Smarter libraries through Technology:

Cycling into the Next Phase of Library Automation

By Marshall Breeding

The main feature in this month's issue of *Smart Libraries Newsletter* is on Innovative Interfaces' announcement of its new library automation platform. I continue to be impressed by how the library automation industry seems to be gearing up for a new phase, one where a new guard of systems is lining up to eventually replace at least some of the veteran systems in the ranks. We've been through this change before, several times.

In the 1990's, we saw a similar situation—a slate of legacy ILS products turned over to new flagship systems. Many of the major vendors that had created products in times where computer terminals prevailed reinvented their wares with client/server designs and graphical user interfaces. Examples from this period include NOTIS to Hori-zon, DRA Classic to Taos, INNOPAC to Millennium, the telnet clients of Unicorn being replaced by WorkFlows, and ALEPH 300 to ALEPH 500. Some new systems emerged in this cycle, such as Voyager from what was then called Endeavor Information Systems. An even earlier cycle in the 1980's saw transitions such as CLSI Libs100 to PLUS, GEAC GLIS 8000 and 9000 to Advance, and the demise of systems such as BLISS and DataPhase. Each cycle is ushered in through changes in the broader computing industry that made older technologies untenable. In very broad terms, the same basic functionality survived through each of these technology cycles. The basics of circulation, cataloging, acquisitions, serials, and online catalog carried forward from the earliest ILS products through the ones in place even today.

We seem to be in a similar period now, though perhaps with a more gentle twist. Earlier transitions happened when obsolesce of a system's underlying hardware, operating systems, or architectures made them essential. The new phase currently unfolding seems to be driven more by opportunity and functionality. All systems today run on commodity hardware and none of the underlying systems are going away. But the shift away from client/server architectures to Web-based computing, service-oriented architectures, and cloud infrastructures provides new opportunities for increased interoperability consistent with the reality of libraries that are more interconnected among themselves and their parent organizations.

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It allows for more efficient computing models to operate, as opposed to locally installed servers and complex desktop applications.

The need to deliver new kinds of library functionality stands as a critical factor in this transition. The earlier cycles carried a fairly stable body of functionality through new generations of technology. Now we need new kinds of functionality to meet important changes in the work and missions of libraries. As we enter a time that will likely encompass the completion of the shift from physical to electronic resources, in book as well as journal collections, and an increasing emphasis on creating local collections of digital content, the basic shape of the infra-

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structure that a library needs to operate changes significantly.

It's good to see relief in sight in the form of new products under development that might better serve libraries in the near future. Yet, if the patterns of the past can predict the future, the transition will not happen quickly. Over the next decade I expect to see a similar pattern over the next decade where the numbers of libraries adopting the new generation systems ramps up very slowly at first,

gaining momentum only after a year or so. It's rare in the library automation industry to see a groundswell of activity following the initial release of a new system. Libraries tend to move with caution and have slow and deliberate planning and procurement cycles. It will be interesting to follow the migration trends over the next few years to see whether this new set of systems find use in libraries any more quickly than the sluggish adoption cycles of previous times.

Innovative Interfaces to Launch Sierra: A New-Generation Automation Platform

Innovative Interfaces has joined the fray of library automation vendors launching new-generation library automation platforms. With Innovative's new system, dubbed Sierra, they aim to offer the depth of functionality equivalent to their current Millennium ILS. This system leverages current technology architectures that include open source components, with full-featured API bundles that enable greater extensibility and flexibility in the way that libraries make use of the system.

The Sierra Platform

The launch of a new system affords Innovative the opportunity to take advantage of technology components, architectures, and methods consistent with the times, and hopefully to anticipate what features will be popular and neccesary in the future. Innovative has chosen the service-oriented architecture, open source database and indexing components, RESTful web services and APIs, and engagement with library developers as some of the key elements of its new technology strategy.

Following a service-oriented architecture, the new Sierra platform has been constructed in four layers. The foundation database layer will make use of PostgreSQL as the transactional database engine and Lucene for indexing to support search and retrieval operations. Use of these open source components stands in distinct contrast to Millennium, which uses proprietary database and indexing technologies developed by Innovative, or the commercial Oracle database. The database layer connects to the rest of the application through a data access object layer using a component called Hibernate which lends database independence and the ability to maintain persistent transactions through workflows executed at higher levels. Since the database layer also supports standard SQL, third party tools such as Crystal Reports can be used to create reports or other data extraction or manipulation operations. Use of the open source PostgreSQL also results in significant cost savings relative to commercial database engines.

A services layer implements the business logic that represents all of the functionality of the system, including the detailed tasks and workflows involved in ILS modules such as cataloging, circulation, acquisitions, a set of services for managing electronic resources, and another others for discovery and delivery of content. The services of this layer are exposed to higher-level applications through SOAP wrappers.

A set of new Sierra applications sits on top of the services layer. The heart of this layer will be a new Sierra App that implements the staff functionality of the system through a unified, non-modular approach. While Millennium offered specialized clients for each of its functional modules, Sierra delivers all functionality through a single application, avoiding the need to switch among modules depending on the task at hand. This application layer will also include components to deliver bundles of API's to support a variety of external interactions, all delivered through RESTful web services (Representational State Transfer).
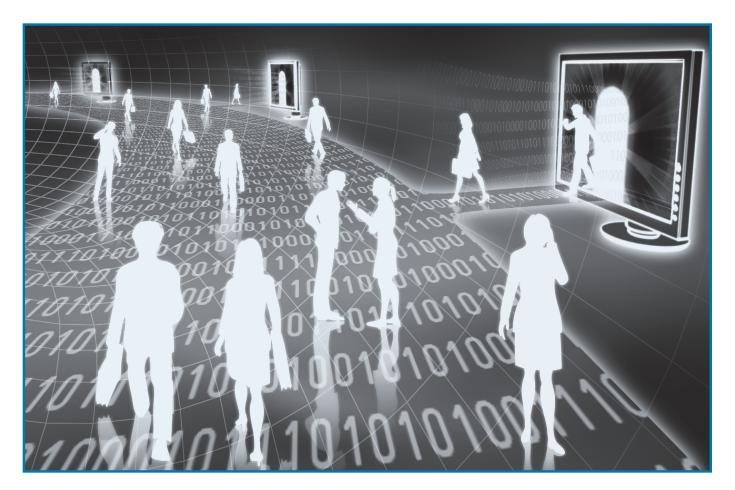
A top presentation layer will operate above the application layer, including the client to the Sierra application, web and mobile public interfaces. This presentation layer would also include third-party applications built on top of the published API's, interfaces to social media applications, or other end-user applications that might be created.

The new Sierra platform will be offered as software that can be installed locally in a library or consortium and will also be offered through software-as-a-service, hosted in a cloud infrastructure.

Sierra Strategy

The new Sierra platform represents a new strategic approach for Innovative. Over the years, the company has gained a reputation for having a closed approach and for offering highly proprietary software that gives libraries too little flexibility in how they access its data or use the system. With Sierra, Innovative aims for the opposite end of the spectrum. The goal is to be more open, by making use of more open source components, but more importantly, by providing libraries access to the data through standard SQL interfaces and to higher level functionality through a full set of published APIs and RESTful web services.

Many libraries will use the Sierra system entirely as delivered by Innovative; others may want to create and implement their own custom applications in different areas of the system. Innovative indicates that it will promote the establishment of library developer communities where

library programmers across institutions can collaborate to create new functionality based on the Sierra APIs, share their work, and to engage with the company's own developers.

The Sierra applications will not be delivered as open source software, but rather will deliver access to data and functionality in ways that do not require access to the complex internal programming of the system. In an environment where many libraries resonate with open source software, companies like Innovative that have traditionally offered proprietary systems struggle to find ways to offer similar benefits and values. Time will tell whether the openness designed into Sierra strengthens Innovative's ability to compete against the growing onslaught of open source ILS products and the expectations of open source enthusiasts.

Roll-out

Work has been underway on Sierra for quite some time. Innovative plans to deliver the initial phase of the software

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by the end of the 2011 calendar year, with two additional phases to follow.

Although Sierra represents a fundamentally new technology platform, the company isn't starting from scratch. All of the business logic, detailed functionality, and workflows of Millennium will be transferred into Sierra and will be available from its earliest release. The delivery of Sierra will follow a phased release schedule, with the initial launch including all existing Millennium functionality, and the core of the new Sierra plat-

form, such as the PostgreSQL database with its third-party reporting options, the single-client architecture and the new configurable staff client, API bundles, and other new services.

The second phase of deployment will include delivery of a Web-based circulation client and extend functionality for workflows related to management of electronic resources, additional API developments, such as for NCIP patron authentication and e-book circulation integration, web services for item availability lookups, and other REST APIs. Corresponding to the availability of these Web services and API's, Innovative will launch the development community and sandbox.

Plans for the third phase currently include the delivery of a table editor for the PostgreSQL data, integration with social media applications, new functional enhancements, and a new set of workflows for acquisitions.

Innovative has made its public announcements about Sierra after competing projects such as Kuali OLE and Ex Libris Alma. But if the company is able to hit its target dates, it may deliver its initial release sooner.

What about Millennium?

According to Neil Block, President of Innovative, the company is not abandoning Millennium or pressing its customers for an abrupt change. Millennium will continue to be supported and development

of its next release is underway. This strategy rings true with the way that Innovative has handled product transitions in the past. The company began a phased development and deployment of Millennium beginning in 1997, with customers shifting away from the character-based INNOPAC modules over the course of the next decade.

Pricing for Sierra has not yet been finalized, though Block indicates that it will be set to make it attractive for customer libraries to easily navigate toward the technology uplift it offers. Pricing may focus more on a services model than on licensing.

While the technologies and functional approach of Millennium were suitable for when it was initially conceived and developed, today's technological and competitive environment set the context for the creation of the company's next-generation system. On the technology front, service-oriented architecture has become well established and is the preferred approach for interoperable business applications. The library automation industry today includes a growing interest in open-source ILS products. Offering a system with the powerful and nuanced functionality and open API's, engendering a developer's community, and designing a system that gives libraries flexibly ways to access their data seems like a reasonable strategy to compete with open source systems.

The launch of Sierra comes at a critical time when the library automa-

tion industry is entering a new phase. Many new products that embrace new approaches to library automation are brewing. OCLC's Web-scale Management Services, which offers ILS functionality as an extension of WorldCat has already begun its early adoption cycle, with a handful of libraries already in production and with others underway. Ex Libris has been developing its new Alma framework, with initial delivery set for early 2012. The open source Kuali OLE project, which aims to produce a new automation platform for academic and research libraries is well into the software build process and anticipates releases beginning in 2012.

Academic and research libraries, hard hit by economic pressures and needing to realign strategies and operations to balance increasing reliance on electronic content and diminishing print priorities, may find some relief in this new slate of automation alternatives. Public libraries need automation platforms that allow them to engage their patrons in new and creative ways and to have the flexibility to deliver services beyond the constraints of traditional ILS products and online catalogs.

Through its development of Sierra, Innovative has claimed a position among the ranks of these new systems and seems ready to take a new turn in the way that it creates software and interacts with its customer libraries.

—Marshall Breeding

Serials Solutions partners with HathiTrust to Expand Web-scale discovery through full-text books

Serials Solutions continues its ambitious plan to populate its Summon discovery service with the widest array of content that represents the

content within library collections. The company has created a massive index of content from a wide range of e-journal publishers and providers, e-books, refer-

ences and other materials. Serials Solutions continues to make partnerships and collaborations to grow the Summon index.

An agreement made in March 2011 with HathiTrust propels Summon into the realm of full-text book content. Led by the University of Michigan, HathiTrust brings together the materials scanned through the Google Book Search into a single massive digital collection. As Google scans the materials from each of the GBS partner libraries, the each library receives a digital copy. How those digital copies can be used depends on the copyright status of the material and the terms of the agreement with Google.

Through an arrangement with the HathiTrust, Summon will gain access to this vast collection of full-text content to exploit in its discovery service. The addition of the materials from HathiTrust into Summon will significantly increase Summon's ability to provide better exposure to book content in the same way that it has already done for scholarly articles. Although Summon already has the ability to ingest metadata from the MARC records of a library's physical collection, it will soon offer library users the ability to provide discovery for its book collection through full-text searching.

The content in HathiTrust that will be available through the Summon service will include:

- A total of 8.4 million volumes
- 4.6 million books
- 200,000 serial titles
- 3 billion pages of text

According to HathiTrust Executive Director John Wilkin, the HathiTrust, motivated by the desire to provide maximum exposure to the scanned digital materials, will expose its SOLR index to Serials Solution to extend Summon, which can in turn make those materials discoverable through its own service. The terms of the agreement specify that use of the HathiTrust index does not allow extraction of the text to display snippets or other representations of the text. Rather, once discovered within Summon, the user will be linked to an appropriate source for the item. Full-text searching of book content profiled to the library's holdings should enable increased use of the library's physical collection since all words and phrases in a book become access points. For books in the public domain, users may be directed to an electronic copy of the book at HathiTrust. Items in search results still in copyright may direct to an electronic copy if the library owns it or to physical copies in the library if they do not.

HathiTrust's arrangement with Serials Solutions is not exclusive. According to Wilkin, the organization aims to provide the highest exposure possible to the content and is willing to partner with other organizations able to agree to the

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terms about how the index may be used. The arrangement between HathiTrust and Serials Solutions does not involve financial compensation; providing access to the index does not involve significant cost to HathiTrust.

The expansion of Summon to include full-text indexing from HathiTrust reflects Serials Solutions ambitious strategy for discovery. As the first commercial discovery service based on a massive aggregated index of primarily article content, Summon was the first entrant into what is now a growing genre of services that use this approach; EBSCO Discovery Service and Primo Central follow a similar strategy.

The addition of this enormous body of full-text primarily book material stands to catapult the exposure of a library's book content through Summon. Full-text book searching has been commonplace on commercial sites such as Amazon.com for quite some time. Most library book search relies on indexes of MARC records, which excel more for structured searches than for keyword retrieval. Most online catalogs and discovery systems offer keyword searches by default. The combination of the existing representation of a library's collection of MARC indexing alongside the upcoming full-text indexing shows promise as a very powerful approach for library book search.

This approach will also come with significant challenges. The announcement of the collaboration is just the beginning of the process of delivering a discovery service with this capability. Executing the integration will not be a trivial undertaking. Many details are yet to be seen on how Summon will blend this new full-text book content into its existing discovery service. If successful, this new development represents a significant step of advancement to the state of the art of library discovery services.

—*Marshall Breeding*

Library Technology News in Brief

Primo Customer Base in the UK and Ireland Continues to Grow

London, United Kingdom – April 6, 2011. Ex Libris Group, a world leader in the provision of library automation solutions, is pleased to announce that the number of academic, national, and research libraries in the United Kingdom and Ireland that have selected the Primo discovery and delivery solution now exceeds 20. This major milestone was reached when UCL (University College London), Kingston University, and the University of Salford, decided to implement Primo to maximize the exposure of their collections to library users.

With the addition of Primo, UCL will be running a full suite of Ex Libris solutions—the Aleph integrated library system (ILS), the DigiTool digital asset management system, the MetaLib metasearch solution, the SFX OpenURL link resolver, and the bX article recommender. Dr. Paul Ayris, director of UCL Library Services, noted: "UCL selected Primo with its Primo Central Index as a cutting-edge discovery platform for our researchers and students, to encourage their use of the resources that we make available to them. Having used Ex Libris solutions for several years, we know that we can rely on Ex Libris for a very high standard of commitment and responsiveness."

HathiTrust Certified as Trustworthy Repository

HathiTrust has been certified as a trustworthy digital repository by the Center for Research Libraries (CRL) through their rigorous Trustworthy Repositories Audit and Certification (TRAC) assessment program. Only a small number of digital repositories have been granted this certification.

As our reliance on digital resources grows, the need for "long-lived" collections of digital content does as well. Libraries have always been the institutions to provide access to and preservation of our shared knowledge. HathiTrust, a partnership of libraries, takes this responsibility into the realm of shared digital collections.

The in-depth preservation audit of HathiTrust began in November 2009 and was completed in December 2010. Certification is based on criteria from the Trustworthy Repositories Audit and Certification: Criteria and Checklist (TRAC), as well as additional criteria developed by CRL. The certification was guided by an advisory panel consisting of leaders from the CRL community in collection development, library administration, and digital technology.

The audit encompassed an extensive review of data and documentation provided by HathiTrust, conversations with key HathiTrust staff, and a site visit performed by CRL in May 2010. The full audit report is available on the CRL website. Documentation of HathiTrust's compliance with TRAC can be found at http://www.hathitrust.org/trac.

Certification represents a major achievement for the partnership, which has defined itself by the transparency of its operations, the openness of its systems and services, and its reliance on broadly accepted standards and best practices for archiving and preserving digital content. Certification confirms HathiTrust on its trajectory to preserve and provide access to an increasingly comprehensive representation of the published record, and advances it's strategic goal to stimulate coordinated efforts among libraries surrounding the storage and management of print collections.

SirsiDynix signs long-term agreement with Stanford University

PROVO, UTAH (MARCH 31, 2011) – SirsiDynix, the world's leading provider of library technology solutions, proudly announces that it has signed a long-term maintenance agreement with Stanford University Libraries. Stanford University employs the SirsiDynix Symphony integrated library system for its library operations and automation.

Matthew Hawkins, chief executive officer for SirsiDynix, said Stanford has been a customer of his company for more than 15 years, with this recent agreement formally extending the partnership for five years.

"As a valued SirsiDynix customer, Stanford has brought us their challenges and provided product input that has ultimately resulted in better technology and innovations for the SirsiDynix suite of products and services," Hawkins said. "We look forward to our shared successes for years to come."

Hawkins said Stanford was instrumental in SirsiDynix's Unicode functionality development, acting as a test partner and providing feedback that benefits countless libraries around the world today.

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