various library specific workflows could be run with one management system and one user interface only. The status of digital or physical fulfillment from receipt of the order to the point of shipping a book/a stack of copies or sending an e-mail with a link, whether to the requesting library or the end-user/patron, can be seen at any time. The system communicates via standard protocols or via APIs with the library systems and catalogues. It works with many automated background procedures, so that the only physical working steps left are picking a volume from a shelf and process a digitization job. More than 30 libraries rely on MyBib eDoc, among them the biggest – measured in collection size – and the most active agents in ILL in Germany and Switzerland. Among them are the Bavarian State Library, Staatsbibliothek zu Berlin Stiftung Preussischer Kulturbesitz (SBB-PK), Staats- und Universitätsbibliothek Hamburg Carl von Ossietzky (SUB Hamburg), ZBW - Leibniz-Informationszentrum Wirtschaft Hamburg/Kiel (ZBW Leibniz Information Centre for Economics), Zurich

17 https://www.b-i-t-online.de/archiv/2008-03/nach1.htm

18 https://www.subito-doc.de/?lang=en

19 https://www.oclc.org/en/member-stories/zb-zurich.html

20 https://gdpr.eu/

Central Library (ZB Zürich) and Basel University Library (UB Basel) and of course ZHB Luzern.

**Requirements for the workflow system**

In the German-speaking part of Switzerland, to which the CSLS partner institutions belong, there is a high service level for patrons. ILL whether with returnable books or document delivery is still seen as a major task of a library. Patrons are entitled to expect a quick and modern service.

In 2014 when the plans for the CSLS took form, questions arose about how the high service level in ILL for the patrons could be maintained even with a substantial number of journals and monographs out of physical reach of patrons. As CSLS partner libraries relied on MyBib eDoc for the management of their document delivery (and some of their catalogue enrichment) for many years, the decision was made that MyBib eDoc should serve as a workflow system within the document delivery around the CSLS in Bueron. Additional critical conditions had to be met: connection to the internal storage software, communication with the 3 Aleph systems of the participating libraries, automated routing of orders between the Aleph systems, patrons should receive their delivery from the library they are attached to even though the fulfillment/scanning itself was done in the CSLS; system should be scalable if other partners decide to join the CSLS and additional services are offered .



**From project to production**

After several workshops in 2014 and 2015 for the planning of the workflow system, decisions for the future CSLS production were made: each CSLS partner would proceed with its own MyBib eDoc local entity; collections in CSLS would be treated as a branch of each library; to facilitate the scanning process, a scan client with direct linkage to the workflow system was selected. Months of vigorous scripting and testing followed, collection items were moved to CSLS and in the first quarter of 2016 the first document deliveries were fulfilled.

**Librarian Wishes vs. Financial Aspects**

With the journals out of sight in the CSLS – what would patrons do and would they still use the journals? Subject librarians came forward with the idea of retrodigitizing the journals tables of content, indexing the articles and building up a database for it. It was discussed and projected in several working meetings but the cost calculation impeded the realization.

**Visibility in the catalogue of the stored items – impact on users**

For the patrons the visibility of the items now stored in the CSLS remained the same. The search entry remains the OPAC of their home library or can be extended to the SwissBib Catalogue which is a kind of supra-catalogue for the German speaking part of Switzerland.

In the OPACs the items stored in the CSLS are indicated with CSLS location and the loan or copy request possibilities.

Statistics of loans and copy requests show a constant increase in loans and DocDel requests with the well-known regular peaks during the academic semester.

**Future developments**

New partners for the CSLS are very welcome in the coming years. This would make the building of new storage modules possible and therefore lower the average storage costs per item even more.

Testing in the upcoming month or the first half of 2020 will show if the ILL tool of ALMA meets the demands of the CSLS partners. MyBib eDoc will then communicate with the ALMA zone instead of the several Aleph systems.



Collins, P.D., Krueger, S., & Skenderija, S. (Eds.). (2019). *Proceedings of the 16th IFLA ILDS conference: Beyond the paywall - Resource sharing in a disruptive ecosystem*. Prague, Czech Republic: National Library of Technology in Prague.

# Digital possibilities in international interlibrary lending - with or despite German copyright law

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**Abstract:**

*The German interlibrary loan service is a good and solid basic solution for the supply of literature between libraries within Germany and some other countries. It has proven itself both nationally and internationally. But recent changes to Germany's copyright law raise questions about what form it will take in the future. This paper will look at which digital possibilities the new law offers our users regarding delivery or electronic media. Copyright law in Germany promises to have the right answers to the demands of modern digital working and studying. But does the copyright law also make this possible for German interlibrary lending? German libraries have the advantage that only a few countries worldwide have a copyright that contains a special section for interlibrary lending. However, this positive effect does not make it easier for foreign libraries.*

**Keywords:** Interlibrary loan, German copyright law, electronic delivery, digital lending



## 1. Legal Basis

The Copyright Knowledge Society Act (UrhWissG) came into force in Germany on 01 March 2018. The previous legislation was often very detailed and spread across several different laws. In addition, digitisation and networked computing have changed the possibilities of creating, distributing and using copyrighted content.[21] This was insufficiently reflected in the previous Copyright Act. The reform was intended to sufficiently cover these deficits by creating new regulations on the legally permitted use (barriers). *"The core of the reform is the new subsection 4 - Legally permitted uses for teaching, science and institutions: §§ 60a to 60h UrhG in the draft version (UrhG-E) comprise the provisions on teaching, science and institutions such as libraries, including a new provision for so-called text and data mining, the software-based analysis of large amounts of data. In future, each group of users will therefore have its own set of facts*

[21] Cf. Drucksache 18/12329 (2017)

*with concrete information on the type and scope of the legally permitted uses. At the same time, various provisions that previously existed for them will be dropped either completely (§§ 47, 52a, 52b, 53a UrhG) or partially (e.g. in § 46 UrhG as well as in the 'private copying barrier' of § 53 UrhG)".*[22]

For interlibrary loan and document delivery in Germany, the UrhWissG not only brings advantages and clear guidelines but also restrictions compared to the previous rules. Particularly in an international context, these rules give rise to questions and confusion. This is probably due to the fact that the German Copyright Act has little in common with the Guidelines on International Interlibrary Loans[23]. The most important points for interlibrary lending and document delivery within Germany are regulated in §60e (5) UrhG.

- individual request for non-commercial purposes
- copies of up to 10% of a published work
- copies of individual articles from scientific journals
- no limitation to certain types of publication originals (print or digital)
- no restriction to certain delivery routes
- requires appropriate individual remuneration by a collecting society (cf. §60h Abs.3-4 UrhG)



The UrhG is directly targeted at copy delivery within German domestic interlibrary loan[24]. International lending is not dealt with separately. However, the regulations still apply to international interlibrary loan with German libraries, as they are binding for German libraries.

**1.1** Individual request for non-commercial purposes

The legally permitted use is basically limited to non-commercial use. This must be proven by the user in the form of a self-disclosure. In the national context, this is done across the library networks by a checkbox, which must be activated by the user for each individual transaction.[25] The library has no active obligation to verify non-commercial use by the patron.[26] In the international context, the German lending library should check in advance whether commercial orders can be placed via the international ordering system and, if necessary, verify with the user that the request serves non-commercial purposes by filling in a form.

[22] Drucksache 18/12329 (2017, p. 2-3)
[23] International Federation of Library Associations and Institutions (2009), (2015)
[24] Interlibrary loan between libraries in Germany is regulated by National Interlibrary Loan Regulations.
[25] Cf. Willwerth/Wulle (2018b)
[26] Katzenberger (2018, p. 685)

**1.2** Scope limitation to 10% of a monograph

The delivery of copies from monographs is clearly regulated by law and limited to 10% of the work. Previous legislation allowed the delivery of a "small part" as a copy. In common practice, this small part corresponded to 15%. Since the specified 10% must be strictly enforced by the libraries, this requires more work for the libraries. This check cannot be done automatically by the ordering system.

In addition, the lending library should ensure that it does not process several, directly consecutive requests of the same user, as it could mean that they exceed the legally permitted maximum of 10%. As an alternative, of course, there is book lending, but this, especially in an international context, has the disadvantage of lengthy and expensive transport.

**1.3** Article requests from scientific journals

A major change in the law is the restriction of the delivery of copies from scientific journals. Newspapers and journals for the general public may no longer be used for the delivery of copies. However, the law does not contain a definition of journals for the general public in comparison to professional and scientific journals. The blacklist of subito[27] and the categorization of professional journals on buchhandel.de[28] serve as guides for libraries.



Public magazines are aimed at a broad audience and are preferably read in leisure time. In comparison, scientific journals are aimed at a specialist audience and contain subject-related articles.[29] In practice, the differentiation is sometimes difficult and must be made individually by each library. There is currently no uniform national reference system for differentiation between professional journals and public magazines.

**1.4** Publication form and delivery options

The elimination of restrictions on the publication format (print or digital) and the acceptance of electronic transmission to the user as the standard delivery option are the most far-reaching changes brought by §60e UrhG compared with the previous §53a.

The examination of appropriate offers from publishers and the mandatory use of graphic files have been eliminated.[30] However, the practical implementation of these positive changes is only possible to a small extent. The unrestricted use of e-resources applies only to license agreements concluded after March 1, 2018.[31] Moreover, electronic transmission to users is not part of the agreements with collecting societies and therefore cannot yet be implemented. During contract negotiations with the VG Wort

[27] Homann (2018, p.4 )
[28] http://www.buchhandel.de/fachzeitschrift (accessed 15 July 2019)
[29] Page „Wissenschaftliche Fachzeitschrift". In: Wikipedia, the free encyclopedia. Processing status 20.08.2018. https://de.wikipedia.org/w/index.php?title=Wissenschaftliche_Fachzeitschrift&oldid=180179456 (accessed 17 July 2019)
[30] Grenzebach (2018, p. 68)
[31] Gillitzer (2018, p. 625), Grenzebach (2018,p. 66)

on the new amount of the fee for the individual case remuneration no agreement could be reached that included electronic transmission.

## 2. International ordering systems and German library stocks

The German interlibrary loan system consists of several standardised interlibrary loan platforms which cooperate across different networks. The basis for this is the National Interlibrary Loan Regulation[32]. Interlibrary loan is primarily used to supply research and therefore mainly refers to scientific literature. This kind of interlibrary loan takes place between academic libraries. An exception is the interlibrary loan of fiction and academic literature between public libraries. However, this represents only a small percentage of interlibrary loan in Germany.

The National Interlibrary Loan Regulations prescribe the regional principle distribution network. Libraries do not choose a favourite supplying library. Instead, the nearest library with the required stock receives the request automatically through the interlibrary loan system. Interlibrary loan within Germany includes:

- the electronic transfer of copies from scientific journals and monographs between libraries (not to the end-user)
- the lending of collections (monographs, journals, special collections such as microfiche, newspapers)
- the lending of e-books[33]



In addition, subito e.V.[34] is a cooperative direct delivery service of libraries from Germany, Austria and Switzerland. In contrast to (inter-)national interlibrary loans, this service allows direct delivery to users and requests from commercial users and private individuals. Orders via subito are more expensive than national interlibrary loans. The libraries serve different target groups via subito than via national interlibrary loan.

In the international context, there are various ways of ordering interlibrary loans from German libraries.

- International Interlibrary Loan (ILL, IFLA-Voucher)
- Bavarian International Interlibrary Loan[35]
- subito library service

[32] Leihverkehrsordnung (2003)
[33] Gillitzer (2014)
[34] www.subito-doc.de (accessed 16 July 2019)
[35] Bavarian Library Network, https://www.bsb-muenchen.de/fileadmin/pdf/benutzung/fernleihe_international_anleitung_engl_201709.pdf (accessed 16 July 2019)

• WorldShare ILL

The breakdown of incoming interlibrary loan requests at the ZBW is as follows:

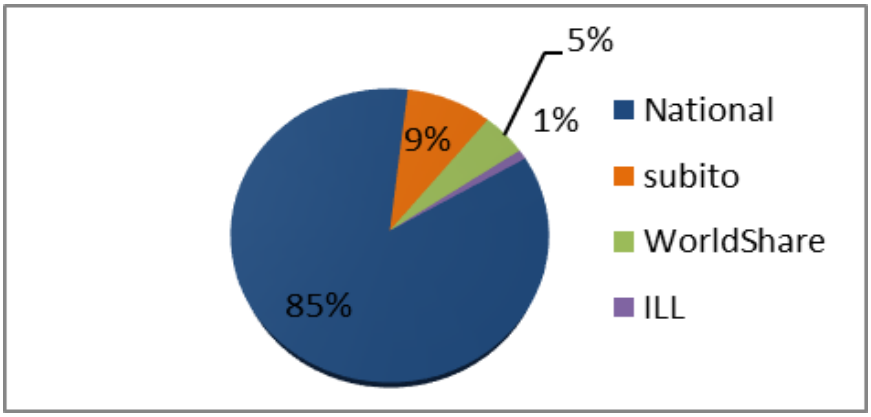


Figure 1: Incoming ILL requests of the ZBW, distribution in 2018

Correlations between country and chosen ordering system can be identified if you analyse the requests of the libraries ordering from the ZBW. The majority of requests for conventional interlibrary loans are received from European countries and increasingly from Eastern European countries. The subito library service is heavily used by European countries, while US libraries order from the ZBW via WorldShare ILL. Australian and Asian libraries choose between the subito library service and WorldShare ILL according to their needs.



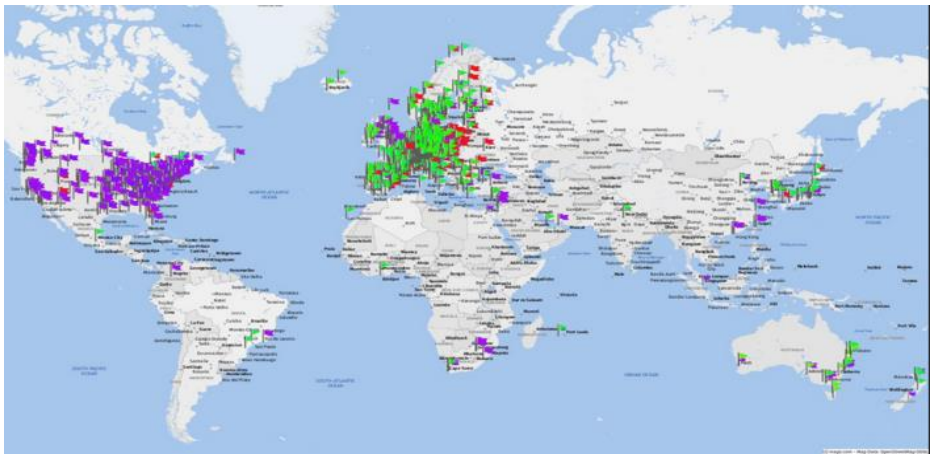

Figure 2: ILL incoming requests at ZBW by city and order system[36]

## **2.1** International Interlibrary Loan

[36] The map is based on an internal ZBW analysis of all international ILL requests. Purple = WorldShare, green = subito library service, red = ILL (IFLA Voucher)

Conventional interlibrary loan requests can be submitted directly to the lending library by e-mail, fax or post. The copy or the loan of the book will be sent by post. The accounting is done via the standardized IFLA Voucher System.[37] This form of international interlibrary loan is the most common procedure and can be used for orders from most German libraries.

**2.2** subito library service

International, publicly financed libraries can use the subito library service to order books and articles from German libraries. This applies to all libraries worldwide, with the exception of the USA and Great Britain.[38] At subito, research and ordering takes place in one system. At subito, unlike conventional interlibrary loan, copies from licensed journals can be sent by e-mail using the Digital Rights Management System.[39]

The services offered (delivery of copies, lending) and the associated prices are determined individually by the supplying libraries.[40] Please note that not all subito supplier libraries offer the lending of books. The average prices in the subito library service are higher than the voucher costs in conventional international interlibrary loan. For this purpose, billing takes place centrally via the subito office in the form of collective invoices.[41]

**2.3** WorldShare ILL

Orders via OCLC WorldShare ILL are a good alternative for libraries from the USA and Great Britain. Please note, however, that only a few libraries in Germany participate actively in the WorldShare ILL interlibrary loan system,[42] whereas it can be regarded as the standard interlibrary loan system of the USA and is used internationally in 57 countries and by over 10,000 libraries.[43]



The services offered (delivery of copies, lending) and the associated prices are determined individually by the supplying libraries. The average prices at OCLC WorldShare ILL are higher than the voucher costs for conventional international interlibrary loan. Analogous to subito, you can choose the supplier library yourself. Billing is done centrally via OCLC's IFM management system.

Several German supplier libraries use ImageWare's MyBib electronic reading room as a complement to OCLC's WorldShare ILL interlibrary loan system to provide digital copies of articles.[44] The requesting libraries can call up and print the ordered article via a link in the electronic reading room. There is no direct delivery as pdf or to the user. The

[37] https://www.ifla.org/voucher-scheme (accessed 16 July 2019)
[38] https://www.subito-doc.de/Benutzergruppen/KG-SLS-SLI?lang=en (accessed 16 July 2019)
[39] https://www.subito-doc.de/DRM?lang=en (accessed 16 July 2019))
[40] An overview of the services and supplier libraries can be found on the subito website (https://www.subito-doc.de/suppinfo, accessed 16 July 2019).
[41] https://www.subito-doc.de/Zentralregulierung (accessed 16 July 2019)
[42] 2018 these were ZBW Kiel/Hamburg, TIB Hannover, SUB Göttingen, SPK Berlin, BSB München.
[43] https://www.oclc.org/de/worldshare-ill/statistics.html (accessed 16 July 2019)
[44] Cf. Clasen (2015)

electronic reading room enables a copyright-compliant compromise between modern, technical possibilities and the copyright requirements for German libraries.

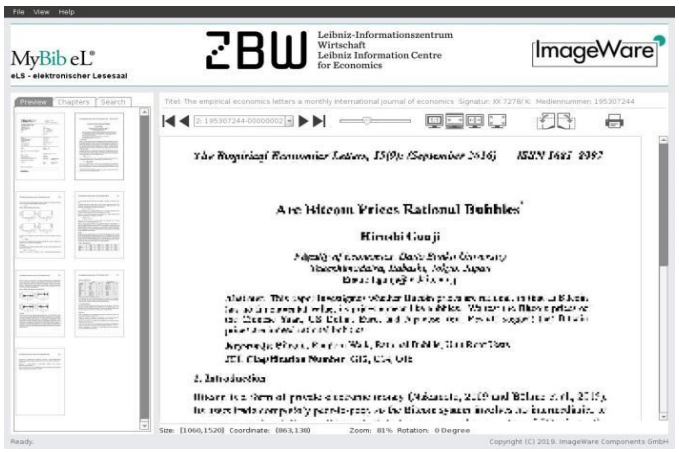


Figure 3: Electronic reading room ZBW, pixelated display

## 3. Conclusion and perspective

On the one hand, the possibilities of the new Copyright Act for national and international interlibrary lending are not yet fully realized. For example, the legally permissible direct mailing to users is currently not applied due to the valid collective agreement. How this will affect the next legislative negotiations cannot yet be foreseen.[45] On the other hand, §60 e of the Copyright Act contains various restrictions, such as the limitation to 10% and the exclusion of newspapers, public magazines and commercial use. In the national and international context, this means a step backwards in the supply of literature via interlibrary loan by German libraries.



If one assumes that international interlibrary loan mainly orders literature that is not available in one's own library and in one's own country, it can be seen as a deterioration that certain holdings of German libraries are not generally available for (inter)national interlibrary loan. Particularly in the field of newspapers and periodicals for the general public, most orders will not be for current articles, but rather for individual articles from recent decades.[46] The supply of literature of this kind is therefore limited.

At the ZBW, the percentage of requests that cannot be supplied has increased.[47] At the same time, the share of borrowed media in unfilled request has fallen. This suggests that the share of titles that cannot be borrowed in the total number of incoming requests has increased since the new Copyright Act came into force.

[45] The UrhG is limited to 2023.
[46] Articles in the public domain are excluded from the exclusion. However, this does not apply until 70 years after the death of the author or in the case of anonymous works.
[47] from 19,7% in 2017 to 22,2% in 2018

By offering various ordering systems in the international field, German libraries have found good opportunities to offer and deliver their stock to international libraries in accordance with copyright law and, ideally, quickly and easily.

But what about the future development of interlibrary loan systems? For the most part, common forms of publication such as e-books or e-journals cannot be offered easily or conveniently. There are many reasons for this, ranging from copyright restrictions to technical difficulties.[48]

How can CC licenses and Open Access publications be integrated into the ordering systems? Do the current search options correspond to the wishes and requirements of the users? Voice-controlled search options or the input of DOIs, for example, can be imagined as user requests.

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[48] Cf. Gillitzer (2014)

https://www.ifla.org/files/assets/docdel/documents/guidelines-best-practice-ill-dd-en.pdf (accessed 16 July 2019)

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# Opportunities and Challenges: The Current Situation of Copyright Protection for Document Supply in China

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## Abstract

***Purpose:*** *This study aims to explore and articulate the copyright problems of document supply resulting from changes in the digital age in China, introducing current Chinese Copyright Law and "fair use" in library services and exploring the challenges and opportunities of copyright protection for document supply in China.*

***Design:*** *From statistical analysis of the changes to document delivery services in the digital age based on the professional experiences of National Library of China (NLC), copyright problems are presented. Current Chinese Copyright Law and "fair use" are introduced. The measures NLC has taken to protect copyright in document supply are summarized.*

***Findings:*** *With increasing digital document delivery, the potential risks of copyright infringement in document supply have become more and more serious; we must take proper steps to protect copyright, especially in the digital age in China.*

***Value:*** *This is the first article in English to describe the current situation of copyright protection for document supply in China. It also presents the problems based on the professional experiences of NLC and recommends solutions for the digital age today.*

**Keywords:** Copyright protection; Document delivery services; National Library of China; Digital Age



## 1. Introduction

Libraries shoulder an important mission for knowledge dissemination from the day knowledge is created. As the basic form of resources sharing, interlibrary loan (ILL) and document delivery services (DDS) are effective ways of spreading knowledge and are important expressions of library core values.

Since the 1990s, with the development of digital technology, profound changes have taken place in ILL and DDS; the scope, content, and mode of service have changed tremendously in the digital age. The changes have also brought various problems related to copyright protection to libraries.

While libraries try their best to supply documents in order to meet users' needs, they may step into the forbidden zone of copyright protection if they are careless. How to find the balance between copyright protection and document supply has become an important issue for the sustainable development of resource sharing in China. In order to illustrate the changes to document supply and the problems related to copyright protection, we take NLC as an example.

## 2. Changes in the digital age

NLC has a long history of ILL and DDS. NLC has been developing ILL since 1927. In 1997, a dedicated Document Delivery Center (DDC) was established to providing ILL and DDS. In order to improve work efficiency, DDC at NLC began to use an Interlibrary Loan and Document Delivery System (ILDDS) in 2007. By 2018, ILDDS had served more than 200,000 users. The types of ILDDS users cover all kinds of members, including scientific researchers, educational institutions, enterprises and institutions, as well as individual users.

### 2.1 Cover a wide area and serve more users



The number of ILL and DDS transactions grew explosively after the establishment of DDC at NLC. The total number of ILL and DDS requests increased year-by-year except during 2012 to 2014, when the main NLC building was closed for remodeling and lending services for some literature was closed (Figure 1). After establishing the ILDDS, DDC filled 52,511 ILL and DDS requests per year from 2007 to 2018.

In 2010, NLC began participating in OCLC WorldShare and has formed partnerships with 603 libraries in 120 countries and regions. By 2018, DDC has cooperated with more than 600 libraries, covering 34 provinces and autonomous regions all over China. NLC's DDC has become the world's largest Chinese literature guarantee base and the largest supply center of foreign literature in China today.

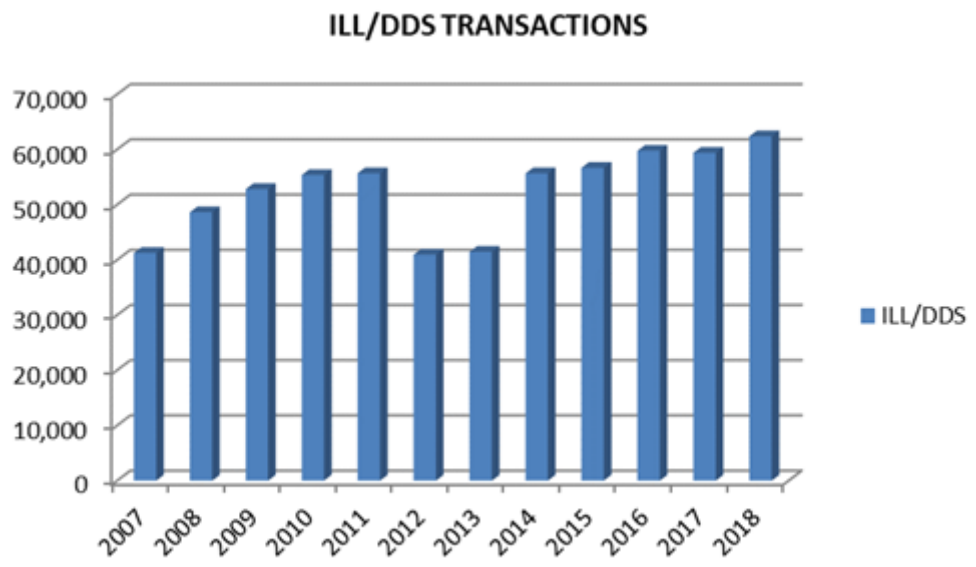


**Figure 1:** ILL/DDS transactions 2007-2018

### 2.2 Focus on special documents

Many ILL/DDS transactions focus primarily on special documents which are difficult to obtain on the market. According to an analysis of ILDDS data for the last five years (Table 1), many transactions focus on preserved books and periodicals; microform documents; Taiwanese, Hong Kong, and Macao documents; and theses. These items represent over 50 percent of the total transactions from 2014 to 2018 and have in common that they are old, rare, and difficult to obtain on the market. Although with open access has increased and while most electronic resources can be obtained by users themselves, old books and periodicals are still difficult to obtain on the Internet or market because they have not yet been digitized or cannot be bought from bookstores, so they can be supplied from libraries only.



| ILL/DDS | 2018 | | 2017 | | 2016 | | 2015 | | 2014 | |
|---|---|---|---|---|---|---|---|---|---|---|
| | No. | % | No. | % | No. | % | No. | % | No. | % |
| Preserved books | 14349 | 23 | 15445 | 26 | 16141 | 27 | 11337 | 20 | 10581 | 19 |
| Preserved periodicals | 11230 | 18 | 11881 | 20 | 7771 | 13 | 9069 | 16 | 10580 | 19 |
| Microform documents | 4991 | 8 | 5940 | 10 | 2989 | 5 | 6802 | 12 | 1114 | 2 |
| Hong Kong and Macao documents | 1872 | 3 | 2376 | 4 | 4185 | 7 | 1701 | 3 | 3341 | 6 |
| Thesis | 2496 | 4 | 593 | 1 | 1793 | 3 | 2834 | 5 | 2784 | 5 |
| Total | 34938 | 56 | 36235 | 61 | 32879 | 55 | 31743 | 56 | 28400 | 51 |

**Table 1:** Types of special documents of ILL/DDS 2014-2018

### 2.3 Focus on foreign literature

ILL/DDC transactions focus on foreign literature, especially Western books and periodicals; the ratio of Chinese to foreign language on annual average from 2014 to

2018 was about 1:8 (Figure 2). This highlights the important role of NLC DDC as the largest foreign language reference center in China.

Advanced information in the foreign literature has important value for scientific researchers, but it is difficult for researchers to buy the original foreign literature by themselves in China. Researchers may, if they manage to navigate the tedious purchasing process, miss the best timing for conducting research. DDC has solved this problem: we deliver foreign documents to researchers timely and effectively; therefore, they can carry out scientific research in time.

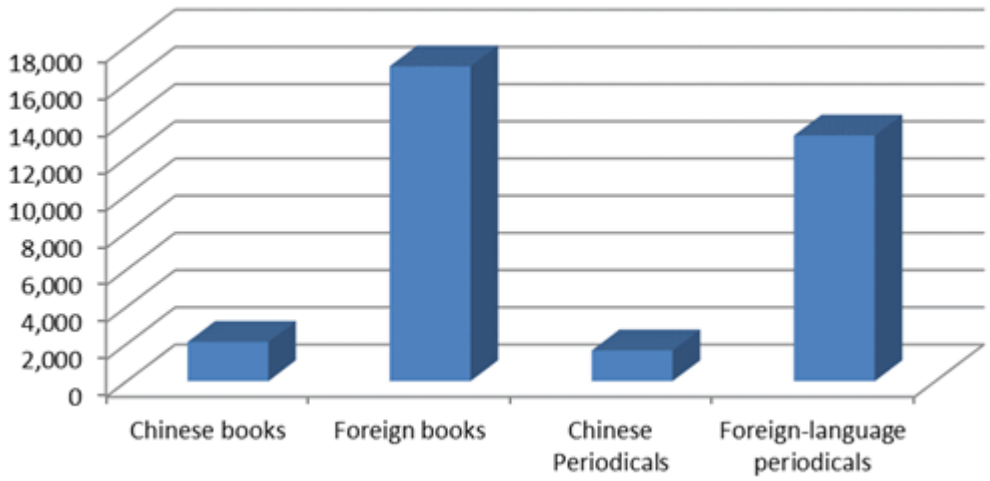


**Figure 2:** Transactions of Chinese and foreign documents, annual average volume, 2014-2018



### 2.4 Electronic delivery increasing

With the development of digital technology, users are already accustomed to the convenience and efficiency of networked services and no longer accept long waiting times for paper copies. Even if the documents are not electronic, users are more likely to obtain them by scanning the original text, taking photocopies, restoring micrographics, or other electronic delivery modes.

Libraries are paying more attention to reducing intermediary barriers to document delivery, accelerating the speed of user access to documents. The number of DDC electronic deliveries increased each year from 2008 to 2017 (Figure 3). 2010, notably, nearly doubled compared with 2008. Then, the number of annual electronic deliveries grew to over 20,000 since 2011. The main mode of document delivery has changed gradually from traditional paper mail to electronic delivery.

With more and more people relying on mobile devices to obtain information, many libraries have begun using mobile applications (apps)to solve mobile users' information needs. Some libraries have tried to open WeChat widgets or other apps for document delivery in China.

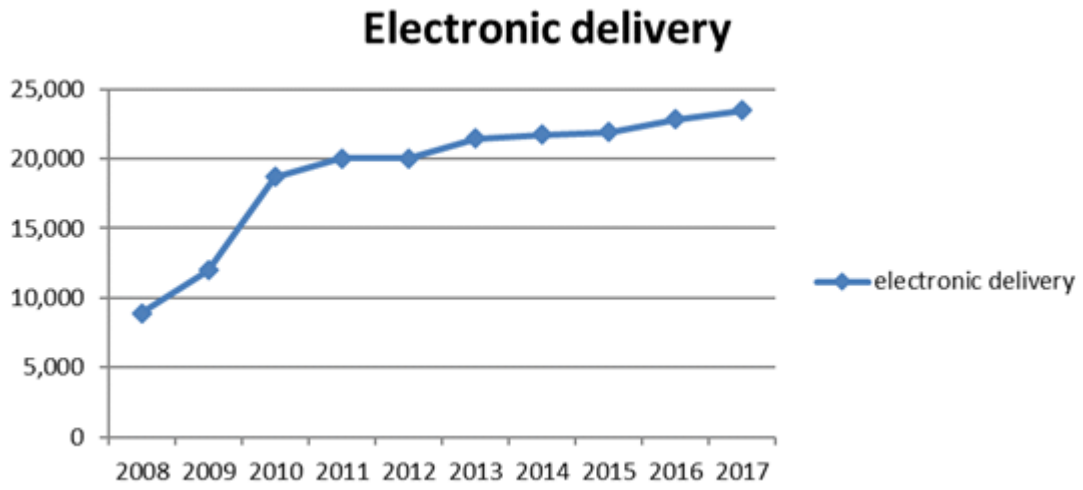


**Figure 3:** Number of electronic deliveries, 2008-2017

### 2.5 Mobile payment increasing

In 2016, ILDDS was upgraded comprehensively and an Alipay wallet was connected. The introduction of mobile payment not only shortens the users' payment times, but also caters to users' interaction needs and behavior habits in the new media age. We analyzed ILDDS Alipay wallet data of ILDDS in 2017 and the results showed (Figure 4) that users who used Alipay wallets to pay for DDS were primarily younger than 45 years old and represented over 90% of total users. Among them, the number aged 25-29 was the largest, 24.48% of the total. At the same time, this group contributed 20.06% of transactions. Only 9.83% of users were over 45 years old. This is basically consistent with the audience of social networking, online shopping, online games, and other new media services. According to market research, the majority of users of "Online To Office" (offline business websites) are 18-40 years old. Such users have a greater acceptance of novel fashion consumption patterns and have a greater understanding of unknown areas and haveever tireless curiosity.



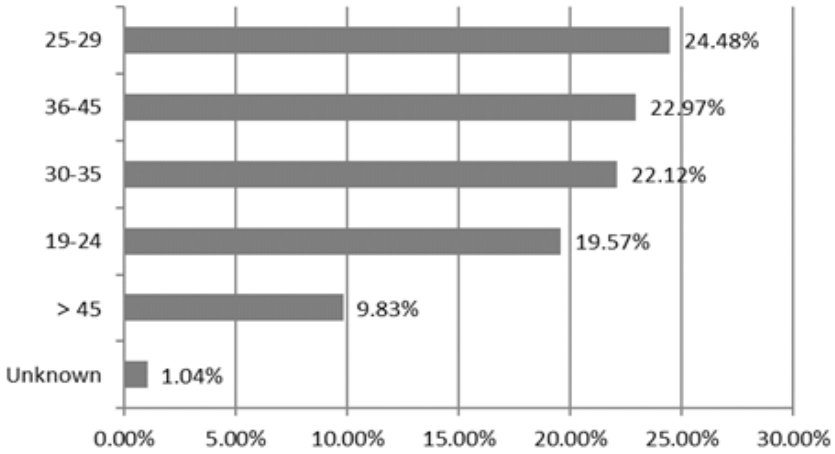


**Figure 4:** Age distribution of users using an ILDDS Alipay wallet, 2017

### 2.6 Resource sharing increasing

Document supply has a high degree of universality in the digital age; users are different from the traditional users and are moving towards integration. Convenient communication technologies promote resource sharing and break regional restrictions, becoming regionalized and internationalized. Registered users in different systems achieved unified authentication after realizing system connections through cooperation between libraries. Users can enjoy the services of other libraries nationwide or even globally in their own library systems, with “one-stop service” becoming a reality.

Since 2010, NLC established cooperative relations with BALIS (the Beijing Academic Library & Information System), CALIS (the China Academic Library & Information System), NSTL (the National Science and Technology library), OCLC, and SUBITO, respectively, allowing resource sharing to break the restrictions of library types and systems. Data from NLC DDC in 2018 showed that applications from BALIS, CALIS, and other document guarantee institutions to NLC have accounted for 47% of the total amount (Figure 5).

As early as 2008, the article “Interlibrary Loan and Document Delivery in the Digital Age” published by Chen Li, NLC’s Director, mentioned “Borrowing a Ship to Sea” and "revealing the resources and services of NLC by means of other document guarantee institutions and platforms, expanding the scope of our library's service.” Now this goal is gradually being achieved; the step of users’ cross-system convergence is unstoppable.



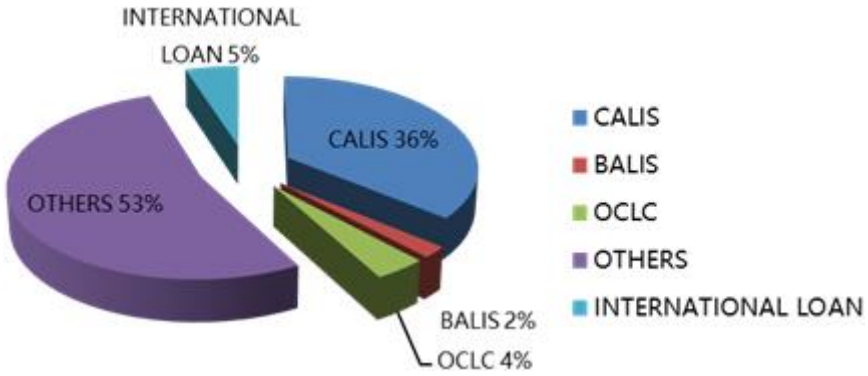


**Figure 5:** Applications from different platforms to NLC, 2018

#### 2.6.1 Cooperation with BALIS

In order to make the use of NLC resources more convenient for Beijing university scientific researchers, NLC’s DDC began to cooperate with BALIS in 2010 and this cooperation has provided strong support for the literature resources of higher education literature guarantee system in metropolitan Beijing.

As can be seen from Figure 6, ILL and DDS transactions have been increasing almost every year since cooperation began. In the Beijing area, the city logistics are convenient and interlibrary loan service costs are low, so the ILL application amount is about 8-10 times of the amount of DDS.

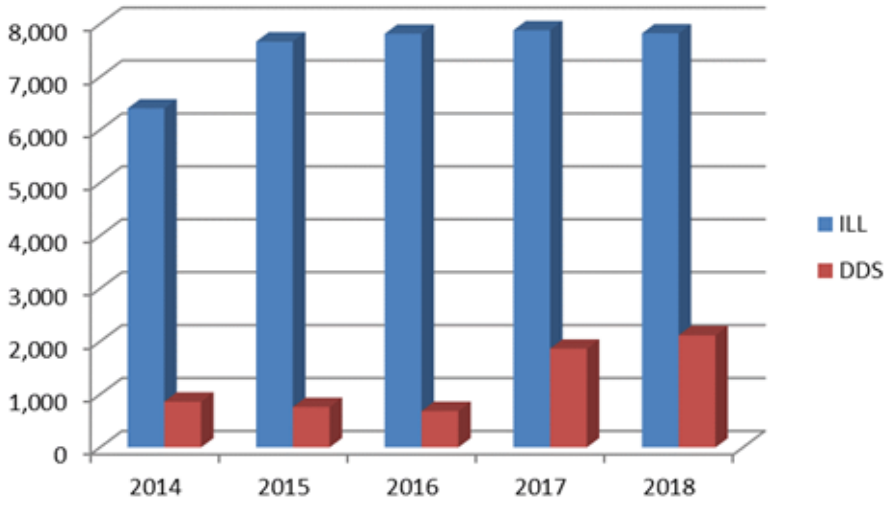


**Figure 6:** Volume of ILL/DDS of the NLC to BALIS, 2014-2018

The cooperation between NLC and BALIS is not limited to ILL and DDS, but also extends to quality training for readers on how to obtain information. From 2014 to 2018 (for 5 consecutive years), DDC and BALIS carried out such training. In the past five years, DDC has provided many center librarians with the opporunity to visit more than 53 colleges and universities such as Tsinghua University, Beijing Foreign Studies University, the Beijing University of Posts and Telecommunications, Beijing Normal University, the Beijing Institute of Technology, the University of Science and Technology Beijing, and so on. Face-to-face, librarians explained NLC's resources and services for instructors and students and answered specific questions about document delivery services. The lecture activities, which lasted for one month, were warmly welcomed by instructors and students, achieved good results in cultivating users' skills and improving service efficiency, and brought about actual application growth.



### 2.6.2 Cooperation with CALIS

NLC officially opened its cooperation with CALIS on November 23, 2013 Since then, users of academic libraries can obtain NLC resources and services through a cooperation platform in one place. This not only enables users to obtain more documents more conveniently, but also effectively enhances NLC's resource security capabilities. By 2018, 296 CALIS member libraries had already conducted ILL and DDS with NLC.

The data of the cooperation between NLC and CALIS is just the opposite of BALIS, see Figure 7: the quantity of DDS is much higher than that of ILL. This is mainly because the CALIS members are located all over China, while BALIS is only in Beijing, so the costs of logistics for ILL in different cities is higher than within the same city, so the colleges outside of Beijing are more likely to choose DDS rather than ILL.

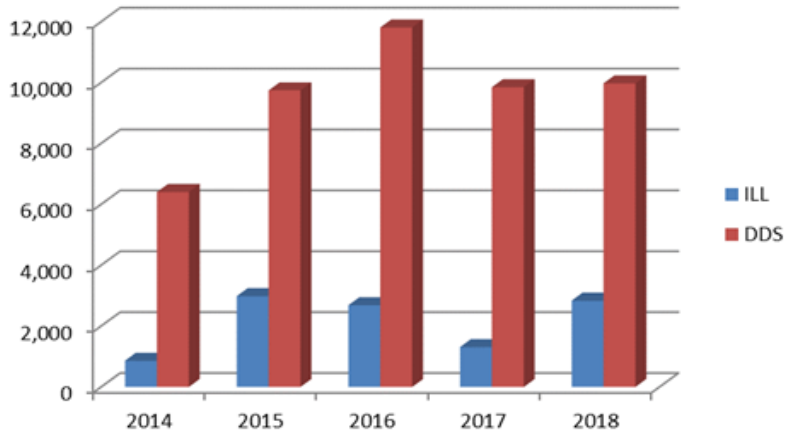


**Figure 7:** Volume of ILL/DDS, NLC to CALIS, 2014-2018

### 2.6.3 Cooperation with OCLC

In order to improve international lending, NLC joined OCLC ( Online Computer Library Center, based in the U.S.) in 2010. Foreign users can find Chinese literature more effectively through OCLC and domestic users can also find literature from all over the world, so international loan transactions increased rapidly since 2010. The data cooperation contributed to a rapid sustainable growth and the amount of ILL via OCLC had increased more than 52% in comparison to 2012.



In cooperation with OCLC, we have had more lending requests than borrowing requests (seeFigure 8). The annual lending requests are about 3 times more than borrowing requests and even reached as much as 7 times more than borrowing requests in 2016. This shows that the needs of users in accessing Chinese literature in various countries is very strong and growing rapidly.

Besides OCLC, NLC cooperates with the British Library, the National Diet Library, SUBITO, the Russian State Library, and other guarantee institutions to establish a widely cooperative service for international loan.

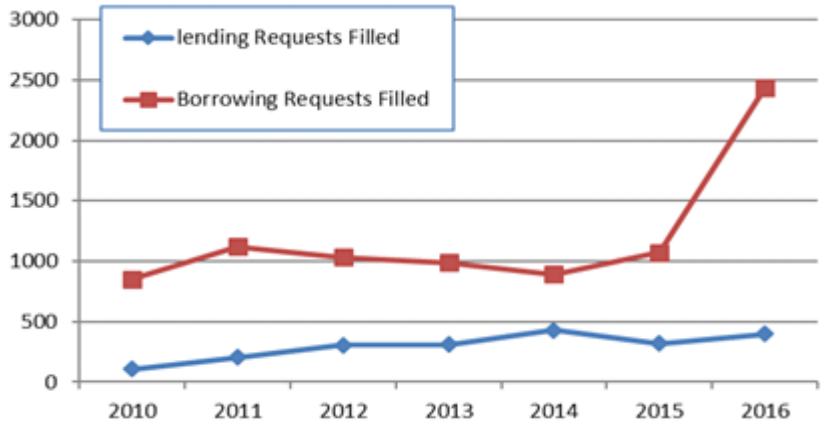


**Figure 8:** ILL borrowing and lending requests through OCLC, NLC volume and fill rates

## 3. Problems

Traditional document delivery services were mostly based on the number of items in paper collections and could be easily categorized in the category of "fair use." Few people raised the issue of copyright protection for many years in China. But digital delivery has overcome space barriers and has expanded the scope of services in the digital age. Especially some large-scale, comprehensive and professional, cross-system and intra-system, national and regional document delivery systems such as NLC, CALIS, BALIS, and so on have realized resource sharing and collaborative services, so the scope of document delivery has become wider, which has lead to some copyright problems.

### 3.1 Infringement of duplicate

In the process of document delivery, libraries inevitably have to copy a certain number of documents. The right of reproduction is protected by the Copyright Law of China, namely Article 10, Paragraph 5, which states: "the right of reproduction, that is, the right to produce one or more copies of a work by printing, photocopying, lithographing, making a sound recording or video recording, duplicating a recording, or duplicating a photographic work, or by other means."

Traditional document delivery does not have a negative impact on the literature market; any adverse impact on the interests of the owner can be ignored. On the one hand, traditional document delivery services adopt a "one-to-one" mode: documents are delivered to specific users and libraries and this is not substantially different from library lending services. On the other hand, the law usually stipulates that users or libraries who obtain the documents should not copy the documents. Even if someone copies documents without authorization, it would not only have considerable costs, but there would also be a clear "quality" difference between "duplicate" and "original". Infringements are easy to find, identify, and combat.



But in the digital technology/networked environment, digital delivery is quite different. First, the scope of dissemination expands rapidly and a "one-to-many" mode becomes a reality. Then, in the instant of dissemination through the network, the number of users increases rapidly, which can cause great damage to the interests of the owner(s). On the other hand, using digital technologies is convenient and fast and simple "fingertip operations" can be completed. Especially compared with an "original", the difference between "digital copy" and "original work" has no copyright significance. Infringement can be concealed and can be difficult to find and punish. As a result, a large number of copyrighted works have been copied and used by individuals, schools, and libraries; even the act of copying for profit has appeared. Even for teaching or scientific research, the number of copies is larger than the limit of "fair use" and this has caused some problems related to copyright protection in China.

### 3.2 Infringement of the right of communication through the information network

Article 10, Paragraph 12 of the Copyright Law of China stipulates the right of communication through the information network. It is an absolute right in China's

current copyright system. The copyright owner grants the library the digitalization right to use the owner'ss works, which does not mean that the right of communication through the information network has been handed over to the library at the same time. If libraries deliver documents in the form of digitalization of traditional paper works, they should acquire digitalization rights and network communication rights at the same time. Otherwise, the library may assume copyright liability.

### 3.3 Joint liabilities for readers' torts

Although the document delivery service itself does not infringe the rights of copyright, if readers obtain copies through a library and then carry out infringement, the library may bear joint infringement liability. Even if libraries can prove no fault, they are not entirely exempt from liability in China. According to the provisions of Article 5 and Article 6 of the Interpretation of Several Questions Concerning the Application of Law in the Trial of Computer Network Copyright Disputes issued by the Supreme People's Court of China in November 2001, libraries may bear joint infringement liability.

## 4. Current Chinese copyright law

Libraries are public service organizations; "public welfare" is their main charter. In order to ensure that libraries can fulfill their social mission, copyright laws have formulated special provisions for the rational use of copyrighted works by libraries, also known as "fair use" or "exceptions" for libraries in order to restrict the rights of copyright owners.



The Rights of the Copyright Law of China and Regulations on the Protection of the Right of Communication through the Information Network both stipulate "fair use." In some cases, a work may be used without permission and without payment of remuneration to the copyright owner. "Fair use" is also an important basis for libraries in avoiding copyright problems when carrying out document delivery.

### 4.1 Copyright Law of the People's Republic of China

Three of the 12 cases of "fair use" stipulated in Article 22, Section 4 (Limitations on the Rights of the Copyright Law of China) are particularly applicable to libraries:

1. Paragraph: "(1) use of another person's published work for purposes of the user's own personal study, research or appreciation."

This article guarantees readers the full right to read. Readers can freely use library books without permission or payment to the copyright owner.

2. Paragraph: "(6) translation, or reproduction in a small quantity of copies of a published work by teachers or scientific researchers for use in classroom teaching or scientific research, provided that the translation or the reproductions are not published for distribution."

This article clarifies that libraries and readers using a small amount of reproduction of published works for the purpose of teaching or scientific research is "fair use". Of

course, it must be non-profit. Under this premise, whether an item is copied in a library or obtained through resource sharing, interlibrary loan and document delivery to obtain copies should be considered “fair use.” If we go beyond this premise, libraries may cause infringement.

3. Paragraph: “(8) reproduction of a work in its collections by a library, archive, memorial hall, museum, art gallery, etc., for the purpose of display, or preservation of a copy, of the work.”

Libraries are allowed to reproduce their collections for the purpose of displaying or preserving editions. But is it legal to copy works collected by other libraries? There is no specific provision in the Copyright Law of China. If the second case is cited, a small number of copies of published works in other libraries for teaching or scientific research may be considered “fair use.”

**4.2 Regulations on the protection of the right of communication through the information network**

In 2001, the revised Copyright Law of China stipulated in Article 10, Paragraph 12 “the right of communication through the information network, that is, the right to make a work available to the public by wire or by wireless means, so that people may have access to the work from a place and at a time individually chosen by them.” Since then, the “right of information network dissemination” has a legal status in China's copyright system.



On May 28, 2006, the State Council formally promulgated the Regulations on the Protection of the Right of Communication through the Information Network (hereinafter referred to as the Regulations), which specifically regulates the dissemination of works by libraries through the network:

Article 7: A library, archive, memorial hall, museum, or art gallery, and so on may make available to the service recipients on its premises through the information network a digital work in its collection which is legally published, or a work which is reproduced in digital form for the purpose of displaying, or preserving copies of the same work in accordance with law, without permission from, and without payment of remuneration to, the copyright owner, provided that no direct or indirect financial benefit is gained therefrom, unless the parties have agreed otherwise.

The Regulations further limits the scope of digital works:

The work reproduced in digital form for display or preservation purpose, as referred to in the preceding paragraph, shall be a work of which a copy in the collection is on the brink of damage or is damaged, lost or stolen, or of which the storage format is outmoded, and which is unavailable or only available at a price obviously higher than the marked one on the market.

There are too many restrictive conditions and obvious legal uncertainties in applying the Regulations, so libraries are facing greater liability risks when applying this provision.

## 5. Current measures

### 5.1 Application of "Fair Use"

From the point of view of the current law in China, as long as document delivery is limited to "fair use" as prescribed by the Copyright Law, this activity belongs to a situation in which documents can be transferred without permission and payment. However, "fair use" must be subject to the following conditions:

1. **Control the price charged.** Document delivery fees can still be charged, but only "at cost" should be charged. The fees can only include reasonable mailing fees, telecommunication transmission fees, network communication fees, replication fees, and so on.

2. **Control the number of deliveries.** The quantity of document delivery must be controlled within the scope of "fair use"; a large number of document deliveries beyond the scope of "fair use" should not be carried out. Article 22, Paragraph 6 of the Copyright Law does not specify whether "a small quantity of copies" refers to a small number of copies of a work or a small amount of content of a work; thus, NLC currently provides readers with no more than 1/3 of the full content of a work to ensure"a small quantity of copies.". The reproduction of the whole content of a work should be regarded as beyond the scope of "fair use" in China.



3. **Pay attention to certain types of works which are not allowed to delivery under copyright law.** These are mainly computer software and audio-visual products. The delivery of such works must be authorized in writing by the copyright owner and royalties paid.

4. **Pay attention to copyright notice on the works.** If the author expressly declares that it delivery of their work is not allowed, the document center shall not deliver it; otherwise, the library will bear certain liability for copyright infringement. In the process of document delivery, the copyright information of a work cannot be modified or deleted at any time.

### 5.2 Delivery to registered users only

All users submitting applications to NLC's DDC must be registered users of ILLDDS. Users need to provide their valid ID number, name, address, email address, and reader's card number obtained when registering. All this information is used for preserving documents and delivery files or to investigate and verify infringements when they occur.

### 5.3 Necessary copyright statement

When users submit applications to NLC's DDC through ILLDDS, they must sign a copyright protection confirmation statement. There is a clear "Copyright Notice" in the reader's interface, a prompt that "Reproduction furnished by the National Library of China Document Supply Center should be used only for purposes of private study, scholarship, or research. If a user makes a request for, or later uses a photocopy or

reproduction for purposes in excess of 'fair use' specified by The RPOC Copyright Law, that user may be liable for copyright infringement." (Figure 9) Users can submit their applications only after reading and clicking that they "agree" with this Copyright Notice.

There are more regulations, such as the copies transferred are not allowed to be copied, altered or forwarded, and only a single sheet of paper can be printed. In addition, all electronic versions of copies must be deleted after successful printing.

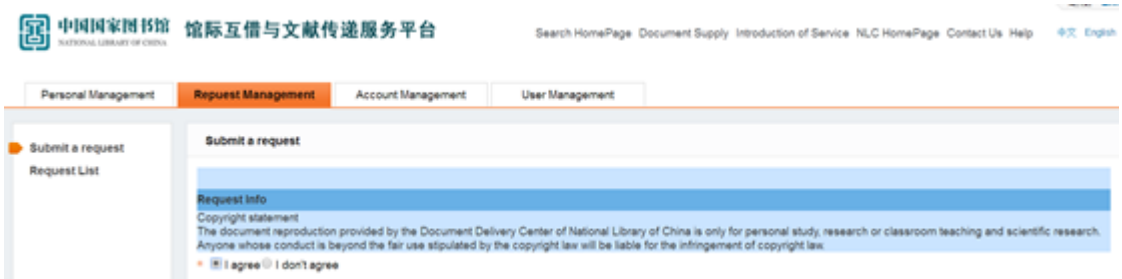


**Figure 9:** The NLC ILDDS Copyright Statement

### 5.4 Perfecting the library legal system

The role of law itself is to balance the relationship between owner and user. When the relationship between the two is not conducive to its development, it is necessary to improve the legal system and make it play its role.



There is no specific provision for electronic document delivery in China's current copyright law, so it needs to be improved. We should protect the interests of intellectual property owners and pay attention to the rights of document users as well.

## 6. Conclusion

In conclusion, despite the risk of infringement, ILL and DDS are still an important way to meet the needs of users in resource sharing. The core idea of copyright law is to seek a balance between copyright protection and users' rights. While emphasizing the protection of copyright and information network dissemination rights, it also increases the restrictions on these rights, thus it leaves a certain space for ILL and DDS.

To date, China has no special library law or other laws to regulate ILL and DDS. Both China's copyright law and the ordinance regarding the right to information network dissemination protect copyright-related rights from the perspective of copyright owners. There is a lack of relevant laws for libraries and readers (as the users) to protect their rights, especially in electronic delivery, this has seriously hindered the library's ability to play an important role in the dissemination of knowledge in the digital age.

Extensive cooperation ensures NLC resources are well-utilized, but NLC must solve new problems related to copyright protection in the future.

**Notes**

1. Available at: http://www.nlc.cn/

2. Available at: http://www.nlc.cn/newkyck/kyfw/201011/t20101122_11696.htm

3. Available at: http://wxtgzx.nlc.cn:8111/gateway/login.jsf

4. Available at: http://www.nlc.cn/dsb_zyyfw/wdtsg/dzzn/dsb_gtzy/

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# UKRR – a collaborative collection management strategy

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**Abstract:**

*The British Library is one of the greatest research libraries in the world. It holds in excess of 150 million items, from original print newspapers to manuscripts, books, journals sound recordings and unique personal archives. The collection is both historic and contemporary bringing together the nation's memory for the purpose of cultural appreciation and research.*

*In terms of meeting its defined purposes[49], the British Library (BL) must transform to meet the current and future needs of research demands because the way in which society seeks knowledge has changed. The traditional library is one of card catalogues and reference numbers that navigate the researcher in an analogue world to the knowledge they seek. Nowadays researchers expect the data and content in their hands anywhere, in dynamic and social spaces, rejecting the past norms of formal research establishments. As the BL adjusts to accommodate this need it must still maintain access to its print collections and of course preserve them for future generations.*

*The UK Research Reserve (UKRR) project set the ambitious target of saving 100km of shelf space within University Libraries by de-duplicating low use print journals on the premise that a master, accessible copy is held by the BL. This collaboration between the BL, UK Higher Education and (formerly) the Higher Education Funding Council for England (HEFCE) has subsequently delivered 128km of library shelf space amounting to £29m in capital savings, and over £18m in recurring estate management costs.*

*This paper describes the evolution of the new access and preservation approach building on the UKRR project outcomes. It will explain how print preservation and access can fit harmoniously alongside a digital strategy reflecting the need for a wider access model that democratises access to content whilst ensuring preservation for future generations. It will also contextualise the approach as part of the national Library's mandate and why the combination has proven to be a recipe of success.*

**Keywords:** Preservation, Access, Journals, Space, De-duplication.



[49] www.bl.uk/aboutus/foi/pubsch/pubscheme3/living-knowledge-2015-2023.pdf

1. **The British Library – a brief history**

1.1. The British Library is one of the greatest research libraries in the world. It holds in excess of 150 million items ranging from Journals, to Newspapers, to Sound Recordings and personal archives. The collections cater to the needs of audiences interested in the rarest manuscripts to the latest electronic journals. The role of the British Library was defined in an *Act of Parliament* in 1972 combining a number of libraries across the country including the National Lending Library (NLL) originally set up by Donald Urquhart in the 1960s. He faced a challenge back then – to provide an efficient *national* solution for remote access to research materials across the country (see Figs. 1 and 2). The 42 acres ex Ministry of Defence site between York and Leeds was a perfect location given its location in the centre of the country and its adjacency to the main transport links, thereby supporting an effective distribution system (inter-lending service).

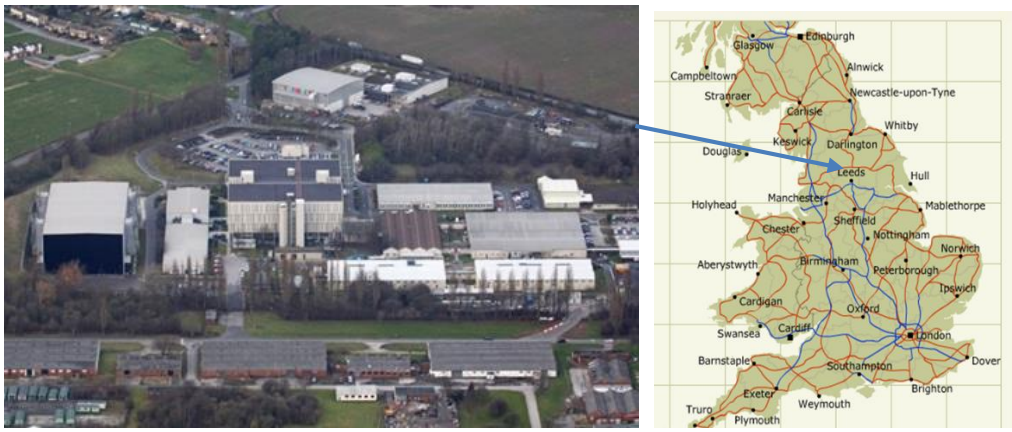


Fig 1 – The British Library, Boston Spa site (today)

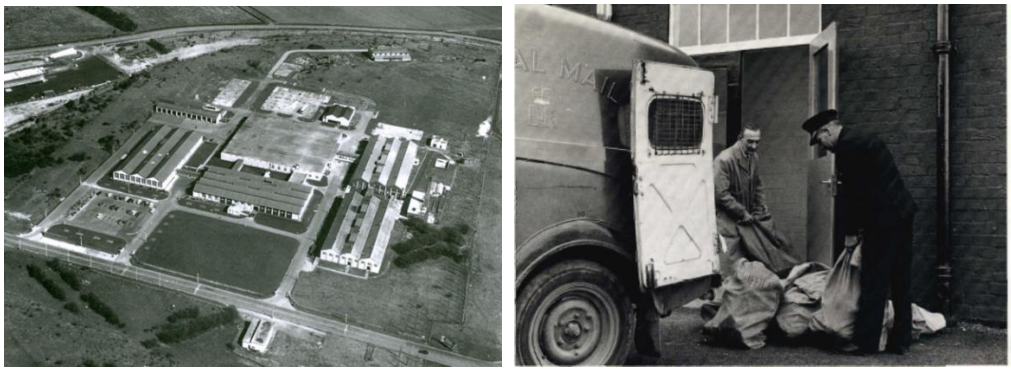

Fig 2 – The British Library, Boston Spa (1960s)

1.2. The inter-lending library (ILL) service over time incorporated licensed copying in the form of photocopied journal articles and book chapters on an industrial scale. Demand rapidly increased to a peak of 4m requests in the late 1990s, not just within the UK but internationally too. The audiences too changed in profile; the service was originally aimed at Higher Education and Government based



Collins, P.D., Krueger, S., & Skenderija, S. (Eds.). (2019). *Proceedings of the 16th IFLA ILDS conference: Beyond the paywall - Resource sharing in a disruptive ecosystem*. Prague, Czech Republic: National Library of Technology in Prague.

research organizations, but then a commercial opportunity was identified. The service was re-engineered in order to support commercial research, in particular pharmaceutical companies thereby underpinning a rapid increase in scale supporting c800 staff.

1.3. The transition from the National Lending Library to The British Library involved the building of a new site at St Pancras in central London in 1998, primarily for physical (reading room) access together with exhibition and gallery spaces – see Fig 3.

Fig 3 – The British Library, St Pancras London.



## 2. The Document Supply Service

2.1. The National Library has a role of preserving all UK published content via Legal Deposit. This content must be consulted on BL premises in the Reading Rooms, but may not be used for any other service.

2.2. The BL has an acquisition strategy based on the purchase of heritage collection items and contemporary collections in all subject disciplines (from Arts & Humanities to Science). Purchased material can be used for the Document Supply Service where a license agreement is in place with the relevant publisher and/or with a reciprocal rights clearing organization.

2.3. Since its conception in the early 1960s the service saw an increase in demand year on year up to the late 1990s, but the advent of digital, internet, Google, “publisher-pay-per-view” models etc. saw the demand curve subsequently go into decline – see Fig. 4.

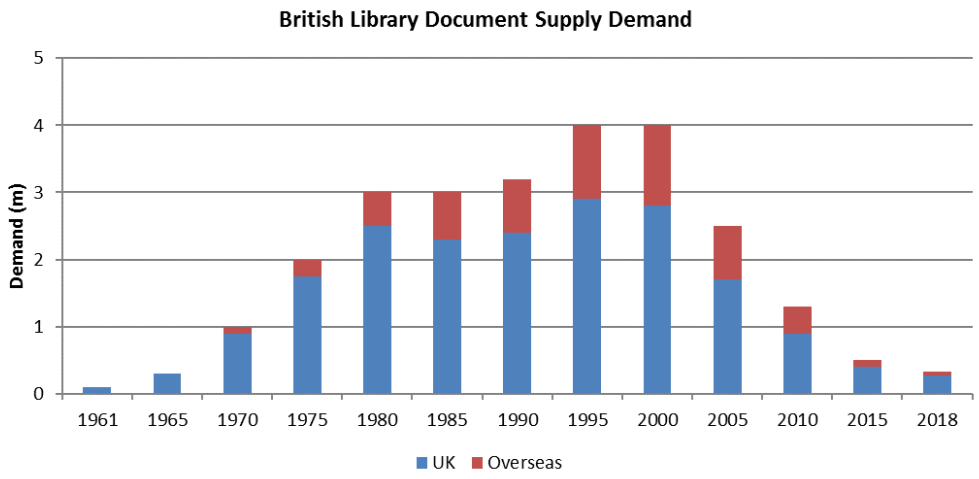


Fig 4 – The BL Document Supply demand curve.

2.4. Moreover, the provision of a document supply service is still a vital part of the BL operation, but providing access to contemporary research collections is difficult as the Library faces an ever reducing budget position. 80% of the Library's income is provided from Government grant-in-aid funding which has reduced steadily over time. The inevitable impact has seen budget reductions in all areas, including acquisitions. Therefore, in order to avoid just being the "back stop" provider of older, rarer and more niche publications (which nevertheless is still an important aspect of the service) a 3rd party approach was adopted in partnership with the publishers and collecting societies. This involves sourcing an item direct from the publisher web site and "reselling" to the customer in a way that gives the user the convenience of a "one-stop-shop" to all types of materials via a range of service options – see Fig. 5. The copyright fee is still collected from the customer and passed back to the publisher who therefore gains from having this additional (BL) shop window.



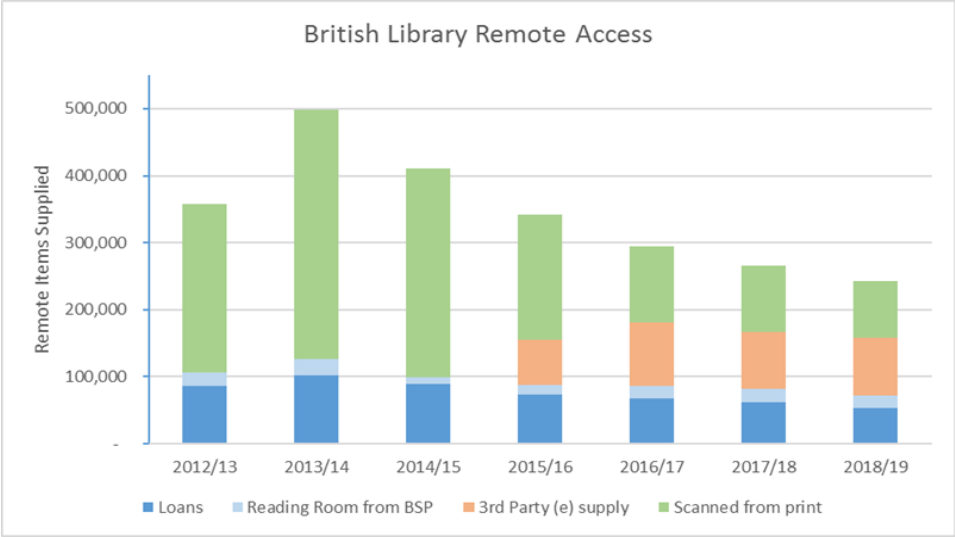


Fig 5 – The BL Document Supply curve illustrating the impact of 3rd party content sourcing.

2.5. The graph highlights some interesting points;

- The decline of "scan from print".
- Inter-lending loan supply demand fairly static.
- Supply to London reading rooms will increase given two thirds of the collections are stored at Boston Spa and increasing.
- The introduction of 3rd party supply has instigated a leveling out of the overall demand curve.

2.6. A number of strategic interventions have looked at reestablishing the core purpose and role with which the northern (Boston Spa) campus is utilized. Clearly there is still a requirement to provide remote access to BL collections and indeed, the BL Act states the BL must always provide such a service, but further diversification was needed.

Naturally any diversification should build on the core strategy (Living Knowledge[50]) and the "Unique Selling Points" (USPs) offered from the BLs northern operation[51]. Accordingly the following new service derivatives and/or operational changes have taken place over recent years;

- Managing and operating the two new high density, low oxygen, automated storage buildings – see Fig 6.

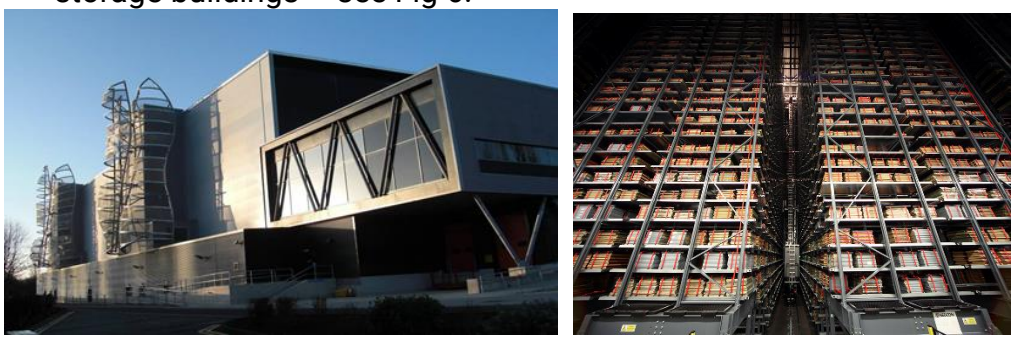

Fig 6 – BL high density, low oxygen, automated storage buildings at Boston Spa.

- Higher Education Scanning Service[52] (eHESS) in partnership with the Copyright Licensing Agency (CLA)[53] – digitization of book chapters for HE course packs.
- Digitization and central access to UK PhD theses content (ethos service[54]).

[50] https://www.bl.uk/.../living-knowledge-the-british-library-2015-2023.pdf

[51] As well as having the collection management and document supply focus, many of the British Library's core functions are based in the Boston Spa site including supporting the digital centre of the UK's library system, housing the British Library's Technology team alongside one of the four data nodes that store and preserve the UK's rapidly-growing digital Legal Deposit collection.

[52] https://www.bl.uk/help/faqs-for-the-enhanced-higher-education-supply-service

[53] www.cla.co.uk

[54] The ethos service offers a digitisation service of print based PhD theses and subsequently stores them in a central repository making them freely accessible. Born digital theses are now also stored alongside digitised

- Renting spare storage capacity to 3rd party organizations.
- The UK Research Reserve (UKRR) – see below.

3. **The UK Research Reserve (UKRR)[55]**

3.1. Higher Education libraries have been at the forefront of enabling the huge change that has happened in universities and have been very successful in helping their institutions to adjust to the new circumstances – from providing new and different learning and research spaces in their buildings, adding value to students, adapting to the exponentially growing range of digital content and the new ways in which it is accessed.

3.2. In 2007 it became apparent that library storage space was becoming an urgent priority and the idea around de-duplicating low use print journals based on a collaborative approach in conjunction with the National Library would be a good idea. Accordingly the UK Research Reserve (UKRR) pilot was launched as a collaborative partnership between the Higher Education sector, the Higher Education Funding Council for England (HEFCE) and the British Library that looked at the deduplication of print journals based on the premise that it would address:

- Preservation via a shared national collection to secure the long term storage, retention and availability of low use printed journals - UKRR aimed at that time to identify the last two copies of a print journal within the community and retain them as part of the UK's infrastructure and
- Access by utilizing the BL Document Supply Service copy delivered within a 24 hour service level agreement.



3.3. The pilot included six institutions - the University of Birmingham, Cardiff University, Imperial College, the University of Liverpool, the University of Southampton, and the University of St Andrews. In conjunction with the pilot, the BL commissioned a piece of research by CHEMS consulting that suggested – "… using a number of assumptions the report concludes that recurrent savings from Phase One (if the space were released and reused in another activity) could be £484k per annum".

- The actual financial outcome of the pilot (Phase 1) project based on the £708k HEFEC Funding amounted to - savings of £308k pa (ongoing operational budget saving) and £3.8m (capital saving)[56].

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theses in the same repository. Many universities also keep a copy within their institutional repository which can be accessed from the ethos service pages - https://ethos.bl.uk

[55] https://www.bl.uk/ukrr

[56] Appleyard, A., Banks, C., Grindley, N., Hosking, J., Larch, N., Stubbs, T., Yang, D. and institutional contributors, (2019). *UKRR Final Report* [online, forthcoming]. London: UKRR. [Viewed 5 August 2019].

3.4. This provided the confidence to move into the main project which subsequently ran from Feb 2009 to Jan 2017 with 29 university members; this was then extended due to its popularity to March 2019 with a further 6 members. As the project progressed, initial concerns were ameliorated as a sense of trust and confidence developed particularly within the academic community coupled with the robust approach in ensuring two preservation copies were always guaranteed by virtue of checking / recording on Suncat[57] (the Jisc[58] managed national journal catalogue and holdings database).

3.5. The lead institution Imperial College London (ICL) worked hand in hand with the BL to manage the project and develop a process which evolved over the project duration but basically comprised;

a. Having consulted with internal stakeholders about which journals would be suitable for de-duplication, the Member Library completed a template spreadsheet with the details and holdings of the journals they wished to offer to UKRR. These details are submitted to UKRR by uploading the completed file into UKRR's web application Linked Automated Register of Collaborative Holdings (LARCH).

b. The information from the submitted file would be downloaded from LARCH by the BL and checked against BL loanable holdings. The SUNCAT team ran a check of all Member Libraries' holdings for the given list of titles and ISSNs from the submission. This data was then forwarded to the BL where a manual comparison was made between the holding range being offered and the holdings found at other Member Libraries.



c. Material missing from the BL's existing lending collection would be requested in order to complete BL holdings, whilst titles not already in the BL collection would be assessed for suitability and could be requested by them in their entirety. The check on the Scarcity of an Offered Holding across the collections of other UKRR members informed the decision to retain or dispose the holding at the Offering Library.

d. Based on the results of the BL shelf check, the Scarcity check and the history of previous submissions of the same BL Overlap Title to UKRR, a Retention Status was decided for each Offered Holding. Offered Holdings given a Retain decision would be retained by the Offering Library. For each BL Retain Offered Holding the Offering Library could choose to retain the whole Offered Holding or transfer the requested part of it to the BL and retain the remaining part. Offered Holdings given a Dispose decision could be sent for environmentally friendly disposal or donated to charity. For each BL Dispose Offered Holding the Offering Library must transfer the part of it requested by

[57] Suncat ceased to operate as a service from the end of July 2019 https://www.jisc.ac.uk/suncat

[58] https://www.jisc.ac.uk/about/who-we-are-and-what-we-do

the BL then could treat the remaining part as they would a Dispose decision.

e. Access to material held in the Research Reserve is provided via the BL's established document supply service (on-demand[59]), with UKRR members receiving a premium 24 hour service for all their document requests.

3.6. The project planned to end in March 2019 at which point the sector became quite vocal in the view that there was still significant amounts of low use journal content to de-duplicate and therefore it should continue. The BL therefore decided it would continue to support UKRR as part of its overall mandate funded from Grant-in-Aid but it would need to operate in a more agile and streamlined way. |

3.7. A joint ICL/BL project team was formed in order to plan the transition from project to UKRR as-a-service which involved the following key steps;

a. A workshop was held in London with c90 representatives from University Libraries in order to assess the appetite and guide any changes to the service design. Accordingly it was decided – (1) the service should continue, (2) there was sufficient trust to reduce the back up (preservation) copies from two to one, (3) the service needed re-engineering and (4) there ought to be an Advisory Group formed to oversee the governance and deployment of the new service.



b. One of the first steps was for the BL project team to process map the as-is situation, which due to the time the project has run, was a significant challenge. The process map involved many iterations and involvement from all areas of the BL and ICL in order to get a true representation, see Fig. 7 below;

[59] https://www.bl.uk/on-demand

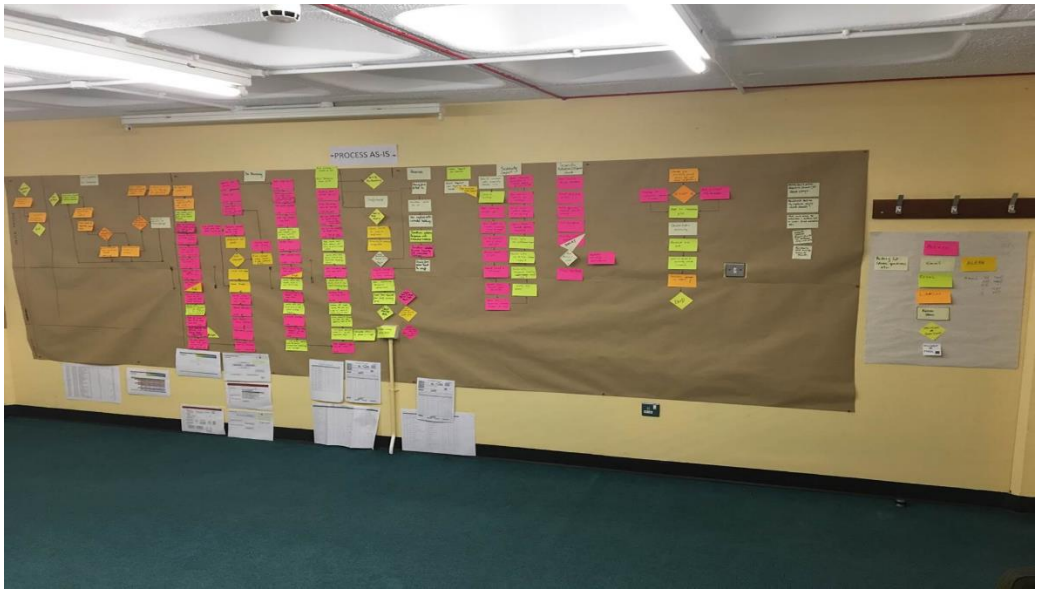


Fig. 7 the UKRR process map of the (before) as-is operation.

c. The next stage was to design a solution around the requirements and building on the knowledge, expertise and groundwork from the project. In undertaking this particular step, new challenges came to light;



i. **Systems** – transfer of the LARCH system from ICL to the BL and replacement of the BL database from Access 2003 to a SQL based version. The plan is that ultimately it will link into Aleph (the British Library's library system) and provide one location describing the entirety of BL holdings.

ii. **Scarcity checking (1)** – Suncat (the national database describing journal holdings information) previously managed by Edina and funded by Jisc was due to retire. The replacement system under design by Jisc is the National Bibliographic Knowledgebase (NBK)[60] which will provide a single, national view of UK monograph and journal holdings – this went live on the 1st August 2019. The BL team worked very closely with the Jisc technical team to ensure the complexities of scarcity checking were reflected within the NBK design and toolkit.

iii. **Scarcity (2)** – When UKRR comprised of a closed group of members it was relatively easy to nominate the back up (preservation +2) copy holders. Once the service was opened up to anyone, there needed to be a system that could allocate a custodian of the backup "scarce" (+1) copy linking into the NBK development above. What the BL team did find was that in c80% of the cases when checking holders of duplicate copies, perhaps

[60] The National Bibliographic Knowledgebase (NBK) was launched by Jisc on the 1st August 2019 and is currently scaling up levels of its range of services and capabilities - https://www.jisc.ac.uk/rd/projects/national-bibliographic-knowledgebase

unsurprisingly, the Legal Deposit Libraries (Oxford and Cambridge) held a copy. Both organizations have the rule that they only de-duplicate within their faculty libraries and don't rely on other libraries. This gave the BL team the confidence that (having agreed with Oxbridge) they could undertake scarcity checking against Oxbridge holdings and thereby limit the amount of checking that was required. Notwithstanding that, an agreement was designed that encouraged the bigger University libraries to also agree to retain preservation copies – this was called the Collaborative Collection Retention Agreement (CCRA).

iv. From the above, the four pillars of service success were created and formed the basis of the service (reengineered) design, see Fig. 8 below;

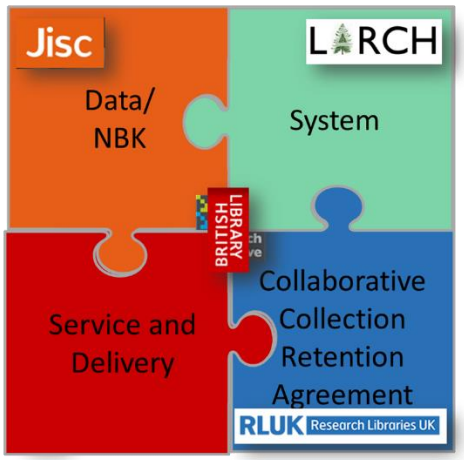


Fig. 8 the UKRR as-a-service 4 pillar model.

d. Having put in place the above building blocks, the BL team could then press ahead and redesign the new service, significantly simplifying and streamlining the operation and reducing the cost of delivery. Another key aspect of this approach was putting the emphasis on a "right-first-time" approach – this involved communicating to the audience group the importance of submitting complete and accurate submissions thereby ensuring a smooth process flow. See revised process map in Fig. 9;

Fig. 9 Revised UKRR Process map following re-engineering.

e. Communication was also a key aspect of an effective service roll out. Together the ICL and BL teams developed a communication strategy that included – Newsletters, Webinars, conferences, focus groups, direct communications, visits and transfer of the website to the BL. Having added UKRR to the BL repertoire, the new web pages[61] were designed (see Fig. 10 below) and monthly communication updates are sent via the News-Page;



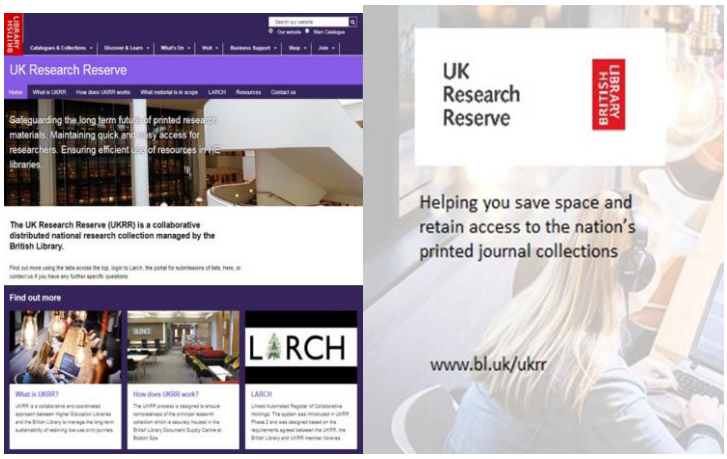


Fig. 10 BL UKRR web pages.

3.8. The service is currently in a ramping up phase as the new system and associated processes become embedded and the capacity is better understood. The latter is an important point such that the team can forecast lead-times and thereby accept new lists from organizations, provide accurate deadlines and feed into the overall production plan. In terms of comparing the new service with what the project offered, re Fig. 11 below;

[61] https://www.bl.uk/ukrr/resources

| Factor | Before | After |
|---|---|---|
| Submission Process | Larch, Response Sheet | (no change) |
| Requirement of user | BL team quality check and adjust | Onus on "right 1st time" and list quality/completeness |
| Eligibility | Membership approach | Open to anyone |
| Lead time | Ave turn-round time = xxx. (for previously offered items) | Could be longer (smaller team). |
| Prioritisation (of lists) | First come first serve | Priority to Holding Libraries and organisations who have undertaken scarcity themselves. |
| Communication and Information | www.UKRR.ac.uk | www.bl.uk/ukrr |
| Preservation (scarce) back up | +2 copies within membership group | +1 within Holding Library group (CCRP) |
| Scarcity and retention | Use Suncat to check and record. | Use NBK to check and record. |
| BL database of previous checks | Based on Access 2003 with manual effort – links to Aleph/Larch. | (New) based on SQL optimised and APIs to Aleph/Larch/NBK. |

Fig. 11 Comparison matrix of the UKRR service – project v BL "business as usual" service.

3.9. The project formally ceased in March 2019 at which point by using the original CHEMS approach to updating the predicted benefits, the benefits could be updated. In financial terms they equated to – £29m in capital savings, and over £18m in recurring estate management costs which basically translates to: **'Every £1 invested in the UK Research Reserve has delivered £4 in value to the Higher Education sector'.**



The project has freed up an impressive **128 km of shelf space** in the participating libraries which subsequently realized other benefits following the repatriation of this space - see case studies below.

**The following case studies from participating University Libraries are taken from the UKRR Final Report (currently in draft)**:

> Involvement in UKRR has meant that we have been able to renovate three of our medical libraries. UKRR disposal reduced the journal stock in these libraries to a level such that we were able to relocate them in library stores across campus, and therefore gave us in effect a whole floor in each library to use for study space. (King's)[62].

[62] Appleyard, A., Banks, C., Grindley, N., Hosking, J., Larch, N., Stubbs, T., Yang, D. and institutional contributors, (2019). *UKRR Final Report* [draft, forthcoming]. London: UKRR. [Draft viewed 5 August 2019]. p.39

In addition to re-developing the JF Allen departmental library in 2010, UKRR has more recently helped with ongoing activities in the Main Library, for example, the creation of an additional 70 study seats in summer 2018. (St Andrews)[63].

UKRR has not only enabled us to provision more spaces, but up the quality in the process.

These spaces include lots of quiet individual study spaces, some more comfortable individual spaces, and bookable group work facilities with shared screens, all of which ave been very popular.

For a large research institution such as ours it is critical for us to know that we are acting

responsibly in managing our collections. We recognise that our collections are of value beyond the University of Leeds, and that we have a responsibility to curate our collections with the needs of the wider, and future, research community in mind. We want to preserve collections, not necessarily all locally, but certainly at a national level. (Leeds)[64].



[63] Appleyard, A., Banks, C., Grindley, N., Hosking, J., Larch, N., Stubbs, T., Yang, D. and institutional contributors, (2019). *UKRR Final Report* [draft, forthcoming]. London: UKRR. [Draft viewed 5 August 2019]. p.42
[64] Appleyard, A., Banks, C., Grindley, N., Hosking, J., Larch, N., Stubbs, T., Yang, D. and institutional contributors, (2019). *UKRR Final Report* [draft, forthcoming]. London: UKRR. [Draft viewed 5 August 2019]. pp.143-144

The type of library space being phased out at the University of Leeds (photo used with the permission of the University of Leeds).

The space vacated as a result of UKRR houses a new learning café with comfortable seating and Wi-Fi access. Our first payment from UKRR was used to provide power on study desks for the use of laptops.(Kingston)[65].

'At Imperial's Central Library there were two basement spaces used for storage of serials. As a result of UKRR, this space has been redeveloped into the Enterprise Lab, which is a flexible workspace primarily focused on allowing groups of budding entrepreneurs to work together and draw on the knowledge of the experts-in-residence. This shows how library storage space has been used to help meet institution-wide space requirements, enhancing the value of the offer of the College' (Imperial College London)[66].



[65] Appleyard, A., Banks, C., Grindley, N., Hosking, J., Larch, N., Stubbs, T., Yang, D. and institutional contributors, (2019). *UKRR Final Report* [draft, forthcoming]. London: UKRR. [Draft viewed 5 August 2019]. p.44

[66] Quote and photos used with the permission of Imperial College London.

Uninspiring basement space at Imperial College London. Photo used with the permission of Imperial College London.

The new Enterprise Lab developed in the basement as a result. Photo used with the permission of Imperial College London.

3.10. In terms of outcomes for the Higher Education Library sector the statement from Cambridge sums it up well…

*"Institutions now rely on the structures and processes that UKRR provides in collection decision making. Libraries do not want to release space at any cost; and responsible collection management is vital, with UKRR providing a framework for this, and peace of mind that collection management is done at a level beyond the local. (We) appreciate how these trusted processes are an important part of being able to advocate with academics, in that the processes ensure ongoing access and preservation. The value of UKRR and those who have worked on the project over the years is that it established policies and frameworks that give assurance to the academic community that the active management of collections and retention of printed material is important for future generations. This has been very important over a period of rapid cultural and technological change"*[67].



3.11. In terms of outcomes for the British Library - The BL sees this as fitting as part of the remit of the national library and a way of deepening relationships with researchers at all levels, enabling them to understand better how the collections are managed, the challenges and success faced by libraries, and the sustainability of collections that they care about. This will be increasingly important as we move towards new UKRR type challenges such as;

a. Designing a national approach to Monographs.

b. Exploring the feasibility of a digital version and/or the creating of access repositories.

c. Building on the work already done with non-HE libraries such as Rothamsted Research (an independent agricultural science research institute) and

[67] Appleyard, A., Banks, C., Grindley, N., Hosking, J., Larch, N., Stubbs, T., Yang, D. and institutional contributors, (2019). *UKRR Final Report* [draft, forthcoming]. London: UKRR. [Draft viewed 5 August 2019] p.67.

collaborating with other sectors including public libraries.

d. Working with colleagues from across Europe such as the European Print Initiatives Collaboration (EPICo) which formed in 2015, bringing together practitioners working in the field in order to share strategies and best practice amongst the European community.

## 4. Summary

4.1. UKRR has given us a visionary example of library leadership and policy making – through putting in practice a vision of libraries working together and realizing their collective potential to serve people within and outside their institutions in a new way, creating new spaces for new types of research and study, while at the same time protecting and preserving collections, as well as saving money.

4.2. As our services migrate further towards digital we still must adhere to our mandate of preserving (print) collections and offering continued access. As contemporary material moves inexorably towards digital publication we need to reinvent ourselves and diversify. Figure 12 illustrates how, by building on the experience, expertise and breadth of our print holdings, through digitization and digital collection development and management, we can create a cohesive strategy going forward.



4.3. The British Library's 43-acre facility at Boston Spa north of Leeds has underpinned research and library services across the UK for over half a century. It is recognized internationally as one of the great library infrastructure centres of the world. From its strategic location at the geographic centre of Britain, its storage operations ingest collections (both print and digital), preserve and make accessible. Our narrative will be grounded in the original visionary 1960s idea of Boston Spa as the UK's 'library at the heart of the system' – re-shaped for the 21st century as a combination of digital and physical infrastructure.

Fig 12: Model describing the BLs strategic collection management and development approach.

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# SESSION 05 - Perspectives: Users, Service Evaluation

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Çuhadar, S., Çimen, E., & Turan, A. (2019). In-transit Practices among Multi-campus University Libraries in Turkey. In P.D. Collins, S. Krueger, & S. Skenderija (Eds.), *Proceedings of the 16th IFLA ILDS conference: Beyond the paywall - Resource sharing in a disruptive ecosystem* (pp. 147-171). Prague, Czech Republic: National Library of Technology. Retrieved from http://invenio.nusl.cz/record/407836?ln=en

Munson, K., & Thompson, H.H. (2019). International Interlibrary Loan in a Changing Environment: Results from the 2019 RUSA STARS International ILL Survey. In P.D. Collins, S. Krueger, & S. Skenderija (Eds.), *Proceedings of the 16th IFLA ILDS conference: Beyond the paywall - Resource sharing in a disruptive ecosystem* (pp. 172-199). Prague, Czech Republic: National Library of Technology. Retrieved from http://invenio.nusl.cz/record/407836?ln=en

# Meeting Users in Their Spaces: Key Findings on Discovery to Delivery

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**Abstract:**

*OCLC Research has been studying how individuals get their information and resources and how they engage with technology for almost two decades. We have learned that convenience often is one of the factors that most drives individuals' decisions for getting information and resources. However, convenience is a moving target and is dependent upon the context and situation of the individual's need. Many factors will influence the decision-making process, such as how quickly the information or resource is needed, how important that information is to the individual need, and how much effort is required to get access to the information or resource. Our findings indicate that individuals often do not consider the library as the first place to get information and sometimes do not consider libraries at all. This often is attributed to the complexity and misunderstanding of library processes for acquiring resources and to not knowing resources or options for accessing and acquiring these resources through the library. Many individuals opt for open content since it is easy to discover and readily and quickly available in full-text.*

*We have conducted semi-structured individual interviews with undergraduate and graduate/post graduate students and faculty in Australia and the U.S. to identify how they discover, access and acquire resources and why they make these choices and decisions, including their format preferences. We also have conducted focus group interviews with resource sharing and ILL*

*librarians in Australia and the U.S. to identify their workflows and to discuss ideas to improve these processes to better meet the needs of their users. The findings from these interviews provide ideas for enhancing the discovery to delivery experience for both users and librarians.*

**Keywords:** user experience, discovery, document delivery, survey

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## Introduction

OCLC Research has been studying how individuals get information, find resources, and engage with technology. We have learned that convenience often is one of the factors that most drives individuals' decisions for getting information and resources (Connaway, Dickey, and Radford 2011). However, convenience is a moving target and is dependent upon the context and situation of the individual's need. Many factors influence the decision-making process, such as how quickly the information or resource is needed, how important that information is to the individual's need, and how much effort is required to get access to the information or resource.

Our previous findings indicate that individuals often do not consider the library as the first place to get information and sometimes do not consider libraries at all (Connaway, Dickey, and Radford 2011). This often is attributed to the complexity and misunderstanding of library processes for acquiring resources and to not knowing resources or options for accessing and acquiring these resources through the library. Many individuals opt for open content since it is easy to discover and readily and quickly available in full-text.



The research team conducted semi-structured individual interviews with forty-three undergraduate and graduate/post graduate students and faculty in Australia and the U.S. to identify how they discover, access and acquire resources and why they make these choices and decisions, including their format preferences. We also conducted focus group interviews with resource sharing and interlibrary loan (ILL) librarians in Australia and the U.S. to identify their workflows and to discuss ideas to improve these processes to better meet the needs of their users. This paper summarizes the findings of fourteen semi-structured individual interviews with undergraduate students, graduate students/post-graduate/PhD students, staff members, and faculty members in the U.S. and four focus group interviews with ILL and resource sharing librarians in Australia and the U.S. The results of the twenty-nine semi-structured individual interviews with graduate/post-graduate/PhD students and faculty from Australia and the U.S will be published in a separate paper.

The findings from the student, staff, and faculty semi-structured individual interviews and the librarian focus group interviews discussed in this paper provide ideas and recommendations for enhancing the discovery to delivery experience. The results also create a more complete view of the journey that students, staff, and faculty take throughout their library experience, and identify points of delight, frustration, and inefficiency encountered along the way. The insights gained from the librarian focus

group interviews provide a framework to begin planning for the next generation of ILL services that will meet ever-changing user expectations.

**Data Collection and Analysis: User Semi-Structured Individual Interviews**

Fourteen undergraduate and graduate students, staff, and faculty from five institutions in the U.S. participated in semi-structured interviews. The interviews were centred on the individual's search behavior represented in logs from WorldCat Discovery. This is an experimental methodology not found in the literature to identify how academic library users navigate the path from discovery to access.

*Participant Recruitment*

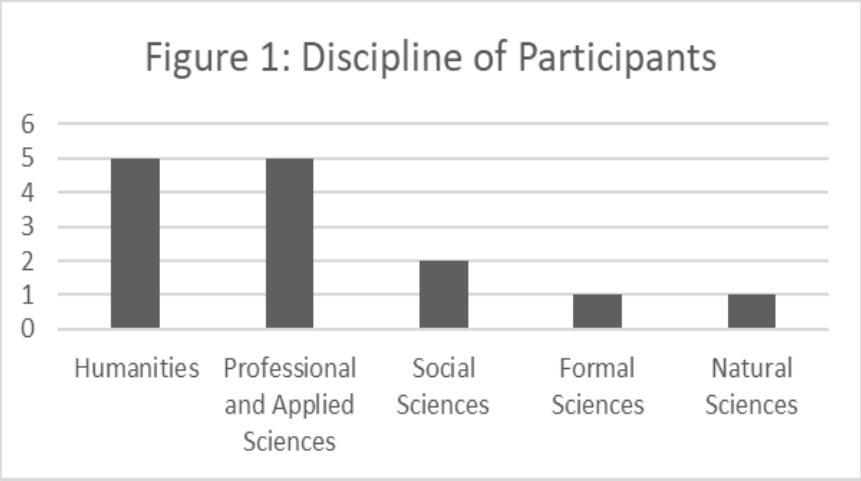
A list of potential interviewees was identified through a screening survey. This was done with a convenience sample using snowball methodology. We initially reached out to contacts at several U.S. university libraries to request their assistance with this project and got participation from five different universities. Four of these were small private academic institutions, and one was a large public academic research institution. Three of these institutions were in the Southeast, one was in the Northeast, and one was in the Midwest. All participating universities had their institutional review board (IRB) review and approve the study methodology.

Participant recruitment varied by university, but generally librarians sent a recruitment email to library users explaining the project and incentive for participation and gave a link for interested participants to use to access the screening survey.



Respondents were asked to provide key information about their search session on their library website, which used the discovery layer that was being studied. Respondents were asked what they were looking for and if they felt that they had accomplished their purpose. They were then asked to paste the "Request ID" from their search, which was used to match their survey with the log of their search session. The survey provided demographic information about the respondents, which included gender, age, academic level, discipline, parent or guardians' education level (which is a rough indicator of economic background), and the educational institution where they performed the search (Thomson 2018). If the respondents were interested in talking about their search session and were selected, they were given a $20 Amazon gift card for their time.

Twenty-five respondents of the screening survey indicated they were interested in participating in an interview, resulting in fourteen user interviews being conducted. The interviewees were diverse on several demographic characteristics, including academic discipline, as described in Figure 1.




Two were faculty members, two were graduate students, one was a staff member, and nine were undergraduates. Five of the participants reported they were in professional & applied sciences, two in social sciences, one in formal sciences, and one in natural sciences.

*Individual Session Log Analysis and Interview Protocol Development*

The session IDs that users copied and pasted into their screening surveys enabled the research team to identify the users' search logs, which then were used to create customized semi-structured interview protocols. To the authors' knowledge, this methodology of creating interview protocols based on session logs, which is an update of a methodology developed by Connaway, Budd, and Kochtanek (1995), has not been done before.



Customized interview protocols were developed for each interview participant based on the extracted session logs. Two members of the research team reconstructed each user's behavior based on details found in the log. This information was used to create a summary of the major actions taken by the participant during the search session.

Interview protocols were developed using the critical incident technique, where users were asked to describe the specific steps that they took throughout their search session. The participants were asked to elaborate on what they were searching and why they had conducted the online search. The protocols served as a reminder of what the individuals searched for during this specific search session, as interviewees were asked about their specific search terms rather than general questions about the experience.

When they were asked about the success of the search, participants were asked to explain whether they found what they were looking for, how they felt about the experience, and if there were points of delight or frustration. The specificity of the questions about their search helped users identify the specific points in the search that impacted their overall experience. In the concluding section, participants could offer additional insights and ask questions of their own.

*Semi-Structured Interviews*

One team member conducted the semi-structured interview, asking a pre-determined set of questions based on the user's submitted search session and follow-up probing questions based on the participants' responses, while a second team member took notes. Interviews were conducted using Skype and were recorded and transcribed. Interviews took approximately 45 minutes. Interviewees were compensated for their participation with a $20 Amazon gift card.

*Interview Analysis*

The codebook was developed based on the common themes emerging from the interviews. These themes were organized to capture user search strategies, decision-making factors, preferred resource formats, feelings of frustration and delight, and other relevant search behaviours and preferences. The researchers coded several interviews together to refine the codebook and resolve problems of ambiguity in code definitions. Each interview was coded by two team members to ensure intercoder reliability, which was calculated at 84%. These data were used to identify the major themes that appeared across interviews to provide a better picture of how users interacted with the discovery system and to identify specific areas for improvement.

**Data Collection and Analysis: ILL and Resource Sharing Librarian Focus Group Interviews**



*Participant Recruitment*

The research team conducted four focus group interviews with thirty-five ILL and resource sharing librarians in Australia and the U.S. to identify the librarians' resource sharing/interlibrary loan (ILL) workflows, focusing on inefficiencies in their processes, task automation efforts, opportunities for unmediated borrowing and lending, perception of faculty and student service expectations and desired features in an "ideal" resource sharing system.

Convenience sampling was used to recruit participants for the focus group interview sessions. A list of potential interviewees was identified using attendee lists for four conferences. The four conferences where the focus group interviews took place were the Australian Library and Information Association (ALIA) Online Information 2019 Conference in February 2019, the OCLC Resource Sharing Conference in March 2019, the Association of College & Research Libraries (ACRL) 2019 Conference in April 2019, and lastly the Colorado ILL Conference also in April 2019.

| Conference | Location | Date | Participants |
|---|---|---|---|
| **ALIA Online Information 2019 Conference** | Sydney, Australia | February 13, 2019 | 9 |
| **OCLC Resource Sharing Conference** | Jacksonville, Florida | March 19, 2019 | 10 |
| **ACRL 2019 Conference** | Cleveland, Ohio | April 10, 2019 | 4 |
| **Colorado ILL Conference** | Westminster, Colorado | April 24, 2019 | 12 |

Table 1: Focus group interview sessions.

*Focus Group Interview Protocol Development*

A focus group interview protocol was created to guide the group discussion around six main questions dealing with (1) typical ILL workflows, (2) inefficiencies within those workflows, (3) opportunities for unmediated fulfillment, (4) shared or standardized ILL policies, (5) librarians' perceptions of faculty and graduate student expectations regarding fulfillment and (6) features of an ideal resource sharing/ILL system. See Appendix A for the protocol.



*Focus Group Interview Analysis*

Transcripts and notes from the focus group interview sessions were reviewed by the research team to identify common themes across the groups. Common topics emerging from the transcripts were identified, grouped together, and summarized.

## Findings

Users select resources based on easy access or convenience of accessing the resources. Immediacy of access also was listed as a factor when selecting a resource. Based on this need for easy access was the "Held by" feature in WorldCat Discovery, which indicates to the user if and where the resource is available. Students and faculty also prefer PDF since it is portable and easy to access. The users' expectations for ease of access and convenience corresponds with the librarians' perceptions that users want speed – users want the resources now! The librarians who participated in the focus group interviews use multiple systems for fulfilment, which makes their job more cumbersome. However, the librarians believe it is their responsibility to provide a seamless ILL interface to the users regardless of how many systems the librarians are using to fulfil the request.

The quotes from students, faculty, and librarians included below support and provide context for these findings.

**Highlights from Findings: Student and Faculty Semi-Structured Interviews**

**Convenience/ease of access** is a major factor in choosing from a list of search results. Eleven of the fourteen interviewees spoke about convenience or easy access to a resource as a factor in choosing which source(s) in their search results to pursue. Related to convenience, timing/immediacy of access was another prominent factor, mentioned by eight of the interviewees. More than half of the interviewees (n=9) spoke specifically of the "Held by" feature in WorldCat Discovery as being an indicator of whether they would be able to access a particular search result.

*"The downloading part was a big thing to me because I knew that I would have to show this to my other group members… If I'm able to download it, then I can save it." (Undergraduate, Social Sciences)*

*"…I made sure that they were all available if I needed them. I think I might have clicked the downloadable option because when I'm in it, I just want to get it right then and there." (Undergraduate, Humanities)*

*"The first thing, the most important thing that I always do, no matter what I'm looking for, is I want to make sure the full text is available." (Undergraduate, Humanities)*



**Users were familiar with Interlibrary Loan;** some loved it, some avoided it. One of the interviewees mentioned ILL in the interview several times.

*"And one of the things I love about the library is interlibrary loan. That's probably one of my most used tools." (Undergraduate, Social Sciences)*

*"I did have the full PDF and that one was directly available. I didn't have to do interlibrary loan or anything. I think there were two sources that had the direct link through access." (Undergraduate, Social Sciences)*

**Most interviewees conducted their searches in both** search engines (Google Scholar and Google, namely) and specialized library databases. Ten of the fourteen interviewees specifically mentioned they used Google Scholar or Google as part of the search process; seven of them also mentioned they used library-specific databases or the library's resources.

*"…I figured the best place to do it would be through the school's library system because they advertise it so much and it's been helpful in other papers previously." (Undergraduate, Humanities)*

[Upon doing search and getting too many results, then refining search and still getting too many results]: *"I started just doing Google searches at that point because I was still*

*unclear of a direction I was going on. I was thinking, 'Hm, this may be better for when I know where I'm going…'" (Undergraduate, Humanities)*

**Users wanted PDFs** and looked for indicators that something was available in that format. Five of the fourteen interviewees specifically mentioned PDF as a format they looked to access. Having clear indicators such as a button or icon to click on for direct access to the PDF was important to them.

*"It's always pretty easy. Most of them have that… little blue button or the PDF icon on them. And you just click there, and it'll take you straight to the document, and you can choose to download it." (Undergraduate, Humanities)*

*"…Usually PDF just because it makes it easier to print off and all of that." (Undergraduate, Social Sciences)*

**No clear preference for print versus online materials** was found among these interviewees. Ten interviewees mentioned they were looking for both physical and online formats; three mentioned only online, and one mentioned only physical items.

*"I was just looking for the best, I guess, book or article that I could find." (Undergraduate, Applied Sciences)*

**While all of the interviewees were satisfied with their search experience,** not many agreed they were "delighted" by the experience. Eight of the fourteen interviewees talked about being satisfied because they found what they were looking for, but they wouldn't say that the search experience delighted them. Five of them were surprised that they actually found something.



*"So I accomplished what I needed to accomplish, but in comparison with other searches using the same databases, I've had ones where I was just afterwards like, 'Ooh, that was so cool.' But this one was just kind of like, 'Got to get it done.'" (Graduate Student, Humanities)*

**For many of the interviewees, influence of a librarian** and/or library instruction has had a positive effect on their search experience. Eight interviewees spoke of the positive effect of having consulted with a librarian and/or having received instruction in using the library and its resources.

*"...when I started in school, they focused more on teaching us how to research things. Over the years, I feel more comfortable, and I kind of just – I just know not to waste too much time on the World Wide Web and just use the library, things they library has deemed good." (Graduate Student, Applied Sciences)*

**Highlights from Findings: ILL and Resource Sharing Librarian Focus Group Interviews**

**The greatest inefficiencies in participants' ILL workflows center around the need to work in several different systems** to determine if the library already has access to the

item and if not, who might; manual sorting of requests to determine who should process it (e.g., student worker vs. professional librarian) and which system they should use; the time it takes for a request to get routed through multiple potential suppliers before one is found that actually has the item to share; lack of (or confusing) communications to users about their request status.

**Using disparate, multiple systems which "do not talk to each other"** is the norm for resource sharing librarians. More than forty systems were mentioned by interviewees, including ILLiad, RapidILL, Relais, RePrints Desk, DOCLINE, INN-Reach, Alma, Tipasa, FirstSearch and IDS Logic. Librarians need these systems to interoperate and believe using APIs may be the best approach.

**Librarians believe the onus for making fulfillment seamless should be on them,** not the users. Users do not need to know how to make it all work – it needs to be seamless for them no matter how many systems are being used in the background.

**Speed is the key for users!** Users want to get their materials as soon as possible. Speed and cost are the keys for librarians! If it's cheaper and quicker to buy an item from Amazon than get it through ILL, that's what some of them will do.

**Consortial borrowing benefits,** according to resource sharing librarians, include on-shelf availability status, standardized policies (e.g., standard loan periods), fixed fees, and the speed of fulfillment.



There is increasing need to better integrate open access/open content into the ILL workflow. As one participant noted, "Open access is extremely important …"

**Conclusion and Future Research**

Library users make a complex journey when finding and accessing resources on their own or through ILL. This journey involves many interrelated parts, which this research is attempting to study holistically with the inclusion of log analysis, individual semi-structured interviews with faculty and students, and focus group interviews with librarians. This research provides a specific roadmap for improving the library user experience. Future research will seek to find ways to improve the points of frustration and inefficiency along the way.

The twenty-nine individual semi-structured interviews conducted from February to May 2019 with U.S. and Australia graduate/post-graduate/PhD students and faculty members will be coded and analyzed. These findings will be compared to the findings reported in this paper.

## Acknowledgments

We would like to thank the librarians who participated in the focus group interviews and the librarians who recruited students and faculty to participate in the individual semi-structured interviews.

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## Appendix A

# OCLC Fulfilment Project Focus Group Protocol – February 2019

**Participants:**

**Interviewer:**

**Note Taker:**

**Date of interview:**

**Interview start time:**



**Interview end time:**

**Script for Introduction**

Let me tell you just a little bit about who I am, who I work for and what we're doing with this research project. I work as **[provide brief description of your title or job role]** at OCLC. OCLC is a non-profit cooperative that works with libraries around the world.

This focus group interview will provide an opportunity for you to discuss your current work practices and processes and to identify what could help you streamline your process, and how you could spend your time more effectively.

Thank you for taking the time to talk with us today. We really appreciate your help. Our focus group won't take much longer than an hour. There are no right or wrong answers. It is not a test. I just want you to be as honest as you can to find out what you think.

We have our note taker here, **[Name]**, who will be typing notes as you speak. I also will be jotting down notes, so please don't think I'm not listening to you if you see me **[writing/typing].** We also are recording the interview. We will be using the notes and recording transcripts later so that we are able to document what you have said. Everything you say is private and will not be discussed with anyone outside of the team. We will not identify you in any presentations, reports, or external communications about this project. We want you to be aware that any of you can stop participating at any time. Is this all okay? Does anyone have any questions before we start?

**Librarian Focus Group Research Questions**

1. Thinking about your typical ILL workflow, please describe where you find yourself spending most of your time. Please include the tools and systems you are using in your ILL workflow.

a. What do you think contributes to this? (For example, technology limitations, physical workspace limitations, or staffing limitations.)

2. Where are there inefficiencies in your ILL process? [Prompt: Describe a time when you thought to yourself "there has to be a better way to do this."]



a. What changes have you made (or attempted to make) in your workflows to try to improve these inefficiencies? And did those changes work?

3. Where in your processes do you think opportunities for unmediated fulfilment exist? (Describe a time when you thought to yourself "there has to be an automated way to do this.")

a. Think about a time when you changed from a manual ILL task to a more automated one, either big or small. What was that experience like? How did you identify the need to automate the task?

4. How have shared- or standardized- resource sharing and ILL policies made your work easier?

a. How have they created difficulties in your workflow?

b. What standardized policies do you think would make your work easier? Why?

c. How have these changes in procedures affected faculty and graduate students' expectations and needs for getting access to items?

5. What do you think graduate students and faculty expectations are for getting access to resources from the library? What makes you think this?

[Probes: Have graduate students and faculty discussed this with you? Have you observed graduate student and faculty behaviors to make you think this?]

6. If you had a magic wand, what would be your ideal ILL/resource sharing system for borrowing and loaning resources? Please describe this ideal way. Include when, where, and how you would use it.



**Conclusion of Interview**

7. What else, if anything, would you like to share about your experiences?

8. What questions do you have for me?

Thank you again for your time and answering the questions. If you have any questions, concerns, or ideas after this interview, please feel free to contact me.

# In-transit Practices among Multi-campus University Libraries in Turkey

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**Abstract:**

*Library in-transit services provided between various campuses of a university are important, helping to ensure user satisfaction, effective allocation of library budgets, optimum use of resources, and effective use of library spaces.*

*In this study, 179 universities operating in Turkey were identified and selected for assessment. The methods which libraries at these universities employ to deliver information resources to users at other campuses as well as their in-transit practices are explained in detail. The paper presents the findings of a survey that was conducted at the selected university libraries in order to assess the current state and the impact of resource sharing via the in-transit method on library budgets, library spaces, and user satisfaction. The in-transit practice of Istanbul Bilgi University (BİLGİ) Library, which has a well-established in-transit policy and which keeps detailed statistics, was also used as a case study to analyse in-transit statistics and survey findings and to provide suggestions for future improvement.*

***Design/methodology/approach:*** *This study employed a historical and explanatory approach; statistical methods are used to analyse the results of the survey. An important outcome of the study was that it documented the current status of in-transit practices at academic universities in Turkey. The authors utilized their professional experiences in developing resource sharing and in-transit services within a university library context in Turkey in order to design the survey.*

***Objectives:*** *This research paper might be useful for any university librarians interested in resource sharing, effective use of library budgets, library collections, and library spaces, especially in*

*developing countries. The paper also provides academic libraries with a set of guidelines for establishing an in-transit service.*

***Originality/value:*** *This paper is the first study of in-transit services provided between Turkish university libraries. It also addresses the opportunities and challenges that arise when establishing or improving in-transit services. The results of the study will be of use to university libraries, researchers, and library professionals working in the field.*

**Keywords:** Campus Delivery, Resource Sharing, Document Supply, "In-transit" Services, Inter-Campus Delivery, University Libraries Turkey

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## Introduction

Academic libraries began sharing information resources and experiences with one another almost as soon as they were established and today, sharing of print and electronic library resources is one of the most common services all types of libraries provide. Cooperation and resource sharing are increasingly critical for libraries due to changing user needs, diversification of types of users, technological developments, and—most importantly—limited funding for library collections.

Resource sharing between academic libraries in the United States has a history of more than a century, with the first interlibrary resource sharing services (ILL) beginning in 1898 when a librarian at the University of California (UC) announced that UC was ready to send resources to requesting libraries (Weber, 1976).



ILL services have remained as an important service for academic libraries since that time. The U.S. Library of Congress developed an official policy for lending materials to other national libraries in 1909 (Stuart-Strubbs, 1975). The American Library Association (ALA) declared its first "Code of Practice for Inter-Library Loans" in 1919. (Frederiksen & Bean, 2012) Even though there were some challenges, international library cooperation increased in the 1920s and 1930s. With the support of the United Nations Cooperation Committee and the International Federation of Library Associations (IFLA) until 1934, almost 40 countries around the world participated in systematic international resource allocation (Miguel, 2007). In 1936, IFLA established rules for coming together and developed an international standards-based lending system based on a uniform regulation rule using standardized forms for the first time (Wehefritz, 1974). In 1939, the IFLA code and form were accepted by 19 countries (Ryward, 1994). In 1951, the University of California, with a 1968 revision of the form, created a four-pages carbon format form that was broadly adopted and used by U.S. libraries (Frederiksen and Bean, 2012). Forms sent by teletype or fax by regular mail and letter were eventually shortened and modified to meet the network requirements for bibliographic utility and transmission. In the early 1960s, ALA designed a photocopy request form which was revised in 1976 to include significant alterations to U.S. copyright law and technological innovations. While paper-based document delivery has changed with the enlargement of bibliographic tools and networks, document distribution systems based on advances in

conduction technologies have also changed (Frederiksen & Bean., 2012). Although the formats and the methods of resource sharing have changed, the principle of resource sharing remains as one of the most important areas of cooperation for academic libraries. Electronic collections of academic libraries have grown rapidly, which has encouraged librarians and software experts to develop creative applications such as secure electronic document sharing. While the use of electronic resources has increased and access to these resources has become easier, the sharing of print materials remains important.

Even though North America, Europe, Canada, Australia, Japan, and South Korea have been adapting easily to technological developments and focusing on creative solutions, the Internet access rate is 49% in some Asian and many African countries, which represents 72% (5,562,011,506) of the world's population (Internet World Stats, 2019). This means that, according to these statistics, 43% of the population does not yet have Internet access, which means almost half of the world's population has to rely on traditional (print-based) resource sharing methods.

Resource sharing activities, except for a few initiatives and minimal attempts at creating standards and policies, did not begin in Turkey until 2006. Until then, initiatives did not go further than guidelines or drafts of policies. The "Collaboration Working Group," established by the Anatolian University Libraries Consortium (ANKOS) in 2006 focused on resource sharing and document delivery activities among academic libraries in Turkey. First, a guide for academic resource sharing was prepared, and then the Interlibrary Collaboration Tracking System (KITS) was developed. KITS allowed academic libraries to submit their loan requests via an online platform created by the Collaboration Group (Cimen et al., 2010). Resource sharing activities have accelerated with the launch of the KITS platform by academic libraries since 2008. From 2008 to 2019, approximately 200,000 print and electronic resources were shared through the KITS platform (KITS, 2019).



ILL often refers to the lending of books to other libraries and tracking of books received from other libraries. The term "document supply" usually means providing copies of documents such as journal articles not expected to be returned after use. Many ILL management systems include document supply modules; however, document supply can also be provided using well-known standalone products such as Ariel, Prospero, and Odyssey (Gavel, 2015).

Developments in the field of secure electronic resource sharing are closely monitored by Turkish librarians. OCLC's WorldShare module, used by more than 200 academic libraries around the world, RapidILL, RapidX, ILLiad, and Odyssey are some popular applications in the area of resource sharing (Delaney & Richins, 2012). In 2013, the ANKOS Collaboration Working Group added a "secure electronic resource sharing module" to the KITS platform and the use of the KITS platform increased significantly with the introduction of the new module (Cimen et al., 2014).

## In-Transit Services

There are many initiatives, services, policies, and procedures aimed at increasing access to library collections through interlibrary resource sharing and document supply services. In-transit services between central and branch libraries is well documented in the literature; for example, King and Pendleton's 2009 study on a campus courier service for delivery of books and journals. According to this study, the Ohio State University Library has been delivering materials from their central library to faculty members' offices and to users with disabilities since 1976 (King & Pendleton, 2009). Today, due to the ease of access to information, users now expect quick access to print and all other formats of information (Griffiths & Brophy, 2005). Because of such changing user expectations, libraries continue to look for better ways to increase access to their collections.

In-transit services are library services offered at academic institutions operating on more than one campus in order to enhance efficiency and effectiveness, to maximize use of collections budgets, to save time and space, and to increase user satisfaction. In-transit services are generally carried out by libraries' resource sharing and document supply departments. Rather than generating independent policies for in-transit service, as was the case for OhioLink (OhioLINK , 2008), implementation guidelines and policies are included in general resource sharing and document supply policies.

Academic libraries have been pioneering resource sharing activities in Turkey. In this context, there are several publications on resource sharing and document delivery services in Turkey published both at national and international level including Cimen et al. (2010), Cimen (2012), Yörü (2012), Cimen et al. (2014), and Guran & Kaya (2017). On the other hand, there is a lack of literature about in-transit services and activities provided between different campuses at a single institution.



This study addresses and evaluates all aspects of in-transit services in Turkey and is the first and the most comprehensive study of its kind in this area.

## Higher education and in-transit services in Turkey

There are 207 universities, including 129 state and 78 "foundation universities"[68] in Turkey as of May 2019. 176 of them were founded between 1933-2015, and 31 of them were created between 2016-2019. As shown in Table 1, universities in Turkey have a total of 7,740,502 students and 166,221 academic staff, meaning there are 7,740,502 potential academic library users (Yükseköğretim Bilgi Yönetim Sistemi, 2019).

[68] Foundation University: In addition to state universities in Turkey, there are also "foundation universities" that are non-profit, fee-paying institutions (Saglamer, 2013).

*Table 1*: Total number of students and faculty members

| Type | Number |
|---|---|
| PhD students | 96,199 |
| Faculty members | 166,225 |
| Master's students | 394,174 |
| Associate diploma students | 2,829,430 |
| Undergraduate students | 4,420,699 |
| **Total** | **7,906,727** |

According to 2018 data from the Turkish Statistical Institute, there are 598 university libraries in Turkey with 17,600,015 items in their collections (Türkiye İstatistik Kurumu, 2019). When the total number of books is divided by the number of students and academics, there are 2.2 books per use and it can be said that the number of publications per user is low. In this context, the effective use and sharing of resources becomes more important due to the low number of resources.

In Turkey, higher education activities are provided in the provinces and districts. The majority of the undergraduate programs are offered on campuses in provinces, while associate diploma programs generally take place on campuses in districts. For example, there are 167 programs at Çukurova University: 82 undergraduate programs and 85 associate diploma programs. While 11 of the undergraduate programs provide education on campuses in the districts, 16 of the associate diploma programs are provided on campuses in the districts. To provides another example: Karadeniz Technical University has 67 undergraduate and 28 associate diploma programs. 11 of these undergraduate programs and 16 of these associate diploma programs are taught on campuses in the districts (Yükseköğretim Program Atlası, 2019).



The majority of university students study on central campuses located in provinces. On the other hand, a significant number of students attend classes at the campuses in districts. However, most of the university libraries are located only on central campuses. The resources offered to students at central campuses should also be provided to users in other districts, at least through an in-transit service. In this context, a survey was designed to initially identify the universities that operate with more than one campus and to discover if their campuses have libraries. It also aims to gain insight into the impact of in-transit services on library budgets, use of physical space, and user satisfaction as well as librarians' opinions and suggestions regarding in-transit services.

Before sending the survey to university libraries, contact email addresses and the year of each library's foundation were obtained from the Higher Education Council (YÖK) web page. There are 207 universities in Turkey as of May 2019. 176 of these universities were established between 1933-2015 and 31 universities were established (6 in 2016, 4 in 2017, 20 in 2018, and 1 in 2019) between 2016-2019 (YÖK Akademik, 2019). These 31 universities are excluded from this study since they do not have any alumni. Therefore, this study included 176 institutions as potential survey participants.

A web link and instructions for completing the survey were sent by email to these 176 university libraries. 106 university libraries from 176 universities responded to the survey, so the participation rate for the survey was 60.2%. In the remainder of the study, 106 institutions were taken into consideration while analysing the survey data. In-transit services of Istanbul Bilgi University were also examined and the effects of these services on library budget, physical space, and user satisfaction were examined in detail.

**Data Evaluation**

The survey had 14 questions, 11 of which were multiple choice and 3 of which were open-ended (see Appendix 1). The survey results were analysed using SurveyMonkey and Microsoft Excel and the outcome of the analysis is presented below in detail.

The first and the second questions asked for the name of the participating institution and type of university. Out of the 106 universities surveyed, 64 were state institutions and 42 were foundation universities.

The third question asked about the number of campuses (including provinces and districts) in which the university conducts teaching and research activities. If a university had only one campus, they skipped question 13. The numbers of university campuses owned by universities are presented in Figure 1.

*Figure 1*: Numbers of university campuses



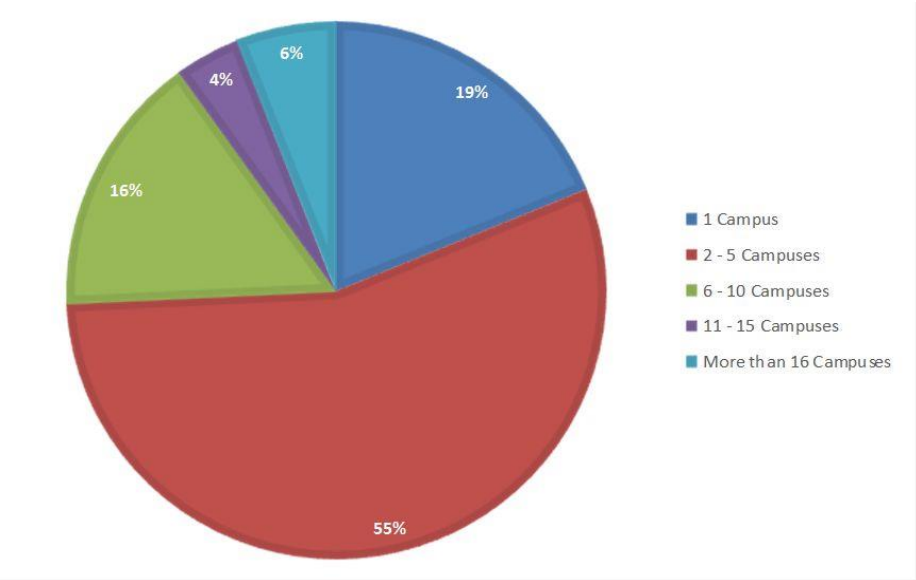
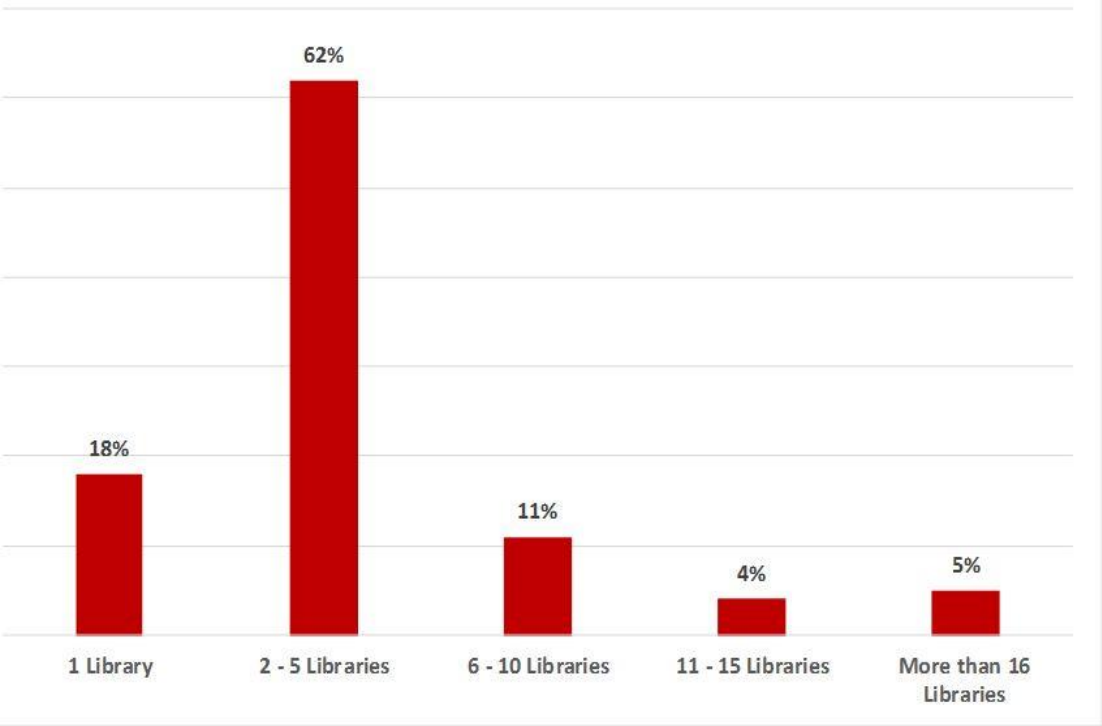



Figure 1 shows that 19% of the universities conducted teaching and research activities in one campus. 81% of the universities had more than one campus. The number of universities with 2-5 campuses was 55%.

The fourth question was directed to universities with multiple campuses and the number of libraries they have. Results are shown in Figure 2.

*Figure 2*: Number of libraries in universities




As shown in Figure 2, 18% of universities had one library, 62% of universities had 2 to 5 libraries, 11% of universities had 6 to 10 libraries; 4% of universities had 2 to 5 libraries, and 5% of universities had more than 16 libraries. According to this data, universities which have more than one campus appear to have more than one library.

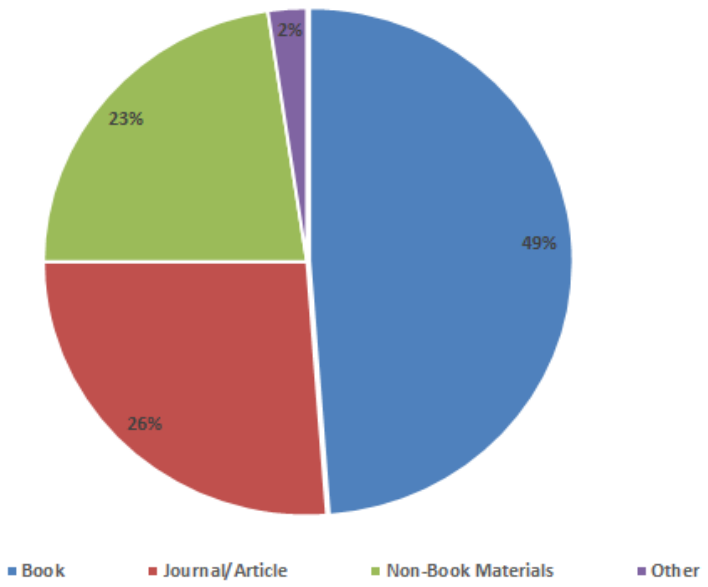


The fifth question of the survey attempted to determine whether in-transit services are provided between multi-campus university libraries. 53% of participants stated that there was no in-transit service between campuses while 47% stated that there was in-transit service between campuses.

The sixth question of the survey asked how many libraries of universities conduct in-transit activities. According to the responses of survey participants, 145 libraries of 40 universities provide in-transit services.

In the seventh question, the types of materials transferred between libraries as part of in-transit services were determined. These are shown in Figure 3.

*Figure 3*: Types of materials transferred between libraries




As shown in Figure 3, 49% of the materials sent via in-transit services were books and 26% were journals/articles. In addition to these, 23% of in-transit transactions were for non-book materials.



It is important to deliver requested materials via in-transit services to users as soon as possible. In this context, the eighth question of the survey asked about the frequencies of inter-campus resource delivery within the scope of in-transit services and the results are shown in Figure 4.

*Figure 4*: Frequency of material transfers between campuses

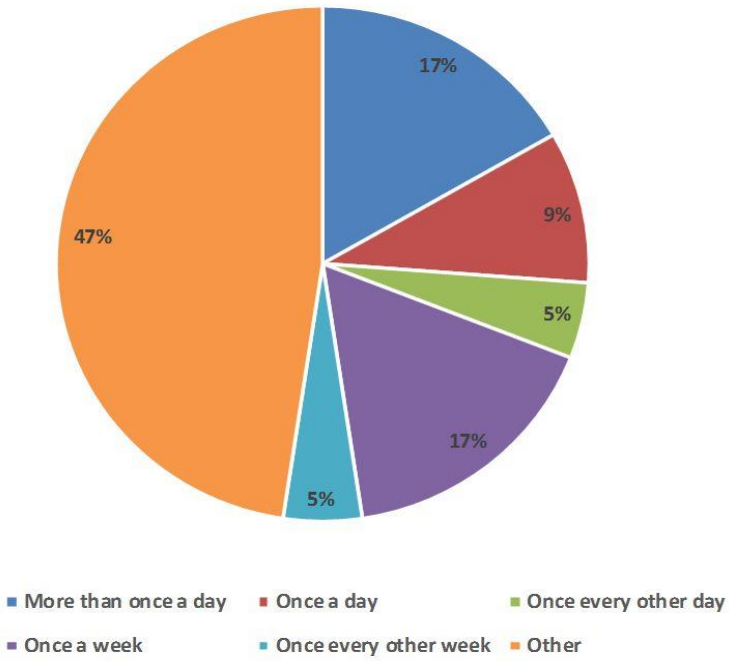
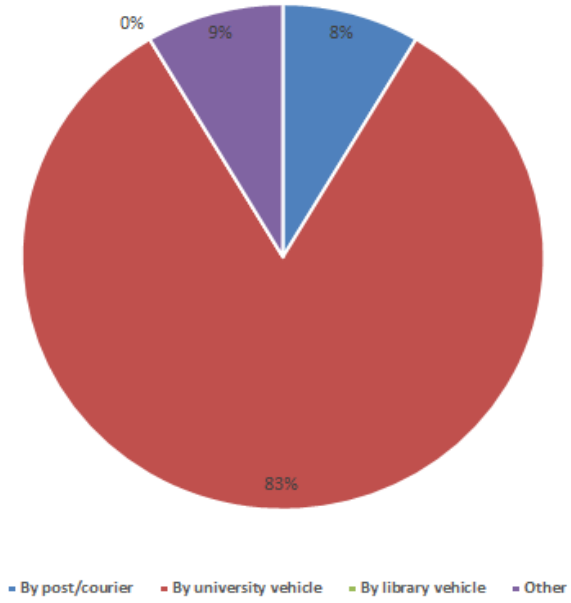



Figure 4 shows that 47% of the respondents stated that they were transferring materials at frequencies different from the ones specified in the survey. When the details are examined, 85% of this group stated that when a request occurs, the requested item is sent. The time interval between shipments varied from once every other day to once every other week.



The ninth question of the survey considered how materials were sent via in-transit services to other libraries and the results are shown in Figure 5.

*Figure 5*: The means of item transfer between campuses

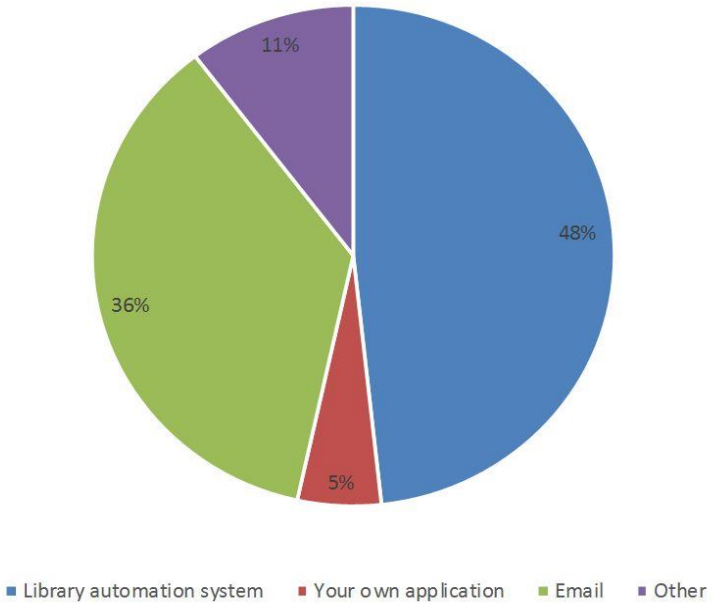



As shown in Figure 5, 8% of materials were sent by post/courier and 83% by university vehicles.



It is important to provide the status of library resources sent via in-transit services to the users correctly, to inform them and let them know where the materials are currently located. In this context, the tenth question of the survey examined the communications methods used during in-transit operations and the results are shown in Figure 6.

*Figure 6*: Communication systems used during resource transfer between campuses



As shown in Figure 6, 48% used library automation systems and 36% used email for facilitating in-transit service transactions. Specific software was used less often for this service.

In order to develop a service in libraries, it is useful to allocate a specific budget for the service. In this context, the eleventh question of the survey asked if institutions implementing in-transit service have a special budget for this service. 94% of participants stated that there was no special budget in the library for in-transit services, while 6% stated that there was a special budget.

The twelfth question of the survey examined which user groups benefit from in-transit services and the results are shown in Figure 7.

*Figure 7*: User groups benefiting from in-transit services

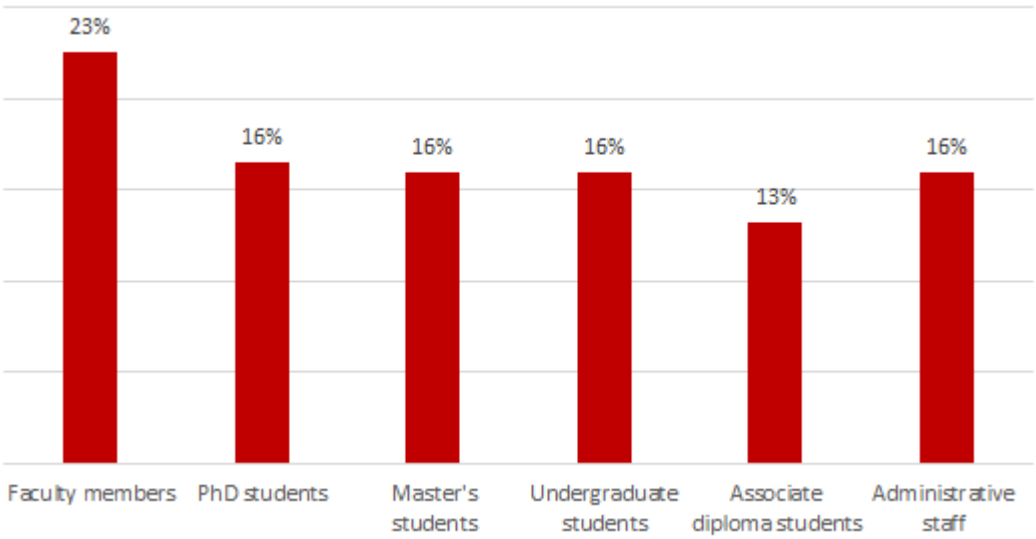



Figure 7 shows that all types of library users benefited from in-transit services. Faculty members accounted for the greatest proportion of usage (23%), while associate diploma students accounted for the least (13%). Doctoral, master, and undergraduate students accounted for 16% each, as did administration staff.

The thirteenth question of the survey asked librarians for their e opinions about in-transit services and the results are shown in Table 2.

*Table 2*: Opinions about in-transit services

| | I have no idea | I definitely do not agree | I partially agree | I agree | I definitely agree |
|---|---|---|---|---|---|
| In-transit services have a positive impact on the library budget | 5.7% | 12.5% | 21.6% | 42.0% | 18.2% |
| In-transit services have a positive impact on user satisfaction | 0.0% | 0.0% | 6.8% | 44.3% | 48.9% |
| In-transit services have a positive impact on the efficient use of physical spaces in the library | 1.1% | 6.8% | 20.5% | 43.2% | 28.4% |
| In-transit services prevent the purchase of multiples copies of books | 1.1% | 3.4% | 19.3% | 53.4% | 22.7% |
| In-transit services have a positive impact on the efficient use of the library personnel time (spent on cataloguing, classification and technical services) | 1.1% | 9.1% | 19.3% | 47.7% | 22.7% |

As seen in Table 2, 82% of participants stated that in-transit services have a positive impact on library budgets. 100% of participants stated such services have a positive effect on user satisfaction. 92% of the participants stated that in-transit services have a positive impact on the efficient use of physical spaces in the library, 95% noted such services prevent the purchase of multiple copies of books, and 90% reported a positive impact on the efficient use of the library personnel time spent on cataloguing, classification, and technical services.



The fourteenth and final question of the survey were open-ended to examine opinions and suggestions regarding in-transit services. 29 participants answered this question. 59% of respondents gave appreciation for such a study and wrote that they wanted to see the results. 13% stated that books should be purchased for each campus library with multiple copies, instead of in-transit services. 28% stated that there should be standards regarding in-transit services and that such services could increase the sense of belonging of students to the university. Participants also expressed their opinions about the deficiencies of in-transit services (budget, personnel, and in-transit system).

General statistical data related to in-transit services at the level of university libraries in Turkey is presented for the first time in this study. Significant results were gathered regarding library budgets, user satisfaction, efficient use of physical spaces, and efficient use of library staff time for in-transit services. In order to further examine such services and support our analysis with numerical data, BİLGİ Library's in-transit service was also included because of their long-term experience in providing in-transit services and access to application data from the institution.

**The Case of Istanbul Bilgi University Library**

Istanbul Bilgi University was founded as a private, non-profit institution in 1996 and has four campuses. Istanbul Bilgi University currently has approximately 20,000 students, 7

faculties, 3 institutes, 4 schools, and more than 150 programs (İstanbul Bilgi University, 2019).

Istanbul Bilgi University, with 3 libraries and 15 study halls, offers an extensive system of academic support for university degree programs, research, and teaching. The library collection consists of 170,000 print resources, 445,000 electronic books, 62,500 e-journals, 125 databases, and other academic materials. The Library is a member of the Anatolian University Library Consortium, the European Bureau of Library, the Information and Documentation Associations, the International Association of Law Libraries, the Turkish Librarians' Association, the University and Research Librarians' Association (UNAK), and the UNAK Turkish Platform of Law Librarians (İstanbul Bilgi University Library, 2019).

**In-transit services at Istanbul Bilgi University Libraries**

Since the first day it was established, BİLGİ Library has been providing materials that are not in its collection to its users using ILL at national and international levels. This service is important in terms of satisfying the information needs of the users notably because of:

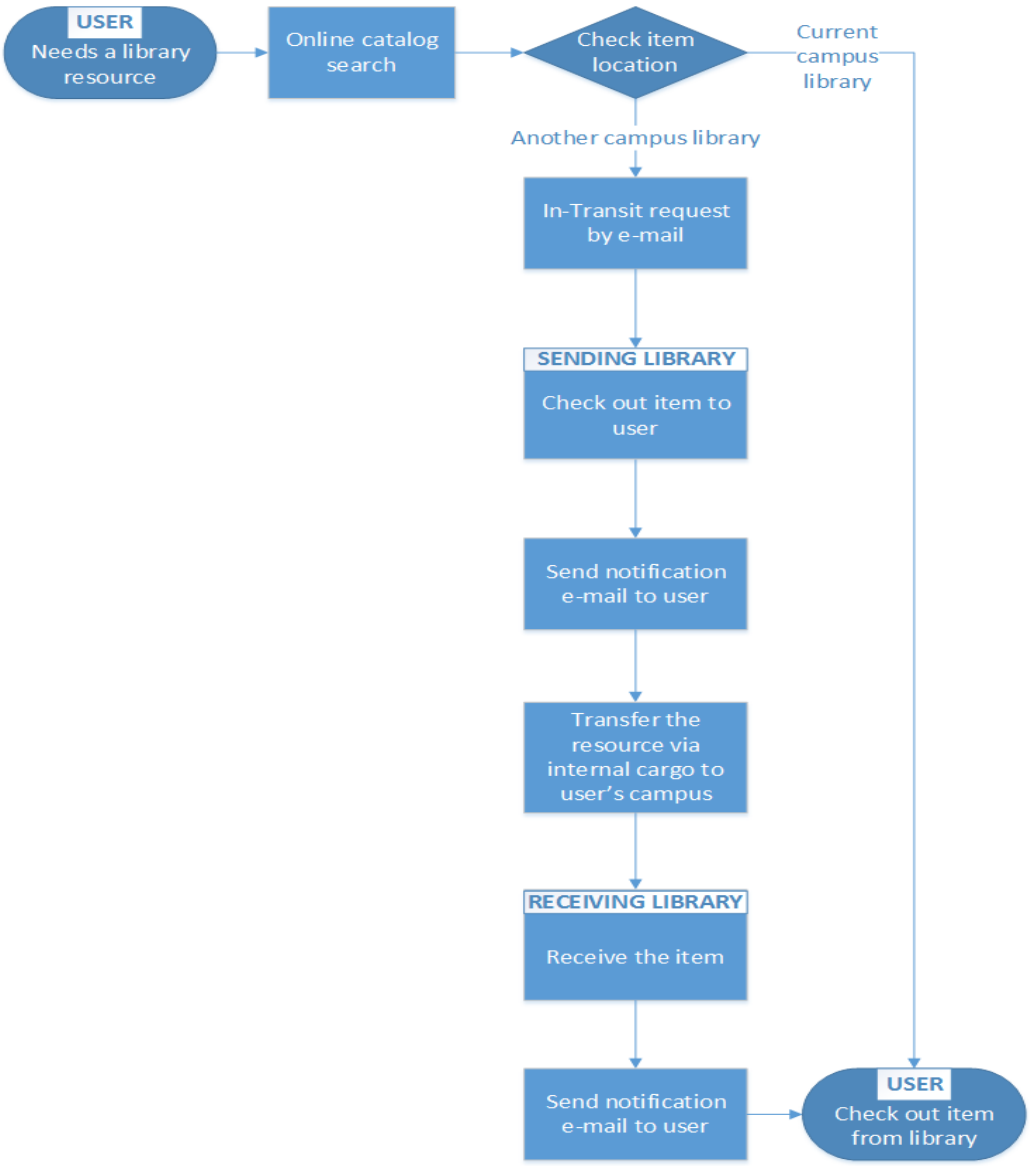
- Increasing numbers of campuses of Istanbul Bilgi University
- Frequent moving of departments to different campuses
- Campuses located in different districts
- Similar disciplines (such as Law and International Relations) located on different campuses
- Targeting the efficient use of the library budget
- Effective use of restricted library spaces
- Planning for meeting book and other item requests from users in a short time,
- Aiming to increase user satisfaction
- Efficient use of the collection



In-transit services were launched between BİLGİ Libraries in 2006 due to reasons mentioned above. A literature search was conducted on in-transit services before implementing them at BİLGİ Libraries. Necessary modifications to the library automation system were made regarding how to perform in-transit services (such as viewing the status of a borrowed item in the online catalog during the in-transit period), updating the library policy, and establishing workflows.

Istanbul Bilgi University has 3 different campuses. The distance between campuses is approximately 7 km and a free shuttle service is provided regularly for students and staff (İstanbul Bilgi University, 2019). Students can choose courses offered at different campuses, take classes at different campuses on the same day, and benefit from different campus libraries. Therefore, BİLGİ Library provides in-transit services to faculty members, master's students, PhD students and administrative staff (İstanbul Bilgi University Library, 2019). Figure 8 shows the workflow of library in-transit services.

*Figure 8*: İstanbul Bilgi University Library in-transit services workflow






BİLGİ Library users may access the library web page (http://library.bilgi.edu.tr/) and search the online catalog about the items they seek. After that, they may borrow the resources directly or may request them by using in-transit services. If the user requests an item from another campus, the bibliographic information of the resource is sent to the library's email address (kutuphane@bilgi.edu.tr) in order to have it delivered via in-transit services. After the request is received by a librarian, the relevant materials are attached, as being borrowed, to the user's account and sent to the campus library with the following message:

*Dear [user]*

> *The book you requested has been checked out to your account and will be delivered to Dolapdere Library. When the book arrives at the library, you will be informed.*

*Best regards,*

> *Reference Librarian*
> *Kuştepe Campus Library*

After the item arrives at the receiving library, the following message is sent to the user by librarians:

*Dear [user],*

> *The book that you requested from Kuştepe Library for delivery at Dolapdere Library has arrived. You may pick up the book from the Circulation Desk at Dolapdere Library.*
>
> *Best regards,*
>
> *Reference Librarian*
> *Dolapdere Campus Library*



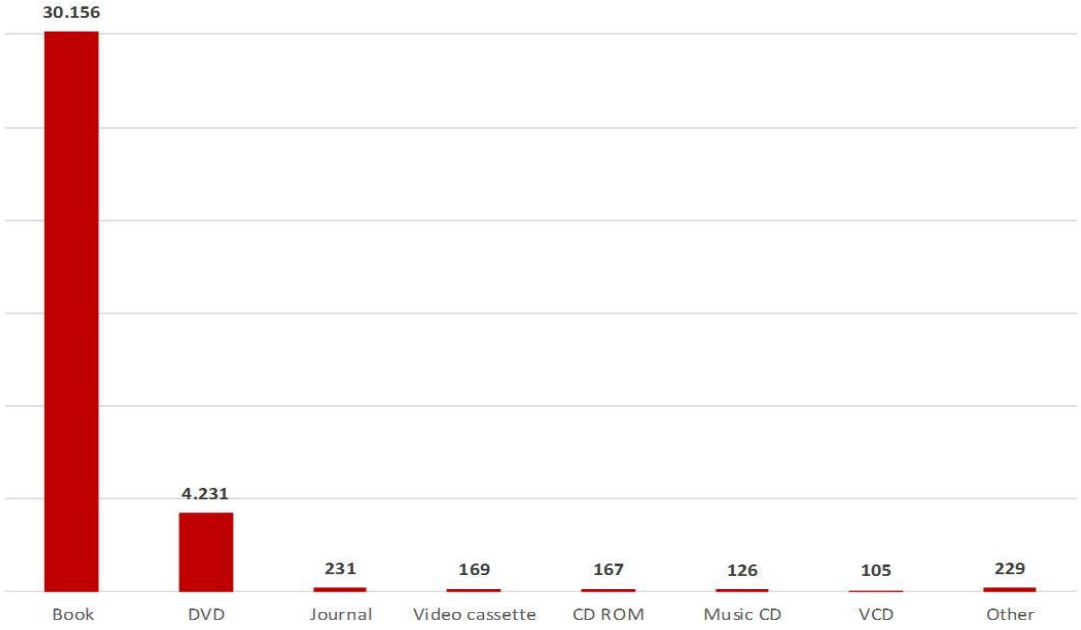
Users who receive this message come to the library and borrow the item. Users may return the item to any campus library. In-transit service deliveries are available between campuses at least 3 times a day.

The impact of in-transit services on user satisfaction at BİLGİ Library was evaluated using email comments and face-to-face interviews at the library. In this context, the library has had much positive feedback from users about in-transit services.

Establishing the library's in-transit services did not require any additional staff, budget, or cargo expenses. The library only purchased 10 book carrying cases in order to protect materials while being sent across campuses. Library resource deliveries have been part of the internal cargo system at the university that enables the transfer of documents between campuses.

In order to evaluate the impact of in-transit services at BİLGİ Library in terms of budgets, physical space, and collections, we analysed data obtained from the library automation system between 2009 and 2018 (10 years). Figure 9 shows the types and number of materials sent by in-transit services.

*Figure 9*: Istanbul Bilgi University Library in-transit statistics by item type



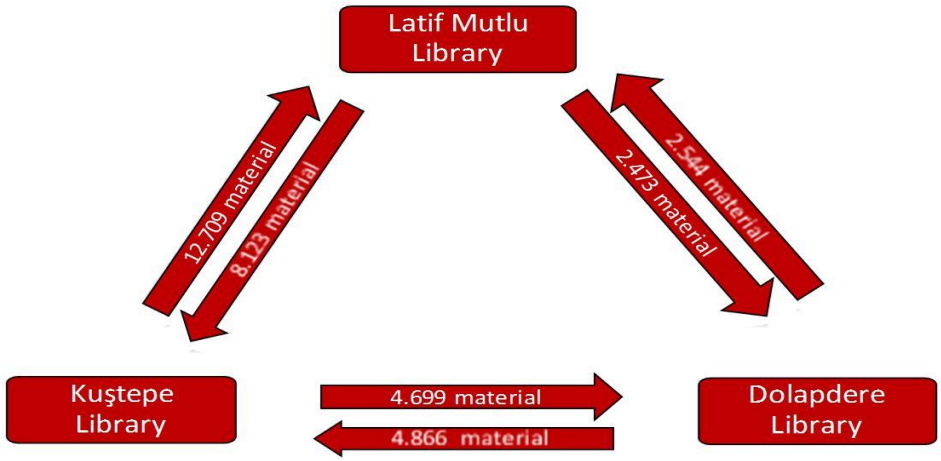

As shown in Figure 9, 35,414 items were delivered to users through in-transit services among 3 libraries during the 10-year period. 85% of the delivered materials were books, 12% were DVDs, 3% were journals, video cassettes, CD-ROMs, music CDs, VCDs, and other items.



In-transit services have had a positive contribution to the efficient use of library spaces. When BİLGİ Library's in-transit data is evaluated, it is seen that an area of approximately 100 square meters would be needed for 35,414 items. A shelf at BİLGİ library measures 95 cm x 66 cm x 207 cm and holds approximately 300 books. By offering in-transit services, the library saves 100 square meters and 120 double-sided bookshelves.

Istanbul Bilgi University has 3 libraries on the Santralistanbul, Kuştepe, and Dolapdere campuses. The libraries at the Kuştepe and Dolapdere campuses are called the Kuştepe Library and the Dolapdere Library, while the library on the Santralistanbul campus is called the Latif Mutlu Library. The number of items sent between the three libraries within 10 years is shown in Figure 10.

*Figure 10*: Istanbul Bilgi University Library in-transit statistics between campus libraries




As shown in Figure 10, 36% (12,709) of the 35,414 items were sent from the Kuştepe Library to the Latif Mutlu Library; 23% (8,123) from the Latif Mutlu Library to the Kuştepe Library; 14% (4,866) from Dolapdere Library to Kuştepe Library; 13% (4,699) from Kuştepe Library to Dolapdere Library; 7% (2,544) from Dolapdere Library to the Latif Mutlu Library; and 7% (2,473) from the Latif Mutlu Library to Dolapdere Library.

Another benefit of in-transit services to libraries is preventing the same item from being re-purchased for multiple libraries. In order to evaluate BİLGİ Library data in this context, the distribution of materials sent between libraries according to the Library of Congress classification (LCC) system is examined and shown in Table 3.

*Table 3*: Istanbul Bilgi University Library in-transit statistics by subject

| Subject | In-transit item | Percentage (%) |
|---|---|---|
| P - Language and Literature | 10,800 | 30.50% |
| H - Social Sciences | 7,546 | 21.31% |
| D - World History and History of Europe, Asia, Africa, etc. | 4,462 | 12.60% |
| B - Philosophy. Psychology. Religion | 3,121 | 8.81% |
| J - Political Science | 2,803 | 7.91% |
| N - Fine Arts | 990 | 2.80% |
| G - Geography, Anthropology, and Recreation | 833 | 2.35% |
| R - Medicine | 813 | 2.30% |
| M - Music | 741 | 2.09% |
| Q - Science | 652 | 1.84% |
| K - Law | 581 | 1.64% |
| L - Education | 526 | 1.49% |
| T - Technology | 484 | 1.37% |
| C - Auxiliary Sciences of History | 346 | 0.98% |
| A - General Works | 170 | 0.48% |
| E - History of America | 169 | 0.48% |
| Z - Bibliography, Library Science | 157 | 0.44% |
| U - Military Science | 88 | 0.25% |
| S - Agriculture | 67 | 0.19% |
| F - Local History of the Americas | 60 | 0.17% |
| V - Naval Science | 5 | 0.01% |
| **Total** | 35,414 | 100.00% |



In the LCC system, the letter "P" indicates the publications in the "Language and Literature" field. As shown in Table 3, the resources in the field of Language and Literature are the most requested materials across all campuses. The second most requested subject is Social Sciences, and the third is World History. Law and Political Science are used by disciplines close to each other and are also sent to other campuses.

Another advantage of the in-transit services to libraries is to ensure the efficient use of library budgets by preventing re-acquisition of the same items for multiple campuses. In-transit data for BİLGİ Library is examined and presented in Table 4.

*Table 4*: Istanbul Bilgi University Library in-transit statistics by total value

| Item type | Number of in-transit materials in Turkish | Value of in-transit materials in Turkish | Number of in-transit materials in English | Value of in-transit materials in English | Grand total value |
|---|---|---|---|---|---|
| Book | 9,098 | $ 90.980,00 | 20,735 | $ 1.285.570,00 | $ 1.376.550,00 |
| DVD | 495 | $ 7.425,00 | 3,847 | $ 57.705,00 | $ 65.130,00 |
| Journal | 326 | $ 16.300,00 | 41 | $ 20.500,00 | $ 36.800,00 |
| Video cassette | 33 | $ 165,00 | 129 | $ 1.290,00 | $ 1.455,00 |
| CD ROM | 24 | $ 240,00 | 143 | $ 2.145,00 | $ 2.385,00 |
| Music CD | 6 | $ 60,00 | 187 | $ 2.805,00 | $ 2.865,00 |
| Other | 177 | $ 520,00 | 173 | $ 4.042,00 | $ 4.562,00 |
| **TOTAL** | **10,159** | **$ 115,690,00** | **25,255** | **$ 1.374.057,00** | **$ 1.489.747,00** |

Since the language of instruction at İstanbul Bilgi University is mainly English, most of the materials in the library are in English. As shown in Table 4, most of the items sent by in-transit services were also in English. Due to in-transit services, a library budget savings of 1,489,747 USD was achieved. In addition, in-transit services seem to contribute to the efficient and effective use of physical space, budget, and staff time at BİLGİ Library and this service did not incur additional costs such as additional staff or access to BİLGİ Library.

## Conclusion & Recommendations

Resource sharing among libraries has an important role in meeting the needs of library users. An item that cannot be found in one library can be supplied under the auspices of resource sharing between libraries at the national or international level. Transferring some materials onto electronic platforms and producing them electronically has not reduced the importance of resource sharing; thus, information sharing services continue in different forms.



Resource sharing has an important place in increasing user satisfaction as well as in the efficient use of the library budgets and facilities.

Universities with multiple campuses, as a standard service, provide their users with materials from other universities under interlibrary loan programs. This study identified multi-campus universities in Turkey and determined the contributions of the in-transit services to libraries in terms of physical space, user satisfaction, budgets, and staff efficiency, with the following results:

- 81% of the 106 universities which participated in this study had more than one campus.
- 53% of multi-campus universities had no in-transit services between their campuses.
- 75% of universities that had in-transit services between campuses delivered books as well as journals/articles.
- 47% of in-transit deliveries did not occur according to a regular timeframe and were sent only on an “upon request” basis.

- 83% of items delivered to other campus libraries with in-transit services were sent via vehicles belonging to the university.
- In general, existing library automation systems are used for in-transit services and therefore, no extra budget allocations were needed.
- Libraries provided in-transit services to all their users, if they provided such services.

The opinions of library staff that participated in the survey were evaluated in regard to efficient use of library budgets, user satisfaction, physical space, and library staff satisfaction, in addition to BİLGİ Library in-transit statistics, and the following results were observed:

- 82% of libraries that participated in the survey expressed that in-transit services contribute positively to library budgets. 10-year in-transit data from BİLGİ Library showed that the service made it possible to achieve a savings of 1,489,747 USD. According to these results, it can be said that in-transit services contributed positively to the university library budget.

- All participants (100%) thought that the in-transit services had/would have a positive impact on user satisfaction.

- 92% of participants thought that in-transit services help libraries use physical space efficiently. 95% said that such services prevent the purchase of multiple copies of the same item. According to data collected from BİLGİ Library, 100 square meters of space was saved by avoiding multi-copy purchases over a 10-year period.

- 90% of survey participants stated that in-transit services helped/would help the library staff use their time efficiently. With the in-transit service of BİLGİ Library, 35,414 items were sent between 3 libraries over 10 years. If multiple copies of these resources had been purchased, more staff time would have been reserved for operations such as purchasing, cataloging, and classification.



In summary, this survey found that in-transit services in Turkey are useful for university libraries in terms of user satisfaction, budgets, physical space, and efficient use of library staff time. Researchers and students also save time by requesting materials from any campus through in-transit services.

This study heightens the awareness about in-transit services at university libraries and serves as a model for the other studies in this area. BİLGİ Library's process flowchart and the analysis of data derived from BİLGİ can be useful for libraries initiating in-transit services for the first time. Additionally, BİLGİ Library's know-how and a decade of experience in providing in-transit services can be leveraged by libraries at the national and regional level upon request. Finally, this article may be useful for all academic librarians and researchers concerned with in-transit services, library management, collection management and resource sharing, especially in developing countries.

## Acknowledgments

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**APPENDIX ONE:**

**SURVEY QUESTIONS ABOUT IN-TRANSIT SERVICES AMONG MULTI-CAMPUS UNIVERSITIES**

Library users across multi-campus universities can request books or non-book resources from other campuses and may choose to return them to any other campus library of their choice. Such services are either briefly coined as "in-transit" or are more explicitly named as "inter-campus book/resource transfer."

This survey, which will initially identify the universities that operate in more than one campus and whether their campuses have libraries, aims to gain insight into the impact of in-transit services on library budgets, the use of physical space, and user satisfaction as well as gather information about opinions and suggestions librarians have for such services.

Survey findings will be anonymously included in a research paper that will be presented at the international IFLA -ILDS (Interlending and Document Supply) conference organized by the IFLA Document Delivery and Resource Sharing (DDRS) Section in the Czech city of Prague (October 9-11, 2019). Participating institutions will be granted access to survey findings upon request.

We would like to thank you in advance for your valuable contribution and feedback.

Sami ÇUHADAR, Ertuğrul ÇIMEN, Abdullah TURAN



1.) Please state the name of your institution.

2.) Please state the category of your institution.

( ) State University ( ) Foundation (non-profit private) University

3.) What is the number of campuses (including provinces and districts) at which that your university conducts teaching and research activities? If your answer is 1, you may quit answering the questionnaire. Thank you for your participation in the survey. Number of campuses: ----------

4.) How many of your teaching and research campuses (including provinces and districts) at your university have a library? Number of libraries: ……..

5-.) Do you provide your library users with book/materials transfer services between your university's teaching & research campuses (including provinces and districts)? If your answer is no, please skip to Question 13.

( ) Yes ( ) No

6.) If your answer is "Yes": Please state the number of libraries that conduct interlibrary book/material transfer (in-transit) activities. ……..

7.) Please select the types of items that are transferred between libraries as part of interlibrary book/material transfer (in-transit) services.

( ) Books ( ) Non-book resources ( ) Periodicals/articles ( ) Other ……..

8.) How often do you transfer books/materials (in-transit) between campuses?

( ) More than once a day ( ) Once a day ( ) Once every other day ( ) Once a week
( ) Once every other week ( ) Other …….

9-. What are the means of book/material transfer between campuses?

( ) By post or courier ( ) By university vehicle ( ) By library vehicle ( ) Other …….



10-. Which systems below do you use for book/material transfer between campuses?

( ) Library automation system ( ) Your own application ( ) Email ( ) Other ……..

11.) Are there any items in the library budget that are designated for inter-campus book/material transfers (in-transit)?

( ) Yes ( ) No

12-. Which user groups benefit from inter-campus book/material transfer (in-transit) services?

( ) Faculty members ( ) PhD students ( ) Master's students

( ) Undergraduate students ( ) Associate diploma students ( ) Administrative staff

13.) Please state the number that best describes your opinion regarding interlibrary book/material transfer (in-transit) services with 1 for “I have no idea”, 2 for “I definitely do not agree”, 3 for “I partially agree”, 4 for “I agree” and 5 for “I definitely agree”.

| | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| In-transit services have a positive impact on the library budget. | | | | | |
| In-transit services have a positive impact on user satisfaction. | | | | | |
| In-transit services have a positive impact on the efficient use of physical spaces in the library. | | | | | |
| In-transit services prevent the purchase of multiple copies of books. | | | | | |
| In-transit services have a positive impact on the efficient use of the library personnel time spent on cataloguing, classification, and technical services. | | | | | |



14-) If you have any additional comments or suggestions, please state them below.

……
……

# International Interlibrary Loan in a Changing Environment: Results from the 2019 RUSA STARS International ILL Survey

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**Abstract:**

*In 2019 the American Library Association (ALA) Reference & User Services Association's Sharing and Transforming Access to Resources Section (RUSA STARS) International Interlibrary Loan Committee conducted its fourth survey of international interlibrary loan policies and practices. This survey was widely distributed to libraries worldwide, in coordination with IFLA's Document Delivery & Resource Sharing Section, including for the first time translations in six of the seven official IFLA languages. While reusing questions from prior survey instruments allowed for longitudinal analysis of quantitative data, the 2019 survey also included new open response questions that delve deeper into how the global library community can build upon its success in sharing resources across borders in order to improve this service for future users. On behalf of the committee, the authors will present select survey results, focusing on the evolving role of international ILL in an increasingly complex resource discovery and delivery ecosystem. Data-informed strategies to overcome challenges currently facing this service and to optimize global delivery solutions will be shared.*



**Keywords**: International, Interlibrary loan, Interlending, Resource sharing, Surveys

## Introduction

The International Interlibrary Loan (ILL) Committee belongs to the Sharing and Transforming Access to Resources Section (STARS) of the Reference and User Services Association (RUSA), which is one of the eleven divisions of the American Library Association (ALA). A key part of the committee's charge is to evaluate trends in international interlibrary loan and resource sharing, and to this end, the committee has

conducted four surveys since 2007 inquiring about libraries' international borrowing and lending practices.[69] The 2019 survey is the third iteration to target a global audience and the first one to offer multiple translations of the survey instrument in the hope of increasing the diversity of respondents. The survey was widely distributed to libraries worldwide in coordination with IFLA's Document Delivery & Resource Sharing Section, and translations in six of the seven official IFLA languages (Arabic, English, French, German, Russian, and Spanish) were provided.

The 2019 survey builds upon the 2015 and 2011 instruments, reusing most of the questions (either verbatim or with minor modifications), which allows for longitudinal analysis of quantitative data over the past decade. Notable changes include rephrasing questions to improve translations, reducing Anglophone-centric response options,[70] and eliminating questions that had not yielded interesting or actionable data in prior iterations of the survey. Additionally, committee members added three new open response questions that delve deeper into how the global library community can build upon its success in sharing resources across borders in order to improve this service for future users. This paper presents select survey results, focusing on the evolving role of international ILL in an increasingly complex resource discovery and delivery ecosystem. Data-informed strategies to overcome challenges currently facing this service and to optimize global delivery solutions will also be shared.

**Methodology**



As in 2015, the survey instrument was created and responses collected using Qualtrics, but this time it was hosted by Northwestern University. The survey was comprised of 40 questions, only two of which were required (selecting your library's continent and country). Questions were divided into four sections: about your library, borrowing activity, lending activity, and broader open response questions related to international ILL. In addition to 33 multiple choice or multiple answer questions (12 of which included a free text option choice to solicit additional detail), seven open response questions were included in the survey to gather more nuanced qualitative data. Survey logic was used to display only the most relevant questions based on prior responses. For the full list of questions, please refer to the Appendix.

Qualtrics has a Translate Survey feature that enabled the committee to provide multiple versions of the survey instrument to a global audience. After finalizing the English

[69] For more information about the 2007, 2011, and 2015 surveys, see Tina Baich, Tim Jiping Zou, Heather Weltin, and Zheng Ye Yang, "Lending and Borrowing across Borders: Issues and Challenges with International Resource Sharing," *Reference & User Services Quarterly* 49, 1 (2009): 55–64; Tina Baich and Heather Weltin, "Going Global: An International Survey of Lending and Borrowing across Borders," *Interlending & Document Supply* 40, 1 (2012): 37–42; and Kurt Munson, Hilary H. Thompson, Jason Cabaniss, Heidi Nance, and Poul Erlandsen, "The World Is Your Library, or the State of International Interlibrary Loan in 2015," *Interlending & Document Supply* 44, 2 (2016): 44–57.

[70] Several multiple choice or select all that apply responses related to resource sharing networks exclusive to or dominant within the United States, United Kingdom, and Australia were removed and replaced with more generic or fill-in-the blank options.

version of the survey instrument, translations were first generated using the Auto-Translate option powered by Google Translate. These translations were then exported into Word documents and shared with bilingual volunteers who reviewed them and supplied corrections (which were minor for French, German, and Spanish, but extensive for Arabic and Russian). After corrections were manually entered in Qualtrics, a survey preview link was shared with the bilingual experts for a final verification. Ultimately a single instrument was distributed to ILL practitioners, but respondents had the option to choose their preferred language from a drop-down menu. This mechanism allowed for seamless comparison of responses using the English questions and pre-defined answers regardless of the version used by the respondents.

The survey was open from March 5 to April 16, 2019. To prepare for distribution, committee members revisited and expanded upon the distribution list used in 2015. More than 370 emails were sent to resource sharing listservs, networks, and professional contacts across 106 countries. In addition to emails sent by committee members, members of IFLA's Document Delivery & Resource Sharing Section and the IFLA Regional Office managers also shared the survey with their professional networks and distribution channels. For the first time the committee actively employed social media as part of its distribution strategy, promoting the survey through the "ILLers" Facebook group as well as the RUSA STARS and IFLA Document Delivery & Resource Sharing Section's Facebook groups and Twitter accounts. Wherever possible, these communications highlighted the language options by providing direct links to each language version in its native language and characters.



**Demographic Overview**

Altogether 394 survey responses with one or more answers were received, 317 of which were completed. Table 1 shows the breakdown by continent. In all 65 countries were represented, which is the highest number for a RUSA STARS international ILL survey to date. The 2019 survey also exceeded the 2015 survey in terms of number of responses received, but fell short of the 2011 survey, which had 632 responses (404 of which were completed). Overall and on most continents, academic libraries dominated. The exceptions were Africa and Australia and Oceania; on those continents, academic libraries were still the largest groups (at 45% and 44%, respectively), but not the majority of respondents. There was a wide range in ILL volume among respondents, but the majority borrow and lend fewer than 1,000 returnables and 1,000 non-returnables per year (between 53-59% for all four categories).

**Table 1. Responses by continent, 2019**

| Continent | Number | Percentage |
|---|---|---|
| North America | 131 | 33% |
| Central or South America | 22 | 6% |
| Europe | 154 | 39% |
| Africa | 29 | 7% |
| Asia | 42 | 11% |
| Australia and Oceania | 16 | 4% |

While an overwhelming majority of respondents (80%) used the English version of the survey, the data suggest that providing translations did increase the respondents' geographic diversity. Each translation was used at least twice, with Spanish being used the most (see Table 2), and all translations but the German one resulted in a new country responding for the first time. Respondents from 24 of 65 countries (37%) used languages other than English, and for 12 countries (18%) the participants only used languages other than English. Most notably, eight countries that had not been featured in one or both of the 2011 and 2015 surveys answered the survey using one of the translations: Argentina (Spanish), Belarus (Russian), Chile (Spanish), Costa Rica (Spanish), Côte d'Ivoire (French), Russia (Russian), Saudi Arabia (Arabic), and Senegal (French). Finally, the committee received increased responses from eight countries for which a translation in one of their official languages was provided.



**Table 2. Usage of survey translations, 2019**

| Language | Times Used |
|---|---|
| Arabic | 2 |
| German | 18 |
| French | 17 |
| Spanish | 39 |
| Russian | 4 |

## International Borrowing Overview

Of the 372 responses to the question "Do you borrow internationally?", 78% of respondents replied yes, and of those, the vast majority (83%) borrow both returnable and non-returnable materials from other countries. Participation in international borrowing varies by continent, with European respondents being the most likely to participate at 89% and African respondents the least likely at 34% (see Table 3). Among those who do not borrow from libraries abroad the most common reasons were no demand (32%), lack of infrastructure (22%), and cost (22%). Overall the volume of international borrowing remains low, with the majority of respondents reporting less than 100 items per year for both returnables (63%) and non-returnables (63%). Unlike in 2015 (when volume appeared to be on the rise),[71] the 2019 survey reveals no clear trend in change in international borrowing volume in recent years, with 35% of respondents reporting an increase as compared to five years ago, 37% reporting a decrease, and 28% reporting no change. Among those reporting an increase in volume, change in users discovering international materials and change in the availability of international lenders were the most common reasons at 31% and 24%, respectively (except among Asian respondents, where change in local policies was the highest factor at 30%). Among those reporting a decrease in volume, alternatives to resource sharing, such as Sci-Hub, #icanhazPDF, etc., was the most common reason at 24% (except among African and Central and South American respondents, where change in local collection budgets dominated at 50% and 42%).



**Table 3. Participation in international ILL by continent, 2019**

| Continent | International Borrowing | International Lending |
|---|---|---|
| North America | 83% | 84% |
| Central or South America | 55% | 57% |
| Europe | 89% | 87% |
| Africa | 34% | 29% |
| Asia | 63% | 64% |
| Australia and Oceania | 81% | 80% |

When asked "From which countries does your library borrow most heavily?", 257 respondents identified 57 countries as frequent lenders. Germany (57%), United States of America (42%), United Kingdom (40%), France (26%), Australia (23%), and Canada

[71] Munson et al, 45.

(21%) were the most frequently selected countries, as seen in the 2015 survey.[72] The 2019 survey asked for the first time, "Why does your library borrow from these countries?", seeking to confirm whether high development, geographic proximity, open borders, and shared language and culture contribute to more frequent borrowing from particular countries, as previously suggested.[73] While clear patterns in proximity or language between the borrower and their most frequent lenders exist for nearly all continents (see Table 4), proximity (7%) and common language (3%) were less commonly mentioned as reasons for borrowing from specific countries than availability of materials (48%); ease of identifying, requesting, and paying for material (26%); and reliability of service (15%). These additional factors explain why Germany is one of the most popular countries from which to borrow on nearly all continents; numerous open responses attest both to the richness of their libraries' collections and the high quality of their resource sharing services, which appear to outweigh any potential barriers of distance or language.

**Table 4. Countries from which libraries most frequently borrow by continent, 2019**

| Continent | #1 Country | #2 Country | #3 Country | #4 Country | #5 Country |
|---|---|---|---|---|---|
| North America | United Kingdom (16%) | Germany (16%) | Canada (15%) | Australia (14%) | United States (10%) |
| Central or South America | United States (21%) | Spain (19%) | Mexico (11%) | Argentina (8%) | Colombia (5%) |
| Europe | Germany (20%) | France (13%) | United Kingdom (9%) | United States (9%) | Spain (8%) |
| Africa | United States (22%) | Germany (19%) | Australia (9%) | France (9%) | Canada (9%) |
| Asia | United States (30%) | United Kingdom (15%) | Germany (10%) | Australia (8%) | France (7%) |
| Australia and Oceania | United States (27%) | Germany (24%) | United Kingdom (16%) | New Zealand (16%) | Australia (5%) |



No matter where in the world one might be, certain types of materials remain more difficult than others to acquire from foreign collections. The most difficult are copies of rare or older material, with 47% of respondents who borrow internationally reporting

[72] Munson et al, 45. The 2015 and 2019 surveys yielded the same top six countries, but the order of those countries shifted slightly, with the United States edging out the United Kingdom and France and Australia passing Canada.

[73] Kurt Munson and Hilary H. Thompson, "Giving Your Patrons the World: Barriers to, and the Value of, International Interlibrary Loan," *portal: Libraries and the Academy* 18, 1 (2018), 20-24.

difficulty, followed by electronic books (39.5%) and theses and dissertations (38.8%). Copies of rare or older material were most commonly reported as the most difficult among respondents on most continents, excluding Europe, where electronic books led at 54%, and Central and South America, where books led at 70%. According to 36% of respondents, sound recordings, videos, and serials are also challenging to acquire. Overall, books and musical scores remain the easiest formats to borrow from abroad, with only 14% and 17% of respondents reporting difficulty, respectively.

**International Lending Overview**

Of the 339 responses to the question "Do you lend internationally?", 77% of respondents replied yes, and of those, the vast majority (83%) lend both returnable and non-returnable materials to other countries. As with borrowing, participation in international lending varies by continent, with European respondents being the most likely to participate at 87% and African respondents the least likely at 29% (see Table 3 above). Among those who do not lend to libraries abroad the most common reasons were no demand (33%), lack of infrastructure (27%), cost (25%), and local policy (25%). Overall the volume of international lending remains low, with the majority of respondents reporting less than 100 items per year for both returnables (74%) and non-returnables (66%). The 2019 survey reveals no clear trend in change in international lending volume in recent years, with 34% of respondents reporting an increase in requests filled as compared to five years ago, 23% reporting a decrease, and 43% reporting no change. Among those reporting an increase in requests filled, change in availability of holdings information was the most common reason at 41%, followed by change in local policies at 19%. Among those reporting a decrease in requests filled, change in availability of holdings information was also the most common reason at 27%, followed by change in licensing terms at 17%. These responses illustrate the critical role discovery plays in both facilitating or impeding resource sharing.



The ability to effectively lend non-returnables to other countries depends on electronic delivery methods, copyright law, and (in the case of electronic resources) licensing terms. Of the respondents that lend non-returnables abroad, 84% deliver those materials electronically. Respondents mentioned at least ten different file sharing methods, with the most common being email (61%), Article Exchange (42%), and Odyssey (22%). Based on responses received, libraries in Africa (100%), Australia and Oceania (100%), Central and South America (100%), and North America (97%) are the most likely to lend non-returnables electronically. Those that do not provide electronic delivery are primarily located in Asia and Europe (in particular Italy, Germany, and Japan). Despite the wide popularity of electronic delivery, both copyright law (40%) and licensing restrictions (55%) remain significant barriers to lending non-returnables internationally, affecting approximately half of the respondents' ability to lend copies abroad. Copyright was reported as a barrier to international lending by a majority of respondents in Asia (76%), Africa (63%), and Europe (53%), while licensing terms restricted international lending for the majority of respondents in Australia and Oceania (82%), Asia (76%), Africa (75%), and Europe (62%).

The 2019 survey also asked respondents about the request, shipping, and payment methods that they employ or accept for international ILL transactions. Email remains the dominant form of accepting international requests at 80%, followed by resource sharing systems or networks at 52%. Email is the most commonly accepted method among respondents in Central and South America, Europe, Asia, and Australia and Oceania, while resource sharing systems and networks were more common among respondents in North America and Africa. Expedited postal service is still the most common method of shipping returnables abroad (38%), closely followed by regular postal service (33%) and courier (23%). Courier shipping is most common in Australia and Oceania and North America, perhaps due to frequent transoceanic shipping. When it comes to payment, IFLA vouchers are the most widely accepted method for international transactions (73%), followed by three electronic payment methods: OCLC IFM (47%), credit cards (24%), and bank transfers (18%). While IFLA vouchers are common across all continents, there is wide variance in acceptance of other payment methods by region. OCLC IFM is dominant among respondents in Africa (86%), North America (80%), and Australia and Oceania (64%); credit cards are frequently accepted in Australia and Oceania (55%) and North America (43%); and bank transfers are more common in Europe (28%) than other continents.

When asked to identify up to five countries to which their library most frequently lends, 224 respondents identified 74 countries as frequent borrowers. The United States of America (38%), Australia (28%), Canada (28%), United Kingdom (27%), and Spain (21%) were the most frequently selected countries overall, but there is noticeable variance by continent (see Table 5). The same patterns of proximity and language seen in borrowing are also seen in lending, with most (but not all) international borrowing occurring within the same continent or between countries with a shared language. The exceptions (Denmark borrowing from North America, Australia borrowing from Central and South America, and Germany borrowing from Asia and Australia and Oceania) may indicate uncommon collections and/or ease of service driving this transoceanic activity. The survey also asked respondents to identify up to five countries to which they will not lend returnables and those to which they will not lend non-returnables. For returnables, 61 countries were selected by 38 respondents, with Afghanistan and the United States of America appearing most frequently (n=9). For non-returnables, 24 countries were selected by a mere 12 respondents, with the Democratic People's Republic of Korea and Germany appearing most frequently (n=3). The reasons cited for why some libraries would not lend to specific countries include distance, cost, customs, policy, political instability, sanctions, travel advisories, and a history of unreliable returns. However, based on the relatively low response rate to these questions (between 3-10%) and answers to the subsequent open response questions inquiring why (the most common of which was a variant of no restrictions), it appears that most libraries participating in international ILL are willing to lend to any country that makes a request and follows their conditions for lending.

**Table 5. Countries from which libraries most frequently lend by continent, 2019**

| Continent | #1 Country | #2 Country | #3 Country | #4 Country | #5 Country |
|---|---|---|---|---|---|
| North America | Canada (17%) | Australia (16%) | United Kingdom (13%) | United States (10%) | Denmark (10%) |
| Central or South America | United States (11%) | Spain (11%) | Colombia (7%) | Chile (7%) | Australia (7%) |
| Europe | Spain (12%) | France (10%) | United States (9%) | Germany (8%) | Italy (8%) |
| Africa | Canada (16%) | United States (12%) | New Zealand (8%) | France (8%) | British Indian Ocean (8%) |
| Asia | United States (30%) | United Kingdom (15%) | Germany (10%) | Australia (8%) | France (7%) |
| Australia and Oceania | United States (27%) | Germany (24%) | United Kingdom (17%) | New Zealand (17%) | Australia (10%) |



## Notable Changes and Trends, 2011-2019

The similarities between the 2011, 2015, and 2019 survey instruments allow for longitudinal comparison of the three data sets. Overall, participation in international ILL (along with characteristics and methods employed) have remained relatively constant over the past decade. Most changes are minor, likely reflecting a gradual evolution in services and operations, while fluctuations may be attributed to different survey respondents and varying representation of different countries or regions. What the authors highlight here are notable changes in 2019 and clear trends as evidenced by a sustained pattern of increase or decrease across all three surveys. Such patterns were most clearly seen with the lending data, which will be the focus of this section.

In terms of request methods accepted by lenders, locally hosted webforms are on the rise, up from 17% of respondents in 2011 to 23% in 2019. On the other hand, fax has experienced a sharp decrease, down from 33% of respondents in 2011 to 8% in 2019, as has postal service, down from 31% in 2011 to 20% in 2019 (see Figure 1). For payment methods, acceptance of IFLA vouchers increased from 50% of respondents in 2011 to 73% in 2019, as did bank transfers (also known as electronic funds transfer or EFTS) to a lesser degree. During the same period of time, acceptance of both local and foreign checks decreased significantly (see Figure 2). While most electronic methods of payment (e.g., OCLC IFM, bank transfers, and credit cards) have increased between 2011 and 2019, non-electronic methods have decreased, with the notable exception of IFLA vouchers.

**Figure 1. Request methods used by international lenders, 2011-2019**

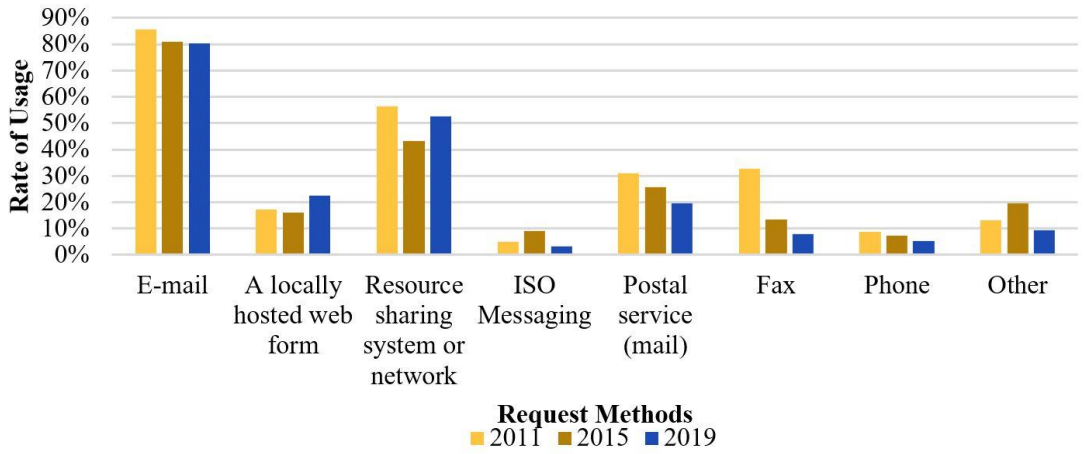
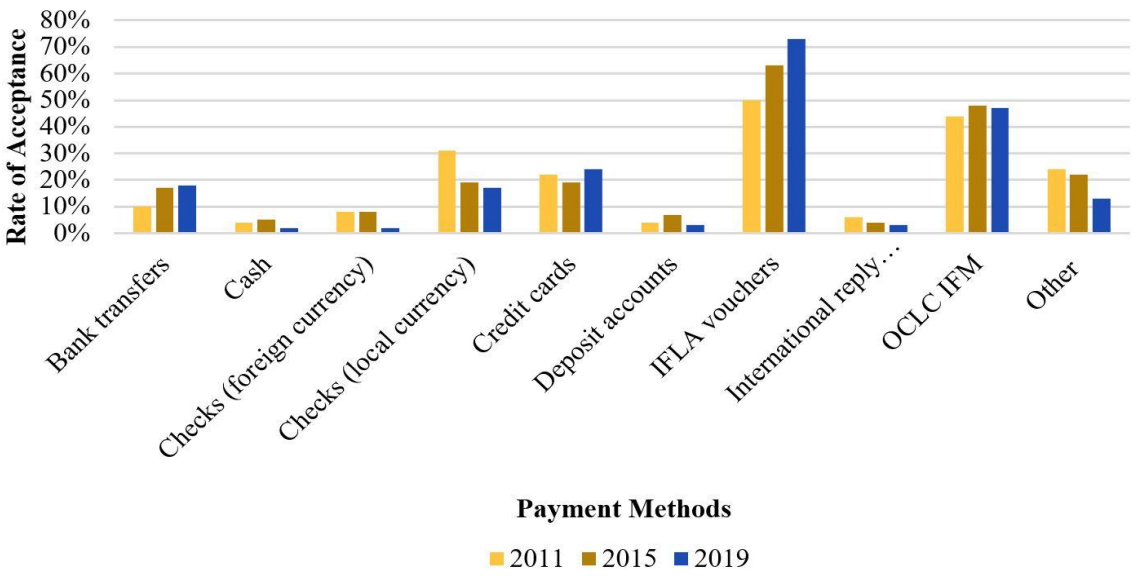


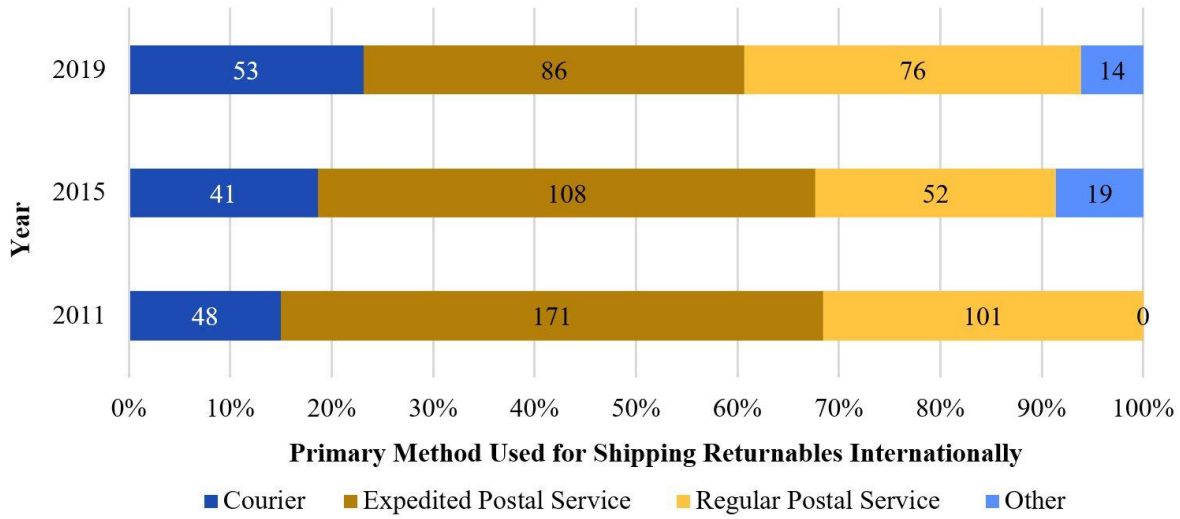

**Figure 2. Payment methods accepted by international lenders, 2011-2019**






For delivery of returnable materials abroad, the surveys demonstrate sustained growth in the use of courier shipping (DHL, FedEx, UPS, etc.), which increased from 15% in 2011 to 20% in 2015 and 23% in 2019 (see Figure 3). While expedited postal service remains the most common shipping method at 38%, it is no longer employed by the majority of respondents as it was in 2011 (53%) and 2015 (54%). Electronic delivery of non-returnables peaked at 84% in 2019 following a dip between 2011 (80%) and 2015 (73%).

**Figure 3. International returnable delivery methods used by international lenders, 2011-2019**




While electronic delivery, request, and payment methods grow in popularity among lenders, licensing terms of electronic resources also appear to be an increasing barrier to international ILL. The 2019 survey was the first to separate licensing from copyright when asking about potential barriers impeding the supplying of non-returnables to foreign libraries. When licensing was coupled with copyright, 42% (2011) and 46% (2015) of respondents replied that either or both prevented them from supplying copies to libraries abroad. When specifically asked about licensing restrictions in 2019, that percentage rose to 55% (see Figures 4-7). Similarly, in the 2019 survey electronic books rose to second place among the hardest materials to obtain from foreign libraries, surpassing theses and dissertations for the first time.

**Figure 4. Copyright or licensing restrictions as barrier to international ILL, 2011**

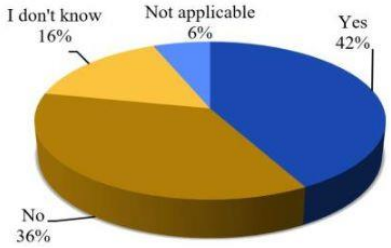



**Figure 5. Copyright or licensing restrictions as barrier to international ILL, 2015**

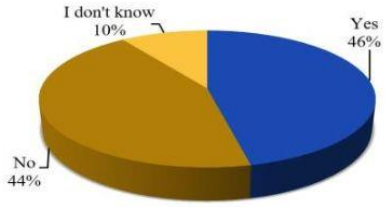



**Figure 6. Copyright restrictions as barrier to international ILL, 2019**

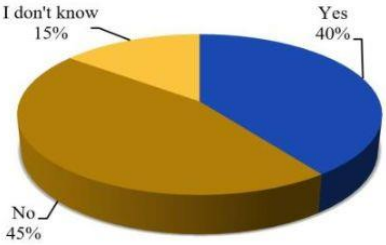
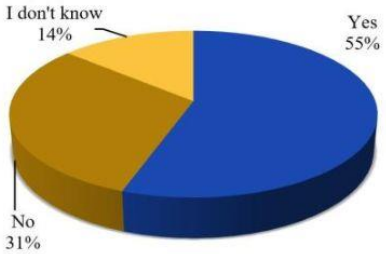



**Figure 7. Licensing restrictions as barrier to international ILL, 2019**




Finally, there has been an increase since 2011 in responses related to not lending to a particular country (see Table 6), but it is unclear if this is due to the increasing diversity of survey respondents or increasing selectivity on the part of lenders. The number of selections increased from 66 in 2011 to 111 in 2015 and 117 (returnables) and 34 (non-returnables) in 2019. Similarly, the percentage of overall respondents who selected at least one country to which they do not lend rose from 7% in 2011 to 17% in 2015 and 14% in 2019. Fortunately, these selections remained low overall, as did the percentage of respondents who lend internationally but selected one of the most banned countries (1-6% between 2011 and 2019). Afghanistan, the United States of America, and South Africa were the only countries that appeared in the top do not lend lists in all three surveys. Reasons expressed in 2019 include concerns about war and instability (Afghanistan); difficulties with customs and high shipping costs (United States); and previous loss of materials (South Africa).

**Table 6. Countries to which your library will not lend, 2019**

| | 2011 | 2015 | 2019 | |
|---|---|---|---|---|
| | Returnables and Non-returnables | Returnables and Non-returnables | Returnables | Non-returnables |
| **Percentage of Respondents** | 7% | 17% | 14% | 4% |
| **Total Selections** | 66 | 111 | 117 | 34 |
| **1+ Countries Selected** | 35 | 49 | 61 | 24 |
| **3+ Countries Selected** | 8 | 13 | 11 | 2 |
| **5 Countries Selected** | 1 | 5 | 5 | 0 |

## Challenges and Strategies to Overcome Them

Identifying which libraries own an item is the first challenge in placing an ILL request whether domestic or international, but international requests are often more difficult because they require searching individual library catalogs or national catalogs. The proliferation of additional topical databases, such as those for dissertations (e.g., the British Library's EThOS) or large-scale digitization projects (e.g., the Digital Public Library of America), have created even more places for ILL staff members to search, yet makes delivery of content to users much easier once the resource is found. Given the complexity of the discovery landscape, it comes as no surprise that numerous respondents expressed the desire for a shared global catalog when asked "What would make international interlibrary loan easier for your library?". OCLC's Worldcat was frequently cited as a tool that eases international ILL, but despite being the world's largest shared index, it is not comprehensive. While multiple respondents wished that more libraries outside of North America would contribute holdings to WorldCat, universal adoption is unlikely. A search engine that allowed searching across linked national databases or individual library catalogs would provide the best solution to international discovery for ILL, but the ability to expose the content of catalogs to Google and other search engines would also vastly improve discovery for all. The ability of Google to display the contents of the PubMed database of medical journal articles is an example of this type of exposure of an otherwise closed system.



Once an owning library is identified, the next challenge is determining how to place a request for the item. OCLC's WorldShare ILL system was mentioned frequently by respondents from multiple countries as a tool that facilitates international ILL because it combines discovery, requesting, and some level of tracking. According to the answers received to the question "In general, why does your library borrow from these countries?", it also influences the regions from which items are borrowed. Email, as

noted above, is the most common method for placing ILL requests where there is no shared resource sharing system. This popularity is likely due to email's ubiquity. One respondent suggested a "new hosted requesting system" as a mechanism to improve this part of the overall ILL process. Perhaps rather than a single system, fuller adoption and vendor implementations of international standards, such as the new ISO 18626 ILL standard, would better serve the international ILL community. This would allow different systems to communicate with each other and allow requests and responses to pass from one system to another. Project Reshare (https://projectreshare.org) is developing an open-source ILL platform to demonstrate this type of interoperability and the functionality ISO 18626 includes.

When it comes to improving fulfillment of international requests, a number of challenges to lending abroad exist. Many of these obstacles are not unique to international ILL, but may be exacerbated by the distance involved or lack of local alternatives. As previously mentioned, some formats remain more difficult to borrow than others, and rethinking policies and service models could expand global access to these materials. For example, in order to reduce the risk of loss and damage involved with lending older or rare materials (which were reported as the most difficult items to borrow from abroad), digitization on demand for older materials in the public domain and controlled digital lending for rare materials that are still copyright-protected are potential solutions worth pursuing.[74] When asked about methods undertaken to improve international ILL, three respondents shared the success that they had in using scanning to overcome lending restrictions for rare books and theses and dissertations. The authors encourage ILL practitioners to engage in conversations with special collections curators and other library stakeholders about possible local solutions to expand global access to uncommon or unique materials within their collections.



Speed is also a concern for respondents when filling both returnable and non-returnable requests, one that is exacerbated by the distance that may be involved with international lending and may prohibit libraries from acquiring materials within the timeframe needed by their users. Where there are no legal impediments, electronic delivery is an effective solution for expediting fulfillment of non-returnables requests: 18 respondents cited electronic delivery as a reason that their international lending volume had increased over the past five years, and it is a factor in determining the countries from which a library chooses to borrow. It is clear from the 61 open responses addressing shipping difficulties that a faster, more reliable, yet still cost-effective shipping method would improve sharing returnables abroad. Seven libraries reported success in improving or expanding international ILL when they switched to using a courier service (e.g., DHL, FedEx, or UPS) for international shipping or reviewed and revised their international shipping procedures. Nineteen respondents also expressed the need for consistent

[74] A consortium of university libraries in the United States formally expressed a preference for digitizing requested rare materials in lieu of a physical loan as a means of expanding access while preserving the originals. Big Ten Academic Alliance. *Principles and Protocols for Interlibrary Loan of Special Collections Materials*, https://www.btaa.org/library/reciprocal-borrowing/special-collections, p.2 The concept of controlled digital lending within the context of U.S. copyright law is explored by David R. Hansen and Kyle K. Courtney in their *A White Paper on Controlled Digital Lending of Library Books*, https://controlleddigitallending.org/whitepaper.

procedures for clearing or bypassing customs, including the intriguing suggestion of developing "an internationally known and accepted symbol, note, or sticker that declares parcels containing library books." The development of such a standard may be an idea that the IFLA Document Delivery & Resource Sharing Section should consider pursuing.

Fulfillment could also be improved by education and advocacy related to copyright and e-resource licensing. Survey responses indicate varying interpretations of copyright law within individual countries, with respondents from 18 countries supplying inconsistent responses to the question "Do copyright restrictions prevent your library from supplying non-returnables to international borrowers?" Similarly, numerous respondents expressed uncertainty as to whether copyright law (14%) and licensing (15%) prevented them from supplying non-returnables abroad. Better understanding of both copyright law and licensing terms could help reduce denials stemming from uncertainty; alternately, it may provide a path for advocacy and negotiating with vendors if learning about licenses reveals that they prohibit sharing outside the library's country. As copyright law varies by country, national libraries and national library associations should be well suited to advance copyright education for their constituents; library consortia, on the other hand, may be better positioned to negotiate favorable licensing terms for their members.

Since only 7% of respondents who lend materials abroad claimed to not charge for this service, an easy method of providing and accepting payment is essential to effective international ILL. One of the most frequently mentioned efforts cited in response to the question "Has your interlibrary loan office undertaken efforts to improve or expand international borrowing or lending in the past five years?" was making changes related to payment (n=17), including accepting or using IFLA vouchers (n=4) and accepting multiple payment methods (n=2). Likewise, payment emerged as the most frequent response to the question, "What would make international interlibrary loan easier for your library?", with 40% of those who answered this question making related suggestions, including electronic IFLA vouchers (n=18), an easier payment method (n=10), wider use of OCLC IFM (n=9), and uniform procedures (n=7). The desire for electronic IFLA vouchers appeared in the 2015 open responses too, which prompted the committee to add a question to the 2019 instrument asking libraries if they would accept electronic IFLA vouchers in order to gauge the popularity of this idea. Seventy percent of respondents confirmed that they would use electronic IFLA vouchers if they were an option. Most (60%) already use IFLA vouchers, while 10% would start using IFLA vouchers if an electronic version existed (see Table 7). Having an electronic, vendor-neutral payment option while retaining the plastic vouchers would give flexibility to both borrowing and lending libraries and might boost international ILL, especially transoceanic lending. The greatest interest in electronic vouchers came from Central or South America (88%) and Australia and Oceania (82%), followed by North America (74%), Africa (71%), and Europe (68%). Given the wide support for this proposal, the authors recommend that the IFLA Document Delivery & Resource Sharing Section continue exploring the development of electronic IFLA vouchers.

**Table 7. Potential Usage of Electronic IFLA Vouchers, 2019**

| Respondents | Number | Percentage |
|---|---|---|
| Libraries that currently use IFLA vouchers and would use electronic ones | 142 | 60% |
| Libraries that currently use IFLA vouchers but would not use electronic ones | 26 | 11% |
| Libraries that do not use IFLA vouchers but would use electronic ones | 25 | 10% |
| Libraries that do not use IFLA vouchers and would not use electronic ones | 45 | 19% |

## Conclusion

It is clear from the survey results that international ILL continues to play a small, yet vital role in meeting academic library users' information needs within an increasingly complex discovery and delivery ecosystem. Discovery of global information resources continues to present challenges, both old (e.g., the lack of a universal catalog) and new (e.g., the growing number of non-traditional databases and digital repositories). Delivery, on the other hand, appears to be moving away from stand-alone, siloed systems that only support sharing within a particular network towards systems capable of communicating with each other and thus can accept and track requests across multiple networks. The potential to connect diverse interlibrary loan networks from around the world is an exciting one, and ILL practitioners must actively participate in shaping this evolving landscape to ensure that future systems support more robust international collaboration and continued improvement of resource sharing services.



Many of the changes in 2019 from what the prior RUSA STARS surveys reported are promising. In particular, the increasing usage of electronic methods for requesting, payment, and delivery and wider acceptance of IFLA vouchers as payment for international transactions over the past decade should make international ILL easier for both borrowing and lending libraries. ILL practitioners and the organizations to which they belong and participate must continue to build upon these successes by seeking ways to reduce or eliminate the remaining barriers to sharing resources across borders. Licensing terms governing e-books and other electronic resources, especially those that restrict lending abroad, must be renegotiated to provide both greater access to information as well as the freedom to send copies electronically. Likewise, creative solutions for lending older and rare materials should be developed in collaboration with those responsible for their access and preservation. Potential projects for the IFLA Document Delivery & Resource Sharing Section to explore in partnership with its members include electronic IFLA vouchers to ease payment and a widely accepted "library books–no commercial value" sticker to expedite customs clearance for returnable materials. Solutions to these shared challenges can be pursued at various levels, including the local, consortial, national, and international. In short, we must

continue to partner and to advocate at all levels for the means necessary to better perform our jobs and thus better serve our patrons.

**Acknowledgments**

The authors would like to acknowledge current and past members of the RUSA STARS International Interlibrary Loan Committee who contributed to revising, disseminating, and analyzing results of the 2019 survey: Peter Bae, Beth Clausen, Peter Collins, Poul Erlandsen, James Harper, Elan Lange, Kurt Munson, Lynne Serviss, Mila Su, and Hilary Thompson. Much recognition and gratitude is also due to the bilingual volunteers who reviewed and corrected the survey translations: Barbara Alvarez, Aicha Azzaoui, Thomas Estrier, Kurt Munson, and Anna Nabity. Without them, realizing the committee's goal of distributing a multilingual instrument would not have been possible.

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Big Ten Academic Alliance. *Principles and Protocols for Interlibrary Loan of Special Collections Materials*. 2018. https://www.btaa.org/library/reciprocal-borrowing/special-collections.

Hansen, David R., and Kyle K. Courtney. *A White Paper on Controlled Digital Lending of Library Books*. 2018. https://controlleddigitallending.org/whitepaper.

Munson, Kurt, and Hilary H. Thompson. "Giving Your Patrons the World: Barriers to, and the Value of, International Interlibrary Loan." *portal: Libraries and the Academy* 18, 1 (2018): 20–24.

Munson, Kurt, Hilary H. Thompson, Jason Cabaniss, Heidi Nance, and Poul Erlandsen. "The World Is Your Library, or the State of International Interlibrary Loan in 2015." *Interlending & Document Supply* 44, 2 (2016): 44–57.

## Appendix: 2019 International ILL Survey Instrument

**Start of Block: STARS International ILL Survey 2019: Introduction**

Intended to research issues related to international interlibrary loan, this survey is sponsored by the American Library Association (ALA) Reference & User Services Association's (RUSA) Sharing & Transforming Access to Resources Section (STARS). All responses will be kept confidential and will only be seen by members of the ALA RUSA STARS International Interlibrary Loan Committee. Data gathered from the survey will be summarized, without reference to individual responses, and shared globally with interlibrary loan practitioners.

Instructions for participants:

- Allocate 20-30 minutes to complete up to 40 questions (not all are required or applicable).
- Submit only one response per interlibrary loan office within each library.
- Several questions ask for statistics about your interlibrary loan activity. You may preview the survey in order to gather this data in advance.
- Direct questions about the survey to the committee chair Hilary Thompson at hthomps1@umd.edu.

Thank you for your help with this important project.



**End of Block: STARS International ILL Survey 2019: Introduction**

---

**Start of Block: About Your Library**

Your library is located on which continent?

- North America
- Central or South America
- Europe
- Africa
- Asia
- Australia and Oceania

Your library is located in which country?

▼ Afghanistan ... Zimbabwe

What is your library type? (select one)

- University
- Public (open/free)
- School (Primary & Secondary)
- State or Provincial
- National
- Medical/Health
- Law
- Special
- Other (please specify) _____

End of Block: About Your Library

---

Start of Block: Definitions

In the following questions the term **returnable** refers to materials that must be returned to the lending library at the end of the loan period, e.g., a book.

The term **non-returnable** refers to materials that the requesting institution or local user can keep, e.g., a scan of an article.

End of Block: Definitions



---

Start of Block: About Your Borrowing Activity

**Borrowing**

This section focuses on your borrowing activity, where your library requests materials from other libraries for your local patrons.

---

What is your library's total (domestic and international) 12-month borrowing volume?

| | Fewer than 1,000 | 1,000 to 5,000 | 5,001 to 10,000 | 10,001 to 20,000 | 20,001 to 40,000 | More than 40,000 |
|---|---|---|---|---|---|---|
| Returnables | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| Non-returnables | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |

What does your library charge local users for interlibrary loan requests?

| | No fees or charges | Standard fee or flat rate | All costs incurred | Shipping costs only | Only costs above our regular limit | Only for some users |
|---|---|---|---|---|---|---|
| Domestic | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| International | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |

Does your library borrow internationally?

- Yes
- No (please explain why not) _____

What type of materials does your library borrow internationally?

- Returnables
- Non-returnables
- Both returnables and non-returnables



What is your library's 12-month international borrowing volume?

| | None | Fewer than 100 | 100 to 250 | 251 to 500 | 501 to 750 | 751 to 1,000 | 1,001 to 2,500 | More than 2,500 |
|---|---|---|---|---|---|---|---|---|
| Returnables | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| Non-returnables | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |

Does your library borrow more or fewer international interlibrary loan requests now than five years ago? What has the change been?

| | +30% or more | +20% | +10% | No change | -10% | -20% | -30% or more |
|---|---|---|---|---|---|---|---|
| Select one | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |

Why do you think the number of international interlibrary loan requests has changed?

(Select all that apply.)

- No change
- Change in local policies
- Change in shipping costs
- Change in availability of international lenders
- Change in users discovering international materials
- Change in local collection budgets
- Alternatives to resource sharing (Sci-Hub, #icanhazPDF, etc.)
- Other (please specify) _____



From which countries does your library borrow most heavily? (Select up to 5 responses.)

▼ Afghanistan ... Zimbabwe

▼ Afghanistan ... Zimbabwe

▼ Afghanistan ... Zimbabwe

▼ Afghanistan ... Zimbabwe

▼ Afghanistan ... Zimbabwe

In general, why does your library borrow from these countries?

_____

Which, if any, types of materials are especially hard to obtain from international collections? (Select all that apply.)

- CD/Audio media
- Books
- Copies of rare or older material
- Theses and dissertations
- Microforms
- Serials (bound volumes/issues)
- Video/film media
- Music scores
- Electronic books
- Other (please specify) _____

**End of Block: About Your Borrowing Activity**

**Start of Block: About Your Lending Activity**

**Lending**

This section focuses on your lending activity, where your library supplies materials (returnables and non-returnables) to other libraries.



What is your library's total (domestic and international) 12-month lending volume?

| | Fewer than 1,000 | 1,000 to 5,000 | 5,001 to 10,000 | 10,001 to 20,000 | 20,001 to 40,000 | More than 40,000 |
|---|---|---|---|---|---|---|
| Returnables | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| Non-returnables | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |

Does your library lend internationally?

- Yes
- No (please explain why not) _____

What type of requests will your library supply internationally?

- Returnables only
- Non-returnables only
- Both returnables and non-returnables

---

What is your library's 12-month international lending volume?

| | None | Fewer than 100 | 100 to 250 | 251 to 500 | 501 to 750 | 751 to 1,000 | 1,001 to 2,500 | More than 2,500 |
|---|---|---|---|---|---|---|---|---|
| Returnables | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| Non-returnables | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |

---

Does your library receive/fill more or fewer international interlibrary loan requests now than five years ago? What has the change been?

| | +30% or more | +20% | +10% | No change | -10% | -20% | -30% or more |
|---|---|---|---|---|---|---|---|
| Receive | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| Fill | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |



---

Why do you think the number of international interlibrary loan requests has changed?

(Select all that apply.)

- No change
- Change in local policies
- Change in shipping costs
- Change in availability of holdings information
- Change in copyright terms
- Change in licensing terms
- Other (please specify) _____

---

Identify up to 5 countries to which your library most frequently lends (returnables and non-returnables).

▼ Afghanistan ... Zimbabwe

▼ Afghanistan ... Zimbabwe

▼ Afghanistan ... Zimbabwe

▼ Afghanistan ... Zimbabwe

▼ Afghanistan ... Zimbabwe

Identify up to 5 countries to which your library will not lend returnables.

▼ Afghanistan ... Zimbabwe

▼ Afghanistan ... Zimbabwe

▼ Afghanistan ... Zimbabwe

▼ Afghanistan ... Zimbabwe

▼ Afghanistan ... Zimbabwe



In general, why does your library not lend to these countries?

_____

_____

_____

Identify up to 5 countries to which your library will not lend non-returnables.

▼ Afghanistan ... Zimbabwe

▼ Afghanistan ... Zimbabwe

▼ Afghanistan ... Zimbabwe

▼ Afghanistan ... Zimbabwe

▼ Afghanistan ... Zimbabwe

In general, why does your library not lend to these countries?

_____

_____

_____



Does your library deliver non-returnables electronically to international libraries?

- Yes (please list methods used) _____
- No

Do copyright restrictions prevent your library from supplying non-returnables to international borrowers?

- Yes
- No
- I don't know

Do licensing restrictions prevent your library from supplying non-returnables to international borrowers?

- Yes
- No
- I don't know

What is your library's primary method for shipping returnables internationally?

- Courier (DHL, FedEx, UPS, etc.)
- Expedited Postal Service (air mail, priority, express, first class, etc.)
- Regular Postal Service (ground, surface, second class, etc.)
- Other (please specify) _____

Does your library charge borrowing libraries additional fees for your international lending services?

- No, not higher than domestic fees
- Yes, higher for both returnables and non-returnables
- Yes, higher for returnables only
- Yes, higher for non-returnables only

Why, if at all, does your library charge additional fees for international lending services?

_____

_____

_____



Which of the following methods does your library accept as payment for lending materials to international libraries? (Select all that apply.)

- IFLA vouchers
- Bank transfers
- Credit cards
- OCLC IFM
- Checks issued in local currency
- Checks issued in foreign currency
- Cash
- International reply coupons
- Deposit accounts
- Other (please specify) _____

Would your library use electronic IFLA vouchers to facilitate international interlibrary loan?

- Yes
- No

How does your library receive international lending requests? (Select all that apply.)

- E-mail
- A locally hosted web form
- Resource sharing system or network (OCLC, Alma, etc.)
- ISO Messaging
- Postal service (mail)
- Fax
- Phone
- Other (please specify) _____

Are your library's international interlibrary lending policies posted on your library's web site?

- Yes
- No
- I don't know



As a lender, does your library routinely try to refer international borrowing requests to other lenders when you cannot supply?

- Yes (please explain how) _____
- No

**End of Block: About Your Lending Activity**

**Start of Block: Additional Comments**

Why do you participate in international interlibrary loan?

_____

_____

_____

What would make international interlibrary loan easier for your library?

_____

_____

_____

Has your interlibrary loan office undertaken efforts to improve or expand international borrowing/lending in the past five years?

- Yes (please explain what you did and whether it was successful) _____
- No

Is there anything else about your library's international interlibrary loan activity that you would like to tell us?

_____

_____

_____



**End of Block: Additional Comments**

# SESSION 06 - Perspectives: ILL, Format Types

## Suggested citations:

Gillitzer, B. (2019). ILL for e-Books: Four Years of Experience – Learning to Walk. In P.D. Collins, S. Krueger, & S. Skenderija (Eds.), *Proceedings of the 16th IFLA ILDS conference: Beyond the paywall - Resource sharing in a disruptive ecosystem* (pp. 201-207). Prague, Czech Republic: National Library of Technology. Retrieved from http://invenio.nusl.cz/record/407836?ln=en

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# ILL for e-books: Four years of experience – learning to walk

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**Abstract:**

*Currently, ILL is sometimes regarded as an old-fashioned standard service of libraries which becomes obsolete through the plenty of information available on the internet. In contrast to that opinion, I want to emphasize that ILL considered as a network of libraries for sharing scarce resources is a very modern concept.*

*Due to the lack of contract clauses or restrictions within existing contract clauses of licensed e-journals or licensed e-books, in the last few years a permanently growing gap within ILL has arisen. More and more documents are not available via ILL and, in consequence, they are not available at all for users needing them urgently.*

*For this reason, the Bavarian State Library and the Bavarian Library Network have since 2013 developed a concept for a solution for this problem. A server for the storing of license information and provision of the respective documents are part of this project as well as the development of appropriate license agreements. While a solution for e-journals is successfully up and running and more than 30% of copies from articles within ILL are provided from e-journals (at least in Bavaria), e-books seem to be a hard nut to crack. There are not any license clauses for ILL at all for e-books in ILL and the modalities for delivery and respective license conditions are controversial between libraries and publishers.*

*The Bavarian State Library started a project to solve these problems together with the Bavarian Library Network. A pilot service has been running successfully since July 2015 and five publishers are cooperating for the test of the conception and first experiences with e-books and ILL. Nevertheless, publisher and holders of rights are sceptical and much work is still to be done until ILL for e-media becomes a regular part of the services provided by libraries. Perhaps international cooperation could be a key to convince the big publishers that a solution for these problems is necessary. The pilot period over the last 4 years shows that the technical solution and the conception are basically successful.*

**Keywords:** Interlibrary loan, electronic resources, e-books, license agreements



Collins, P.D., Krueger, S., & Skenderija, S. (Eds.). (2019). *Proceedings of the 16th IFLA ILDS conference: Beyond the paywall - Resource sharing in a disruptive ecosystem*. Prague, Czech Republic: National Library of Technology in Prague.

**Introduction: General remarks about ILL**

Very often ILL is regarded as somewhat old-fashioned. Time seems to have gone over this library service where books are exchanged between libraries, which might take days or even weeks. Compared to instant access for example on Sci-Hub, it might seem old-fashioned indeed. On the other side, it cannot be denied that ILL has the advantage of being legal. Concerning the question of whether ILL is outdated or not, there are other aspects too. Sharing various resources in other areas is up and coming: car sharing, food sharing, couch surfing, house sharing, and so on. Why should ILL as one of the most traditional kinds of resource sharing be outdated? Is the fact that ILL came up earlier than other kinds of resource sharing – in a manner of speaking, the early bird – be sufficient reason to regard interlibrary loan as old fashioned?[75]

Not yet answering these questions, I want to present four theses concerning the problem:

1.) ILL is the consequence of various shortages. No single patron can buy and own everything he or she needs for scientific work: libraries are indispensable information providers even in times of internet download. And more than that, no single library can provide all needed information – at least with respect to the community of scientists.

2.) ILL cannot be replaced by other solutions like pay-per-use, patron driven acquisitions, direct document delivery, and so on. All these alternatives have their own value but also their shortcomings: there is no completeness and no solution throughout. Always only more or less smaller parts of a collection are made available via these services. These comparable new services often have only a few common standards and are not interoperable and not part of the established services offering. And in many cases, sustainability is not guaranteed. The services may vanish any moment.

3.) E-media do not match the principles of ILL. Not only that – not being regarded as models of "real" e-lending – e-media are generally not returned. That is not completely new to interlibrary loan. A more serious difference to traditional service provision is the fact that electronic resources often are not owned by the lending libraries but only licenced. In consequence, legal limitations of copyright do not apply to e-books and so further license agreements are necessary. A further difference concerns the handling of data instead of books or hard copies. That implies that a modification in the technical basis is necessary to handle ILL for digital media, especially e-books.



[75] See: Gillitzer, Berthold: Digitale Lücken büßen: E-Medien in der Fernleihe, Teil I, in: Bibliotheksforum Bayern 10 (2016), S. 108 – 111 (https://www.bibliotheksforum-bayern.de/fileadmin/archiv/2016-2/011-Digitale-Luecken-bue%2B%C6%92en.pdf)

4.) All that does not mean that resource sharing for e-media is not possible or useless. On the contrary: if ILL should not be regarded as out of date, the inclusion of electronic resources is necessary. This is possible if we can achieve appropriate license agreements and build up an appropriate technical basis.

**The initial situation**

For our patrons it is often not clear that a book they searched for via ILL is only available as an e-book. Some books are in fact only available as e-books and there exists no print version at all. In consequence, within the last few years, libraries have been faced with an increasing number of unfilled requests concerning e-books. In Germany this situation has been worsened by the fact that public funding by the German Research Foundation is dependent on the preferred acquisition of the digital version.[76] Furthermore, the funding is also dependent on the supra-regional accessibility of the digital media. In connection with the difficulty of providing e-books via ILL, this situation poses a dilemma for the libraries. If they want additional funding, they have to buy e-books, but funding is also dependent on the provision via ILL, which is often not possible at all.[77]

The most absurd result of this situation was the necessity for patrons to go on a library journey to get access to an e-book if urgently needed. Taken together, these were enough reasons to spur the Bavarian Library Network to search for the solution which was invented in 2015.



**The basic concept**

Through interlibrary loan of e-books, users from other institutions can gain limited access to e-books, given that this is covered by the licence agreement in place. As with printed books, this is to enable individual information which is urgently needed to be provided by libraries across regional boundaries without affecting the economic interests of right holders. This is ensured through the following technical features:

Access is only granted upon individual request:

Access to documents is only granted to certain users (see section below) upon individual request. If users wish to gain access to a specific e-book, they have to place an individual order (e.g. via the local library catalogue) which is then manually processed by the library providing access, as is the case with interlibrary loan of printed books. In any individual case, the staff of the providing library has to personally provide the person who places an order with access to the data requested. This prevents users from bypassing their home libraries (with their own range of easily accessible e-books), but at

[76] See: Deutsche Forschungsgemeinschaft: Grundsätze für den Erwerb von Publikationen in den DFG-geförderten Fachinformationsdiensten für die Wissenschaft (https://www.dfg.de/formulare/12_101/12_101_de.pdf )

[77] See: Gillitzer, Berthold: Digitale Lücken schließen: E-Medien in der Fernleihe, Teil II, in: Bibliotheksforum Bayern 10 (2016), S. 108 – 111 (https://www.bibliotheksforum-bayern.de/fileadmin/archiv/2016-3/006-Digitale%20Luecken%20schliessen.pdf)

the same time allows information which is urgently needed to be provided across institutions in individual cases.

Access is only granted to certain users:

Only users eligible for interlibrary loan can place individual orders for e-books, i.e. registered users of a German library participating in the German interlibrary loan network. This is ensured through a secure authentication procedure, checking eligibility when a user attempts to place an order.

Limited number of requests:

Based upon the number of individual requests, the system ensures that access to an e-book can only be granted a limited amount of times per calendar year by the providing library. The licence agreement which is in place for a specific e-book package is stored on a secure server and checked every time an order is submitted to the respective library. This includes information on how often individual orders can be placed for a specific e-book per calendar year, so that the system will only accept this amount of requests for individual e-books belonging to a package. The extent to which an e-book can be accessed is therefore just as strictly limited as with a printed book. The only difference is that an e-book can be ordered by several users simultaneously (with each order counted into the overall quota) and is not necessarily handed out to one person at a time. Once the quota is reached, no further orders can be placed. However, the library will be notified about this and may be able to have the quota increased.



Regulated access:

For two weeks, the ordered e-book files are made available to the user on a secure server in the same way they are made available to the regular users of the providing library. If only the individual chapters of an e-book can be downloaded, the same will apply in the case of individual orders. Access to the requested e-book is only granted after authentication has taken place using the same user account through which the order was previously placed. When access expires, all files are deleted from the provision server. Until the next order is placed and processed, the e-book can no longer be accessed.

**System components**

To implement the concept presented above, the following components had to be developed and new or existing components had to be adapted and developed further:

Ordering module of the central interlibrary loan server:

Orders placed through the various search engines of libraries (e.g. local or union catalogues) to which the users belong are forwarded to the ordering system of the central interlibrary loan server of the Bavarian Library Network. Here, authentication takes place via the local user account. This ensures that only registered users of

libraries eligible to interlibrary loan can place orders. The ordering module communicates with both the user administration of the local library systems and the central configuration database in which the respective licence information (see section below) is stored.

Central Configuration and Licence Database:

For each providing library an e-book package, licence information (i.e. how often per calendar year access to e-books as part of a package/by a certain publisher is to be granted by the providing libraries according to the respective agreement in place) is stored within the central configuration database. Also included is information on how often each e-book has actually been made available by the libraries within the current calendar year. This is to ensure that per year, access to a book is only granted as often as it should be according to the existing licence.

Provision Server:

Following an order, the e-books are made available to the user for a limited period via the secure environment of the provision server. In order to access the e-books, the user has to provide the provision server with separate authentication (using the same account through which the order was placed) and also declare that no data will be forwarded to third parties. This prevents unauthorized access of e-books during the individual order process. When the access expires after two weeks, all documents are automatically deleted from the provision server.



**Experiences during the first four years**

The setup of the technical infrastructure went very smoothly without any problems and the system is up and running. The German library networks agreed upon using the system as a common national system so that different models are not in place and negotiations with the publishers and rights holders can be based on this infrastructure.

Currently the project still has the status of a trial period based on license agreements with five publisher and 11 partaking lending libraries in Bavaria and is still for the most part restricted to the area of Bavaria. There are about 20,000 titles available for interlibrary loan and, within the last four years, nearly 3,000 requests could be fulfilled. Although it is a completely new service and although some users were surprised that their ILL order was fulfilled by the supply of an e-book, the service has been accepted without any problems.

The main obstacle of the project is the fear of the rights holders that their e-book collection could be “sold out” by delivery of books to users which are not the genuine patrons of a lending library. But, using our case as an example, it turned out that there is no reason for this fear. There are only very rare multiple orders for the same title. Within a sample of 2,159 deliveries, 1,710 different titles were ordered. 75% of the ordered titles are unique orders, only 16% were ordered twice, and only 3% were ordered three times. The rest of the multiple orders up to 11 times of ordering for a title concerned only 3% of

the deliveries. The supplies from 11 lending libraries are distributed across more than 30 borrowing libraries. But the most important result of the trial period is that the annual rate of orders, which means the number of orders per total amount of selectable titles per year, is identical for e-books and printed books with a rate of 0.031. Only for 3.1 % of the selectable titles ILL orders are placed no matter if we start with only a small sample of some specially selected e-book collections or the full offer of the printed books of all libraries within a library network with more than 40 million titles.

That proves that the concept and the system for e-book ILL serves exactly the needs of interlibrary loan. There is no hint that any borrowing library would buy or license one e-book less if e-books are also available within ILL.

**Tasks for the libraries – challenges**

Setting up such a system is surely an effort, but when this is accomplished, the technical part – especially the administration of the system – is no serious problem. License data have to be fed into the system and the orders have to be processed as orders have to be processed in conventional ILL as well. There is no additional work to be done. It turned out that the most difficult task has been the negotiation of license agreements with publishers. Standard license agreements are available either as an appendix to existing agreements or as a master license agreement for consortia and license communities. The second solution (the master agreement) allows for more control of total access to documents for the publishers and should be preferred if the publisher estimates their risk to be high. As mentioned above, there exists no risk for the economic interest of publishers at all: the system and the agreements allow for a flexible limitation of access, guarantees a limited number of authorized users and controlled access. Also, transparency is ensured by provision of statistical information about lending and borrowing libraries even on the level of a single title. This information is not only useful for publishers but for the borrowing libraries as well. Multiple orders of titles or perhaps within collections with a common topic indicate a gap in the collection of a library. Persons responsible for the acquisition policy at a library are happy to have this information.



Last but not least, ILL of e-books is an alternative to the illegal exchange of digital documents by scientists. If established as a standard component within license agreements and our library services, it would help to improve the acceptance of e-books overall. This would surely be an advantage for both libraries and publishers.

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# When there's only one: resource sharing and the predicament of the dissertation request

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**Abstract**:

*Electronic theses and dissertations (ETDs) are one of the many resources interspersed throughout the current environment of online content. The past two decades have witnessed a shift from print to electronic theses and dissertations and an accompanying growth in university mandates requiring deposit of ETDs in institutional repositories. While these changes should have paved the way for unfettered online access, barriers such as embargoes requested by the author and vendor licensing restrictions have also emerged, hampering access to these unpublished works. Likewise, policies governing cataloging, deposit, and repository access may differ widely across institutions, adding further complexity to the landscape. Interlibrary Loan practitioners are looking for ways to share this unique content and help users navigate the terrain despite the obstacles. This presentation will explore recent trends in thesis requesting and fulfillment using borrowing and lending requests for theses and dissertations from two U.S. public research universities, along with the perspectives of colleagues at peer institutions. These data sets demonstrate that the demand for these materials extends across borders, raising the question: how can we encourage the sharing of ETDs on a global scale? The authors hope their research on the accessibility of theses and dissertations will inform the international academic community on ways to improve the sharing of these important institutional assets, including raising awareness of the need for a policy and workflow that permits controlled ILL lending of embargoed ETDs that mirrors lending of print dissertations.*

**Keywords**: thesis, dissertation, embargo, interlibrary loan, interlending

## Introduction

Graduate students and other researchers often request theses and dissertations through interlibrary loan (ILL), and difficulties associated with the borrowing and lending of these unpublished materials plagued ILL practitioners in academic libraries throughout the twentieth century. While the shift from print to electronic theses and dissertations (ETDs) over the past two decades should have paved the way for unfettered access to recently deposited graduate works, ETD embargoes by authors and vendor licensing restrictions have emerged as new barriers for resource sharing. Both the existing literature as well as the authors' experiences mediating ILL requests for ETDs suggest that further investigation is warranted to determine the extent to which these restrictions are preventing the dissemination of graduate works through ILL. Additionally, policies governing cataloging, deposit, and repository access may differ widely across institutions, adding further complexity to the landscape.

Interlibrary Loan practitioners are looking for ways to share this unique content and help users to navigate the terrain despite these obstacles. To inform best practices for sharing these materials, the authors explored recent trends in the requesting and fulfillment of theses and dissertations using ILL lending and borrowing request data from two U.S. public research universities (the University of Maryland, College Park and the University of Minnesota, Twin Cities). The authors also analyzed data sets for embargoes placed by authors on ETDs deposited within their respective institutional repositories and surveyed colleagues at peer institutions to gather their perspectives on lending ETDs. Together, the results reveal potential methods to improve sharing of these important institutional assets at a national and possibly global scale.



## Literature Review

Theses and dissertations represent the culminating work of graduate students, in which they present original research or creative work in support of their candidature for a degree (ISO, 1986). These graduate works have been alternately decried as "a mere intellectual exercise of little real significance" (Tate, 1953) and touted as "the most useful form of invisible literature" (Suber, 2008) and "important primary research...that inspire better research and learning" (LaVeck, 2019). Regardless of the value commentators ascribe to them, continuing demand for theses and dissertations, and the need to meet this demand through ILL, is well documented in the literature. Several articles from the mid-twentieth century address both the frequency and difficulty of borrowing theses and dissertations from other libraries and the promise, never fully realized, of University Microforms, Inc. (UMI) to alleviate this difficulty (Tate, 1953; Gatliff & Foreman, 1964; Plotkin, 1965). Articles published in the 1990s and 2000s evaluate ILL and commercial document suppliers like Dissertation Express as fulfillment options for theses and dissertations, finding the latter preferable but the former still necessary in some cases (Burke, 2001; Gee & Shirkey, 2010). The demand for these works comes predominately from graduate students (Baich, 2015; Burke, 2001; Gee & Shirkey, 2010), and it extends across borders, with local dissertations ranked as the second or third most difficult type of material to acquire in the 2011, 2015, and 2019 international ILL surveys conducted by the Sharing and Transforming Access to

Resources Section of the Reference & User Services Association, a division of the American Library Association (Baich & Weltin, 2012; Munson, Thompson, Cabaniss, Nance, & Erlandsen, 2016; Munson and Thompson, 2019).

Electronic theses and dissertations (ETDs) should solve this conundrum; free online access removes potential barriers related to cost, shipping, copyright, and even fear of loss of the only available copy. In 1997 Virginia Tech became the first university to mandate deposit of ETDs as a graduation requirement (M. L. Ramirez et al., 2014), and over the past two decades, the practice has become common across the United States and the world. According to OpenDOAR, there are now at least 260 institutional repositories in the United States and 2,091 abroad containing theses or dissertations, making it the second most common content type within open access repositories behind journal articles (OpenDOAR, 2019). Inclusion within institutional repositories, most of whose contents are indexed by Google, enhances the discoverability of theses and dissertations, making it easier to find and retrieve these items by scholars and library staff alike. ILL units now use ETDs to fill their users' requests for theses and dissertations whenever possible (Baich, 2012, 2015; Gee & Shirkey, 2010), yet not all of the content in so-called open digital repositories are accessible to scholars. Embargoes of ETDs are one of the primary culprits behind these "degrees of openness" (Schopfel & Prost, 2014b), and they represent a barrier not only to open access on the Internet, but also to resource sharing.



Common types of restrictions on ETDs include limiting immediate access to the campus community, restricting access for a specified period, or restricting access indefinitely. Hawkins, Kimball, and Ives (2013) found that most North American universities with doctoral programs in the humanities conform to ProQuest UMI's standard embargoes of six months, one year, and two years, but some universities offer initial embargoes as long as five and six years and renewals for up to ten years. Graduate students elect to embargo their work for a variety of reasons, most notably pending patent applications and concern that open access to an ETD would prevent later publication of its contents (Lowry, 2006; Owen, Hackman, & Harrod, 2009; Pickton & McKnight, 2006). As numerous studies over the past fifteen years show, concerns about unrestricted access to ETDs and support for embargoes may stem from faculty advisors, publishers, professional associations, and graduate students themselves, with attitudes varying by institution and discipline (Dalton, Joan T., Seamans, 2004; Kaufka & Bryan, 2007; Lippincott & Lynch, 2010; Owen et al., 2009; M. L. Ramirez et al., 2014; Marisa L Ramirez, Dalton, Mcmillan, Read, & Seamans, 2013; Thomas & Shirkey, 2013; American Historical Association, 2013). Despite growing evidence that the perception of publishers considering ETDs as prior publication is greater than reality, the number of embargoes requested by graduate students appears to be increasing over time (Schöpfel & Prost, 2014a).

The potential growth of ETD embargoes is concerning for resource sharing practitioners striving to fill a researcher's immediate information need. Unless proactive action has been taken in local policy and workflows to permit interlibrary loan, embargoes represent an insurmountable barrier to the borrowing and lending of theses and dissertations, even if only a temporary one. While Lowry (2006) asserted that embargoes

at the University of Maryland would only affect electronic distribution of ETDs (not lending of the print copy through ILL), the elimination of the practice of depositing print dissertations seven years later left the ILL unit without options to lend newly embargoed materials. Indeed, even the American Historical Association's recommendation added the caveat that authors who elect to embargo their ETD should also deposit a print copy in their university library for lending, or alternatively provide a digital copy to those on campus or access via the author's explicit permission (2013). Morris (2004) discusses the University of Georgia's successful transition from lending print to electronic dissertations, including steps taken to ensure ETDs with embargoes could still be lent via ILL. As Morris' article is the only known paper to address this subject, it is unclear how many academic libraries have enacted similar protective measures, and if not, to what extent resource sharing is hampered by ETD embargoes. The authors seek to answer these questions, first by analyzing borrowing and lending data from their own institutions, then by surveying peer institutions to learn more about the constraints affecting their ability to lend ETDs and any effective workarounds that have been developed. Much like the graduate works themselves, each institutional context is unique (with its own deposit requirements, ILL and cataloging policies and workflows, and licensing agreements), but the authors hope that general patterns and recommendations to improve access will emerge from these datasets.

## Methodology

### *Identifying Thesis and Dissertation Requests*



The University of Maryland and the University of Minnesota use the same interlibrary loan management system, ILLiad, which stores detailed information about all requests in an SQL database. This information can be queried using a built-in reporting tool or by running queries directly against the database. Both methods were used for this study, and examples of these searches are included in Appendix A. The data gathered from ILLiad for both borrowing and lending requests included bibliographic information on the items requested (such as title, year of publication, and OCLC number) as well as information on when the request was submitted, whether it was filled or cancelled, the reason for cancellation, the format delivered, and the department of the requesting patron.

### *Defining Filled Requests*

While the traditional definition of a filled interlibrary loan request includes only materials provided to or received from other libraries, such a limited scope does not reflect the current work performed by ILL employees. ILL has increasingly become a service that connects users to full text online resources that they were unable to discover on their own, with staff members frequently delivering content that is available online at no cost or via a university subscription. ILL practitioners may find ETDs by searching Google, institutional or other digital repositories, and aggregated catalogs such as DART-Europe E-Thesis Portal and OATD.org. These requests are usually high-touch, requiring mediation and good online searching skills. Accordingly, the authors have considered

any request which was made available by ILL staff to have been filled, regardless of the material's ultimate source.

*ETD Embargoes*

For the lending case studies, additional data were gathered from the Digital Repository at the University of Maryland (DRUM) and the Office of the Registrar at the University of Minnesota, which handles the ETD embargo process for graduate works deposited in the University Digital Conservancy (UDC). These data sets included the type of degree, department and school, year of deposit, and the length of the embargo chosen by the author.

**Borrowing Case Studies**

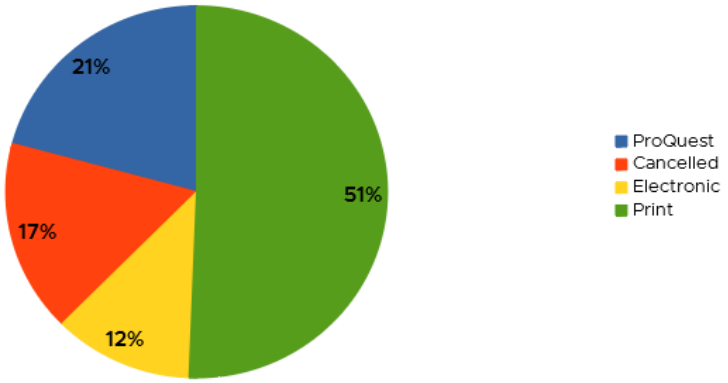
***University of Maryland***

*Volume, Format, and Fill Rate*

The University of Maryland examined borrowing data for all theses and dissertations requested in fiscal years 2015 through 2018. Of the ILL requests submitted over this period, 2,570 (2% of total borrowing requests) were identified as requests for theses or dissertations. One half of these requests were filled by borrowing print, one third were delivered electronically, and one sixth were cancelled (see Figure 1). This yields a total fill rate for thesis and dissertation requests of 83%, which is somewhat lower than Maryland's overall ILL fill rate of 88%. Requests delivered electronically included items that were scanned and delivered by other libraries (20%) and ETDs that were freely available online (16%), but the bulk of these items (64%) were available via subscription to the ProQuest Theses & Dissertations Global database (henceforth referred to as ProQuest). Over the four years considered, the proportion of theses and dissertations delivered electronically increased substantially, from 16% in 2015 to 51% in 2018. The proportion of ETDs which came from ProQuest also increased, from 60% in 2015 to 70% in 2018. In 2018, 35% of all ILL requests for theses and dissertations were filled from ProQuest, making in the largest single source of these materials by an order of magnitude.



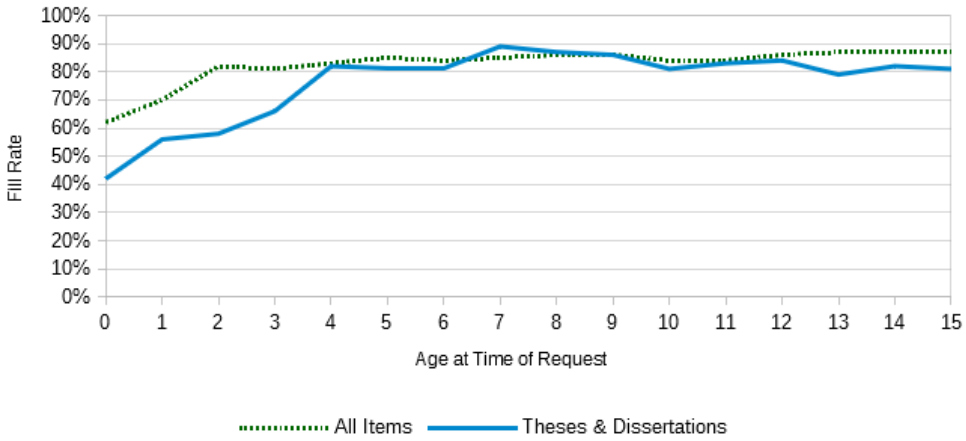
**Figure 1. Fulfilment of Thesis and Dissertation Requests at Maryland, Fiscal Years 2015-2018**



*Impact of ETD Embargoes*

The data did not allow the authors to easily determine which requests were cancelled due to author embargo as opposed to other reasons. In order to estimate the effect of embargoes on ILL availability, fill rate and delivery format were considered as functions of the age of materials. Generally speaking, items requested in the year of their publication are less likely to be obtained than items requested a few years after publication. For most types of publications, this trend levels off after three years, and remains stable for several decades. For theses and dissertations, however, Maryland observed a different trend. Items requested in the year of their deposit (approximately 40%) had a much lower fill rate than other materials (approximately 60%). The fill rate increases significantly after one, two, and five years. After six years, the fill rate for theses and dissertations achieves parity with the overall fill rate (see Figure 2). While this does not speak directly to an increase in embargoed ETDs, it does indicate that embargoes are a significant impediment to obtaining ETDs through ILL. Maryland's increasing reliance on ProQuest is likely to exacerbate this problem.

**Figure 2. Maryland Fill Rate by Material Age, Fiscal Years 2015-2018**



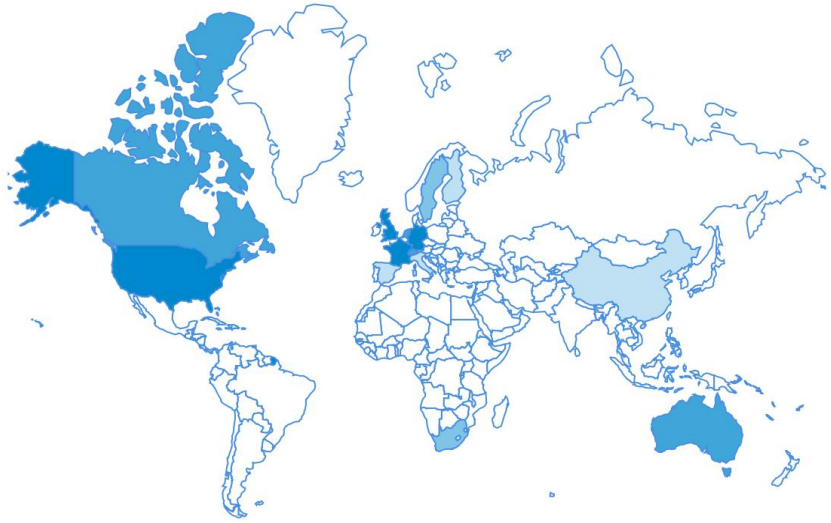



*International Theses and Dissertations*

Maryland was able to identify the country of origin for the majority (92%) of theses and dissertations requested between 2015 and 2018 (see Figure 3). Seventeen percent of submitted requests were for graduate works originating outside of the United States; of those, 75% were from European universities, and 38% were from the Commonwealth of Nations. The fulfillment rate for international graduate works (73%) was noticeably lower than for those written in the United States (86%). International graduate works were around twice as likely as U.S. graduate works to be delivered as scanned PDFs (13% v. 6% of filled requests) and were less likely to be available in ProQuest (25% v. 33% of filled requests). At least 22 of the international graduate works that Maryland was unable to obtain were unavailable due to embargoes, which is proportionally more than for U.S. dissertations. While the data on reasons for cancellation are not reliable enough

to draw conclusions, they do indicate that embargoes are likely to be an obstacle worldwide.

**Figure 3. Maryland Thesis and Dissertation Requests by Country, Fiscal Years 2015-2018**



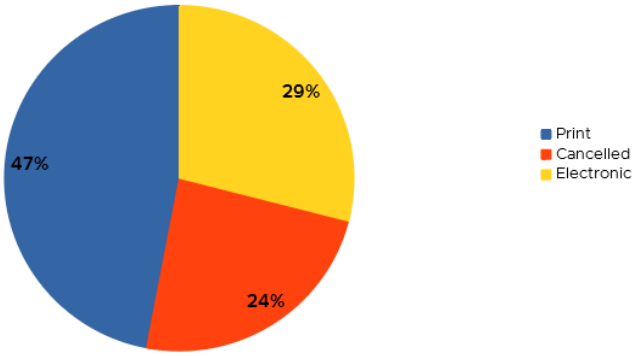
***University of Minnesota***

*Volume, Format, and Fill Rate*



The University of Minnesota examined borrowing data for theses and dissertations requested in fiscal year 2018 in order to determine the number of requests filled and cancelled, how many were filled with print vs. electronic copies, and the number impacted by author embargoes. Minnesota identified 1,719 requests for theses and dissertations. Removing duplicates and those cancelled by the patron, 47% of these requests were filled by borrowing a print copy, 29% were delivered electronically, and 24% were cancelled (see Figure 4). Of the ETDs provided to patrons, 19% were filled by another library, and 81% were available via open access. The results of the data analysis show a significantly lower fill rate for these materials (76%) in comparison to the institution's overall fill rate of 92%.

**Figure 4. Fulfilment of Thesis and Dissertation Requests at Minnesota, Fiscal Year 2018**

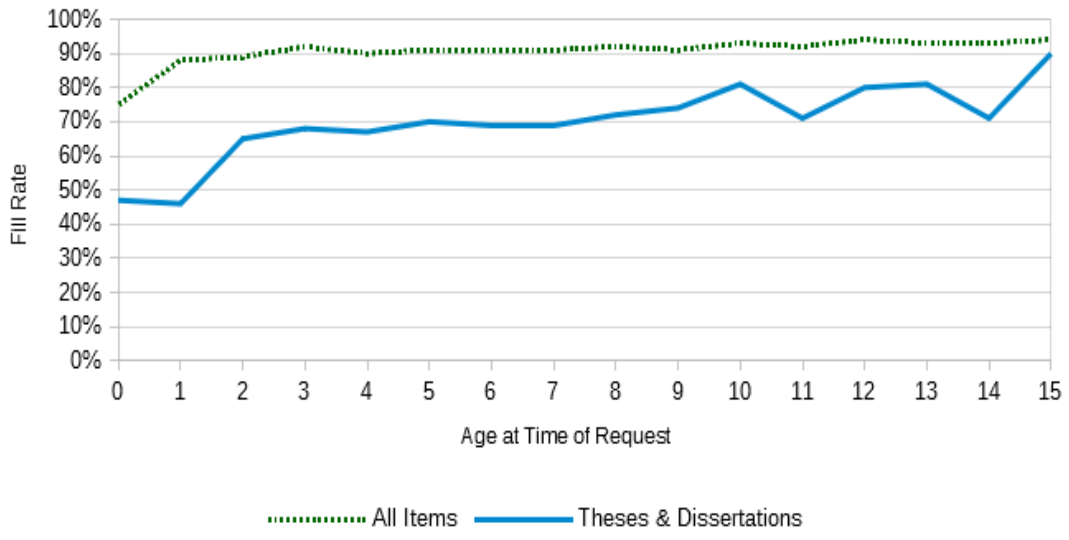


*Impact of Subscriptions, Licensing, and ETD Embargoes*

For this particular institution, there are more factors than just embargoes impacting the library's ability to fill these requests. According to the authors' 2019 survey (see p.14-15), the University of Minnesota is among the minority of U.S. R1 university libraries who do not subscribe to ProQuest Dissertations and Theses Global.[78] Minnesota's lack of a subscription to this database had an effect on the fill rate, as do any licensing terms that restrict a lending library's ability to share ProQuest content with other libraries. While Maryland's ETD fill rate leveled with their overall fill rate after six years, Minnesota's fill rate for ETDs remains lower than the overall (see Figure 5). Cancellations due to author embargoes accounted for 6% of cancellations; 88% of cancellations are due to lack of subscription to ProQuest; and another 6% were cancelled for other reasons such as the non-circulating status of print copies. Due to these limitations, ILL staff are sometimes forced into the predicament of not only being unable to fill the request, but also informing the patron that they can elect to buy a copy themselves. Many patrons reply to these cancellation emails with a plea asking if there is anything more the library can do to access this graduate work on their behalf so they will not have to pay for it. On occasion ILL staff will purchase ETDs from ProQuest (e.g., if a user needs a copy with optical character recognition). According to fiscal year 2018 data, it would have cost the library approximately $12,000 to purchase all ETDs that were not available to our users, but are available for purchase from ProQuest. This is a financial burden that Minnesota would like to avoid passing on to its researchers, but like many libraries, its budget cannot always accommodate these purchases.



**Figure 5. Minnesota Fill Rate by Material Age, Fiscal Year 2018**




[78] Minnesota does subscribe to ProQuest Dissertations and Theses A&I, which includes full-text access to theses and dissertations of University of Minnesota-Twin Cities students and those of the Big Ten Academic Alliance.

*International Theses and Dissertations*

International theses and dissertations accounted for 8% of Minnesota's total requests for theses and dissertations in fiscal year 2018. 138 of the 1,719 requests were for international graduate works, some of which were borrowed from U.S. libraries. Volume of requests by country of deposit can be seen in Figure 6. The breakdown of filled and cancelled requests is as follows:

- *Filled Print,* 15 (11%). Unsurprisingly, there were very few print international theses borrowed since these usually belong to the "there's only one" scenario. Minnesota borrowed 15 hardcopy international dissertations. Of those, 10 were print copies held within U.S. libraries, including eight purchased by the Center for Research Libraries. Four were borrowed from Canada and one from the University of Haifa in Israel.

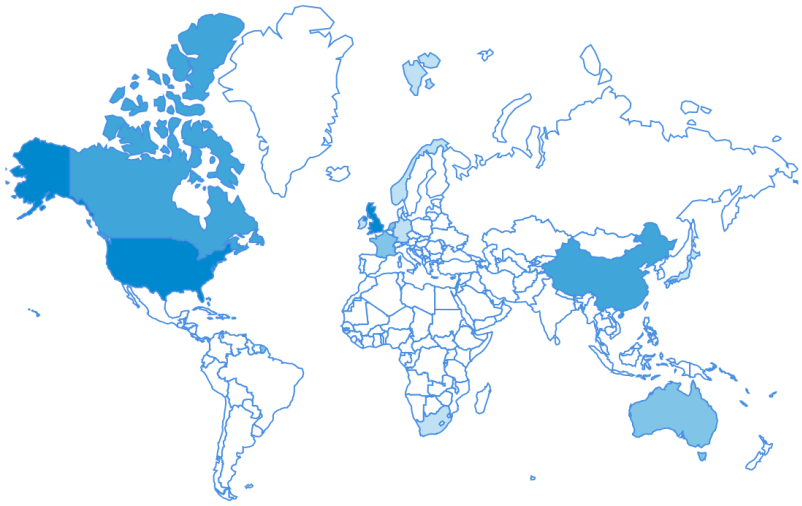
- *Filled Electronic*, 82 (60%). The majority of these requests were filled with an open access link found by ILL staff. Many were filled through EThOS, the British Library's Electronic Theses Online Service, which requires the patron to create an account in order to access the content.

- *Cancelled*, 39 (27%). While this percentage is only slightly higher than the overall rate of cancellation, the reasons for cancellation proved to be unique to overseas materials. Thirteen of the international cancellations were available for purchase through ProQuest, so they would have been filled if the library had a subscription. Most of the remaining cancellations were for master's level theses. The Center for Research Libraries will not purchase master's theses, and these items are less often deposited in institutional repositories. Past experience with requesting this content has shown a trend of non-circulating overseas. The international master's theses requested ranged in deposit year from 1982 to 2017, but regardless of the year, they proved to be inaccessible through interlibrary loan. This is a good example of a set of materials that would benefit from a controlled digital lending process.



Within this one year of borrowing data, none of the international request cancellations appeared to be due to embargoes, but this could very well just be due to the small pool of data.

**Figure 6. Minnesota Thesis and Dissertation Requests by Country, Fiscal Year 2018**



## Lending Case Studies

### *University of Maryland*

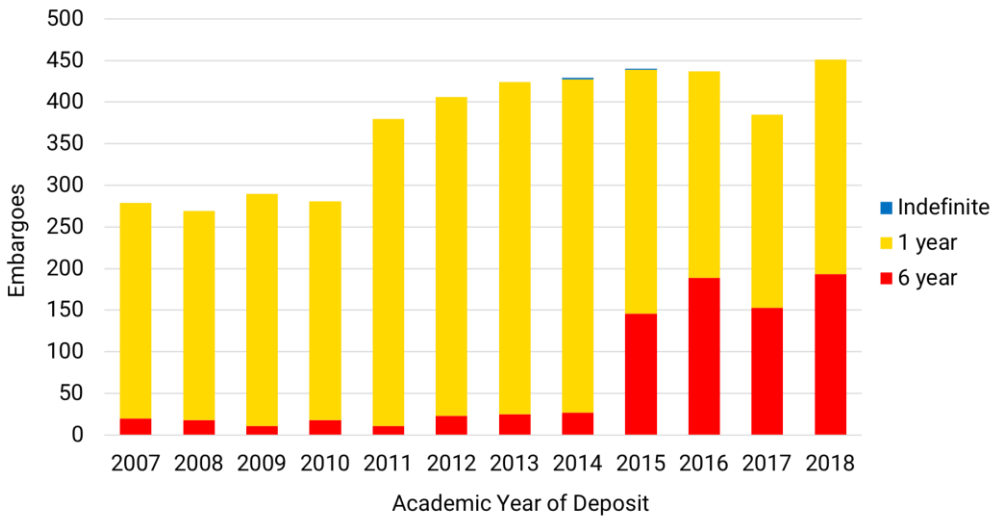
At the University of Maryland the deposit of an electronic version of a thesis or dissertation in DRUM and ProQuest became a requirement for all graduate students starting in Fall 2003. At first the ETD supplemented the deposit of an archival print copy in the library, but when the university-wide practice of depositing print copies ceased a decade later, the ETD became the only version except in cases where copyright of images posed a concern. Since 2006 Maryland graduate students have had the option to place an embargo on their work for one year, six years, or an indefinite period, provided that they supply an "explicit and real" justification that is approved by their faculty advisor; in the case of indefinite embargoes, the approval of the Dean of the Graduate School is also required (Lowry, 2006).



An examination of twelve years of data on ETDs deposited in DRUM reveals that embargoes are on the rise, with a 62% increase in frequency between academic year 2006-2007 and 2017-2018. Similarly, the percentage of graduate students electing to embargo their ETD increased from 29% to 51% during this period. As Figure 7 illustrates, there are distinct differences between the volume and type of embargoes between academic years 2006-2007 to 2009-2010, 2010-2011 to 2013-2014, and 2014-2015 to 2017-2018. 2010-2011 marked the first rise in embargoes, with all colleges and schools experiencing an increase in embargoes placed between the first four academic years and the four that followed. One year embargoes were primarily responsible for this rise; they increased from 250-300 per year between 2006-2010 to 350-400 per year between 2010-2014 before returning to previous levels. 2014-2015 saw the start of a second and more concerning trend: the rise in six year embargoes, which have increased 615% over the past four academic years. While the American Historical Association's 2013 *Statement on Policies Regarding the Option to Embargo Completed History PhD*

*Dissertations* (which encourages embargoes for up to six years) likely contributed to this change, all UMD colleges and schools experienced an increase in six year embargoes during this four-year period. Graduate students in the Robert H. Smith School of Business (74%) and the College of Arts & Humanities (37%) selected this option the most often; Arts & Humanities also placed the greatest number of six-year embargoes (n=184) of any college or school. Indefinite embargoes are—thankfully—rare, with only three being approved to date.

**Figure 7. ETD Embargoes Placed by Maryland Authors, Academic Years 2007-2018**






What impact has the change in deposit practices and rise of embargoes had on the lending of Maryland theses and dissertations via ILL? The volume of requests received for graduate works fluctuated between FY 2011 and FY 2018, with a general downward trend that can likely be attributed to the continuing growth of ETDs in DRUM (see Table 1). While requests for graduate works represent less than 2% of all lending requests received, their unique nature lends an importance to filling these requests that far exceeds their relatively small volume. It is thus concerning that the fill rate for these materials has been on the decline since FY2011, when 79% of these requests were filled. The fill rate dropped as low as 35% in FY2017 before improving to 50% in FY2018. Several factors contributed to this decline, including the withdrawal of the main library's circulating copies of historical theses and dissertations in 2014 and the aforementioned increase in the volume and length of ETD embargoes.

**Table 1. Lending Requests for Maryland Theses and Dissertations, Fiscal Years 2011-2018**

| Fiscal Year | Filled | Cancelled | Total | Percentage |
|---|---|---|---|---|
| FY 2011 | 421 | 109 | 530 | 79% |
| FY 2012 | 329 | 129 | 458 | 72% |
| FY 2013 | 167 | 93 | 260 | 64% |
| FY 2014 | 251 | 172 | 423 | 59% |
| FY 2015 | 182 | 302 | 484 | 38% |
| FY 2016 | 147 | 237 | 384 | 38% |
| FY 2017 | 128 | 239 | 367 | 35% |
| FY 2018 | 158 | 159 | 317 | 50% |

As a result of the changing local landscape for graduate works and evolving lending policies to adapt to those changes, there was great fluctuation in the frequency of cancellation reasons used for theses and dissertations between FY 2011 and FY 2018 (see Figure 8). In FY 2011 to FY 2013 lack of availability (e.g., checked out, missing, or currently unavailable) was the most common reason that ILL staff could not supply a thesis or dissertation, but in FY 2014 this shifted to policy reasons (e.g., non-circulating, following the withdrawal of circulating print copies before an on-demand digitization workflow was developed). The transfer of pre-2014 archival copies to high density storage between October 2016 to August 2017 temporarily reduced access to graduate works, but improved the library's ability to digitize them on demand once intake was complete. In FY 2018 embargoes emerged as the top cancellation reason, with the percentage of thesis and dissertation requests received that were cancelled due to embargo reaching an all-time high of 20%. Embargoes impede the success of ILL's ongoing efforts to improve access to these materials because the current university policy provides no exception for controlled lending of embargoed ETDs that mirrors lending of print theses and dissertations. If such an exception existed, Maryland's combined fill and referral rate for FY2018 would have been 86%, an increase of 6.7% over FY2011 (see Figure 9). This growing gap visually represents the unfilled promise of ETDs to improve access to these unique materials.



The rise in ETD embargoes, especially six year embargoes, and the subsequent rise in ILL cancellations due to embargoes clearly demonstrate that ILL staff at Maryland need both the right and means to lend embargoed ETDs to library users in a mediated fashion. Paradoxically the population that is requesting and approving the highest number of six year embargoes for its own ETDs—the College of Arts & Humanities—is also requesting the most graduate works from other institutions. Given its high level of involvement on both sides of this cycle, faculty and graduate students in this college

would be key stakeholders in any efforts to implement controlled digital lending of embargoed ETDs at Maryland.

**Figure 8. Cancellation Reasons for Maryland Theses and Dissertations, Fiscal Years 2011-2018**

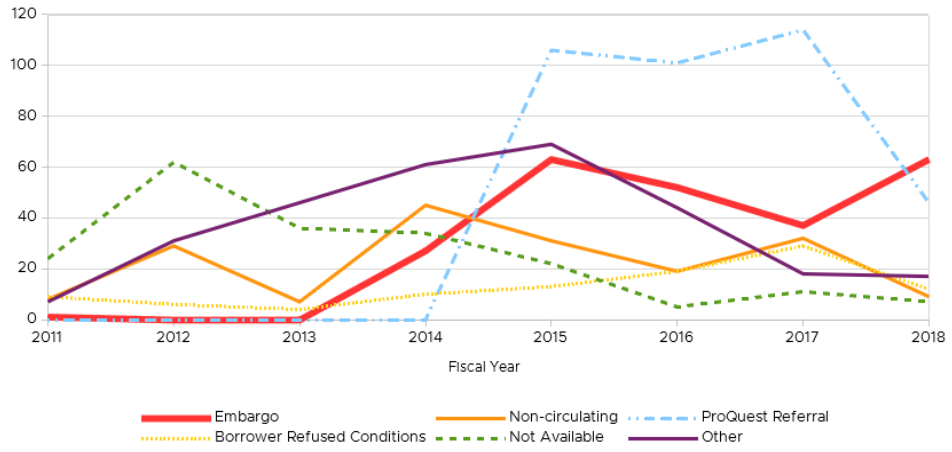
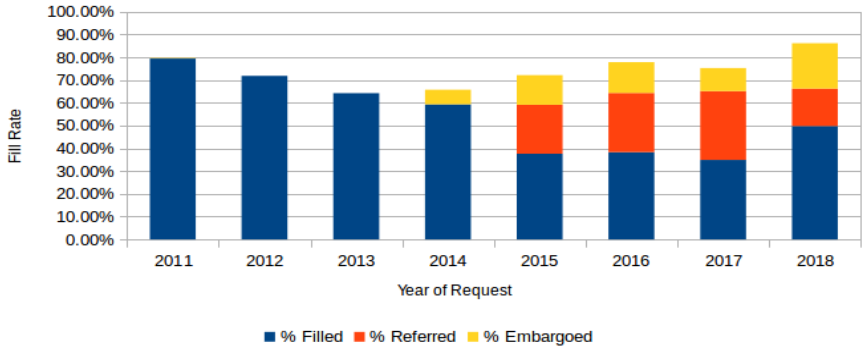



**Figure 9. Fill Rate for Maryland Theses and Dissertations, Fiscal Years 2011-2018**





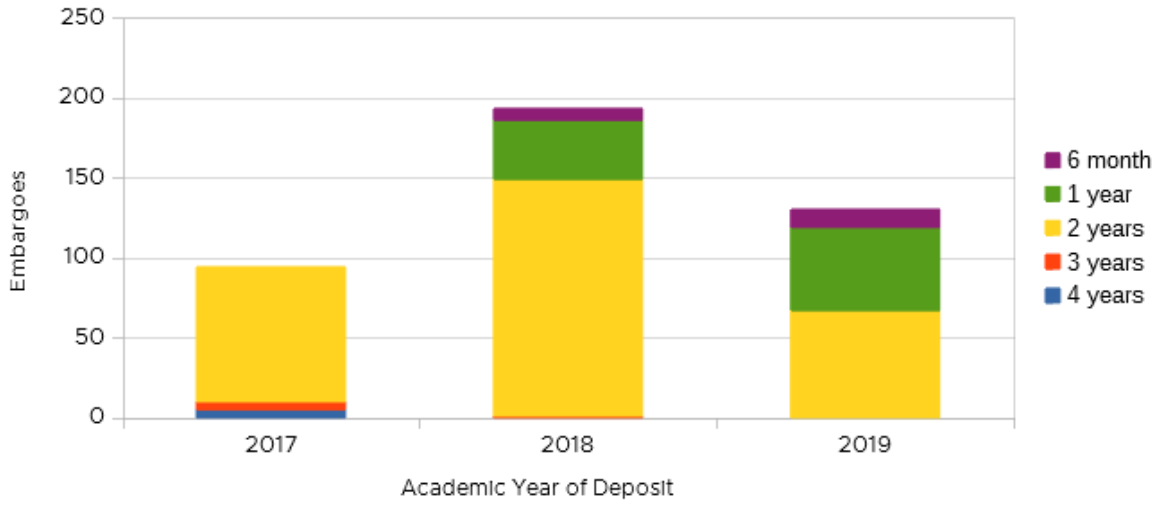

### *University of Minnesota*

The University of Minnesota's graduate and professional enrollment is about 16,000 students each semester, which is a comparable number to the University of Maryland. Minnesota's graduate students were first required to submit their ETDs to both the UDC and ProQuest in 2008.[79] Since at least 2004 an elective embargo process has been in place, whereby students have the option to embargo for six months, one year, or two years, but they may extend their embargo more than once for a total of four years. The embargo process is handled by the Office of the Registrar, which was able to supply a limited amount of data on ETD embargoes as well as the total number of graduate works deposited each term. The most interesting finding from this set of data is undoubtedly the relatively small numbers of elective embargoes by University of Minnesota graduate students. *Dissertation Review*'s 2015 survey of 336 respondents found that 42% of those scholars had elected to embargo their dissertation for some

[79] Only Doctoral and Master's (Plan A) works are mandatory for deposit into the UDC.

length; Truschke (2015) also noted that 46% of Stanford University students elected to embargo their theses in 2014. University culture likely plays a role, as this study found that "nearly eight times as many junior scholars admitted to following the pack in deciding the dissemination fate of their dissertation rather than making a contrary decision" (Truschke, 2015). In academic year 2018, 21% of Minnesota's ETDs had embargoes placed on them (193 of 929 deposits), which is significantly lower than Maryland's embargo rate of 51% for the same period. The College of Science and Engineering (CSE) has the highest number of embargoes at 29%, followed by the College of Liberal Arts (CLA) at 19%. Within CSE the subjects of Chemistry and Biomedical Engineering had the highest number of embargoes, while within CLA dissertations in History had the highest number. Most of the students who elected to embargo their ETD chose a two-year embargo, with only a small number of ETDs being renewed to four years (Figure 10). The impact of these embargoes on ILL's ability to fill requests is unclear for reasons that are expanded on below.

**Figure 10. ETD Embargoes Placed by Minnesota Authors, Academic Years 2016-2018**



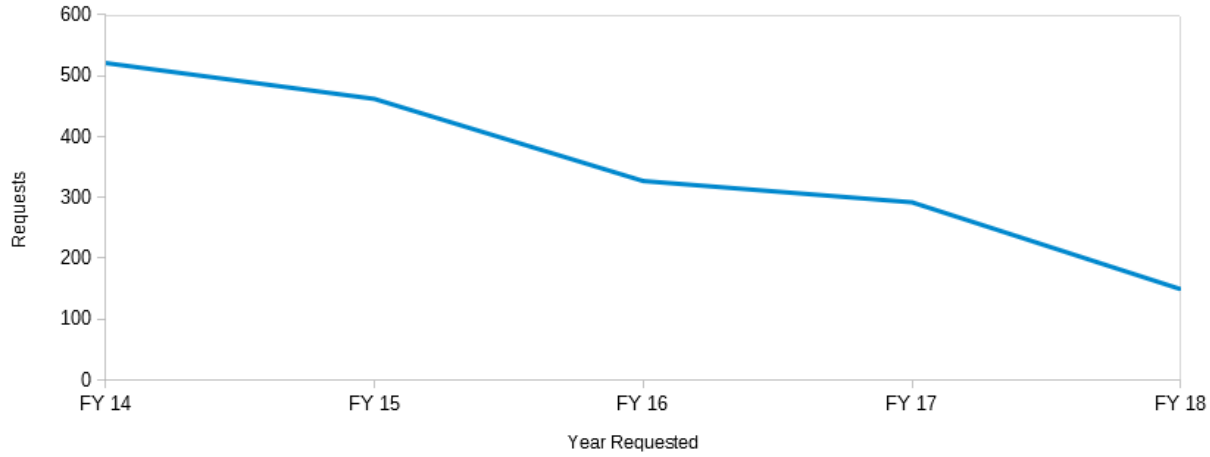



The Libraries continued to receive some print PhD dissertations from 2008 to at least 2013, and about two dozen master's theses were received between 2009 and 2012. To date, the Libraries have not undertaken on-demand digitization of print theses that are not available online. A large number of historical master's theses are held within the University Archives and are non-circulating, while most doctoral dissertations are in the circulating collection.

The authors found more differences than commonalities between Maryland and Minnesota in our examination of lending requests during the same period. This is due to a number of factors, including differing ILL workflows and levels of discoverability of ETDs at our respective institutions. For Minnesota, there was a marked decrease in thesis and dissertation requests over the past four years (see Figure 11), although the fill rate remained high at 84%. The drop in requests received is likely due to Minnesota ceasing to catalog its ETDs in OCLC's WorldCat after migrating to a new integrated library system in 2014. The free availability of ETDs in UDC and a borrowing library's

subscription to ProQuest may also be a factor. Anecdotally, the authors know that researchers and ILL staff members often search online for a free copy before submitting an ILL request. Even so, Maryland has not seen this precipitous drop in requests for theses and dissertations; it is thus possible that the lack of cataloging contributed to this decrease. Since Maryland's ETDs are cataloged in WorldCat, unmediated automations like OCLC Direct Request could allow requests to be sent without borrowing staff mediation.

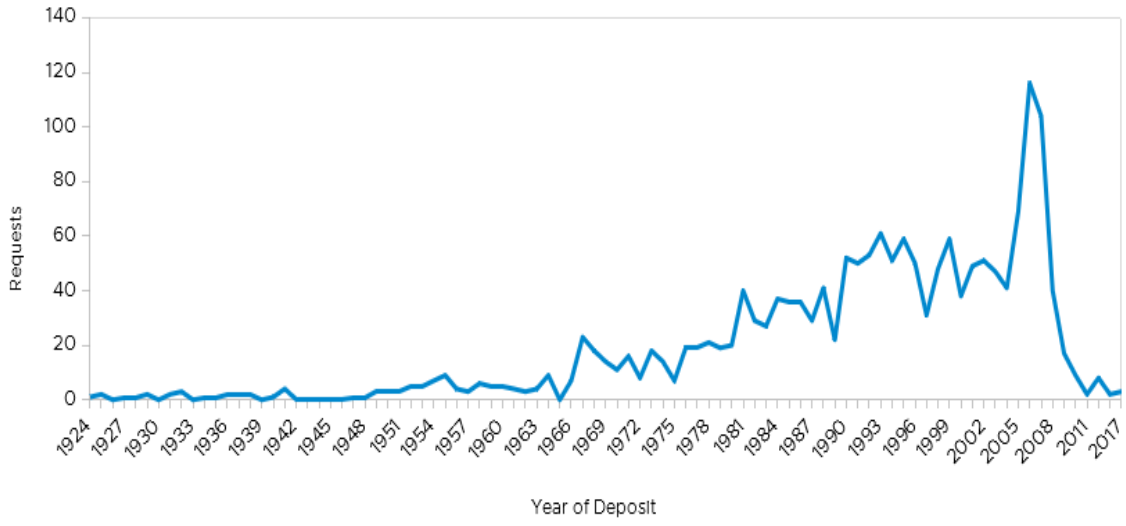
**Figure 11. Minnesota Thesis and Dissertation Requests by Year Requested**






Only a tiny fraction (1%) of Minnesota's requests were filled with an electronic copy, and indeed, the vast majority of requests were for older theses and dissertations held in print. ILL received a particularly high number of requests for graduate works that were deposited in 2006 and 2007, with a 60% decrease for those deposited in 2008 (the same year that Minnesota began requiring ETD deposit in the institutional repository instead of a print copy in the library) and a 92% decrease from 2008 to 2017 (see Figure 12). Only 81 requests (5%) were received for graduate works with deposit dates between 2009 and 2017 during this five year period. Reasons for cancelling requests for graduate works included their non-circulating status, not being held within the collection, and the inability to lend PhD dissertations overseas. The policy of not lending dissertations abroad was established based on the uniqueness of the material, but it should be noted that there is no known data from Minnesota to suggest that materials sent abroad are any more likely to be lost than those shared domestically. Cancellations due to embargoes were not tracked in ILLiad, and since Minnesota received so few requests for ETDs deposited in recent years, the impact of embargoes is inconclusive.

**Figure 12. Minnesota Thesis and Dissertation Requests by Deposit Date**




## Peer Perspectives

Since libraries' ability to lend theses and dissertations affect other libraries' ability to supply these materials to their patrons, the authors conducted a survey of peer institutions' lending practices to determine if the issues affecting their institutions were unique or common among research university libraries and what best practices, if any, exist for lending graduate works. A nine-question survey created in Qualtrics was distributed to ILL supervisors at 131 R1 institutions across the United States (see Appendix B for questions). [80] Sixty-three responses were received, yielding a response rate of 48%. Lending ETDs appears to be a topic of interest to resource sharing practitioners, as evidenced by the high participation rate and multiple open comments expressing gratitude for the study and a desire to see the results.

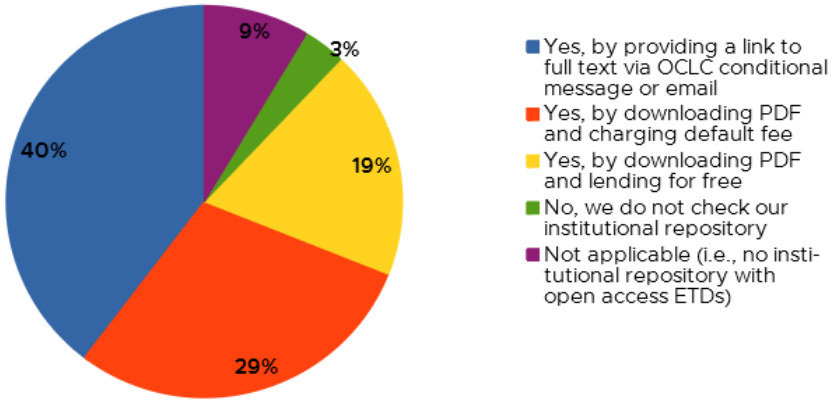


Eighty-eight percent of respondents search for ETDs in their university's institutional repository and connect borrowing libraries with open access ETDs when found, indicating a high awareness of leveraging digital repositories for fulfillment. However, there is not yet a standard for connecting users with the ETD once it is found (see Figure 13). Providing a link to the full text via an OCLC conditional message or email is the most prevalent method (40%), but downloading and sending the PDF is also common at 30% (with charging default fee) and 19% (with no charge). The survey also asked a series of questions related to lending ETDs from ProQuest. While the majority of respondents deposit graduate works within (94%) and/or subscribe (75%) to this database, the responses reveal inconsistency in licensing language and/or

[80] R1 institutions are doctoral universities with very high research activity according to the Carnegie Classification of Institutions of Higher Education. During the update year, these institutions awarded at least 20 research/scholarship doctoral degrees and had at least $5 million in total research expenditures as reported through the National Science Foundation Higher Education Research & Development Survey (Carnegie, 2018).

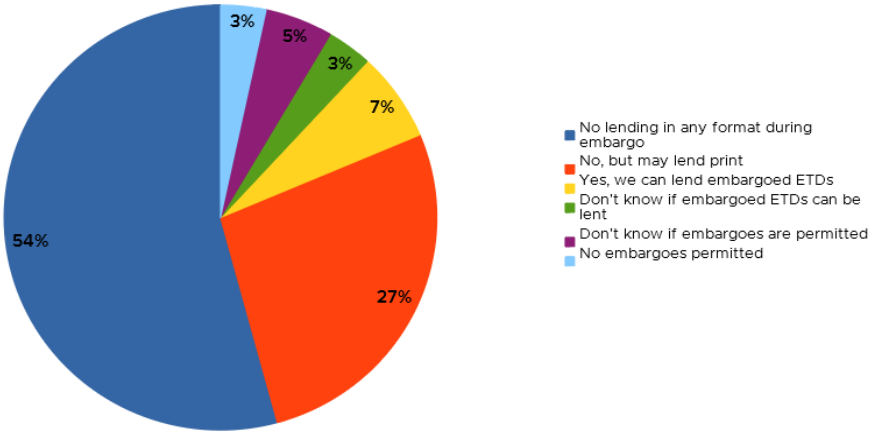
understanding of those terms across institutions. Accordingly, the authors urge ILL managers to verify the terms of these agreements with e-resource librarians and to advocate for changes that permit lending as well as electronic delivery, especially of local theses and dissertations. While 41% of R1 libraries have obtained such permissions for their own graduate works (and 38% for other works within this database), there is not yet a significant majority that are able to electronically lend ETDs from ProQuest.

**Figure 13. Survey Respondents' Lending of Open Access ETDs from Institutional Repositories**




The survey responses suggest that embargoes are a common barrier to sharing theses and dissertations at U.S. research libraries (see Figure 14). Ninety-two percent of respondents indicated that embargoes are permitted at their institutions, but only 7% can lend an electronic copy before the embargo period ends. Additionally, the majority of respondents (54%) cannot lend any version of the ETD while it is under embargo. Fortunately, there are some libraries who have overcome this barrier and were willing to share their workflows for lending embargoed ETDs, each of which is different. One library contacts the author to request permission and a PDF copy for lending, while another refers the request to the local ETD team, which in turn shares the request with the author (who may elect to share a copy directly with the borrower). In both of these cases, it is the author who makes the decision and supplies the file. At least two libraries have developed methods to share embargoed ETDs without the additional step of contacting the author. At one library an ILL staff member downloads and shares a PDF with a fair use statement attached, implying that ILL has special authorization to access the embargoed files. At another library an ILL staff member places a request (presumably with those who manage the institutional repository) to create a temporary link that expires in two weeks, which they then share with the borrowing library via an OCLC conditional message. Both methods allow for controlled access to the embargoed ETD, but explicit permission from the author is not sought at the point of lending. (Presumed, but not disclosed by the respondents, is whether permission for such use was granted by the author at the time of deposit).

**Figure 14. Survey Respondents' Ability to Lend Embargoed ETDs**




Answers to the last question, which invited respondents to share other information about lending theses and dissertations at their library, also reveal actions that ILL practitioners could undertake to improve access to these unique materials. Six open responses mentioned one-time projects or ongoing workflows to digitize print theses and dissertations as a means of increasing access to these unique materials. As one respondent asserted, "It's faster and safer to send out electronic copies." The importance of advocacy for resource sharing also appeared repeatedly. One respondent urged "advocating for ILL with ProQuest and ensuring that the license agreements permit ILL," while another described communicating their needs as part of a process of transferring management of incoming ETDs from the library to a vendor: "We have traditionally lent the print copies and all ETDs… everyone at our institution involved in the transition (at the Graduate School and the Library) is aware that we want to preserve this ability to share all ETDs via ILL." The authors wish this respondent and others undertaking similar initiatives success in their efforts to advocate for sharing these materials!



## Conclusion

After analyzing the six datasets and survey results, the complexity of the landscape surrounding the deposit and access of theses and dissertations within the U.S. is clear. This landscape is also shifting, from longtime obstacles to accessing graduate works (i.e., the cost of shipping, limited availability of a single print copy, and fears of losing unique materials) to new barriers that ILL staff cannot easily circumvent (i.e., ETD embargos and vendor licensing restrictions). In the case of ETD embargos, both a university-level policy change as well as the development of supporting infrastructure may be required for a library to undertake controlled digital lending that mirrors lending of print dissertations. While pursuing change to the submission practices for graduate works in order to obtain authors' permission for lending via ILL may be difficult, it is a worthwhile undertaking for the library, especially if the ETD embargo rate is on the rise at one's institution. Beyond mediated lending of embargoed ETDs, there are other ways for lending libraries to improve access to theses and dissertations, including digitization of print copies (where copyright law permits), rethinking policies that restrict lending

abroad, making sure ILL practitioners understand licensing terms for databases with theses and dissertations, ensuring the discoverability of these materials within OCLC's WorldCat, and negotiating with vendors to improve licensing terms (if needed). Where funds permit, subscribing to ProQuest's Dissertations & Theses Global database has benefits too, as does membership in the Center for Research Libraries, which collects foreign doctoral dissertations from outside North America on demand to meet the information needs of its members' users. Advocacy is required at multiple levels and with different players, and since it appears that the U.S. is not alone in encountering difficulties lending or borrowing theses and dissertations, the authors hope this paper inspires colleagues from all countries that are affected by the same or similar challenges to join them in advocating for improved access to graduate works moving forward.

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## Appendix A: Data Gathering Queries

Example of an SQL query used to collect borrowing request data from the ILLiad database:

```
SELECT t.TransactionNumber, t.ProcessType, t.RequestType, t.DocumentType,
t.CreationDate, t.Location, t.CallNumber, t.ESPNumber, t.ISSN, t.LoanTitle,
t.PhotoJournalTitle, t.PhotoArticleTitle, t.LoanDate, t.LendingString,
t.LendingLibrary, t.TransactionStatus, t.ReasonForCancellation, u.Status,
u.Department

FROM dbo_Transactions AS t LEFT JOIN dbo_Users AS u ON t.Username = u.Username

WHERE t.ProcessType <> "Lending"

AND t.CreationDate > #7/1/2017# AND t.CreationDate < #7/1/2018#;
```

Examples of some ILLiad custom searches used to collect lending data from ILLiad:

CallNumber Contains LD3231.M70 *[specific call number used for Maryland TDs]*

ReasonforCancellation Contains embargoed *[conditional reason used to cancel embargoed ETDs]*

CallNumber Contains Theses *[specific call number used for Minnesota TDs]*

LoanPublisher Contains Thesis OR LoanPublisher Contains PhD OR LoanPublisher contains

Dissertation OR … *[additional fields for identifying Minnesota TDs]*



## Appendix B: Survey Questions

Start of Block: Default Question Block

This survey is collecting information about if and how U.S. research university libraries lend electronic theses and dissertations (ETDs) via interlibrary loan (ILL). There are nine questions, not all of which may be applicable. Participation in this survey is voluntary and anonymous. Data gathered from the survey will be summarized and shared with ILL practitioners at the 16th IFLA Interlending & Document Supply Conference, October 9-11, 2019, in Prague, Czech Republic.

If you are able and willing to participate, please provide a response by Friday, June 21.

End of Block: Default Question Block

Start of Block: Institutional Repository

**Institutional Repository**

When mediating requests for theses and dissertations, do ILL staff search for ETDs in your university's institutional repository and connect borrowing libraries with open access ETDs when found?

o Yes, by downloading PDF and charging default fee

o Yes, by downloading PDF and lending for free

o Yes, by providing a link to full text via OCLC conditional message or email

o No, we do not check our institutional repository

o Not applicable (i.e., no institutional repository with open access ETDs)

*Display This Question: If When mediating requests for theses and dissertations, do ILL staff search for ETDs in your univer... = No, we do not check our institutional repository*

Please explain why not.

_____

_____

_____



End of Block: Institutional Repository

Start of Block: ProQuest Theses & Dissertations

**ProQuest Theses & Dissertations**

If your institution deposits theses and dissertations with ProQuest, are you allowed to lend the electronic version to other libraries?

o Yes

o No

o I don't know

o Not applicable (i.e., institution does not deposit ETDs with ProQuest)

Does your library subscribe to the ProQuest Dissertations & Theses Global database? (In other words, do you have access to full text beyond those of your own institution and any consortia to which you belong?

o Yes

o No

*Display This Question: If Does your library subscribe to the ProQuest Dissertations & Theses Global database? (In other words... = Yes*

Does your licensing agreement permit lending ETDs from other institutions to other libraries?

o Yes

o No

o I don't know

End of Block: ProQuest Theses & Dissertations

Start of Block: ETD Embargoes

**ETD Embargoes**

Does your university allow graduate students to place embargoes on their ETDs?

o Yes

o No

o I don't know



*Display This Question: If Does your university allow graduate students to place embargoes on their ETDs? = Yes*

Does ILL have permission to lend embargoed ETDs to users at other libraries through a mediated workflow?

o Yes, we can lend an electronic copy before the embargo period ends.

o No, but we may be able to lend a print copy instead.

o No, we cannot lend a copy in any format while the ETD is under embargo.

o I don't know.

*Display This Question: If Does ILL have permission to lend embargoed ETDs to users at other libraries through a mediated wo... = Yes, we can lend an electronic copy before the embargo period ends.*

Please describe your local workflow for lending.

_____

_____

_____

**Final Thoughts**

Is there anything else you would like to share with us about lending ETDs or other thesis and dissertation formats at your library?

_____

_____

_____

End of Block: ETD Embargoes



Collins, P.D., Krueger, S., & Skenderija, S. (Eds.). (2019). *Proceedings of the 16th IFLA ILDS conference: Beyond the paywall - Resource sharing in a disruptive ecosystem*. Prague, Czech Republic: National Library of Technology in Prague.

# SESSION 07 - Perspectives: ILL Tools and Technologies

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Niu, X., Zhang, L., & Han, L. (2019). Analysis of the Development Direction of a Conceptual Academic Library Resource Sharing Service based on a Case Study of DXY. In P.D. Collins, S. Krueger, & S. Skenderija (Eds.), *Proceedings of the 16th IFLA ILDS conference: Beyond the paywall - Resource sharing in a disruptive ecosystem* (pp. 250-259). Prague, Czech Republic: National Library of Technology. Retrieved from http://invenio.nusl.cz/record/407836?ln=en

Dethloff, N., Ibbotson, I., Rose, K., & Thompson, S. (2019). Project ReShare: An Open, Community-Owned, Resource Sharing Solution. In P.D. Collins, S. Krueger, & S. Skenderija (Eds.), *Proceedings of the 16th IFLA ILDS conference: Beyond the paywall - Resource sharing in a disruptive ecosystem* (pp. 260-268). Prague, Czech Republic: National Library of Technology. Retrieved from http://invenio.nusl.cz/record/407836?ln=en

Pokorný, J. (2019). ZÍSKEJ – National System for Sharing and Delivering Documents. In P.D. Collins, S. Krueger, & S. Skenderija (Eds.), *Proceedings of the 16th IFLA ILDS conference: Beyond the paywall - Resource sharing in a disruptive ecosystem* (pp. 269-274). Prague, Czech Republic: National Library of Technology. Retrieved from http://invenio.nusl.cz/record/407836?ln=en



Collins, P.D., Krueger, S., & Skenderija, S. (Eds.). (2019). *Proceedings of the 16th IFLA ILDS conference: Beyond the paywall - Resource sharing in a disruptive ecosystem*. Prague, Czech Republic: National Library of Technology in Prague.

# Engineering a Powerfully Simple Interlibrary Loan Experience with InstantILL

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**Abstract:**

*IUPUI University Library (UL) has long recognized the need to advance open access and the crucial role resource sharing services play in bridging between the subscription-based world and an Open world. Resource sharing professionals frequently use library services to search for and retrieve known items, and thus have a key role not only in the provision of services but in demanding better discovery systems, promoting new and better discovery and delivery tools, and educating users. As services such as Primo, EDS, and Google Scholar combine with library website design to promote central indexes, it is increasingly unrealistic to expect the average user to search multiple unpromoted channels for what they need, and so libraries must work to make all aspects of discovery and delivery similarly straightforward.*

*Resource sharing professionals can make significant inroads in improving discovery and delivery of open access and subscription content by partnering with Open projects to improve the library user's experience when searching for known content. This paper will share how UL has taken a concrete step in this direction by working with the Open Access Button to develop InstantILL, a simple, community-owned, search tool for students and researchers to get free, fast, and legal*

*access to articles. With a simple interface that users expect, InstantILL integrates searching library holdings, searching open access materials, and submitting interlibrary loan requests into a single action. Attendees will learn why the library chose to pursue this project, what InstantILL is, how it was designed and developed, and the results of the implementation.*

**Keywords:** resource sharing, interlibrary loan, open access, delivery, InstantILL

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## Introduction

The Open Access Button is a non-profit project that builds free, open source, community-controlled tools that make doing research without subscriptions simple. In 2013, the project launched the Open Access Button tool, which took users from a paywall to an Open Access version in one click, (SPARC 2015) and has since evolved to encompass a suite of researcher and library tools designed to help libraries create and utilize Open content to save money, improve services, and accelerate progress towards Open.

Indiana University-Purdue University Indianapolis (IUPUI) is an urban public university comprised of academic units from both Indiana University and Purdue University. IUPUI enrolls approximately 30,000 undergraduate, graduate, and professional students and employs more than 2,800 faculty and 4,600 staff (IUPUI n.d., IRDS n.d.). IUPUI University Library (UL) serves two colleges and fourteen of the seventeen schools on the IUPUI campus. The professional schools of law, dentistry, and medicine each have their own library, providing their respective faculty, staff, and students with library services, including resource sharing. UL's Resource Sharing & Delivery Services department provides interlibrary loan (ILL) to UL and Herron Art Library users and maintains a shared ILLiad server, which holds the ILL management systems used by all campus libraries.



UL has a longstanding commitment to Open Access, which has had a library-wide influence, including within Resource Sharing & Delivery Services. This is reflected in the scholarship of Tina Baich, who led UL's resource sharing services for twelve years. Baich has long recognized the crucial role resource sharing services play in bridging the gap between the subscription-based world and an Open world. Resource sharing professionals frequently use library services to search for and retrieve known items, and thus have a key role not only in the provision of services but also in demanding better discovery systems, promoting new and better discovery and delivery tools, and educating users (Baich 2017).

## Literature Review

Kristof (2018) provides an excellent overview of the issues that currently affect interlibrary loan (ILL) in academic libraries, including what can be referred to as our "dueling fears." For some time, ILL practitioners have been caught between fearing their workloads will significantly increase due to decreased purchasing/licensing caused by budgetary constraints and/or significantly decrease due to increased availability of Open

Access content. Both are largely false fears as demonstrated by Calvert and Fleming (2013) and Mak and Baich (2016). Calvert and Fleming (2013) examined the effects of journal cancellations on interlibrary loan and, as cited by Kristof (2018), found that "small increases in ILL requests were noted, [but] they were not significant" (p. 399). Mak and Baich (2016) conducted a study of interlibrary loan (ILL) article requests for evidence of a decrease that could be attributed to the spread of Open Access. Despite the assumption that the impact of Open Access on interlibrary loan would be most visible in a decline for requests for articles in the period immediately post-embargo (likely 12-24 months post-publication), no significant impact on request volume could be directly attributed to Open Access (Mak and Baich 2016). The authors conducted a second, expanded study to specifically look for an impact on ILL as a result of the NIH Public Access Policy. This study did find a decline in demand for health sciences content; however, the decline was in the first year post-publication when the articles were most likely to be under the NIH-permitted embargo (Mak and Baich 2017). This finding runs counter to the assumption that Open Access contributes to decreases in ILL volume.

The true driver of ILL volume may, in fact, be discovery (or the lack thereof). There have been numerous studies regarding the impact of discovery on interlibrary loan, including the tendency of library users to request owned/licensed items (e.g. Yontz et al. 2000, Janke 2007, Kress et al. 2011, Gaffney 2012). Librarians have, in fact, proven that improved discovery reduces the volume of interlibrary loan requests for material readily available whether through subscriptions or Open Access versions. This finding has been described by Musser and Coopey (2016), who found that "the overall reduction in requests for locally owned or licensed content was 58 percent for articles and 56 percent for loans" two years after implementation of a discovery system (648). As a result of these and other studies, a number of U.S. academic libraries, IUPUI University Library included, continuously pursue streamlined discovery, as well as integration of Open Access content.



Recent efforts specifically within resource sharing to improve discovery and delivery for library users are the Big Ten Academic Alliance's (BTAA) series of Discovery to Delivery Reports (BTAA 2017), the Private Academic Library Network of Indiana's (PALNI) OneButton (Magnuson et al. 2018), and Project ReShare. The BTAA reports outline a clear vision for the future of library discovery to delivery systems that prioritizes interoperability and communication and breaks down the silos in which many of our systems currently operate. In short, BTAA advocates for a unified, "smart" patron-facing system that creates a seamless user experience (BTAA n.d.). PALNI's OneButton is an attempt to achieve that vision using a PHP application developed to replace "multiple fulfillment buttons in institutional discovery interfaces with a single OpenURL link" to the best fulfillment option for a particular user (Magnuson et al. 2018, 1). Finally, Project ReShare, launched in October 2018, is a collaborative, community-driven initiative to create "a user-centered, app-based, community-owned resource sharing platform for libraries" that, at the outset, will largely be geared toward library consortia (Project ReShare n.d.).

Baich has specifically spoken to the need for improved discovery of Open Access content, which would help to both reduce interlibrary loan requests for these materials and improve overall patron experience with library services (Baich 2017, Baich 2018). In recent years, Open Access discovery tools have been introduced outside the library in the form of browser extensions such as the Open Access Button (OAB) and Unpaywall. Libraries are promoting the use of these extensions to their users, and both OAB and Unpaywall have made headway into library systems and services. For instance, Unpaywall data can be used in conjunction with library link resolvers (Unpaywall n.d.) to supplement existing Open Access "subscriptions" that can be activated in electronic resource management systems to surface open content. The Open Access Button's ILLiad addon has been used by libraries more than 300,000 times to supplement staff discovery of Open Access content in the course of their normal workflow. A recent study found that the "proportion of ILL requests that may be filled by using OA Button or Unpaywall is significant enough to provide a substantial benefit," showing that libraries should continue their implementation of Open Access discovery tools (Emery et al. 2018). While both build tools with broad usage, Our Research, the parent organization of Unpaywall, is focused on more researcher-facing, Open Science infrastructure (Our Research 2019), while OAB creates tools with and for libraries to improve their services and thus library users' experience, while still fulfilling their mission to advance Open.

**What is InstantILL?**



InstantILL aims to reduce dependency on subscribed resources by providing a cost-effective route to delivering articles from many sources through a unified interface in the spirit of the BTAA Discovery to Delivery Reports (BTAA 2017). The open source tool is designed to replace or augment existing ILL forms by finding and checking metadata, as well as content availability, during the search for a known item. These functions allow patrons to access content instantly when a subscription or Open Access version is available and reduce the amount of information to be manually entered. By ensuring full and accurate metadata, InstantILL also shortens the processing time for ILL staff. The tool connects to many subscription and ILL management systems without complex integrations, embeds into existing workflows, and receives hosting and maintenance centrally through the Open Access Button.

The figures (Fig. 1a-5) below illustrate one way in which InstantILL can be integrated into existing library webpages. Users input whatever information they have, and InstantILL fills in the gaps using data from Crossref and other repositories. InstantILL returns minimal metadata to aid the patron in confirming the accuracy of the match and provides the delivery options available to them (i.e. subscription full-text link, Open Access full-text link, or ILL request submission button), or provides the user with the opportunity to supplement and/or correct metadata (Fig. 1b).

In Figure 2a, the user is prompted to submit an ILL request. When the user chooses to submit the ILL request, InstantILL passes the metadata via OpenURL to the library's existing ILL management system for submission, without retaining any patron information. In Figure 2b, the ILL request is submitted into UL's ILLiad system, but InstantILL is designed so that any OpenURL compatible system, including e-mail, can be

used. ILL practitioners see all the metadata found by InstantILL and are made aware of the content availability checks conducted. The metadata includes standard numbers (i.e. ISSN), which allows for automated processing into systems like RapidILL or OCLC's Article Direct Request. Figures 3 and 4 illustrate other possible delivery options.

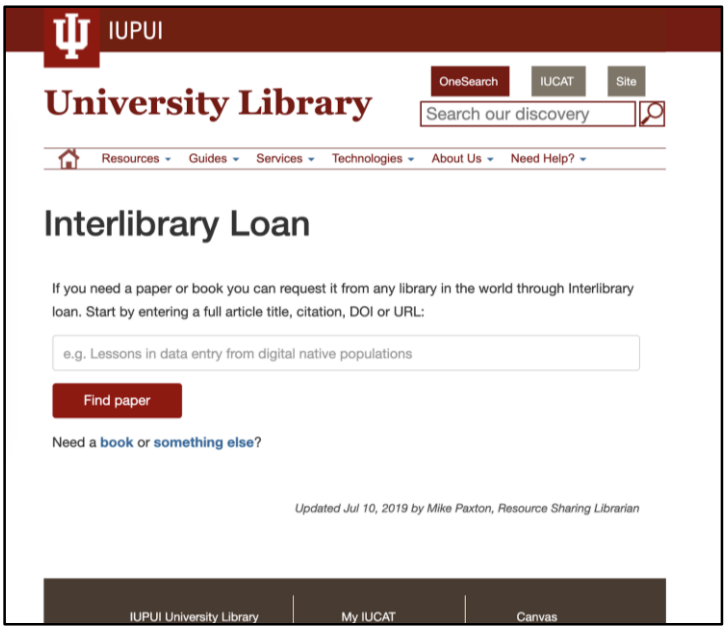


**Fig 1a.** Users input whatever information they have about a known item, and InstantILL fills in the gaps using data from Crossref and other repositories.



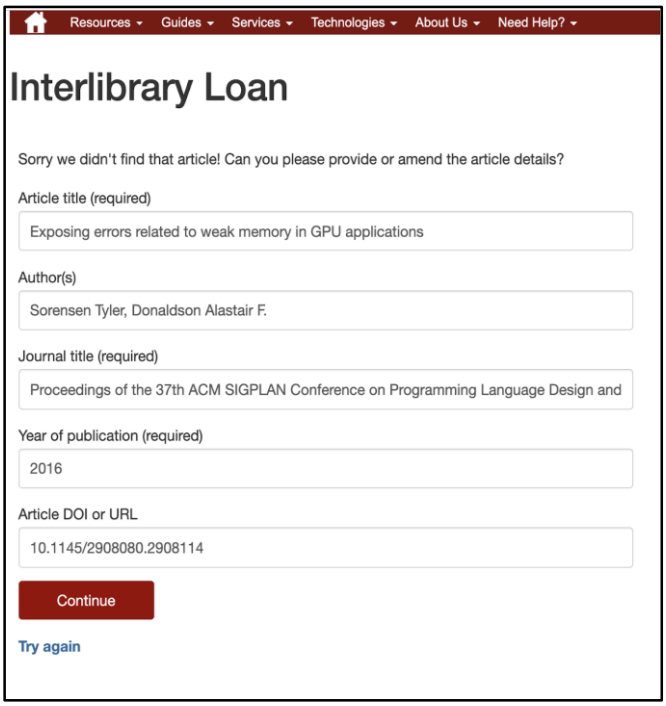


**Fig. 1b.** If InstantILL can't find, or wrongly matches, an article, details can be manually entered through a streamlined form. These details can then be enriched before submission.

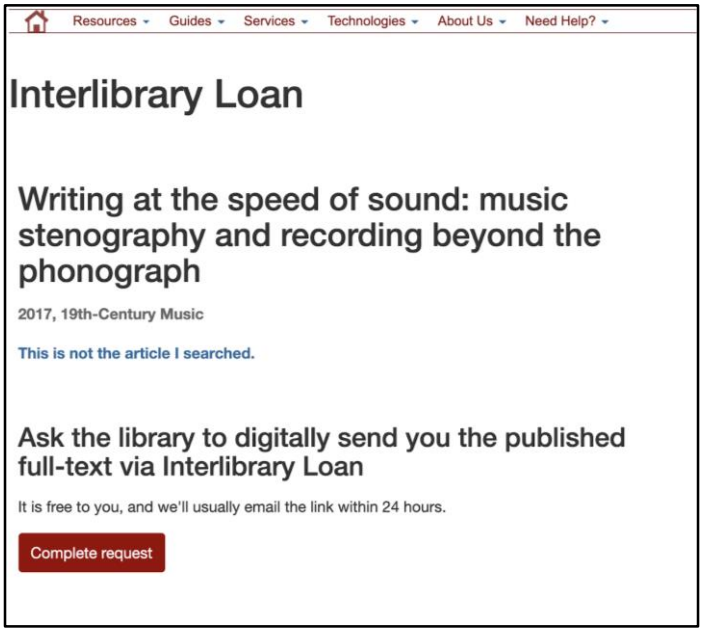


**Fig. 2a.** Patrons are offered the delivery options that are available to them. In this instance, the user is prompted to submit an ILL request.

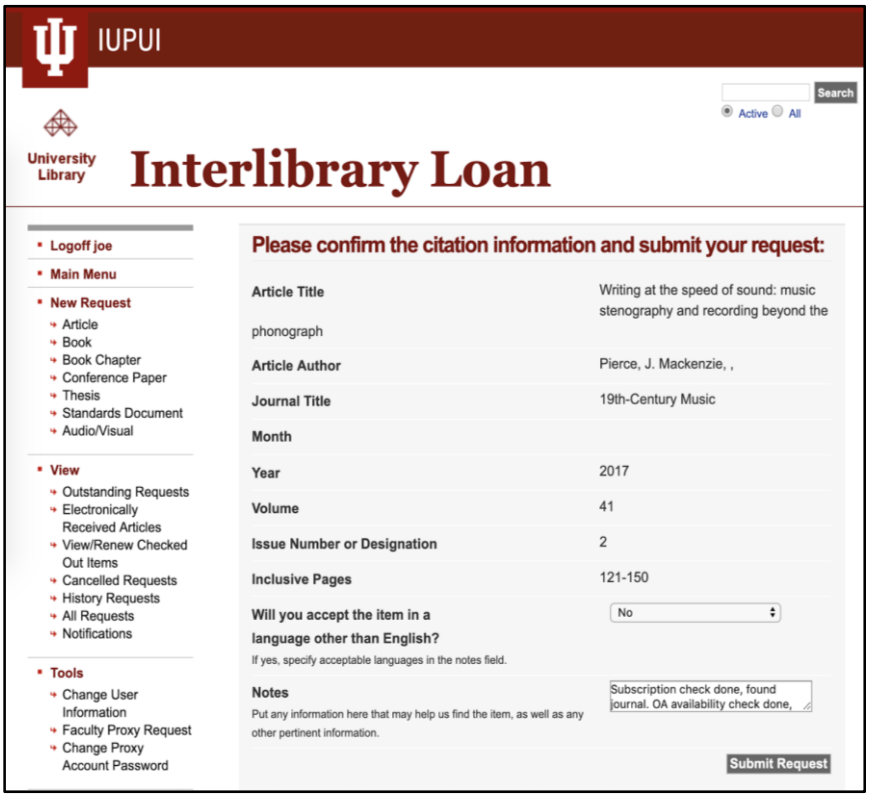


**Fig. 2b.** When the user chooses to submit an ILL request, InstantILL passes the metadata to the library's existing ILL system for submission via OpenURL, without retaining any patron information. An ILLiad request form is shown here.

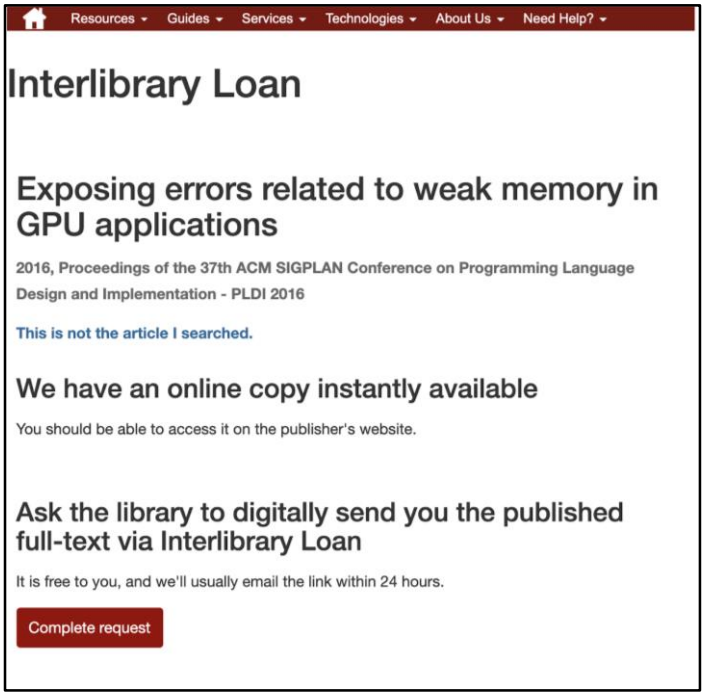


**Fig. 3.** Patrons are offered the delivery options that are available to them. In this instance, the user is given the option to use an Open Access copy or to submit an ILL request.



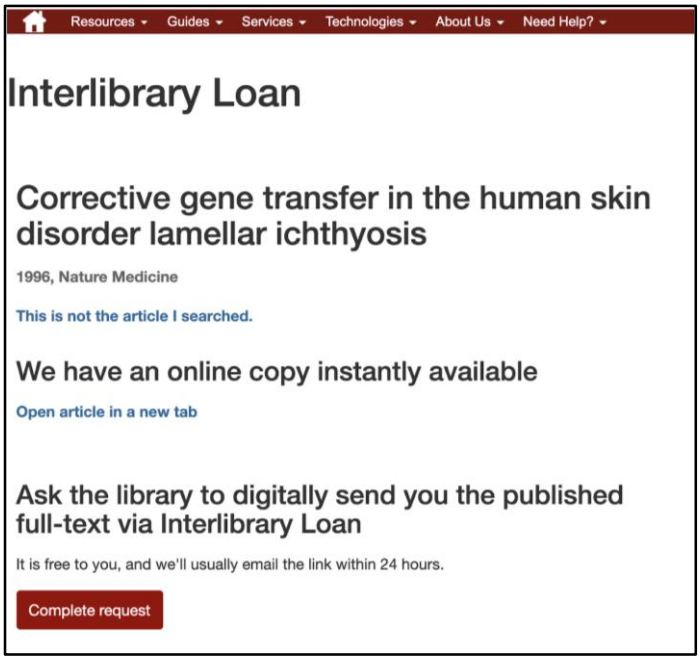


**Fig. 4.** Patrons are offered the delivery options that are available to them. In this instance, the user is prompted to utilize an already paid-for copy of research.

## Designing and Developing InstantILL

The design of InstantILL was rooted in the origins of the Open Access Button (OAB), which has always aimed to provide user-friendly access to content behind paywalls. In

2016, OAB began to focus its efforts on libraries, motivated by the desire to support institutions with journal negotiations. Early discussions at Imperial College London pointed OAB towards Interlibrary Loan as a key leverage point, and this was confirmed during broad consultations and discussions with approximately one hundred librarians from across the world. During those consultations, three potential routes were identified, and OAB did case studies with libraries to explore these routes (Jisc 2017, Open Access Button 2017). InstantILL represented the most ambitious of those routes, one that built on the other case studies and a clear articulation of what OAB thought it was truly positioned to deliver to fulfill a need within the community (McArthur n.d. *Case 3*).

Reconciling OAB's lofty aims with the constraints of time, resources, and the desires of users, required several key design elements that, once accepted, defined what InstantILL could become. For example, knowing the importance of ILL as a local service meant embedding the service into web pages controlled by libraries. This necessity put huge constraints on the design elements OAB could use, while maintaining confidence that InstantILL would display and work properly in multiple contexts. OAB also knew it wanted InstantILL to reach hundreds, if not thousands, of campuses, and, given its small team, this aim necessitated a simple and independent implementation process for libraries. Further, set up must not require developer assistance, which may or may not be available within a library. Understanding that patrons don't want to manually enter information, use complex interfaces, or always know common identifiers (e.g. DOI) meant designing input mechanisms that could accept almost any type of input and simplifying a complex process into just one key action at a time.



Partnering with IUPUI University Library (UL) allowed OAB to take broad strategies and reconcile them with on-campus realities to develop a working tool at one library that could be implemented by others. This involved a series of planning meetings to discuss, learn, and agree on what was required to advance the project. Throughout, OAB benefited from the expertise and pragmatism of UL staff, and maintained a strong action orientation, always looking for what it could do to reach the next milestone. In this process, OAB was lucky to find most of its broad ideas would work in some form; however, few, if any, of the expected specifics remained.

OAB worked with Cottage Labs, its development partner, to build InstantILL based on the design prototypes. InstantILL uses a RESTful, JSON API built on the Open Access Button's existing infrastructure, which itself is built with NodeJS with Coffeescript and Elasticsearch. Meanwhile, the front end is a static site built in HTML, CSS (Bootstrap), and Javascript (Jquery). Open Access Button, and therefore InstantILL, runs on a cluster in the cloud to provide scalability and reliability. These languages and tools are well-known, with lots of tooling available in order to enable the OAB team to focus on building with them.

OAB and Cottage Labs code openly on Github, delivering updates weekly (or sooner, if possible) in alignment with the agile development philosophy. An iterative release approach allowed UL to take elements of InstantILL live as they became viable and test various subsystems at scale before the full tool was complete. This let the team observe

results from the search box's performance in a real-world setting and get feedback from a wider array of users.

**User Testing InstantILL**

To prepare InstantILL for release, the team tested it with potential users to better ensure they would be able to successfully complete their requests. The process for finding materials needed to be transparent enough to allow savvy researchers to understand exactly what they were getting, but seamless enough that users who simply wanted to get an article could do so without difficulty. Balancing the needs of these two types of researchers was important to the team, as was ensuring that less experienced researchers found the tool usable and not overly onerous.

It was particularly important to test the language and directions in InstantILL. Any product or process that relies on a user making decisions needs to provide clear, understandable directions and prompts. This need can be complicated when the audiences possess various levels of knowledge and expertise. Related to the directions, the team tested to ensure that the interface was approachable and usable. This included concerns like the order in which results were displayed and the use of buttons versus text.

For user testing, the team created prototypes of the web page with Figma, a web-based tool that allows users to quickly create sample web pages and then link them to other sample web pages, allowing testers to interact with a fake website in a natural way. To test these prototypes, the team employed a scenario-based approach with participants who were from IUPUI University Library's population of users. This approach tasks participants with several scenarios to complete, while a team member stays in the room to give them tasks and handle any kind of technical errors that might occur during testing. The rest of the team usually is able to view a participant's screen and hear their voice through a screen-sharing service. One of the benefits of this type of testing is that it requires only a few participants, but the team gets to spend more time with each one. This makes recruitment of participants easier and allows the team to focus on immediate issues with the design. Standard practice is between three to five participants for each round of testing.



Participants were presented with several of these prototypes in order to complete their tasks, all of which followed the same basic structure. Participants were given printed citation information and asked to find the item with the prototype. The difference between each task was the results returned by the search. For example, in one test, the item had an Open Access version; in another, the item needed to be requested through interlibrary loan; and, in yet another, the result the search returned wasn't the item the participant was requesting. As participants worked through the tasks, the team observed how they interacted with them, what steps seemed problematic, and any sources of frustration. While completing the tasks, participants were asked to voice their thoughts, or "think out loud." This is standard practice for task-based tests, as it allows the team to better understand what participants are thinking and their motivations throughout the test. After completing the tasks, participants were asked several

questions about their experience with library systems and if they had used interlibrary loan in the past. This provided the team more context for the way participants behaved and more information about how users may expect the tool to function.

Conclusions were made quickly after every test, with each member of the team aggregating their notes and then discussing the results. Changes were made in the prototype between each testing date, based on the results. The team conducted user tests three different times, with a month between each test. The tests provided a rich amount of information to improve the design of InstantILL, particularly with the language used.

In the course of testing, the team identified several challenges with the prototypes, language, and recruitment and took steps to eliminate, or at least offset, each of these. The first shortcoming was the inability of users to type in a search box within the Figma prototype. To replicate the search, the team still made users click the "Search" button to progress, and then a "loading" screen was presented to the users that had the title of the item they were tasked to find in the search box. Clicking anywhere on this screen advanced the prototype to the next step. Since InstantILL is based on users' ability to search for a specific item, this limitation caused several issues. Firstly, it meant that participants couldn't interact with the tool as it was intended. The second was that the team felt participants didn't truly "own" the search. In other words, the participants didn't actually think about the item for which they were asked to search. This was of particular concern when the prototype was designed to return the wrong item to the user. To remedy this, the team began to require participants to write down what they wanted to search on a piece of paper with a pen. While the participants found this to be odd, especially since they had the article information on a printout, the team felt this aided the way in which the participants interacted with the prototype.



Recruitment for these types of tests can be a challenge, depending on the population being targeted. The team tried to recruit students at different levels (i.e. undergraduate, graduate) and created a small marketing campaign with IUPUI's graduate office. While the team received some interest and scheduled one graduate-level participant, they ultimately did not participate. Participants were then found by interacting with students as they entered the library. This means that our population was narrow (on-campus students that were users of the library), when the team had hoped it would be broader.

**Implementing InstantILL**

The Minimally Viable Product (MVP) consisted of checking the search terms against Open Access repositories and metadata sources (e.g. Crossref, Europe PMC, Unpaywall Data, DOAJ) and then linking users to either the Open Access text or a pre-filled Interlibrary Loan request form. Before moving to production, a search box was added to a live (but unlinked) page, and an InstantILL-specific request webform was created for testing. Once the MVP was deemed functional, UL moved InstantILL into production by adding it to the Interlibrary Loan pre-login page on April 26, 2019, the beginning of IUPUI's spring semester finals week. The team chose this location in order to give patrons access and an option between the new InstantILL request box and "classic"

request forms. The search box was given a place of prominence on this page, along with descriptive text.

Mike Paxton, UL's Resource Sharing Librarian, shared an overview of the project with the Library's subject librarians during early development, and gave a more detailed presentation to this group when InstantILL moved into production. This was both to prepare them in case of questions about the new search box through University Library's chat reference service and to familiarize them with the new interface, especially for those who include interlibrary loan in instruction sessions.

The new ILLiad article request form created for user testing continued into the production environment. By using ILLiad's OpenURL mapping functionality, requests created with verified metadata supplied by InstantILL are sent to a unique form rather than the standard article requesting form, and much of the article metadata is added to the final request invisibly to the user. Though the initial configuration did not include integration with University Library's link resolver, the team continued to iteratively design and test this functionality. Link resolver integration was accomplished mid-summer 2019, clearing the way for redeployment in UL's interlibrary loan requesting pages.

The iterative implementation process used by the team allowed for continuous development of InstantILL and has ensured a simple and independent implementation process for other libraries, which was a key goal of the project. The tool now connects to many content and ILL systems, without complex integrations or technical infrastructure, and embeds into existing workflows.



**Results**

InstantILL was successfully developed and released at IUPUI University Library (UL), to the agreed specifications. From April 26 to July 18, 2019, eleven patrons affiliated with UL and other campus libraries used the InstantILL search located on UL's ILL pre-login page to submit seventeen ILL requests, all of which were completed. In this early release phase, it was anticipated that InstantILL may not gather enough data to show its performance, which is borne out by the data just presented. Therefore, several bulk tests of individual systems were conducted on previously processed ILL requests. An anonymized dataset of article requests processed in the past year was exported from ILLiad containing article metadata and transaction records. This dataset of 13,000 requests was deemed to be representative of expected future requests.

Open Access Button (OAB) ran three tests on this dataset to assess various sub-systems of InstantILL, including OAB's ability to find Open Access alternatives for records and metadata for article processing, as well as the efficacy of the subscription systems. In each case, OAB used its API through OAsheet, another OAB tool, or inside a Google Sheet using ImportJSON to conduct the test. To stress test the system, OAB used only one field, article title, as a starting point for tests, as this is a reasonable requirement for all ILL requests. In actual usage, the team expects to have more metadata or identifiers when looking for items.

In OAB's first test of InstantILL's search system, 12.7% of the searches were matched to Open Access articles, which is within the expected Open Access availability range in testing. Based on existing studies, OAB expected at most 23% (Emery et al. 2018), and at least 5% (McArthur n.d. Case 1) of ILL records to match an Open Access item, with the large variability down to the interests of the schools and library subscriptions. From previous tests, OAB had established its accuracy with title searches at around 83%, while a recent study using DOIs found the Open Access Button to have a precision rate of 98.58%, as measured by automated analysis (Knoth and Cancellieri 2019). OAB deemed these accuracy results acceptable for an initial release, given that users are given a clear option to make an ILL request if the Open Access option is wrong.

OAB's metadata gathering systems ensure patrons don't need to complete long forms, while providing the information staff need to fulfill requests, ideally automatically. When OAB tested 1,000 records, the system found the essential information (article title, year published, journal title) for allowing ILL submission without patron intervention and the metadata needed (ISSN) to automate submission to RapidILL 80% of the time. Full citation records, where the system found every field (volume, issue, DOI, etc.), were found 30% of the time. On average, metadata searches took 15 seconds with titles, with a range of 1 to 30 seconds, and an average of only 5 seconds with DOIs (Digital Object Identifiers).

Finally, to test InstantILL's subscription integration, OAB used a dataset of 100 ILL requests filled via a library subscription to assess the tool's ability to find either an article URL or another confirmation of subscription access. When given just an article title, InstantILL found just 64 of 100. When given an article title and journal name, InstantILL found 91 of 100 (91%). For 60 articles (66%), InstantILL could provide a direct link and could only confirm access for the remaining articles. This was deemed acceptable, with plans to improve the success rate over time.



**Next Steps**

Now that InstantILL is installed on the IUPUI University Library (UL) website, the team will conduct a new round of task-based tests. Since participants will be able to interact with the tool directly, the team should be able to get better information without contending with some of the issues faced when using the prototype. In particular, the team is interested in analyzing the tool with graduate students and faculty members. UL intends to maintain the existing search box on the ILL pre-login page and integrate InstantILL in its ILLiad webforms. This is expected to resemble the "Simple Search" and "Advanced Search" options present in many library electronic resources. Based on patron feedback and, as part of the ongoing review of UL's discovery services, the team may explore other possible locations for embedding the InstantILL search box, such as LibGuides, the campus learning management system, or the library homepage. When the tool is more fully integrated into interlibrary loan pages, Resource Sharing & Delivery Services will hold information sessions for UL librarians. Though exact branding has not yet been determined, it is unlikely that "InstantILL" will be used in patron-facing messaging, since "instant" refers to the request creation process rather than time to access (though access is indeed instant in some cases).

By making InstantILL part of the regular interlibrary loan article requesting process, the team expects InstantILL usage to increase, giving patrons faster access to articles. One anticipated consequence of embedding the InstantILL search box within the interlibrary loan request forms is a statistical decrease in the number of interlibrary loan borrowing requests. However, if UL is referring patrons to its electronic holdings or to Open Access versions of the content and information they need, this should be viewed as a success. Because InstantILL searches take place outside of the interlibrary loan requesting system and without patron-identifying information, the statistical effect will need to be accounted for in annual statistics and reporting, possibly by comparing any drop in overall number of requests with past requests that were filled from local holdings or Open Access sources. Resource Sharing & Delivery Services may also be able to point to other service improvements as a result of InstantILL integration, such as improved turnaround times.

OAB's most immediate next step will be to deploy InstantILL at other institutions. However, building on InstantILL's systems, OAB also hopes to build tools that bring these features to users wherever they are on the web. OAB expects to continue working to ensure patrons have easy, legal access to every article by improving InstantILL. Obvious and requested routes to do so include integrating more sources of subscription data and interlibrary loan systems, including purchase on demand as a way to deliver articles, and exploring the possibility of using InstantILL as a link resolver or alternative to library search. Finally, OAB will continue to collaborate with ILL systems providers, especially those who share the values of open source and community ownership, to use InstantILL's features and ideas.



**Conclusion**

For IUPUI University Library, partnering with Open Access Button seemed the perfect way to actualize the concepts and values espoused by its librarians, including Baich (2018) and Lewis (2017), among others. The organizations' visions for marrying discovery and delivery of Open Access content with resource sharing workflows were aligned. By combining our expertise, the team has been able to, in a timely and cost-effective manner, replace manual workflows for resource sharing staff, while surfacing Open Access content in a way that is more transparent and educational for the end user. The joint development of InstantILL increases our potential to not only integrate with library systems but also to bring the library to where users are.

This successful partnership between a library and a mission-driven, open-source developer can be a model for future creation of community-owned infrastructure. Though the Open Access Button team did not have significant previous experience in library-specific development, by consulting with University Library staff OAB was able to build a tool that integrates well with existing software. The specific scope of InstantILL made this a quick, low-cost project by leveraging existing available infrastructure. Going forward, libraries could adopt this partnership model to achieve goals quickly, affordably, and independent of traditional library vendors.

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# Analysis of the Development Direction of a Conceptual Academic Library: Resource Sharing Service based on a Case Study of DXY

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**Abstract**

*Under a global environment characterized by open and complex information networks, academic library resource sharing practitioners should observe the information services market beyond their "library-oriented" settings and rethink the development directions of their services. To investigate this issue, this paper presents an analysis of the development trajectory and characteristics of DXY, a Chinese information service enterprise. This study also discusses the development of academic library resource sharing service from three dimensions: namely, service targets, service contents, and service roles. Findings show that the academic library resource sharing practitioners should break through the traditional cognitive frameworks of "academic users on campus" and "document providers," and furthermore, consider upgrading services to assume a comprehensive role as information sharer, information connector, and platform operator simultaneously. This change will enable the move toward a knowledge service orientation.*

**Keywords:** Resource sharing, Open access, Interlending and document supply (ILDS), Information mining, Information connection

## Introduction

With the development of the Internet, the global academic information environment has changed remarkably. The evidence is in the rapid development and worldwide attention attracted by the open access (OA) movement. Two primary vehicles, namely, OA journals and OA archives or repositories (Suber, 2009), are used to deliver OA research

articles. The representative platforms of OA journals include Public Library of Science,[81] BioMed Central,[82] and the Directory of Open Access Journals.[83] The representative platforms of OA archives or repositories include arXiv,[84] PubMed Central,[85] the Directory of Open Access Repositories,[86] and institutional repositories that belong to universities or research institutes. For the decentralization of OA resources, OA search engines such as Socolar[87] and CiteSeerX[88] or plug-in tools such as Kopernio[89] and Unpaywall[90] have emerged. OA not only removes paywall barriers for users but also accelerates academic information communication. In addition, the academic community's ResearchGate[91] and Academia.edu[92] as well as the online database Sci-Hub,[93] which aim to remove barriers to knowledge access in science, also play an important role. Compared to the western countries, although the development of institutional repositories is slow in China (Zhong & Jiang, 2016), which doesn't mean it is difficult to access to OA resources for users. For example, some database vendors directly provide fast document delivery service to end users; this service is available by searching and simply filling in an email address. In summary, the information environment has become increasingly convenient and open for users in terms of discovering and accessing academic information, thereby influencing the provision patterns for global academic information.

At present, the trends in interlending and document supply (ILDS) services are not optimistic. For instance, service requests in France and Britain are on a downward trend (Schöpfel & Gillet, 2011; Appleyard, 2015). Muhonen and Saarti (2016) reported that ILDS services are the least used channel for instructors in obtaining necessary documents. The China Academic Library & Information System,[94] as the largest resource sharing platform among academic libraries in the country, received approximately 120,000 requests in 2014; this number dropped to 50,000 in 2018. In 2016, academic libraries in the United States reportedly loaned 10.5 million documents and borrowed approximately 9.8 million documents (Rosa & Storey, 2016). The Rosa & Storey report did not describe trends for ILDS services, but suggested that increasing globalization and socialization of information creation and distribution were some of the most important factors that affected the performance of U.S. libraries.



Currently, academic information supply exists in an open and complex global information environment. Libraries, OA resources, academic communities, social networks, enterprises, and even online databases established by individuals are all part of the academic information chain. The Internet promotes academic information access

[81] https://www.plos.org/ [2019-6-7]
[82] https://www.biomedcentral.com/ [2019-6-7]
[83] https://doaj.org/ [2019-6-7]
[84] https://arxiv.org/ [2019-6-7]
[85] https://www.ncbi.nlm.nih.gov/pmc/ [2019-6-7]
[86] http://v2.sherpa.ac.uk/opendoar/ [2019-6-7]
[87] http://www.socolar.com/ [2019-6-7]
[88] https://citeseerx.ist.psu.edu/index [2019-6-7]
[89] https://kopernio.com/ [2019-6-7]
[90] https://unpaywall.org/ [2019-6-7]
[91] https://www.researchgate.net/ [2019-6-7]
[92] https://www.academia.edu/ [2019-6-7]
[93] https://sci-hub.shop/ [2019-6-7]
[94] http://www.calis.edu.cn/index.html [2019-6-9] (business data are from an interview with CALIS staff)

and exchange, causing an obvious loss of users for traditional ILDS services in academic libraries. To ensure future development, ILDS services should step out of their "library-oriented" perspectives, observe other academic information providers in the market, and rethink the direction of service reformation. This paper presents a case study of DingXiangYuan (DXY)[95] , an information service operator in China. Through observations of DXY, including its development trajectory and operation characteristics, this study analyzes the transformation of ILDS service targets, contents, and roles.

**DXY case study: development trajectory**

DXY originated from a peer-to-peer (P2P)-based academic document searching and sharing service in the medical field and has developed into a connector and digital service provider in China's healthcare industry. DXY connects researchers, physicians, patients, hospitals, pharmaceutical firms, and insurance payers by providing information and knowledge services for health professionals and public users. The development trajectory of DXY can be divided into the following four stages:

**Initial stage (2000–2002): P2P-based academic document searching and sharing**

Li Tiantian, a medical postgraduate and the founder of DXY, had tried to search for documents on the Internet and was inspired by PubMed because he was dissatisfied with the inefficient and fee-based document services in libraries. In 2000, Li launched a public welfare bulletin board system (BBS) that enabled (1) sharing and discussion of medical documents; (2) discussion of medical databases, document searching methods, and skills; and (3) participation in competitions for medical database searches and applications among medical students or workers. The BBS not only provided document information for learners and researchers in medicine but also built a communication channel that gathered the first group of DXY followers (Zhang, 2015).



**Transition period (2002–2006): establishing a professional academic community**

Li thought that by only enabling users to share and discuss medical documents, the BBS would not develop further and would even lose users. Thus, the founder attempted to transform the BBS into a professional academic community that was oriented toward discussions on the latest research results and special cases in the medical field. This transformation brought the number of DXY users to a million in 2006, representing a peak in user growth.[96] Furthermore, DXY began to recommend potential academic partners to registered users based on back-end data analysis of the academic community. At this stage, DXY successfully transformed itself into a comprehensive platform for academic information exchange, not limited to an academic document supply service. Since then, the platform has been guiding users in producing professional content that promotes communication among them.

[95] http://www.dxy.cn/ [2019-6-9] (relevant information and data on DXY are mainly collected from its own website and other websites)

[96] https://www.huxiu.com/article/2013/1.html [2019-6-10]

**Commercialization (2006–2011): promoting profitability**

As a larger number of users joined the DXY academic community, additional financial aid was needed for sustainable development. Thus, DXY drove the community toward commercialization. To maintain academic neutrality of the community, DXY established a top management organization that was independent of the commercial team. At present, DXY provides recruitment information, enables procurement of experimental materials, and offers online course services for professional users; the platform also provides business advisory services such as medicine marketing solutions for enterprises,[16] Thus, besides being the operator of an academic community, DXY has become an information connector and information provider. DXY currently has 5,500,000 professional users, including 2,000,000 doctors.[97]

**Socialization (2011 to present): surpassing academic community and serving society**

After 2011, DXY expanded its target users from medical professionals to the public. To adapt to the mobile internet era, DXY has implemented changes to become "public user-oriented" and "marketing-oriented," and to offer "mobile products."[98] For example, DXY has launched several applications to provide answers to medication inquiries, parenting knowledge, and health information consulting services to the public. Furthermore, DXY has been using WeMedia with WeChat to upgrade the operation and promotion of DXY services since 2012. Through WeMedia, DXY advocates "knowledge-driven" marketing that integrates marketing information into academic contents and plans topics according to data. Thus far, DXY has gathered numerous WeChat fans, including 30 million public users and 20 million professionals.[18]



**DXY case study: development characteristics**

**Key points**

The development of DXY has been characterized by the following features alongside the pace of change in the information environment:

- Focus on content: From being a BBS-based system focused on document search to becoming a commercial information-service platform, DXY has upheld a "user-centered" framework and focused on the development of high-quality and professional content, the basic foundation for promoting user interaction and enhancing user engagement.

- Focus on user behavior: In the big data era, DXY attaches great importance to user behavioral analytics, including likes, comments, forwarding, searching, and information exchange. "User analysis" is an important basis of service improvement,

[97] http://www.dxy.cn/pages/about.html [2019-6-10]

[98] https://vcbeat.top/MzRmYmFmNzFhYWNkMDkzNTI0Nzg1YzZkMTU5OTU2MzY= [2019-6-10]

product research and development (R&D), and precision marketing.

- Focus on platform and marketing: The platform is an important provider of content dissemination and user interaction. With the development of 4G technology and smartphones, DXY has expanded its presence from web to mobile platforms. DXY has also used the WeChat social network to accelerate content and service marketing, thereby enhancing the brand's influence and expanding its user groups.

**Changes in roles**

The role of DXY has changed constantly over a 19-year period. Initially, DXY was the organizer of a public welfare BBS where users shared documents and searched for skills. Thereafter, as a professional academic community operator, DXY provided users with information services such as knowledge resource acquisition, professional information exchange, and research support. Furthermore, as a connector, DXY linked information demanders and information providers to enable the provision of academic courses for professional users and information consulting services for public users, thereby helping to address information asymmetry and accelerating the conversion of knowledge value. As an information provider, DXY offers business marketing consultancy services based on data analysis for enterprise users. Evidently, DXY has transcended the scope of a document information service by providing comprehensive information consulting services to professionals, enterprises, and the public.



**Discussion**

The traditional ILDS services provided by academic libraries face marginal risks in a pluralistic, open, and convenient global information environment. Thus, information professionals must redefine traditional services to adapt to future digital realities (Healy, 2015), and ILDS services should implement changes.

**Increasing target audiences**

Sari Feldman, former president of the American Library Association (ALA), stated that "cooperation, support, and outward development" are the keys to library transformation (Sari, 2015). According to Wu (2016), libraries have to strengthen their connection to society as a whole, to make themselves more widely open, and to expand cooperation during the current transitional period. DXY participates in social services and its users include professionals and the public. By contrast, at least in China, the main target audiences for academic library ILDS services are limited to university educators and research institutions. However, from the viewpoint of ILDS services, target users have changed considerably:

> ILDS defines its target readership as 'digital information researchers, [including] educators, knowledge professionals in education and cultural organizations, knowledge managers in media, health care, and government, as well as librarians.' With open science, society at large becomes the target of scientific communication [and] document supply is faced with a

> choice: either to limit its activity to scientists from universities, research institutes and corporate R&D, or to broaden its scope to 'society at large' (Schöpfel, 2016, p. 151).

With social media developments, many people have become keen on science exploration and participating in crowdsourcing scientific research projects. These people do not work at universities or research institutions but demand relevant information support. Compared with public libraries, academic libraries have more obvious advantages in supporting scientific research. Thus, academic libraries should re-recognize the relationship between library services and society. Academic libraries can draw upon the experience of DXY's development trajectory and role-changing processes and attempt to provide knowledge services for social users breaking through the focus on academic users. In addition, A certain scale of social user groups may also drive new business growth to academic libraries. Many academic libraries, which receive public funds or individual donations, should manifest the consciousness of serving society so that a greater numbers of people can have easy access to information and knowledge. By doing so, academic libraries can assist in social development.

**Improving service content**

Undoubtedly, further content, availability, and legal compliance are positive factors in the development of ILDS services. Thus, the following suggestions are proposed to improve ILDS service contents on account of the observation and analysis of DXY:



- **Positive cognition of OA**: A large number of documents obtained by users from the DXY platform are OA resources, which are a part of the scholarly canon. Librarians should actively enhance the awareness of exploiting OA resources and integrate searching and utilization of OA resources into their daily workflows. Simultaneously, librarians should filter high-quality OA resources for users, and even incorporate OA resources into the discovery systems to promote the exchange and sharing of scientific achievements. For instance, the National Science Library of the Chinese Academy of Sciences has launched the GoOA project, which involves the selection, collection, storage, and discovery of OA journals in the natural sciences.[99] Overall, for ILDS services in academic libraries, deep mining and utilization of OA resources should be promoted.

- **Efficiency:** Efficient information services are an important way to increase user engagement. According to a report by PricewaterhouseCoopers in November 2014, e-book sales in the U.S. were expected to exceed those of print books beginning in 2018,[100] which indicates a considerable change in peoples' reading styles. Approximately 31% of total global library investments were spent on e-books in 2015 (Healy, 2015). The academic resources on the DXY platform, whether papers, books, or reports, are transmitted online so that user information needs can be met in a timely manner. However, in terms of current ILDS services, most of the users'

[99] http://gooa.las.ac.cn/external/index.jsp [2019-6-17]

[100] https://the-digital-reader.com/2014/11/18/pwc-claims-ebook-sales-will-exceed-print-2018/ [2019-6-17]

requests for borrowing e-books are not satisfied. By contrast, e-book lending is restricted by legal copyright and contract terms, and thus, this practice among libraries has not reached a large scale. Through a survey of e-book lending in U.S. libraries, Percy (2013) showed that 92.4% of interlibrary loan (ILL) departments (61 of 66 respondents) still did not lend e-books via the ILL process and argued that e-book licensing agreements need to be re-evaluated and that ILL staff should be involved in negotiations. Furthermore, even less attention has been paid to the study of e-book lending in developing countries (Muhonen & Saarti, 2016). Therefore, e-book utilization can be enhanced through the assistance of countries and collaboration among legal professionals, technicians, and libraries.

- **Information mining and dissemination:** As an information provider, traditional ILDS services passively deliver document information to users according to users' applications. However, information dissemination is not limited to articles and books. Verbal communication is an important way to convey information. The essence of online courses and lectures on the DXY platform is also information sharing and exchange, similar to the concept of TED Talks, well-known idea-sharing platforms.[101] The users of academic libraries include experts from many fields and talented students who are potential information providers. By contrast, information demanders are from universities and society. As a node, academic libraries can mine information supply and information demand and disseminate high-quality information in pluralistic and convenient forms. The China Academic Humanities and Social Sciences Library (CASHL), which is built upon an ILDS service, has been exploring information mining and dissemination since 2017. CASHL has also launched online academic lectures and invited scholars from various universities to deliver keynote speeches on the humanities and social sciences through live broadcasts and recommended related thematic resources to audiences. These lectures are open to the public. Through this approach, the service contents of ILDS in academic libraries can resemble information mining and dissemination.



**Changing service roles**

In a multilateral sharing environment, information is disseminated widely and rapidly instead of being spread through single-track delivery, which can enhance the efficiency of information access and the value of information utilization for users. Multilateral sharing requires an information commons platform.

**Who constructs the information commons?**

Any such platform must be constructed through collaboration, not limited to cooperation among libraries. Libraries may seek other departments, institutions, and partners outside universities. For example, the Scholarly Commons at the library at the University of Illinois in Urbana-Champaign has integrated library services and cooperated with other institutions on campus to provide data, digital humanistic, and

[101] https://www.ted.com/talks [2019-6-20]

research support services for users.[102] ILDS services should actively respond to the demand for multilateral sharing, promote the development of an information commons platform, seek related platforms, mine valuable information resources, and move toward knowledge services (beyond document services only).

**How should ILDS services locate themselves in the information commons environment?**

As in the case of DXY, ILDS services can play many roles such as the following:

- **Document provider**: ILDS services can continue to utilize the platform to provide resource sharing services and information consulting services for users.

- **Information sharer**: ILDS librarians can assist in constructing content for the information commons platform by mining information resources. For example, taking advantage of library resources, ILDS librarians can share document information such as hot research topics and papers as well as the latest professional books and other valuable information and to promote sharing and dissemination of related academic information.

- **Information connector**: ILDS is able to actively mine potentially high-quality information and disseminate it effectively. ILDS can find reliable information sources (not limited to documents) or information providers according to customers' requirements, which are conducive to information mining, connection, and conversion.



- **Information commons operator**: The operation of an information commons involves content construction, user maintenance, event planning, technical support, resource mining, and other tasks that require professional talent. ILDS librarians may consider joining an operation team to enhance comprehensive vocational abilities.

**Concluding remarks**

Open science and information, along with OA and the Internet, are expected to continue to blossom, and the global information commons will develop further through time. As a member of the information chain, ILDS services should learn from the providers who participate in information market competition, adhere to a "user-centered" philosophy, adapt to the present era with an open attitude, and redefine their own values. The service target audiences are not limited to users in academic circles. Services should emphasize efficiency and not be constrained to traditional document resources. Furthermore, ILDS services should aim to break through their traditional roles and consider comprehensive roles as information sharers, information connectors, and platform operators by offering personalized information services and information

[102] https://www.library.illinois.edu/sc/ [2019-6-20]

exchange opportunities to a larger number of users, thereby moving toward a knowledge service framework.

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# Project ReShare: An Open, Community-Owned, Resource Sharing Solution

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## Abstract

*The ReShare Community is a group of libraries, information organizations, and developers, with both commercial and non-commercial interests, who came together in 2018 to create a new and open approach to library resource sharing systems. Libraries have long established protocols and agreements among local, regional, national, and international networks to provide discovery and access to print and digital resources, extending the use and value of each library's collection exponentially. However, current resource sharing solutions leave much to be desired. The marketplace has been characterized by stagnating technology, closed or siloed environments, and a consolidation of commercial options, leaving consortia to desire a fresh start; a re-imagined infrastructure that promotes an increased ability to innovate, experiment, and communicate across diverse library systems (ILS, discovery, resource sharing, etc.) and more sustainably pursue shared collection development and print retention initiatives. ReShare aims to inject new life into the space by developing a community-owned, modular resource sharing platform, enabling libraries and consortia to place library users at the center, from discovery to request management and fulfillment. Project ReShare's key differentiator is its foundation as a wholly community-owned solution. This approach offers libraries and commercial partners a fundamentally new model for shaping collections and connecting people with what they need, by greatly deepening our ability to collaborate and develop systems responsive to the needs of libraries and their users. In this paper, members of the Project ReShare Steering Committee and Product Management Team explore the frustrations with the current resource sharing environment, share perspectives*

*on the importance of community-owned, open source tools, and discuss the benefits of this type of collaboration for the library community at large. The paper tells the story of Project ReShare, including how it is being developed, how the community has grown, and the potential for this new resource sharing solution.*

**Keywords:** Project ReShare; Open Source; Community-owned; Resource Sharing; Interlibrary Loan

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## Today's resource sharing environment

The Resource Sharing field is collaborative, innovative, and creative. We provide core services to obtain requested material to complement local collections in the quickest, most user-centered, efficient way possible, and we do so through partnership with one another around the world. Products such as ILLiad, RapidILL, Relais D2D, and the IDS Project's Logic Rules allow libraries flexibility to customize systems to local workflows and to automate routine processing, and we can leverage and expand consortial partnerships to ensure timely fulfillment and user-friendly loan policies. However, the siloed nature of our underlying systems hampers our ability to improve user experience and provide efficient, sustainable services. Ideally, our discovery and fulfillment systems would interoperate to allow users a more informed request experience and libraries to capitalize on efficiencies that consider local, offsite, and electronic availability, real-time availability and loanability from our consortial partners, and geographic and shipping information, among other factors.



This information exists to varying levels in our fulfillment systems, yet these systems were not consistently built to interoperate, which makes leveraging the data to improve the users' experience difficult and often impossible. Furthermore, while we've had success manipulating our current systems to automate workflows and better meet changing user expectations, especially through the work of the IDS Project in New York state, we're still limited by systems which reflect legacy practices. In recent years the resource sharing community has begun dialogue around these issues, exemplified in the Big 10 Academic Alliance's work envisioning the future of resource sharing, and their report, "A Vision for the Next Generation Resource Delivery"[103] where they, "envision a future state where system interoperability and communication replace today's silos." This is a founding principal of Project ReShare.[104]

## Challenges

Libraries have long established protocols and agreements among local, regional, national, and international networks to provide discovery and access to print and digital resources, extending the use and value of each library's collection exponentially.

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[103] Barton, Bruce, Melissa Eighmy Brown, Zoe Chao, Kurt Munson, and Ken Varnum. A Vision for Next Generation Resource Delivery: Report of the Big Ten Academic Alliance Discovery to Delivery Project Action Committee. [2019-07-29] 2016. Available at: https://www.btaa.org/docs/default-source/library/d2dnov2016report.pdf?sfvrsn=4 .

[104] Project ReShare. [2019-07-29] Available at: http://projectreshare.org/.

However, current resource sharing solutions leave much to be desired. The technology marketplace has been characterized by stagnating technology, closed or siloed environments, and a consolidation of commercial options, leaving us to desire a fresh start. Some specific challenges include the user experience throughout the request process, our inability to share across consortia with the same efficiencies available when borrowing within a single consortium, and decreasing agency for libraries to affect functionality enhancements.

**Opportunities**

In 2018 a group of consortial leaders and resource sharing experts coalesced to form Project ReShare and act on these strategic concerns, bolster libraries' agency in the provision of resource sharing services, and advocate for user needs. ReShare aims to inject new life into the space by developing an open source, community-owned, modular resource sharing platform, enabling libraries to use modern approaches that place library users at the center, with accompanying interoperable software applications for the discovery, management, and fulfillment of unmediated interlibrary loan requests, supporting consortial and inter-consortial library borrowing networks.

Ultimately ReShare will provide a platform that any library or consortium may use to expand sharing within and between networks, regardless of choice of integrated library or discovery system. ReShare will help libraries support teaching, learning, and research activities by building their capacity to provide rich collections to users in the most timely and efficient manner. We envision a re-imagined infrastructure which puts the user first and promotes an increased ability to innovate, experiment, and communicate across systems for resource sharing and other strategic library functions such as shared collection development and print retention initiatives.



**A community-owned & open governance structure**

Project ReShare's key differentiator is our foundation as a wholly community-owned solution. This approach offers libraries and commercial partners alike agency, and a fundamentally new approach to the pursuit of technology solutions and new models for shaping collections and connecting people with what they need, by greatly deepening our ability to collaborate and develop systems responsive to the needs of libraries and their users.

Project ReShare established its governance model in August 2018, and has since gained membership in the Open Library Foundation[105] for key infrastructure needs and ownership of intellectual property. Project ReShare is organized around a Steering Committee, Product Management Team, and Subject Matter Experts (SMEs). The

[105] Open Library Foundation. [2019-07-29] Available at: http://www.openlibraryfoundation.org/.

project is developed by Index Data[106] and Knowledge Integration[107] with UX by Samhæng.[108]

The Steering Committee is a collaboration of libraries, software developers, related organizations, and consortia, specifically the Big Ten Academic Alliance, the Greater Western Library Alliance, the Midwest Collaborative for Library Services, the Pennsylvania Academic Library Consortium, The Alberta Library, and the Triangle Research Libraries Network. The Steering Committee is responsible for the vision, resourcing, and outreach.

The Product Management Team takes primary responsibility for the internal activities of ReShare development. The team manages the scope of the ReShare project, agrees upon development priorities at the feature level, sets the final content of each release, and strives to create a cohesive and transparent working environment for project participants.

Subject Matter Experts possess expertise and experience in day-to-day resource sharing workflows. They describe existing and desired workflows, share documentation, and provide use cases. SMEs review UX sketches and prototypes to ensure they meet usability and functionality requirements, and provide feedback to the UX designer. They will also perform user acceptance testing on ReShare software and provide feedback to the product owner and developers.



**User first development process**

The ReShare development process is founded upon an open, community-owned, and iterative model which begins with an extensive process to gather and refine specifications and test prototypes before commencing development. Similar to the FOLIO (open source library services platform) project,[109] ReShare is organized in modular applications (apps) based upon resource sharing activities such as Supply, Request, Shipments, Box, Unbox, Send, Receive, Shared Index, Directory, and Consortia. Starting in January 2019, SMEs, working alongside UX designers, created and refined requirements and priorities for each app based upon current practices and future needs. Based on SMEs' input, UX designers provided sketches for both "happy paths," requests with no errors or special exceptions, and "unhappy paths," requests with errors or special handling. After the SMEs and Project Management Team reviewed and edited the sketches, UX and UI designers created prototypes which were field-tested by resource sharing staff at two libraries in New York City. This process was repeated until the community agreed the prototype was ready for development. Figure 1 illustrates the iterative nature of this development process.

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[106] Index Data. [2019-07-29] Available at: https://www.indexdata.com/.

[107] Knowledge Integration. [2019-07-29] Available at: https://www.k-int.com/.

[108] Samhæng. [2019-07-29] Available at: https://samhaeng.com/.

[109] FOLIO. [2019-07-29] Available at https://www.folio.org/.

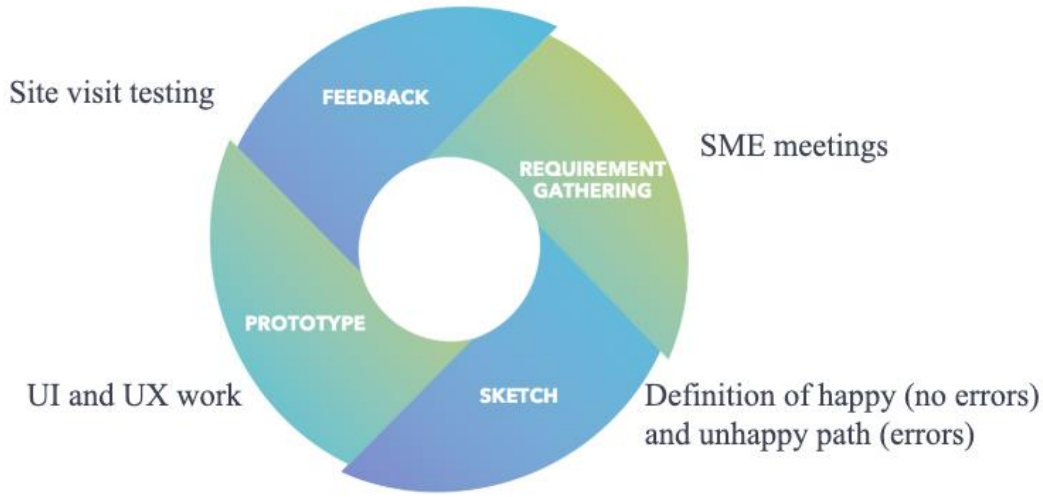


*Figure 1: ReShare Iterative Development Process*

The test-release of the ReShare Minimum Viable Product (MVP), codenamed Inevitable Narwhal (IN), is planned for fall 2019. The MVP focuses on physical material fulfillment within the consortial environment, and is planned to include the library directory; shared index; support for discovery, including real-time availability status; and fulfilment, including requesting, supplying, shipping, and reporting. While we're starting with a focus on returnable items, there's a strong desire to quickly move into the development of tools for electronic content delivery and to make this platform work well with others outside of the ReShare community, allowing libraries and consortia to integrate this tool (or not) as it makes sense for local needs.



The strong foundation and shared index will allow for future development to support key priorities such as shared print initiatives and consortial / local collection analysis to inform print retention.

**Resource sharing technical history**

The ISO10161 protocol specification, and its sister service definition, ISO10160 were first published in 1993. Their direct descendent, ISO18626 followed in 2014. The aim of the standards body through these specifications was to formalize the conversation that can take place between an institution looking to acquire a copy or loan of a resource and any one of the multiple institutions able to supply that copy or loan. The vision assumed that by defining the conversation between these parties, a community of practice would emerge free to innovate independently in each setting - with institutions able to develop or buy into the solution that best fit their own procedures. All parties would work collectively to maintain and refine the standards, and those standards would ensure that widely variant visions of the interlending application (profiles) could still exchange a fundamental set of messages and interoperate with each other. A healthy market of solutions that offered "the right tool for the job" would emerge.

This approach to loose-coupling the activity of legally distinct institutions, bound by a common purpose of knowledge sharing did indeed yield results. Often consortia would lead the charge in setting up viable interlending networks built upon easily replaceable, substitutable or upgradeable components. Results are documented in the publications of projects such as LIDDAS.[110] These projects are characterized by the leading role of standards and standards bodies, collaboration between vendors, institutions, staff, and users and interoperability by consensus rather than consolidation.

Key components in these loosely coupled systems included the UI, the service directory, and the protocol messaging adapters.

Around 2003/4 a new model of service delivery started to emerge, spurred by the rise of HTTP/HTML as a ubiquitous "Zero Install" platform. The "Application Platform" became the default sharing mechanism for everything from photos to music, files and social networks. These platforms ensure interoperability not by having vendors agree to abide by a common standard, and then allowing institutions a free choice in how they adhere to that standard, but by encouraging all participants to adopt a single ubiquitous application. This approach has substantial benefits in the way it reduces the complexity of systems. The need for a shared service directory falls away (replaced by a proprietary internal database) as does the need for complex protocol implementations. The approach increases ease-of-use for end users, who no longer need to worry about these details. Some of these benefits come to the institutions; many, however, come to the provider of the platform.



The strongly engineered international standards started to be set aside in favor of proprietary APIs. Because the web could be accessed from anywhere, the need for interoperability standards was reduced. Anyone could participate provided they had a browser. Any institution could use the internet to access the application platform of any other, so interoperability changed from a technical on-the-wire problem, to one of humans having to access several different applications in different contexts.

It is not uncommon for providers of these platforms to provide legacy hooks for the older protocols – although this seems to be a dying practice, and where the practice remains it appears to be a more fundamental, if hidden, part of what the platform does behind the scenes. Interoperability testing with these systems is harder today than it was in the prime of the distributed systems movement.

The downside of the "application platform" approach comes primarily in the reduced influence that an institution can exert on the development and direction of that platform. As a platform grows in popularity, and choice reduces in the marketplace, this power is effectively reduced to zero, and there is only one game in town.

[110] Roxanne Missingham (2006) LIDDAS Goes Live: How Close is Australia to Interlending in One Easy Step?, Australian Academic & Research Libraries, 37:1, 38-54, DOI: 10.1080/00048623.2006.10755321

The architecture behind ReShare seeks to meet the sometimes conflicting needs of high-end integrated and interactive user experience with loose coupling, "Design for unforeseen use" and "Design for replacement."

### ReShare architecture and aims

ReShare has drawn on resources and models made available by the FOLIO project, although the two are separate projects with discrete funding and personnel. Specifically, ReShare has been able to reuse the FOLIO platform architecture, which again, supports the building of modular applications that sit atop a system layer and API gateway and their Stripes UI toolkit, which helps create a consistent look and feel between applications. By reusing these FOLIO components, ReShare developers have not only saved the time needed to develop these components on their own, but also have begun to test the true potential of community ownership of software.

FOLIO takes a microservices approach to systems infrastructure. The ReShare MVP is drawing primarily on the existing FOLIO users and inventory service components and adding to that a directory services module and a resource sharing service (along with a number of plugin modules that communicate over a message bus which provides guaranteed delivery and message non-repudiation). At the front end, our user facing apps are more granular and are modelled more closely with the various functional tasks commonly undertaken in resource sharing departments. Currently these are: Supply, Request, Shipments, Box, Unbox, Send, Receive, Shared Index, Directory, and Consortia. This split reflects the different needs of the system's internal interfaces and modules, and the UX led process – with the user experience split much more finely over the different roles that can be taken, and with the core software "domain model" being a more stable and static arrangement. Our aim is to provide an "app" which supports each specific activity taking place in the department.



The current arrangement of apps provided at the front end may change as the project learns from its experiences in running the MVP service. One of our great strengths is in adaptability and our ability to learn and apply user input as we move forward.

### Service Provider model

To support the effort to create a sustainable, open source, user-centered resource sharing platform for libraries, Project ReShare created the Certified Service Providers (CSPs) program.[111] CSPs are partners approved by the ReShare Steering Committee as trusted providers and community contributors. These organizations have demonstrated expertise and a significant community effort to support ReShare's open technologies through community leadership, a minimum number of hours of in-kind community contributions annually, and a flat annual fee toward support of community infrastructure.

[111] Project ReShare Service Provider Model. [2019-07-29] Available at: https://projectreshare.org/get-involved/commercial-service/.

The CSP program is aimed at supporting and elevating those service providers who offer ReShare services while adhering to community standards and giving back to the Community. ReShare takes a radically open and transparent approach to collaboration between nonprofit and commercial interests. With that approach in mind, CSPs commit to open and transparent pricing, caps on annual increases, use of open standards and protocols, participation in leadership roles, contributions of ReShare code, and excellent service to ReShare customers.

**Get involved**

The ReShare Founding Members Program[112] provides a direct path to project participation, offering a variety of benefits to individual libraries and consortia interested in advancing our goal for the development of an open, community-owned resource sharing infrastructure. ReShare Membership includes a voice in project governance, recognition on the ReShare website, and discounts with ReShare service providers. Founding Members play a critical role in bringing this open source software to market and shaping the Community's trajectory as a disruptive and innovative force for open, standards-based, user-centered resource sharing services in libraries.

With the support and collaboration of ReShare Founding Members, we believe we can transform resource sharing, focus on our collective user needs, and build innovative tools and business models that work for libraries and consortia. Membership allows libraries and consortia to become a partner in project governance with a voice in ensuring that ReShare meets the needs of this community. Membership dollars will be used to establish ReShare as a resource sharing service option for libraries and consortia and ensure the long-term sustainability of this project.



[112] Project ReShare Founding Member Model. [2019.07-29] Available at: https://projectreshare.org/get-involved/libraries-consortia/.

## Acknowledgments

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# ZÍSKEJ – national system for sharing and delivering documents

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**Abstract:**

*A software platform called "ZÍSKEJ" (Get it) for documents sharing and delivery was designed and developed at the National Library of Technology as a nationwide system for public libraries in the Czech Republic. The project was supported by the Ministry of Culture of the Czech Republic. The system ZÍSKEJ is published as open source with a GNU Public License (GPL).*

*ZÍSKEJ is a server application that is capable of managing user's document requests through its web client or local integration using the available API. The system is based on a request management module that automatically handles the queue of incoming requests to deliver the document requested by end users or by libraries that serve end-users.*



**Keywords:** document sharing and delivery, information system, nationwide library network.

## Introduction: Libraries and the sharing economy

The sharing economy is based on renting, exchanging, or sharing property within the community. It takes advantage of the fact that the owner often does not use the owned object continuously, so he can offer it to other interested parties. Thanks to information technology systems, community-based sharing economies can reliably realize real-time sharing of flats, cars, offices, etc. In this way, communities or clubs are set up to acquire items of interest for members, and members can then share these resources in a controlled manner. Libraries and their users work on the same principle as these clubs.

Libraries have been using a sharing model for centuries. In the beginning they shared manuscripts and printed documents, in recent decades also electronic collections (e-journals and e-books) and non-traditional items (umbrellas, games, tablets, didactic tools, etc.). Libraries are also pioneers in sharing study rooms and even in sharing referral and consultation specialists.[0]

**Library collections sharing to support science and research**

The mission of academic and research libraries is to provide the necessary information support for students, teachers, and scientists at universities and scientific institutions. Science and research would flounder and fail without information resources and associated research services. However, acquisition and maintenance of the information portfolio is very costly and many research and education institutions cannot afford to buy all documents and databases required in a "just in case" inventory strategy (JIC).[0] Increasing pressure on economic efficiency of resource management calls for using flexible models of "just in time" acquisition (JIT), i.e., acquisition of information resources in real time driven by real users' needs. Today's users also expect library services to be available anytime, anywhere, as they are used in common web delivery and purchasing services. The form of modern acquisition and access to library content has changed significantly in recent years.

The most frequently used JIT acquisition models are PDA, ILL, and EDD:

- Patron-driven Acquisition (PDA) is a collection development model in which a library purchases a document only when it is required by a user,

- ILL (InterLibrary Loan) is a service allowing a library user to borrow books or documents owned by another library,

- EDD (Electronic Document Delivery) is a type of ILL where a user obtains the requested document from another library in electronic form, obtained either as an e-copy or by scanning a printed document.



**Document sharing and copyright laws**

There is a conflict of interest between publishers and libraries, and it is frequently discussed.[0] Some publishers see libraries as competitors that threaten their sales due to document sharing practices like interlibrary loan. It should be noted here that this problem arises only with documents that are still available on the market. However, libraries collect a number of documents that are out of print and no longer available in the book and journals marketplace. This position of publishers is logical when shared documents or parts thereof are shared for commercial purposes, and copyright law in most countries restricts commercial applications. On the contrary, using library services for individual needs, especially in the fields of education, science, and non-commercial research is in the public interest and is also defined by law in most countries.

For each information resource, it is necessary to respect the copyright law and licensing conditions under which the information resource was acquired. The conflict between publishers and libraries is solved by open access that has been becoming a standard in Europe and other countries. Open Access (OA)[0] is a scientific communication model that provides permanent, instant, free, and online access to the fulltext of published scientific results (mostly articles) without limitation for anyone.

## Cooperation of the Czech libraries in their network

Public libraries and academic libraries in the Czech Republic are regulated by Library Act 257 from 2001.[Chyba! Nenalezen zdroj odkazů.] This Act defines, among other things, the so-called library network in which all libraries have to cooperate with each other and share their collections within the interlibrary loan service (ILL). Until now, ILL has been based on phone calls and e-mails, which was ineffective, too dependent on personal contacts that are often changing, and lacked any central control of the requests. It was not possible to maintain a common standard for running these services at the national level.

In addition to traditional ILL, where libraries lend to each other's printed documents from their collections, other forms of library delivery services have been introduced. First, making of microfilms that replaced lending of the original printed document. These, along with the arrival of faxes, significantly accelerated library delivery services. But the biggest change in collections sharing has been brought about by expansion of personal computers. The ability to create an electronic copy from a printed original and to provide this copy for downloading or electronic distribution has brought a paradigm shift in library cooperation, increase in delivery speed. Unfortunately, this type of service is limited by copyright and other legislative constraints that complicate development of electronic document delivery (EDD). Nevertheless, the INVIK system[Chyba! Nenalezen zdroj odkazů.] was developed and successfully launched at the State Technical Library, Prague in 1997, which made the library collection accessible to hundreds of registered system users in the form of EDD. Since 2001, the system was extended by dozens of other libraries' collections and was renamed to VPK (Virtual Polytechnic Library).[0]



## System Získej: a nationwide system for documents sharing and delivery

In 2016 and 2017, a software platform called "Získej" (Get it) for documents sharing and delivery was designed and developed at the National Library of Technology as a nationwide system for public libraries in the Czech Republic. It uses the best practices from its predecessor VPK, but it was completely redesigned. The project was supported by the Ministry of Culture of the Czech Republic. The system Získej is published as an open source with a GNU Public License (GPL)[0]. It is written in Python and uses several expanded python web frameworks, such as Zope, Plone, and Pyramid. It is currently available in Czech and English. It can easily be deployed to support the delivery services of any network of libraries in the world.

Získej is a server application that is capable of managing user's document requests through its web client or local integration using the available API. The system is based on a request management module that handles the queue of incoming requests made by end users or by libraries that serve end-users. The system Získej uses several external systems as a data source (bibliographic data, patrons data, items status), therefore it is a typical integrated system that builds application logic on heterogeneous data in a new context.

The system Získej is a platform that allows the development of new plug-ins supporting other types of delivery services in addition to the base platform. At this time, the system supports ILL for both sharing an original document, its copies, and EDD.

The system Získej consists of the following basic modules:

- Authentication module and identity merging
- Request creation module for each type of delivery service
- Request management module (requests queue)
- Delivery timeout warnings
- Service quality monitoring
- Statistics

Each user and each library have to be registered in the system. There are several reasons for a mandatory registration. The first reason is the copyright and licensing rules that treat unauthorized access to content or some formats - for example, not all documents can be obtained in electronic form. The second reason is that by registering, users and libraries get a user account where they can set a number of parameters that subsequently affect the behavior of the system. Users can set the delivery address or determine whether they prefer a low price or delivery speed. Libraries can set up the normal business hours and scheduled closures so that the system can properly select suitable candidates for request processing. Libraries can also create white lists of other libraries they want to collaborate with, and black lists of libraries with which they do not want to cooperate or have received poor service. The white and black lists are used by the system to determine the order of libraries from which the document is requested.



In order to use the network of libraries equally and equitably, the system Získej sorts the list of suitable candidates for request processing based on load balancing. All document delivery requests are monitored and their timeouts is being watched. Warnings and alerts are being sent when there is threat of delay or when deadlines are actually exceeded.

An important feature of processing requests is the fact that at any stage the process may fail for some reason. If the source document is a physical unit such as a printed book or journal, it can be found out that the document is damaged, missing from the shelf, lost, etc. In the case of electronic documents, unavailability may be caused by poor quality of descriptive metadata, bad linking to full text, etc. Any request therefore goes through a defined workflow of statuses which are changed by an operator in each phase of the process. This status tracking is similar to the operation of commercial delivery services such as postal services or commercial delivery services like FedEx or DHL. At any time, both the user and the library can see the status and location of the request.

End-user GUI and UX is designed according to the common principals of ecommerce. A user selects a document to deliver, chooses the final delivery date and preferred format (an original, a paper copy, or an electronic copy). Request processing is run automatically or with partial support of the operator, depending on the complexity of each request.

System Získej uses the union catalog of all Czech libraries[0] as a data source. It consists of bibliographic records of documents regularly harvested by OAI-PMH protocol from the local databases of individual libraries. This union database provides information on which libraries own the required document. However, it does not say anything about the actual status of the document, that is, whether the required document is actually available at the moment of the request (it may already be out on loan or otherwise absent from the shelf). The NCIP (ANIS / NISO Z39: 83 - NISO Circulation Interchange Protocol) protocol, which is implemented in many local library systems, provides information about the current status of the document. By combining bibliographic data and document status information, the system gets all the data needed to identify the appropriate library to handle the request.

An important functionality of system Získej is the ability to work with and consolidate multiple user identities. The user can be a member of several libraries at the same time. For example, a user can be a member of an academic library in Prague and also visit the municipal library in their hometown. System Získej can merge these multiple registrations into one user account.



**Conclusion**

System Získej has been developed as a universal tool for supporting library collections sharing and delivery services. As free software it can be deployed in any environment supporting basic international standards such as MARC, NCIP, XML, HTML / CSS and UTF8.

Thanks to the access Ziskej provides to shared print and electronic collections, libraries can significantly expand their portfolio of information they offer and provide a faster and better way for educational and scientific activities to flourish, particularly in e-learning, PhD studies, and lifelong learning. A document delivered quickly and searched through a large number of resources, commonly unavailable on the web, is fundamental for any serious academic and scientific work.

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