Smart Libraries Newsletter

News and Analysis in Library Technology Developments

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Smarter Libraries through Technology

Collaborative Resource Sharing Strategies

By Marshall Breeding

Libraries have a strong interest in technologies able to improve patron access to information resources. A variety of products have been developed to enable groups of libraries to collaborate to pool their resources, greatly expanding the body of resources available to their patrons. These products are based on a variety of resource sharing models, ranging from centralized interlibrary loan services to peer-to-peer lending networks.

It is not realistic for libraries to purchase all the information resources to meet the interests and research needs of their patrons. At best, libraries strive to develop core collections of immediately available materials, which can then be supplemented through some type of interlibrary loan borrowing or on-demand purchases.

Central interlibrary loan services, such as OCLC's WorldShare ILL, draw on the collections of tens of thousands of libraries all around the globe to fulfill requests for practically any item requested. This service is powered by WorldCat, which currently includes over 420 million bibliographic records spanning 2.6 billion library holdings. WorldShare ILL enables access to the widest possible range of materials, offset by lengthy fulfillment times and high costs. Other centralized interlibrary loan services are offered through national libraries and other organizations providing services to libraries within their jurisdiction.

Libraries have also developed distributed systems of resource sharing aiming to provide much faster fulfillment with lower costs. These systems usually operate among a consortium of libraries, relying on some type of technical infrastructure to manage the exchange of materials. This infrastructure includes a set of common components:

- **Discovery**—a physical or virtual catalog of the aggregate collection of the participating libraries, usually listing each library holding a given item and its current status or availability.
- **Request** service—this discovery component will include a facility to enable a patron to place a request for an item.
- **Fulfillment**—this component provides messaging and tracking needed to obtain the item from a remote library, have it delivered to the designated pick-up location, and check the item out to the borrower. If multiple locations within the consortium hold the item, fulfillment may also include selection of the preferred lender. Fulfilment includes a complex chain of transactions structured to get the item to the requestor quickly, provide detailed tracking through the entire process, and generate any needed messages to library personnel and patrons.
- **Reporting or Analytics**. Libraries expect resource sharing systems to generate detailed reports documenting fulfillment times, most requested items, and other metrics. These reports help the consortium evaluate the overall performance of the service, address any bottlenecks in fulfillment, and inform collection development.

These functional components can be implemented in different ways, depending on the organization of the consortium, its business requirements, and the technical infrastructure implemented.

Most integrated library systems (ILSs) serving multi-branch libraries come with built-in resource sharing features. Most

IN THIS ISSUE

ISSN 1541-8820 July 2018 Volume XXXVIII Number 7

large city or county-wide libraries use the circulation module of their ILS to enable libraries to request items from any branch, which are pulled and delivered to a designated location for pick-up and checkout. Some libraries have implemented strategies of floating collections in which materials may remain at the branch returned rather than be transferred back to the original location. Floating collections can reduce transit costs but can also result in disproportionate distribution of materials among branches that may need to be rebalanced periodically.

The circulation features of an ILS can also be used to support resource sharing among the members of a consortium. The resource sharing capabilities used for multi-branch systems can be applied to groups of independent libraries participating in a consortially-shared ILS. The participating libraries usually rely on the consortium to manage the system, to operate a courier service for delivering requested and returned materials, and to provide other services. This model resembles that of a multi-branch municipal or county-wide library system, except that the libraries are organizationally independent. This arrangement can significantly lower the technology costs for each institution compared to separate ILS implementations, though there may be administrative costs associated with services provided by the consortium. The participating libraries also benefit from a larger aggregate collection. Sharing materials within the consortium provides savings by reducing the number of requests made to an external interlibrary loan service and provides faster fulfillment.

Libraries that have each implemented their own independent ILSs can also cooperate in a consortium. This model involves using a resource sharing or interlibrary loan software that communicates with each of the ILSs to provide a unified catalog of resources, present request services for patrons, and to manage, route, and track items. Examples of products supporting this model of consortial borrowing include SHAREit from Auto-Graphics, Innovative Resource Sharing (formerly INN-Reach), and Relais D2D developed by Relais International, now a product of OCLC. This model enables each library to operate its own ILS for its internal operations and circulation, while also offering a broader range of resources available through the consortium. This model can be more expensive to operate since it involves multiple ILS implementations as well as the resource sharing software, but it is a necessary solution when libraries are committed to their existing ILS implementations and need the benefits of consortial borrowing.

In recent years, there has been a growing trend toward the shared infrastructure model of resource sharing. This trend has been especially strong in academic libraries, where many groups of libraries have moved from independent ILS implementations to a shared library services platform. Across all library types, there is steady growth in the number of libraries participating in consortially-shared ILSs.

This issue of *Smart Libraries Newsletter* features a new model of resource sharing offered by Biblionix. The company's VersaCard service adds a set of resource sharing capabilities to independent implementations of its Apollo ILS. This novel approach seems well suited for the small public libraries for which Biblionix designs its products.

VersaCard: A New Ad Hoc Consortia Option from Biblionix

Biblionix, the supplier of the web-based Apollo ILS, recently introduced a new set of features to help libraries share their collections with selected library partners without the overhead and complications associated with prevailing models of consortial infrastructure. The company's VersaCard Ad Hoc Consortia enables multiple libraries using the Apollo ILS to let their patrons borrow materials from each other's collections. This new service complements its VersaCat discovery interface, which enables patrons to search multiple library catalogs. Biblionix recently launched a new inter-library reserves feature that can let patrons request materials from other libraries.

Resource Sharing Based on Ad Hoc Consortia

The Biblionix VersaCard program enables multiple libraries, usually those in a nearby geographic area, to establish a partnership to enable patrons to borrow materials across any of the participating members. Currently, libraries must have implemented the Apollo ILS to participate in VersaCard. Biblionix emphasizes that implementation of VersaCard does not diminish the independence of the library. Libraries maintain their direct business and support relationship with Biblionix and continue to control their own lending policies.

VersaCard can be thought of as a versatile library card, valid for multiple libraries. In most cases, the patron will physically visit the partner library to check out and return materials. The recently implemented inter-library reserves enables a patron to place a request for an item in another library. Participating libraries may offer to deliver reserved items to the home library of the requestor. Otherwise, the patron can visit the partner library to borrow the requested items.

Leverages Apollo's Multi-tenant Architecture

VersaCard has been implemented as an optional configuration for Apollo, requiring no additional software components. A VersaCard consortium can be set up with minimal administrative or technical overhead. Biblionix offers participation in a VersaCard-based consortium as a free service covered by a library' s annual subscription for Apollo. Participating libraries continue their existing relationships with Biblionix, both in terms of subscription payments and support received. Biblionix does not charge for participation, nor does it give discounts to groups of libraries that implement VersaCat.

VersaCard is based on a new configuration option for Apollo that enables patrons associated with multiple libraries to be authorized as eligible borrowers across the ad hoc consortium. Biblionix offers VersaCard as a flexible service. Libraries can join or leave a VersaCard consortia upon request, with no cost implications.

As a multi-tenant hosted service, all bibliographic, item, and patron records in Apollo reside in a technical infrastructure that is well suited to resource sharing features such as VersaCard. Rather than a major redeployment, an ad hoc consortium can be established through changes in the permissions and policies in the scope of patron records relative to the participating libraries in a defined group.

Libraries Share Resources, but Maintain Control

Participating libraries do not gain wholesale access to the patron records of the participating libraries. A library will be able to see data for a patron from a partner organization only during an active loan period. The patron data revealed to the partner library can be configured either in a limited "privacy" mode or "full-service mode," which makes the full patron record visible.

Libraries participating in VersaCard also do not lose control over their collection. Each library continues to catalog or import records independently. Libraries can define distinct circulation policies for external borrowers using the VersaCard service, which might differ from the loan periods offered to its own patrons. Blocking of patron access applies to all scenarios, including their local library and any which have enabled VersaCard borrowing. If a patron has been blocked by any partner library, that patron would also not be able to borrow items from any other library until their record has been cleared.

Discovery via VersaCat

Biblionix offers a discovery option, called VersaCat, initially introduced in 2009, which enables searching of multiple libraries through the Apollo catalog interface. VersaCat was launched in 2009 as a federated search feature. Using the Z39.50 search and retrieval protocol, it integrates search results from external resources, such as state-wide interlibrary loan catalogs or other library collections. In the context of a VersaCard consortium, VersaCat would be configured to include the collections of the participating libraries. Even if libraries opt to not enable borrowing through VersaCard, they can activate searching of nearby libraries' collections in VersaCat.

The combination of VersaCard, cross-library reserves, and VersaCat represent much of the functionality seen in consortial implementations of larger-scale products. This combination of products is intended for groups of small to mid-sized public libraries interested in informal cooperative arrangements, providing access to additional materials to their patrons without the expense or complexities of formalized consortia based on dedicated resource sharing systems. Most of the VersaCard consortia do not have formal organizational structures nor are they official named entities. Rather, these resource sharing arrangements can be established through informal agreements, with implementation performed by Biblionix without cost.

A Free Option for Apollo Sites

Activation of a VersaCard consortium does not increase the price of the Apollo subscription for the libraries involved. Biblionix activates VersaCard consortia based on requests from the participating libraries once they have entered into a formal or informal agreement to enable reciprocal borrowing. Since creating a VersaCat-based consortium is cost neutral, most libraries will not face a complex procurement process.

The resource sharing features fit within the Biblionix business model of offering almost all capabilities of Apollo

through a single subscription fee rather than charging for extra features. Biblionix does offer a select number of services not covered by the basic Apollo subscription fee. Added-cost options include an acquisitions module, the Gabbie 2-way texting service, Content Café for presentation of cover art images, automated calling for circulation notifications, and support for multiple branches.

Libraries can opt for the Biblionix automated calling feature for overdue and availability notices. The company recently eliminated the set-up fee for the service, though the 10 cents per call charge still applies. No fees are charged for notices sent by e-mail or text.

The business dynamics for Apollo and the VersaCard option differ from the consortial models associated with the more complex and higher-priced systems. Biblionix offers Apollo at a level of subscription fees set to be affordable by small libraries with limited budgets. Libraries implementing the higher-end products as a consortium generally expect a lower cost per library compared to individual implementations. Consortia based on larger-scale products, such as Symphony, Polaris, or Sierra, usually have a single point of billing and support in contrast to the arrangement with VersaCard, where each library continues to work directly with Biblionix.

Basic Resource Sharing

Apollo has been implemented principally by small, independent public libraries. Since these libraries tend to have smaller collections and serve a single town, the ability to easily set up flexible lending arrangements can be a substantial benefit. Patrons appreciate having a versatile library card giving them borrowing privileges at multiple libraries in their area. The VersaCard program, was conceived to provide a beneficial service to small libraries interested in new resource sharing options without having to implement a more complex ILS.

As a free service, the VersaCard service from Biblionix has a modest scope of functionality compared to dedicated interlibrary loan or resource sharing services. Some of its caveats or limitations include:

- All participating libraries must use Apollo. This is not a separate resource sharing layer able to connect to different ILS products.
- The service does not perform sophisticated brokering or routing of borrowing requests among libraries within a consortium. The inter-library reserves feature enables the placing of a request but does not manage its fulfillment.

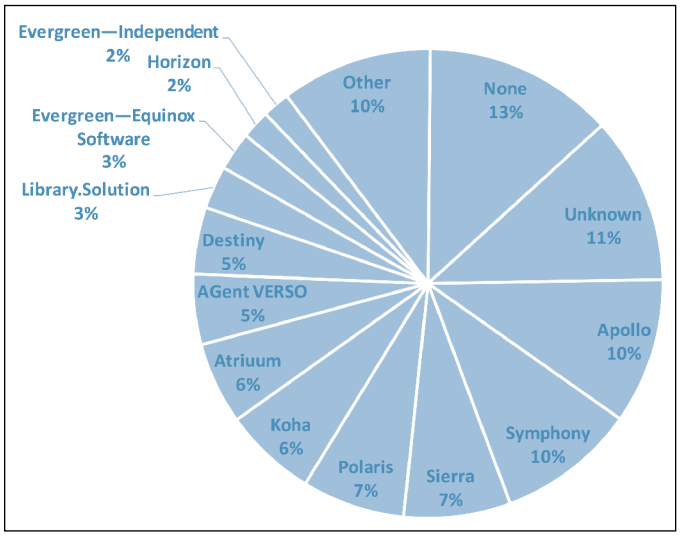

Figure 1: ILS implementations in public libraries in the United States by library facilities with collections smaller than 20,000 items

Biblionix has generally seen a positive response from its libraries by offering simple and affordable solutions. Its customers do not necessarily need a lot of complex features that would be required by larger public or academic libraries.

Security and Privacy

Biblionix has implemented Apollo using technologies and processes to maintain the security and privacy of all library data. Apollo enforces the use of HTTPS as web browsers access either the staff features or the public catalog, ensuring the encryption of all data transmitted over local networks and the internet. This encryption prevents any interception of sensitive patron data as it is transmitted. Apollo also encrypts all data as it is stored on servers. The company protects the operational safety of data through disaster planning and recovery processes that include storing all data on multiple geographically distributed data centers underlying its multi-tenant technical infrastructure.

The attention to data privacy is reflected in the restricted exposure of patron data in the VersaCard service. Libraries participating in an ad hoc consortium do not gain broad access to the patron records of partner institutions. Rather, patron records only become visible to the partner library during an active circulation transaction. Libraries need to know the specific patron borrowing an item from their collection and their contact information.

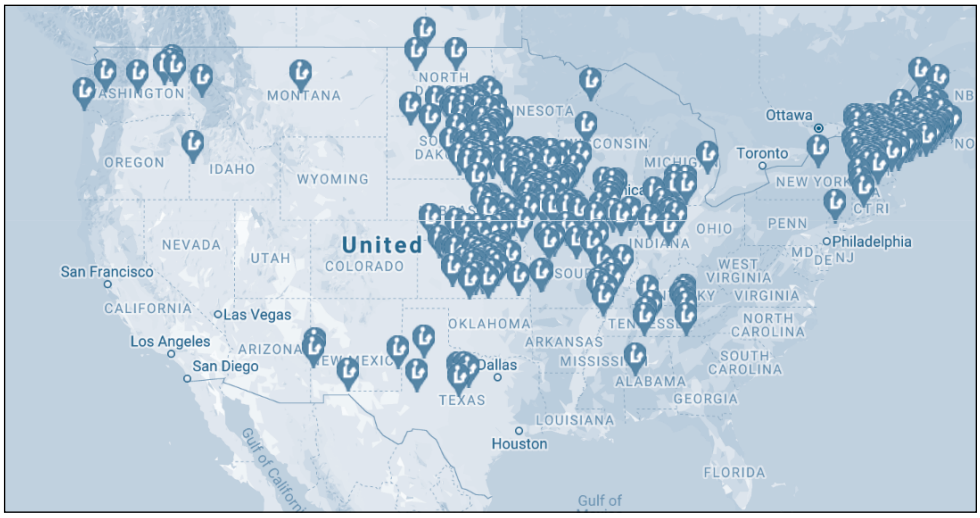

Figure 2: Map of public libraries in the continental United States with collections less than 20,000 items with no automation system.

Background on Biblionix and Apollo

Biblionix was founded in 2003 as a consulting business for Alexander "Xan" Charbonnet, creating computer-based tools for the Westbank Community Library, a suburb of Austin, TX. This work culminated in the development of the Apollo ILS, which was implemented in the Westbank Community Library in May 2006. Since that initial implementation, Biblionix has seen steady sales for Apollo and has consistently received positive ratings for its support services. (See International Library Automation Perceptions reports https://librarytechnology.org/perceptions).

Xan Charbonnet continues to lead the technical development and deployment of Apollo. The initial decisions regarding the technical architecture to create Apollo as a fully web-based, multi-tenant hosted system have proven sound. The company is able to support a large and growing customer base of libraries adopting Apollo with minimal increases in computing infrastructure and with a very small number of personnel. The web-based hosted deployment also relieves libraries from having to maintain servers or other technical infrastructure other than their Internet connection and computers able to support a modern web browser.

Figure 1 shows that 13 percent of the US public libraries with collections smaller than 20,000 items have no automation system.

Apollo is a multi-tenant, web-based ILS. All libraries using the product use the same version of the software, which is hosted across multiple geographically distributed data centers.

Biblionix designed Apollo specifically for small to mid-sized public libraries in the United States. Its product and business strategy is based on providing only the features needed by this sector of the library market. The product has been designed exclusively for public libraries with collections less than 300,000 items. As of June 2018, Apollo has been implemented in 627 libraries spanning 679 branches. Most of the libraries using Apollo are single-branch facilities. When looking at the breakdown of Apollo implementations by library size, 52% are small-sized public libraries and 48% are medium-sized public libraries.

Biblionix credits its high levels of customer retention and satisfaction to its focus on small to mid-sized public libraries. Since it does not include features oriented to public and school libraries, its interface can be uncluttered and more easily used by its target audience.

Perspective: Business Opportunities in an Underserved Niche

Although Biblionix has developed an impressive number of customer libraries adopting Apollo, the company remains one of the smaller vendors in the industry in terms of revenue and personnel employed. The company addresses an important niche in the public library landscape, that of mid-sized and small public libraries. Many of the larger vendors do not find it worth their while to develop and market products for these libraries since the revenue opportunities per library are quite modest.

To put the economic scenario into perspective, it is likely that a small handful contracts to large academic or municipal libraries or can equal the revenue potential of a thousand small public libraries. It is easy to see why the larger vendors would target their efforts to the more lucrative market of top-tier libraries and

consortia. That said, there is also a meaningful potential in the small and mid-sized library range.

Statistics from the libraries.org directory of libraries indicate a substantial number of small public libraries in the United States have yet to implement an automation system. Figure 1 shows that 13 percent of the US public libraries with collections smaller than 20,000 items have no automation system. For another 11 percent, no automation system has been recorded in the database—a strong indicator that these libraries are also unautomated. These figures suggest that about 20 percent, or 800 out of a total of about 3,400 libraries in this category have no automation system. In the mid-sized public library category—those with collections between 20,000 and 200,000 items—another 150 or so lack automation systems.

Among the small public library sector, access to technology remains quite uneven. Some states, for example, have established regional or state-wide programs that provide shared automation systems or other options that encompass the smaller libraries. In other states, libraries serving small towns and rural areas are left to acquire technology independently and with very limited funds. See Figure 2 for a map that illustrates the distribution of small unautomated libraries in the United States.

These numbers reflect the reality that the library technology industry as a whole, including both for-profit and non-profit entities, has not given much of a priority to small libraries with limited financial resources. The economic challenges are significant given the limited opportunities to receive revenue sufficient to recover product development and support costs.

Biblionix has demonstrated that a modern web-native, multi-tenant platform can meet the challenges of providing technology for these libraries within their budget possibilities. The company has been implementing Apollo at a rate of about 65 per year.[1] At this rate, it would still take more than a decade for Biblionix to reach all the small public libraries yet unautomated. Significant opportunities remain for Biblionix and other organizations able to deliver cost-effective solutions for this large, but economically challenged niche of the US library market.

1. See Marshall Breeding, "Library Systems Report 2018: New Technologies Enable an Expanded Vision of Library Services," *American Libraries*, May 1, 2018, https://americanlibrariesmagazine.org/2018/05/01/library-systems-report-2018/.

Smart Libraries Q&A

Each issue, Marshall Breeding responds to questions submitted by readers. Have a question that you want answered? Email it to Samantha Imburgia, Associate Editor for ALA TechSource, at simburgia@ala.org.

What is the most suitable software that can be used for integrated library automation in an academic library?

In my experience, there are no absolute conclusions regarding the best or worst software for any given type of library. Almost any of the products available has been implemented successfully in at least some libraries with positive outcomes. The challenge lies in finding the technology-based systems and services best aligned with the strategic priorities of the libraries and that offers functionality to support its daily operational work.

Each library type has its own broad set of expectations for the components that comprise its technology environment. Academic, public, and school libraries continue to diverge in the ways they serve their respective communities. Specialized products have been created for each type of library. That said, there are some broad characteristics that an academic library might avoid when considering a new automation system.

- Avoid products exclusively designed for other types of libraries. Since academic libraries have their own set of needs, using a product designed for a school or public library will probably not be a good fit. You should check to see the distribution of library types using any product under consideration. You will find some products used almost exclusively by academic libraries, such as Ex Libris Alma and OCLC's WorldShare Management Services. Others, such as SirsiDynix Symphony and Innovative's Sierra, have a mix of library types and continue to be used by a very large number of academic libraries. For the products that support multiple types of libraries, options need to be available that address management and access to electronic resources. Naturally, if the product under consideration has been dominantly implemented in public libraries or schools, it is not likely to work well for an academic library.

- Avoid products that may no longer be actively developed. This characteristic applies to any system for any type of library. Libraries keep their automation systems for very long intervals—often a decade or two. Libraries should have assurance that any product under consideration continues to receive ongoing development and is part of the vendor's long-term roadmap. Part of the due diligence in system selection should include checking statistics on the number of libraries adopting a product versus the number moving away.
- Seek products or product suites that demonstrate strong tools for managing electronic resources. Almost all academic libraries devote most of their collection budgets to subscriptions to electronic resources. Essential components of a viable electronic resource management include up-to-date and accurate knowledge bases able to support portfolio-level activation of resources rather than having to manage each title individually. The domain of electronic resource management is complex, and any potential product should be evaluated carefully for its strengths in this area.

Libraries should seek components with well-developed APIs able to participate in an ecosystem of interoperability.

One of the major trends in the last decade related to academic libraries has been the emergence and adoption of library services platforms. The trajectory of products such as OCLC's WorldShare Management Services and Ex Libris Alma have been chronicled extensively in this newsletter. ILSs continue to see widespread use in academic libraries. While ILSs tend to be oriented to print resources, they can work well as a component in a broader environment where electronic resource management and discovery are addressed by other components.

Open source products also represent an important set of alternatives to consider. There are established open source ILSs, such as Koha, which have been successfully implemented by many academic libraries. The FOLIO project has made substantial progress toward developing an open source library services platform oriented to academic libraries. Once an initial set of libraries have implemented this product, it will be easier to assess its ability to serve the general body of academic libraries.

The core resource management system represents only one component of the broader technology environment supporting an academic library. These libraries also have to consider how they will approach discovery, such as whether to use the discovery service bundled with their core resource management system or integrate a third-party product.

The resource management and discovery products serve as the core of the library's technology environment, but do not address all aspects of its varied activities. Most academic libraries will also operate institutional repositories, create digital library collections, support digital humanities, perform copyright clearance for course materials, manage reading lists for academic courses, or support various aspects of the research activities conducted within the university, such as through data management plans, research data repositories, or research information systems.

The challenge for academic libraries lies in implementing appropriate technologies across all these activities in sustainable ways. A proliferation of standalone components would lead to a fragmented environment that might be difficult to manage. Products able to unify some aspects of this broader academic library support infrastructure may be possible, though a monolithic platform encompassing everything would be both unwieldy and unrealistic. Rather, libraries should seek components with well-developed APIs able to participate in an ecosystem of interoperability.

Any judgement of what constitutes suitable software for an academic library cannot be generally prescribed. While there are some commonalities among academic libraries, many institutional differences also apply. I have given some general advice on obvious qualities to avoid and factors to consider; it is not possible to lay out more specific guidance in the absence of specific institutional considerations. The changing dynamics of academic libraries require investment in technology products receiving active development and those designed with the highest level of openness and flexibility.

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July 2018
Smarter Libraries through Technology

Smart Libraries Newsletter

Marshall Breeding's expert coverage of the library automation industry.

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Digital Access for Subscribers
journals.ala.org/sln

Production and design by the American Library Association Production Services Unit.

Smart Libraries Newsletter is published monthly by ALA TechSource, a publishing imprint of the American Library Association.

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