The Birth of a New Generation of Library Interfaces

by MARSHALL BREEDING

DESPITE A CERTAIN LEVEL OF URGENCY TO MAKE THE TRANSITION TO NEXT-GENERATION LIBRARY INTERFACES, I DON'T EXPECT A SUDDEN DEATH OF THE TRADITIONAL OPAC.

Over the last couple of years, we've seen a surge of activity in the library automation arena directed toward improved user interfaces. As I look at the events and activities that have transpired over the last year or so, I see an incredible amount of progress in creating interfaces that help librarians compete better in an ever more crowded landscape of information providers. It's strategically important for libraries to have technologies in place that will optimize delivery of content and services in the context of today's Web. I believe that failure to make progress in this area can foster a creep of irrelevancy as potential users increasingly rely on information resources provided by entities other than libraries.

The Web 2.0 movement triggered a broad self-examination of library Web technologies that led to a widespread indictment of the then-current generation of online catalogs and Web sites as falling short. Relative to the other Web destinations, many of the interfaces offered at libraries were behind the state-of-the-art in search technologies, visual appeal, usability, and user engagement.

Once we were awakened with a vision of new possibilities for library interfaces, a number of projects and products emerged to fill the void. Today, we see a variety of projects that are all intent on creating a new application that better reflects the current expectations of library users. The urgency to come out with products to help us catch up on this front has unleashed many different creative efforts—some from the roster of traditional library automation companies, some from other commercial sectors, and some from librarians themselves. We truly live in interesting times where opportunities abound: Any type of organization that has a good idea and that is willing to devote some resources can become a serious contender in the competition for next-generation library interfaces.

The Old OPAC Is Dying

Much of the recent activity in the library automation arena stems from the widespread dissatisfaction with the online catalogs cast in the traditional mold. The OPAC emerged as a module of an integrated library system that allowed patrons to search the collections, which were focused on the physical items. It's this traditional view of the OPAC that has not weathered well in the current climate of Web 2.0 expectations. The concept of an online public access catalog that's tied solely to the physical inventory of the library and that doesn't incorporate at least the basics of how people use the Web today is dying.

The demise of the traditional OPAC comes despite quite a bit of good work to save it. These OPACs were evolving to include many well-received features, such as increased personalization, self-service, the ability to display book jacket images, and other improvements. Yet, the evolution proceeded slowly, and the need for drastic improvement for many libraries pre-

sented a problem that required more immediate and urgent action.

A New Vision of Library Interfaces

A new vision of library interfaces has emerged, and it's more in tune with current Web technologies and user expectations. It's broader in scope, takes advantage of search technologies and techniques that are closer to the state-of-the-art, and offers more dynamic interactions with library users.

Most libraries today shepherd collections of content much broader than those represented directly within the ILS. It's increasingly common for librarians to create local digital collections of images, documents, genealogy records, or other materials of special interest. The biggest shift of all involves increasing investments in subscriptions to ejournal and ebook collections. A library interface that does not provide equal access to the content of these collections stands incomplete in today's reality.

A new genre of software is being defined, and it may displace the traditional online public access catalog. I've recently completed an issue of *Library Technology Reports* ("Next-generation Library Catalogs," ALA TechSource, July/August 2007 issue) that presents what I consider the important features of the next generation of library interfaces. In brief, here are some of these characteristics:

A more comprehensive scope: Today's environment of diverse resources demands a library interface that spans many different sources and types of content. It's no longer as acceptable to require users to visit several different parts of the library's Web site as they attempt to locate information for their research needs. We can't realistically expect researchers to understand that they need to search the ILS OPAC for books and journal titles, to search a separate repository for local digital collections, and to use yet another interface to find articles from magazines and journals. Rather, a more ideal interface presents a single point of entry for all the library's content regardless of its media, form, or location.

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Modern interface conventions: The new generation of library interfaces brings in the features that have become standard fare elsewhere on the Web. Today's users expect results of a search to be ranked by relevance, since almost all other search engines and information resources throughout the Web use that approach. Faceted navigation helps users easily drill down through a set of results, incrementally narrowing the results down to a manageable number. Book jacket images increase the appeal and provide visual clues as to the content. Ratings and reviews from other users provide the means to help evaluate a given piece. Library users will feel much more at home with our interfaces if we adopt the interface conventions that have become well-established on the larger Web.

Efficient content delivery: People have very high expectations when it comes to the ability to find content on the Web. Today's library interfaces must go beyond helping discover the available resources, they must also make that content available in the most convenient way. Ideally, viewing the actual content online should come just one click after discovering that it exists. Since librarians make very large investments in full-text electronic content, it's becoming easier to realize this part of the vision. The key challenge lies in creating a more seamless path for users as they navigate from the tools that we provide for resource discovery to the actual information.

Traditional library features: As with everything else in library automation, the process is cumulative. The new features expected in the new generation of interfaces build upon what existed before. Many of the key features of the traditional OPAC must be retained in the new one: advanced and precise searching; display of current availability and status; and the ability for users to place holds and recalls on materials, to pay fines, to view lists of materials currently checked out, etc.

The New Generation of Automation Innovators

I see the beginnings of a new phase in the broader arena of library automation. As I think about recent events, it seems to me that we're leaving an era where a select set of companies dominates the development of library automation. In this new age, the incumbent companies might face competition not just from other vendors in the same niche, but also from companies from related industries and especially from libraries and other organizations creating their own alternatives, using both open source and proprietary toolkits.

When looking at the recent evolution of the library automation industry, we see major consolidation among the commercial competitors resulting in a smaller group of vendors and a troubling narrowing of options. We may be witnessing the backlash against this harsher business climate. Librarians today show less tolerance for the weaknesses in products from these companies and a new willingness to accept products incubated by other sources.

Back in the frontier days of library automation (the late 1960s through the

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1970s), many of the major projects had at least their early development in libraries. A few of the better known and successful projects include systems produced at Northwestern University in Chicago, Georgetown University's Dahlgren Memorial Library, Tacoma (Wash.) Public Library, the University of California–Berkeley, Lister Hill Laboratories, and Virginia Tech University. As that era played out, there were many short-term success stories. But those days also revealed that the technology environment made it difficult to sustain an adequate level of development and investment of resources necessary for an individual library's staff to develop an automation system. Despite the ideal that an ILS developed in one library could be shared with others, we eventually concluded that we could not single-handedly assume the role of developing and marketing software. Many of the automation projects born in libraries were later adopted by commercial parents.

Next came a purely commercial phase of library automation, wherein a slate of specialized companies formed to support libraries. Though the roster has changed over the years, this core group has vigorously competed for the last 20 years to create these products and services. It has followed the models prevalent in the larger software industry—creating software in a proprietary model where the actual source code is protected as a trade secret and charging license fees to customers for the right to use the software. Over the last 5 years or so, we've seen a number of mergers and acquisitions consolidate this slate of companies into a much smaller number. While some of them have managed to retain their original ownership and management, others now operate under the ownership of private equity and venture capital firms. As a group, they remain in financially good health with large teams of development, support, and marketing personnel. In most regards and for most libraries, this commercial model remains well accepted and stands as the route that almost all librarians continue to follow for their automation systems.

That said, the tables have turned on many of the original assumptions that led to the emergence of the commercial library automation companies. The days of costly mainframe computing have long since passed. Today we enjoy almost limitless computational power, network bandwidth, and data storage at incredibly low prices. In previous times, basic software infrastructure came at a dear price, provided by computer software giants like IBM, Unisys, and Digital Equipment Corp. This high cost of hardware, software, and development tools fostered an environment where most software was created in the commercial sector.

In today's environment, open source components abound for all of the layers of technology infrastructure. The Linux operating system; the Apache Web server; relational database management systems such as MySQL, PostgreSQL, the Lucene and Solr search technologies; and many other open source projects provide essential technology infrastructure components with very low cost. This new environment has made it quite a bit easier for library staffers to get back into the process of creating their own software. And we're seeing a resurgence of in-house software projects that place librarians back into a more visible role as technology innovators.

I don't see a radical shift taking place anytime soon that takes commercial companies out of the picture, but competition is heating up. The automation companies, it seems to me, have quite a bit of an advantage over the competition to deliver this new generation of library interfaces. They have significant experience creating products to meet our automation needs, have vast resources available, and have deep expertise in the complex processes of professional software development. In fact, several of the traditional ILS vendors have made significant contributions in the next-generation catalog arena.

Old Dogs Doing New Tricks

The Library Corp. was the first to jump into the next-generation catalog competition. The company didn't create its own product but partnered with Medialab Solutions to offer AquaBrowser and Endeca to libraries. AquaBrowser, developed by **Medialab Solutions**, which was recently acquired by R.R. Bowker, is a next-gen library interface that has seen the widest adoption to date, with more than 100 libraries using it.

Innovative Interfaces focused much of its development resources over the last year on creating Encore, its discovery services platform. Encore targets a wide variety of libraries. Its initial bevy of more than 50 early adopters includes public, academic, and special libraries.

Ex Libris created Primo, a next-gen interface that implements its vision for discovering and delivering information sources in academic libraries. The company positions this product as a single-user interface to front all of a library's print and electronic resources.

Polaris chose the path of enhancing the online catalog it delivered as part of its integrated system with the slate of features expected in next-generation library interfaces. The latest version of the Polaris online catalog includes features such as relevancy ranking, faceted navigation, and book jacket images. I have not found any examples where a customer has chosen to replace the Polaris online catalog with a third-party product.

OCLC offers WorldCat Local as a new catalog option for libraries. Currently in the pilot stage, WorldCat Local combines the power of searching the global WorldCat database with modern interface features and with hooks into the library's local ILS for item availability and patron service features.

What the DIY Crowd Is Doing

Here are some of the efforts coming out of libraries:

North Carolina State University led the way among large academic libraries and crafted its own next-gen catalog based on technology from Endeca. The Endeca search technologies excel in providing the infrastructure for faceted navigation and relevancy-ranked search results. Other libraries have since adapted Endeca's products to re-create their catalogs, including McMaster University in Canada and Phoenix (Ariz.) Public Library.

In a similar vein, the **State Library of Tasmania** launched its next-generation catalog based on the Verity search engine (http://catalogue.statelibrary.tas.gov.au) in July. The Verity technology was acquired by Autonomy Corp. in 2005.

Villanova University in Pennsylvania has been busy creating a new interface called VuFind. Based on the Apache Solr search engine and other open source components, VuFind incorporates many of the major features of next-gen interfaces. The software is currently in the beta testing phase with a demo site available for public review.

It's very interesting to note that NCSU, the State Library of Tasmania, and Villanova each based their interfaces on generic search engine technologies, crafting a library-specific interface that takes great advantage of the capabilities of the underlying technology.

The **University of Rochester River Campus Libraries** have been engaged in a process (with funding from the Andrew W. Mellon Foundation) to investigate an open source approach for academic libraries. Called the eXtensible Catalog, this project aims to develop an interface that will "unify access to traditional and digital library resources." Participants are conducting a thorough investigation of the options and opportunities of creating a next-generation library interface following the open source approach, laying important groundwork for future development.

I THINK THAT EVERYONE SHOULD BE CAREFUL TO DISTINGUISH THE OPEN SOURCE ILS MOVEMENT FROM THE NEXT-GENERATION CATALOG TREND.

In addition to these projects that focus primarily on creating new interfaces, the open source ILS products also position themselves as next-generation library interfaces. I think that everyone should be careful to distinguish the open source ILS movement from the next-generation catalog trend. The issues involved in whether a library should adopt an open source ILS are quite different from those related to next-gen interfaces. That said, the pubic interfaces of the two major open source ILS products, Evergreen and Koha, incorporate many of the features generally considered as part of the next generation.

The **Georgia Public Library System** created the Evergreen ILS. The success of this project lies not just in the open source software created for the 260 members of the PINES consortium, but also in the structure of a single automation implementation to serve this large group of libraries that all agree to share a single bibliographic database, to have consistent circulation policies, and to share a common library card. The Evergreen interface includes many of the next-gen characteristics, including relevancy-ranked results, faceted navigation, and enhanced display through book jacket images.

The Koha ILS, likewise, includes many modern interface features. Originally created in New Zealand, the software currently exists primarily under the stewardship of **LibLime**, a small company spun off from the Nelsonville Public Library, one of the early adopters of Koha in the U.S.

A Gradual Transition

Despite a certain level of urgency to make the transition to next-generation library interfaces, I don't expect a sudden death of the traditional OPAC. While I see a lot of new development, I don't see widespread deployment. In my ongoing work with the lib-web-cats online directory of librarians, I keep a pretty close eye on the Web sites and online catalogs librarians offer to their users. I continue to see the majority of libraries offer online catalogs that are a version or two behind their vendors' most recent offering. If software development cycles are too sluggish, library adoption cycles also take a slow and measured pace. Although a small minority of librarians is willing to take bold steps and make changes quickly, the vast majority don't have the resources to be on the fast track.

The options available for your next interfaces are expanding fairly rapidly. Today you can choose from a menu of both off-the-shelf and roll-your-own solutions. As the prognosis of the traditional OPAC continues to decline, librarians now face the need to prepare for a transition to the next generation of interfaces. ■

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