



# Smart Libraries™

Formerly Library Systems Newsletter™

50 East Huron Street, Chicago, Illinois 60611-2795, USA



## Smarter Libraries through Technology: Overlapping Models of Resource Sharing

By Marshall Breeding

No library, even one that is most generously funded, is able to acquire all the resources of potential interest to its community of patrons. Yet, libraries respond in any way possible to obtain information requested by their patrons, whether the libraries already own the resources or not. Libraries therefore engage in a variety of different forms of resource sharing to fulfill the needs of their own patrons, relying on materials available in the collections of partner institutions. The ecosystem of resource sharing embraces reciprocity where libraries likewise make items from their collections available to external borrowers.

Several different models have emerged to enable libraries to share their resources. The scope of these approaches ranges from exchanging materials among a few close partner institutions to global services. Each model relies on a specific type of technical infrastructure. Resource sharing technology has proven to be complex and not necessarily inexpensive, but enables libraries to share materials at reasonably affordable costs.

In this issue of *Smart Libraries Newsletter*, we take a look at two models of resource sharing. OCLC WorldShare Interlibrary Loan is an example of a global centralized interlibrary loan

service. Based on a central database of bibliographic information and the libraries that own each item, the service is able to receive a request from a library for an item needed by one of its patrons, identify libraries which own the material, and track its fulfillment and return. This centralized brokering service for interlibrary loans provides access to almost any possible resource, but given that the supplying library may be distant geographically, there may be significant delivery times and processing costs.

Another model of resource sharing aims to fulfill as many requests as possible within an established group of libraries organized into a consortium. Such a partnership among libraries within a geographic region or other type of association can greatly expand the materials available collectively. A large portion of items requested, but not owned by the patron's local library, can be satisfied within the consortium. Only those not available within the consortia need then to be requested through OCLC or another global interlibrary loan service. The technology to support resource sharing within a consortium can be complex, especially when each library operates its own integrated library system (ILS). Direct consortial borrowing systems work in conjunction with these ILS implementations to provide a combined catalog, so that patrons know whether the items they need are available within the consortium. These systems also have components for receiving and routing the request through the ILSs of the borrowing and lending institutions.

Resource sharing within a consortium can be accomplished much more simply when all the members share a common implementation of an ILS. This configuration comes with built-in capabilities for discovery across the collections of the participating institutions and can rely on standard circulation functionality for placing requests and routing materials to the requestor. While a simpler model, libraries may not be able to change from a locally implemented ILS to a consortial system just to be able to share materials more efficiently. This model of

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shared technical infrastructure to support resource sharing among members of a consortia has been a growing trend in recent years, but most libraries will likely operate independent systems for the foreseeable future.

The niche of the library technology industry related to library resource sharing has seen many challenges over the years. It is characterized by software that is complex and expensive to create with a limited number of sales opportunities. In that context, it is not surprising to see only a handful of offerings for consortial borrowing support.

In this issue of *Smart Libraries Newsletter*, we cover the most recent round of changes within the library resource sharing arena. OCLC's acquisition of Relais International represents a major step towards consolidation within the arena of resource sharing technologies. The leading provider of consortial borrowing technology is now part of OCLC, which offers the dominant global interlibrary loan service. This move gives OCLC more options to offer libraries to facilitate resource sharing, but it also means fewer choices of providers.

Such consolidation is consistent with the trends that have prevailed in the last decade or two in the broader library technology industry.

We also note OCLC's launch of the new Tipasa interlibrary loan management system. This product will ultimately replace ILLiad, a Windows-based utility for managing the interlibrary loan workflow that was developed by Atlas Systems. Bringing this functionality into the WorldShare Platform makes sense from a technology perspective, but it also represents a shift away from an independent company to OCLC's internal development team. This move can also be seen as a small step toward the concentration of library software development into an ever-smaller group of providers.

Both moves represent a deeper commitment by OCLC to provide solutions that will facilitate resource sharing in libraries. This area seems well aligned with the OCLC's core mission and strengthens its ability to advance the technologies in this sector in ways that might not be possible by companies operating at a smaller scale.

## OCLC Expands Its Reach into Resource Sharing

The global non-profit organization OCLC has taken two steps to strengthen its position in the resource sharing arena. It has acquired Relais International, a major provider of resource sharing technologies, and has launched Tipasa as its new service for interlibrary loan management.

### OCLC to Acquire Relais International

In a move with considerable implications for the resource sharing arena, OCLC has acquired Relais International, which develops and supports the Relais Discovery to Delivery (Relais D2D) consortial borrowing system and related products. This acquisition strengthens OCLC in the sphere of resource sharing, adding to its stable of products a peer-to-peer consortial borrowing solution to complement its core WorldShare Interlibrary Loan service. This move also represents a further narrowing of the providers of resource-sharing technologies.

Resource sharing stands as one of OCLC's core services. Founded in 1967 as a bibliographic utility, the organization has offered interlibrary loan service since 1979. OCLC provides the dominant brokering system to enable libraries to supply materials that they do not own to their patrons. The current WorldShare Interlibrary Loan service was branded as WorldCat Resource Sharing prior to its relaunch on a new

technology platform in 2013. OCLC reports that 10,161 libraries participate in its resource sharing services and that in the 2016 fiscal year, it processed 7,533,796 interlibrary loan requests.

OCLC's WorldShare Interlibrary Loan service follows a centralized approach for interlibrary loan, based on the massive WorldCat database. WorldCat is comprised of bibliographic records describing each resource and the participating libraries that hold each item. Libraries that make use of WorldShare Interlibrary Loan pay annual subscription fees for the system to broker requests and fulfill items that they don't own. Interlibrary loan services enable libraries to provide access to an almost unlimited universe of materials, which are available as requested, to supplement their core collections.

Another model of resource sharing can be seen in consortial borrowing programs, where members agree to share materials with patrons throughout the consortium. This approach provides access to a body of materials substantially beyond each member's individual collection, but without the need to pay fees to an external organization. These consortial interlibrary loan programs depend on technology components that manage the request and fulfillment of each request, which can include the ability to process transactions through the ILS of each member institution. A consortial borrowing service can

reduce interlibrary loan costs and provide faster fulfillment, especially when supported by a regular courier service to expedite delivery of materials. In cases where the item requested cannot be fulfilled within the consortium, the transaction can be handed off to an external interlibrary loan service, such as OCLC's WorldShare Interlibrary Loan.

By acquiring Relais International, OCLC gains consortial resource sharing technologies to supplement its existing centralized interlibrary loan service. Relais International has become well established as one of the leading providers of consortial resource sharing technologies. The company's core products include:

- Relais D2D, a full-featured consortial borrowing environment, including a discovery component that represents the aggregated collections of the member libraries as well as the request management technology to process requests and communicate with the ILLs involved.
- Relais ILL, an ILL management tool used in Canada and Australia.

These products expand the tools and technologies OCLC can offer to meet the resource sharing needs of its members and customers.

OCLC and Relais International have an established history of cooperation. In March 2012, OCLC enabled access to the APIs of its WorldShare Interlibrary Loan platform to the Relais ILL product to facilitate more seamless interoperability between the two services. Such access had previously been possible through the ISO-ILL protocol, but working through the API provided additional capabilities and was more efficient technically.

### *Details of the Transaction*

Through this business transaction, OCLC will purchase Relais International. All the current personnel of Relais International will become employees of OCLC. Financial details have not been released but are expected to become available after the end of the next fiscal year when OCLC publishes its next Annual Report and when its I-990 statement required by non-profit corporations becomes available.

### *Previous Related Acquisitions*

OCLC has previously made acquisitions of organizations involved with resource sharing:

- WLN (Western Library Network), a bibliographic utility that also offered interlibrary loan services merged into OCLC in January 1999.

- PICA, a European organization providing a variety of services to libraries was acquired by OCLC in three phases beginning in 1999. Its products included CBS (Central Bibliographic System), designed for national or regional union catalogs, which included interlibrary loan capabilities. Several implementations of CBS remain in use, though some have transitioned to OCLC's WorldShare Platform.
- OCLC acquired RLG in July 2006, including its RLIN bibliographic service and interlibrary loan system.
- Fretwell-Downing, a company based in the United Kingdom offering a variety of library automation and resource sharing technologies was acquired by OCLC in November 2005. The VDX (Virtual Document eXchange) product developed by Fretwell-Downing delivered consortial borrowing functionality, which OCLC used as a component of its WorldCat Navigator. This product is no longer actively marketed by OCLC.

### *Relais International Corporate Background*

Based in Ottawa, Canada, Relais International was founded in 1996. Clare MacKeigan has led the company as its Chief Operating Officer. The company was originally called Network Support, Inc and was renamed Relais International in 1998 after its primary product. The impetus to the concepts and products of the company emerged out of the IntelliDoc document delivery initiative in 1994 within the Canadian Institute for Scientific and Technical Information (CISTI). Relais was owned briefly by EBSCO Industries (1998-2001) but has subsequently been owned by MacKeigan and Chief Technical Officer Kevin Stewart.

In its twenty-year business history, Relais International has remained a small company but has steadily increased its customer base. Some of the major organizations and projects that rely on technologies from Relais International include:

- BorrowItNow, an expedited resource sharing service among the members of the Greater Western Library Alliance (GWLA).
- BorrowDirect, an unmediated resource sharing service, serving Brown University, Columbia University, Cornell University, Dartmouth College, Harvard University, Princeton University, University of Pennsylvania, Yale University, and Massachusetts Institute of Technology.
- E-ZBorrow, which is implemented by the Pennsylvania Academic Library Consortium, Inc. (PALCI) for its 70 academic library members.
- UBorrow service, serving 13 academic institutions in the Midwest that participate in the Big Ten Academic Alliance.

SirsiDynix formed a partnership with Relais International in September 2016 to integrate its resource sharing technologies as an optional component of its BLUEcloud platform.

### A Narrow Genre

The arena of consortial borrowing technologies includes a very modest number of competing products. In addition to the products from Relais International, the major competitors include:

- **INN-Reach** from Innovative Interfaces, which was originally developed by library consortia exclusively using the company's own Millennium product, and over time, it has gained the capabilities to work with other ILSs. INN-Reach includes a union catalog and a request management component to manage patron requests among the ILSs of the participating institutions. The product was originally launched in 1991 to support the academic libraries in Ohio participating in OhioLink and has since been implemented by dozens of library consortia.
- Auto-Graphics offers its **SEARCHit** union catalog and **SHAREit** interlibrary loan software, which has been implemented by a number of state-wide resource sharing initiatives. The company also offers the Circulation-Interlibrary Loan Link (CILL) to provide interoperability with the ILS circulation modules to streamline the processing of requested materials. SEARCHit can be configured to create a physical union catalog of the aggregate holdings of the participating institutions or to provide discovery via a virtual catalog that uses Z38.50 to dynamically search across the catalogs. Around 16 consortia currently use SHAREit and SEARCHit for resource sharing. Auto-Graphics also offers the VERSO ILS used mostly by small and mid-sized public libraries. (For more information on SHAREit, see the July 2015 issue of *Smart Libraries Newsletter*.)
- **FulfILLment**, which is an open source interlibrary loan product developed by Equinox Software and commissioned by a number of sponsors, primarily state libraries, interested in the development of a new low-cost resource sharing alternative. The initial development of the FulfILLment software was completed in 2012. This software has not yet been put into production by a major consortium.

The category also includes products that have been discontinued:

- The **Universal Resource Sharing Application** (URSA), developed by CPS systems in Australia in the mid-1970s,

was acquired by Ameritech Library Services (later known as Dynix, now part of SirsiDynix). URSA had become established as one of the leading resource sharing products but was discontinued by SirsiDynix in 2011.

- Pigasus Software, founded in 1997, developed the **Wings Request Management System**, which was implemented by 18 consortia and related organizations. The company ceased operations after a failed acquisition by Auto-Graphics.
- OCLC's **WorldCat Navigator**, based on software from Fretwell-Downing, is also nearing the end of its product life.

## OCLC Introduces Tipasa Interlibrary Loan Management System

Many libraries operate an office dedicated to the management of interlibrary loan and document delivery requests. The tasks involved with tracking the lending and borrowing activity can be complex and time consuming. Functionality to automate these tasks is not within the scope of ILSs or interlibrary loan services, such as WorldShare Interlibrary Loan. Libraries often deal with multiple interlibrary loan services and need automation tools to integrate and automate the processing of requests and fulfillment.

OCLC's interlibrary loan services Atlas Systems, Inc., a small software firm based in Virginia Beach, VA, created ILLiad to automate the tracking of lending and borrowing interlibrary loan transactions. ILLiad operates as a Microsoft Windows application, though it has web-based interfaces for submission of patron requests.

ILLiad was originally developed by the Interlibrary Loan Office of the Virginia Tech libraries. Atlas Systems was founded in 1996 to continue development and provide support for ILLiad. OCLC has served as the exclusive distributor of the software since October 2000. Over 1,200 libraries have implemented ILLiad.

OCLC has announced that it will create a new product with functionality similar to ILLiad that will be entirely web-based and deployed on its WorldShare Platform. The development will be performed within OCLC in partnership with the interlibrary loan community, rather than through a third party, such as Atlas Systems. OCLC initially revealed its roadmap to create a new interlibrary loan management system in March 2016, which was announced as Tipasa in January 2017. The shift from ILLiad as a Windows-based application to Tipasa as a service deployed via the WorldShare platform should result in several benefits for interlibrary loan operations. Tipasa will provide simplified workflow and interfaces,

smother interoperability with the WorldShare Interlibrary Loan service, and will relieve libraries from much of the technical overhead in operating and continually upgrading a local Windows-based application.

The initial version of Tipasa was made available in January 2017 with fifteen libraries currently making use of the software in production. OCLC reports more than 50 libraries have committed to serve as early adopters of Tipasa.

Atlas Systems will continue with the development and support of its other products. The company has developed other products, such as Ares for managing academic reserves and Aeon for managing and tracking the use of materials within a library's special collections unit. Atlas will continue its support and training services for ILLiad until libraries make the transition to Tipasa.

## Innovative's New Business Strategy and Management Team

Innovative Interfaces, under the leadership of its new Chief Executive Officer James Tallman, has begun to execute major changes to strengthen its position in the library technology industry. Innovative has expanded its management team to include a new set of executives with proven abilities in other sectors to take the company forward. In its next phase, Innovative intends to make major investments to transform itself into an “enterprise class library solutions company,” adopting practices and methodologies that have proven successful in other technology-oriented business sectors. These investments will also support new product development initiatives.

**Tallman** joined Innovative as its Chief Executive Officer in 2016. As we reported in the March 2016 issue: “Tallman comes to Innovative from Wolters Kluwer, where he served as the General Manager for Enterprise Legal Management. He was Chief Executive Officer of Datacert from 2008 until 2014, when the company was acquired by Wolters Kluwer. Datacert created the Passport enterprise legal management platform to help organizations manage legal risk and compliance.” This background informs Tallman's ambitious vision to bring Innovative up to a dramatically new level of performance in the way that it builds, supports, and sells software to a global customer base. According to Tallman, “Passport was the platform that transformed the Legal industry—it had the same kind of impact for Legal as discovery or ERM had for Libraries.”

Tallman has recruited individuals able to execute his vision of transforming the company “from a Library Management Software Company to an Enterprise Class Library Solutions Company.” He has tapped several of his former associates to help bring about an ambitious agenda to achieve results in areas such as increased customer satisfaction and business expansion. Tallman asserts that Innovative's products will be built “at the same level used to measure enterprise software providers across other technology

sectors—we're talking about security, scalability, reliability, and flexibility here.”

Changes in composition of the executive management are not unexpected following the appointment of a new CEO. Although some of these appointments have been in place for a few months, the overall business strategy has progressively assembled over the first year of Tallman's leadership. The executive team of innovative includes individuals newly appointed, some who joined the company during the initial phase of private equity ownership under the leadership of Massana and some veterans who were in leadership positions when the company was led by its co-founder Jerry Kline. This mix of perspectives brings together elements of a new strategic focus on enterprise software development, knowledge of the library domain, and continuity with the roots of the company. Tallman explains that “the titles here reflect a reorganization of the executive leadership at Innovative—we've brought in new additions and we've refined roles for existing team members, and it's all about making sure we have the right folks in the right roles to execute on our corporate strategy.”

Innovative's new executive leadership team is larger than other companies in the library technology industry. Each position has been tasked with very specific responsibilities that support the company's aggressive business strategy.

### Continuity

Two of the current executive members joined Innovative when it was owned and managed by Jerry Kline. These executives can bring forward the knowledge and perspective of Innovative's unique history as the company moves forward.

**Hilary Newman**, now Senior Vice President, Client Success has been with the company since 2000 and has held a variety of positions, including Director of Software Engineering

and VP for Implementation Services. Her current role builds on her extensive experience to lead customer operations.

**Doug Randall**, Vice President, Product Technology has been with Innovative since 1985, rising through the ranks of technical responsibility from tech support, to product manager, to his current role, where he'll primarily be focusing on the core Sierra platform.

## First Phase of Private Equity Management

This group of executives joined Innovative during its initial phase of ownership by JMI Equity and Huntsman Gay Global Capital (2012-2016). Driven by priorities established in the new company strategy, many of these individuals have taken on new roles and titles in this last reorganization, which may be different from when they initially joined.

**Leif Pedersen**, Executive Vice President, Product Management and Marketing joined the company in 2014 and is responsible for shaping product directions in collaboration with Innovative's customers and partners.

**Bill Schickling**, Executive Vice President, Business Development joined innovative when it acquired Polaris Library Systems in 2014. Schickling was previously CEO of Polaris and led the development of the Galaxy and Polaris ILSs.

**Marina Keating**, Senior Vice President, Client Services and Support has been with Innovative since 2014 and has recently implemented a new model of customer support through "Customer Competency Centers", which can support library customers at a global scale.

**Aaron Terrell**, Vice President, Engineering and Information Technology joined Innovative in 2013 following a number of roles related to quality assurance, information technology infrastructure, and security in high-tech companies, such as Salesforce.com and Alibris.

**Bill Gadala**, Vice President, Financial Planning and Analysis initially joined Innovative in 2014 as Director, Financial Planning and Analysis and was elevated to VP in 2016. Prior to joining Innovative, he worked as the Finance Manager for FXalliance, a company offering financial services.

## Recent Appointments

In support of Innovative's new strategic directions, a new set of executives has been added to the leadership team. These new promotions have not involved displacements or demotions of existing executives, but add a new layer of individuals with expertise and experience directly related to implementing the company's new corporate agenda.

**Don Schad** joined Innovative in 2016 as its Chief Financial Officer. Schad most recently worked as VP of Finance

for Wolters Kluwer ELM Solutions. Schad is responsible for developing investment strategies for expanding Innovative's global operations.

**Roger Leitner**, Chief Operating Officer, who joined Innovative in 2016, is responsible for a broad portfolio of company activities, including "consulting services, managed services, data center services, implementation services and customer support."

**Chris Fields** recently joined innovative as its Chief Technology Officer (CTO). Fields co-founded DigiContract in 1999 and served as its CTO. Datacert acquired DigiContract in 2001 and named Fields CTO. Fields became CTO of Wolters Kluwer's Enterprise Legal Management division in 2014. He comes to Innovative with a track record for building large scale open systems platforms, a central focus of Innovative's business and technology strategy.

**Shaheen Javadizadeh**, Executive Vice President, Global Sales is responsible for "the expansion and ongoing training of the Innovative Sales and Account Management team." He joined Datacert in 2011 as its VP of Strategic Markets and continued in a similar role for Wolters Kluwer's Enterprise Legal Management division.

**Kory Knell**, Vice President, Client Operations comes to innovative from JMI Equity, where he was a Senior Associate. Knell is responsible for producing "operational improvements that are focused on client satisfaction and success."

**Alice Cameron**, Vice President and Corporate Controller is tasked with ensuring that Innovative's financial accountability meets the expectations of enterprise-class companies. Areas of responsibility include timely invoicing and payment collection. Cameron previously worked with Wolters Kluwer ELM Solutions as Director of Accounting.

**Hal Brandom**, Vice President, Human Resources joined Innovative in 2016 and is responsible for the recruitment, training, and development of the company's personnel. Brandom comes to Innovative with personnel experience in the financial services industry.

**Akin Adekeye**, General Counsel for Innovative since 2016 is responsible for Innovative's "transactional, compliance, regulatory, and litigation activities." Adekeye was Associate General Counsel at Wolters Kluwer ELM Solutions (2012-2015).

This new executive team has been working behind the scenes for the last few months. Their strategies are extremely ambitious and will require considerable resources to achieve. The next year will be critical for Innovative as it works to implement its vision, and future issues of *Smart Libraries Newsletter* will report on any major events or accomplishments in this next phase of business for Innovative.

## Smart Libraries Q&A

**Marshall Breeding responds to questions submitted by readers. Submit questions to Sam Imburgia at [simburgia@ala.org](mailto:simburgia@ala.org).**

“Libraries have seen major changes in technology over the years with a feverish pace of development from the mid-80s to the mid-2000s. Now with discovery tools and ILS, it feels like we are essentially done, with minor tinkering needed on language, view options, and full mobile capabilities. What is the icebreaker movement that we should be looking for—when do you think we will see a shift to fully cloud-based services?”

The characterization that the pace of development in library technology was feverish from the mid-1980s until the mid-2000s isn't consistent with my view of that period. This was a time when the ILS and online catalog gained some maturity, but remained tightly bound within a static model of automation cast in the previous phase. ILSs emerged in the late 1970s through early 1980s when the work of libraries almost entirely surrounded print and other physical media. The classic model of the ILS composed of a bibliographic database underlying modules for cataloging, circulation, acquisitions, serials, and a public catalog was cast. Each of the modules gained increasing sophistication in functionality tied to the MARC family of standards and to task workflows, business rules, and fulfillment procedures optimized for physical materials. Much of the development energy was invested in taking this model of the ILS through new technical architectures. The same systems were essentially ported through the successive phases of mainframe/terminal, client/server, and web-oriented deployment.

During this phase, the basic work happening in libraries was changing dramatically. Academic libraries shifted from print to electronic journals, launched institutional repositories, and created new digital collections, as well as other technology-focused activities as they sought to serve their academic institutions. Special libraries were largely transformed from collections of books and journals to information centers oriented to competitive intelligence and enterprise knowledge management. Public libraries faced challenges to manage the fulfillment of physical materials in the context of ever higher demand and to meet expectations for engaging technology relative to advances in user experience in the consumer arena.

The library technology industry during this critical phase remained fragmented. Many companies focused their development mostly on ILSs with only marginal differentiation from their competitors. Rather than expanding the vision of ILSs, some companies created standalone products to address

emerging areas of need, such as link resolvers, electronic resource management systems, and institutional repository platforms. These products seemed to be stop-gap measures that failed to provide adequate technical infrastructure to support the broad range of challenges libraries were working hard to address.

Some interesting advancements have since taken place. Index-based discovery services, starting in about 2009 with the launch of Summon, made a fundamental departure from the concept of the catalog based on entities to a much richer and more granular discovery tool that included all the individual content items with access points beyond structured metadata and including full text. The vision of a resource management system able to manage library collections across all formats emerged in 2011. These platforms embraced an ambitious scope of bringing together the management and fulfillment of electronic, print, and digital materials with respect to their different metadata structures and workflows. Library services platforms have been working toward greater maturity for the last 6 years and have become increasingly dominant in academic and research libraries. ILSs continue to prevail in public and school libraries and are making incremental advancements to address increased involvement by these libraries in lending digital materials.

Library resource management systems and discovery services have made long strides to catch up with the current realities of libraries. These products are shifting to the latest technology expectations, such as modern web-based interfaces delivering user experiences on par with consumer-oriented destinations and social networks, including usability on mobile devices.

Library technologies, despite recent progress, still fall short of providing the business infrastructure needed to advance libraries' strategic positions in society and their specific communities. It seems important for libraries to stay reasonably current in their technical architecture by using cloud-based infrastructures and interfaces optimized for a society increasingly oriented to social networks and mobile devices. But my greater concern lies in a more progressive vision of technology infrastructure able to keep pace with the more complex requirements of libraries as they evolve as institutions. I think investing in development that mostly focuses on tinkering around the fine points of existing functionality and leaving new areas of work unaddressed will represent a major lost opportunity. The need for substantive innovation in the realm of library technology has never been more urgent.



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