The Viability of Open Source ILS

by Marshall Breeding

Open Source Software in Libraries

Following an era lasting more than two decades where companies offering integrated library systems (ILS) under traditional closed-source license arrangements, the library automation industry has seen a burst of activity in the last few years involving open source ILS alternatives. As libraries consider the field of ILS options today, a thorough investigation includes both traditionally licensed and open source alternatives. This essay focuses on questions regarding to what extent open source ILS products can be considered viable alternatives.

We will look at open source ILS viability from four perspectives: market acceptance, support options, product development and functionality and risk factors.

Market Perspective

We're seeing a great deal of market acceptance of ILS products in the open source arena. This does not necessarily mean that they offer all the nuances of functionality found in their commercial counterparts, only that libraries seem willing to adopt them. In broad terms, open source options are now well represented in the ILS products to which libraries are migrating.

In the current library automation marketplace, news of libraries selecting open source ILS products has become routine. In the United States and Canada, three open source ILS products dominate – Koha, OPALS and Evergreen. While Evergreen and OPALS have not yet found wide adoption outside the United States and Canada, Koha finds use in libraries worldwide.

The demographics of the libraries that have so far chosen to adopt these open source ILS products provide interesting information. This data reveals the track record already established and helps us identify the categories of libraries in which the current slate of ILS products can be expected to adequately serve. The following figures illustrate the level of adoption of the three major open source ILS products by libraries in the United States, as represented in the lib-web-cats database of libraries (www.librarytechnology.org/libwebcats/). This database provides the most comprehensive data available regarding the automation systems used by U.S. libraries. The table shows the numbers of libraries that have made official commitments to implement systems, not necessarily the number fully in production.

Within certain bounds, open source ILS products are making great strides in adoption in libraries within the

Libraries Selecting Open Source ILS in the United States			
System	Koha	Evergreen	OPALS
Public	126	58	
Academic	23		3
School	32		51
Museum	12		
Medical	3		
Church	2		2
Other Special	10		3

Figures current as of September 2008.

United States. Koha, while it attracts far more public libraries than other types, serves the most diverse audience. Evergreen finds use primarily in public libraries with a strong orientation to consortia. The original PINES implementation alone includes 49 library systems spanning 272 individual library facilities. OPALS appeals primarily to K-12 school libraries. The numbers provided in the table variously represent individual libraries, school districts and consortia of districts. The number of individual school libraries represented in the numbers is difficult to calculate but totals several hundred.

We use U.S. figures to gauge the demographics of libraries gravitating

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BREEDING, continued

to open source ILS. The patterns are somewhat different in Canada, with both academic and public libraries showing interest in Evergreen. British Columbia has begun a phased, opt-in province-wide implementation of Evergreen while a group of academic libraries is working toward enhancing Evergreen for eventual adoption through the Conifer Project and many libraries have adopted Koha and OPALS.

The upper bound of the size and complexity of libraries moving to open source ILS products continues to increase. Currently, smaller and medium-sized public libraries have made decisions to implement Koha or Evergreen. Two members of the Urban Libraries Council have joined the open source ranks, with Koha at the Howard County Public Library in Maryland and the recent implementation of Evergreen at the Grand Rapids Public Library in Michigan. Orange County Libraries in Florida have elected to use Koha as its web-based catalog while still retaining the Millennium system for other functions. (See "Orange County Library System Board of Trustees Meeting, Board Packet for January 2008 – www.ocls.info/About/BOT/PDFs/ Meetings/2008/Packets/080110Up.pdf.") No members of the Association of Research Libraries have given an open source ILS the nod.

Evergreen has proven itself capable of providing automation support for consortia with large numbers of participating libraries. The consortia using Evergreen tend to comprise small to mid-sized public libraries and do not include those supporting highly populated urban centers.

The numbers of libraries adopting open source ILS products show some fairly dramatic rates of increase, especially in the last two years. These products have already reached a level where they have made a large impact on the overall industry.

When considering the position of open source ILS in the competition to provide library automation systems to libraries, we see a high probability that the numbers will continue to increase. At least within the small and medium-sized library arena, open source ILS isn't so much a matter of viability as inevitability. We have entered a phase of library automation where open source and proprietary ILS options will compete vigorously.

Support for Open Source ILS

A very important factor in the adoption of open source ILS products by libraries involves the role of commercial companies. Each of the open source ILS products is closely tied to a commercial business that markets, develops and supports it.

Each of the companies involved in commercial support of ILS products shares a number of important characteristics. They include the primary, if not original personnel, that developed the product, and they offer support contracts for installation, data conversion, system maintenance and hosting options. These companies include LibLime providing services related to Koha; Equinox Software, Inc., providing services related to Evergreen; and Media Flex providing services related to OPALS.

Although in theory any library can implement an open source ILS completely on its own, the vast majority of libraries choose to work with commercial companies. Of the libraries that have chosen to implement Koha, Evergreen or OPALS in the United States, we have found only a few examples of independent implementation without contracting for services from a commercial support companies. A group of school libraries in Utah, for example, implemented Koha independently through the Southwest Educational Development Center.

Libraries in the United States Adopting Open Source ILS			
	Koha	Evergreen	OPALS
2000			
2001			
2002	2		
2003			6
2004			2
2005	2		4
2006	22	46	5
2007	102	3	18
2008 (thru Aug)	101	11	35

	LibLime	Equinox Software	Media Flex
Product	Koha	Evergreen	OPALS
Company Website	www.liblime.com	esilibrary.com	www.mediaflex.net
When Founded	January 2005	January 2007	1985
Background	Involved with the implementation of Koha at the Nelsonville Public Library	Development team that created Evergreen for the Georgia Public Library Service	Previously created Mandarin automation system. Created OPALS as as a new open source product.

TOP OF ARTICLE   < PREVIOUS PAGE   NEXT PAGE >

For both the proprietary and the open source ILS products, one of the main trends involves vendor-hosted implementations, marketed as software-as-a-service (SaaS). These SaaS implementations relieve the library of the need to maintain local server hardware, operating system and network administration. The vendor assumes responsibility for the maintenance of the ILS software, including such tasks as installing new versions, patches and performing backups. The vendor provides – often through a leasing arrangement with a higher-level provider – data center facilities, including redundant levels of protected power, network and hardware. The library pays an annual or monthly subscription fee that includes all these hardware and software components. These predictable subscription costs offset the upfront capital expenditures involved when the library hosts its own servers. The only substantive difference between the SaaS offering of the open source and the proprietary ILS products involves the portion of the subscription fees associated with the software license fee.

In the current environment, almost all libraries implementing open source ILS products do so with paid support contracts. The availability of these support options makes the open source ILS products possible for almost any library regardless of the level of in-house technology support available. Libraries generally need not employ more technically trained staff to implement an open source ILS than they would for the traditionally licensed products.

As the open source ILS products experience a surge of rapid adoption through commercial support contracts, a key concern involves the capacity of the companies to absorb these new projects and deliver adequate levels of service, deliver on-time implementations and achieve a high level of customer satisfaction. In the history of library automation, there have been times where a company has achieved a rapid influx of libraries selecting its product and faltered in its ability to live up to its customer's expectations. As libraries consider open source ILS support options, they should evaluate the company's capacity to provide adequate service levels.

The companies involved in open source ILS products exhibit varying levels of maturity and growth. Media Flex, led by industry veteran Harry Chan, has been in business since 1985 and has been involved in multiple generations of proprietary library automation products for the school library

market prior to its involvement with OPALS. LibLime has been in business since early 2005 and has demonstrated constant growth in personnel, including a number of hires of individuals previously employed by companies involved with proprietary ILS products. Equinox Software, Inc., while still a very small company, has also increased its ranks, expanding the original GPLS development team with additional personnel from the ranks of the ILS industry and from libraries.

Product Development

Open source ILS products are gaining functionality at a relatively rapid pace. Through in-house library development, sponsored development and volunteer programming, Koha and Evergreen have gained major extensions in functionality not present in their original versions.

Each of the ILS products has cultivated a community of supporters highly motivated to help them succeed. The free and open source software movement has found fertile ground in the library community. The number of libraries willing to allocate institutional resources and the commitment of individuals interested in contributing both personal and work time to open source ILS projects have resulted in greater momentum than would have otherwise been possible.

Proprietary ILS products have been available for a long time relative to their open source alternatives. Proprietary products have achieved a very high level of maturity and have evolved a very rich and nuanced set of features for each aspect of functionally addressed. A key consideration for open source ILS products involves whether they have achieved a high enough level of functionality for any given type of library and if the development models in place will result in an adequate pace of advancement.

In the classic proprietary development model, the company that owns the software assumes complete control of the development agenda and its execution. Only developers directly associated with the company have access to the source code and can materially participate in its development. In the ILS industry, the development roadmap includes initiatives spearheaded within the company and in response to enhancement requests from current library customers.

BREEDING, continued

Open source ILS products follow a different model of development, involving multiple threads. By definition, open source ILS products allow anyone to gain access to their source code and make modifications. The key challenge of open source ILS involves harnessing a variety of support efforts, channeling them into a single rapidly evolving product.

The basic approach used in the open source arena involves establishing an organization surrounding a product that shepherds its development. With open source software everybody, regardless of their understanding of the product or their programming proficiency, can make modifications. Of course, people can make the changes they choose for their local version. The growth of the software, however, involves finding ways to funnel improvements back into the official distributions so that the broader community benefits.

In most cases a single individual or organization takes the role of a release manager adjudicating what modifications will be incorporated into future distributions. In order to ensure the integrity of a product, some sort of vetting process establishes which individuals enter the circle of trust of those allowed to commit new or modified code into the official distribution.

In the open source ILS arena, each of the companies has established itself as the responsible agent for its flagship product. While open source licensing theoretically enables multiple companies to compete for the support of a given product, within the United States we're seeing a one-to-one relationship between companies and products. Outside the United States, other companies have emerged to support Koha within their geographic regions (see www.koha.org/support/pay.html).

A major part of the development of open source ILS occurs through a model of sponsored development. The basic premise of this approach involves libraries interested in a given ILS identifying a particular feature, module or component that they are willing to pay to have developed. If in the consideration of implementing the product a library finds a feature missing that they must have, rather than rejecting the project, they enter into a contract for its development. In most cases, functionality created by one library through a sponsored development contract will be cycled into the next distribution so that any other library will receive the enhancement without cost. This model results in an accumulation of improvements each of which is paid for by a single library benefiting the entire installed base.

The model of sponsored development can be seen as the key factor in the development of the Koha ILS. The initial development of the software by Katipo Communications for the three libraries involved in the Horowhenua Library Trust in New Zealand involved a fairly simple data model and did not implement many of the standards and functional modules needed by larger libraries. As Nelsonville Public Library in Athens County, Ohio, considered the implementation of Koha, they chose to contract for the development of features such as support for MARC21 and Z39.50. The Crawford County Libraries in Pennsylvania chose to support the integration of the Zebra XML storage and retrieval environment into Koha. The Westchester Academic Libraries Director Organization (WALDO) contracted to introduce many features into Koha required for academic libraries. These represent but a few examples where sponsored development has led to the expansion of Koha from a very simple ILS to one with a competitive set of features suitable for many small and medium-sized libraries.

Volunteer development also plays a role in open source ILS. The Georgia Public Library Service specifically developed the original version of Evergreen for public libraries. While the functionality of the system was geared toward public libraries, the system was designed to scale to large implementations. Larger libraries interested in open source ILS have therefore focused their attention more on Evergreen, which relies on OpenSRF middleware layer, rather than on Koha, which is based on a more monolithic perl-based infrastructure. OpenSRF, specifically developed for Evergreen, uses the Jabber protocol to distribute messages in a more services-based environment and has given this system stronger appeal to those concerned with enterprise-level implementations.

Yet the absence of components such as acquisitions, serials control, multilingual support and course reserves in Evergreen has prevented its adoption by large academic libraries. A group of libraries in Ontario, including McMaster University, University of Windsor and Laurentian University, under the name Project Conifer, have begun an effort to develop these components (see conifer.mcmaster.ca). These libraries have chosen to allocate internal resources toward this project rather than directly contracting with an external

BREEDING, continued

support company such as Equinox. Nonetheless, the work of Project Conifer has been coordinated with Equinox, working toward incorporating the project's contributions into Evergreen Version 2.0, which is being positioned as the "academic version" of Evergreen.

The forward development of open source ILS includes volunteers working for libraries or independently and sponsored development. These development channels have resulted in products capable of competing with the longer-established closed-source ILS in some market segments.

An area of concern regarding development trajectories of open source ILS products involves long-term development strategies. Much of the development energies currently focus on catching up with functionality already present in proprietary products. While the success of open source ILS depends on achieving parity with their proprietary competitors, there is some risk that too much of a focus on reinventing existing functionality comes at the cost of using open source software to deliver greater innovation.

Functionality Thresholds

Prior to the last two years, one of the greatest concerns with open source ILS products centered on whether they offered adequate functionality. Proprietary products currently hold many advantages in functionality for most staff-side modules and are capable of supporting a much wider range of libraries. Yet as we noted above, open source products have achieved functionality capable of supporting all but the tier of larger libraries.

Open source ILS products compete especially well on their web-based catalog interfaces. Both Koha and Evergreen offer some of the features expected in next-generation interfaces such as faceted browsing, relevancy-ranked results and display of cover art. In an environment where the traditional library OPAC has been at least somewhat discredited, a new genre of discovery interfaces has emerged better suited to web-savvy library users, including AquaBrowser from Medialab Solutions; Encore from Innovative Interfaces; Primo from Ex Libris; BiblioCommons; and open source alternatives such as VUFind and SOPAC. The online catalogs of Koha and Evergreen have just as much in common with these new interfaces as with traditional library OPACs.

The functionality of open source ILS products already falls well within the needs of a very large number of libraries. Many public libraries serving small communities and rural populations currently rely on outdated automation products or have no automation. Open source ILS products represent at least equal functionality but also provide an entry into more sustainable web-based computing. While proprietary closed source ILS vendors have struggled to provide automation solutions that small public libraries could afford and implement, open source ILS products seem well positioned to serve this large segment of the library automation market.

Open source systems must survive on the merits of their features and functionality, scalability and performance. The standards for these characteristics vary according to each sector of the library market. Today, only proprietary systems stand ready to support the largest and most complex tier of libraries. Given the trajectories of development described previously, we can expect the capabilities of open source products to rise gradually. If functionality increases past the threshold that now precludes adoption by large libraries, we can expect at least some large public and academic libraries to shift from proprietary to open source ILS products.

Risk Issues

Many libraries currently seek automation strategies that make them less vulnerable to the increasing harsh business environment. Recent rounds of business consolidation and corporate buy-outs by private equity firms have resulted in a great deal of uncertainty for libraries about the business environment. Some companies have been strengthened through these transitions and stand more capable than ever to create and support library automation products. Yet many libraries remain very skeptical of the current business environment of the incumbent vendors, which opens an opportunity for new products, business models and companies.

The movement toward open source ILS comes during a time in the library automation industry when libraries find themselves frustrated with traditional vendors. One event in particular eroded library confidence in the status quo slate of vendors. The business decision of SirsiDynix not to develop future generations of Horizon and to concentrate on Unicorn as the

TOP OF ARTICLE   < PREVIOUS PAGE   NEXT PAGE >

basis for its strategic library automation platform left many libraries scrambling for new options. Even for libraries outside the SirsiDynix fold, many libraries came to realize their vulnerability to business decisions far removed from their control.

One factor in the appeal of open source ILS involves a perception that it frees libraries from dependence on any given vendor. In theory, once a library has adopted an open source ILS, it will have viable options for support even if the company with which it originally contracted either goes out of business or fails to deliver adequate support. In the absence of license restrictions imposed by proprietary products, a library could choose to contract with another firm for support, or it could take on support in-house.

Conclusions and Observations

The open source ILS movement has progressed past the point where its viability can seriously be questioned. The current momentum of open source ILS adoption makes it almost inevitable that it will represent an increasing portion of the library automation landscape. A set of companies has emerged to provide support options. Each of the products has already achieved a level of functionality suitable for its current target market. Current open source ILS products have a demonstrated a history of increasing functionality with models in place that promise reasonable levels of future development.

It is not at all clear what proportion of the ILS market will be represented by open source alternatives. Although we see increased acceptance of open source ILS products, the market for proprietary systems remains strong,

especially for larger libraries. We see higher levels of adoption of open source ILS in the United States and Canada than in other regions of the globe.

Current trends do not necessarily presage the demise of the companies offering closed source ILS products. Some of these companies continue to foster a positive reputation with their current library customers and continue to make announcements of new sales. The open source movement most affects the companies that have failed to maintain the confidence of their customer libraries either through diminished levels of customer support, sluggish product development or strategies that force premature migrations.

Although some of the companies involved with closed source ILS have experienced a downturn in sales in the last year, some appear to be attracting new libraries to their products. In 2007, open source contracts represented less than 10% of the ILS contracts for academic and public libraries, according to the Library Journal "Automation System Marketplace" report. 2008 stands to be a pivotal year in the heightened competition between the companies offering proprietary versus open source ILS.

The open source ILS movement has produced other benefits for the industry. At least some of the companies offering closed source library automation products have reacted to the presence of open source products by introducing new levels of openness in their closed-source products, usually through increased availability and documentation of APIs (application programming interfaces). These APIs provide new opportunities for interoperability with external systems and give libraries better access to the underlying data and functionality of their systems without access to source code. ■