Smarter Libraries through Technology

Strategies for Creating a Unified Web Presence

By Marshall Breeding

Libraries provide a complex set of information resources through their websites, which are often centered on their catalog or discovery services. Their collections are increasingly diverse, spanning physical and digital formats, and they provide a variety of tools for their users to explore and gain access to these collections. It can be quite a challenge to bring together all of the components on a website in a consistent presentational design and with unified content access. In many cases, the discovery service is powered by an entirely separate application from the website itself. This difference in back-end technologies can assert almost jarring differences in the way that patrons interact with the discovery service or catalog relative to the other aspects of the site. Other components, such as those that manage events, directories, or other specialized services, likewise impose their own user interface conventions.

Such fragmentation detracts from the usability and coherence of the website. Almost all other types of web destinations embody a consistency in presentation and functionality throughout. Any differences in technologies used to drive the different compartments of the site are usually not at all conspicuous. I see this quality of consistency as an important aspect of usability. Users don't have to wonder where they are when suddenly things look and feel different as they navigate to another part of the site.

To the extent possible, libraries work to smooth out the differences in the user interfaces associated with the applications that power the varied services which comprise their web presence. In most cases, each of these applications can be configured with common style sheets, banners and other page header elements, and footers. These techniques can lend a superficial similarity in the look of diverse applications, but don't really address the more fundamental differences in user interfaces and in their isolated functionality.

One of the shortfalls of many library websites with functionality delivered by multiple back-end applications lies in a fragmented user experience. The most egregious example can be found in the way that a library's online catalog or discovery services provides a substantially different user experience compared to the rest of the website. While most libraries will configure these search tools with their own logo or banner, it may not be possible to adjust most of the presentational elements to conform with what has been defined for the broader website.

The different components of a library website often reveal their fragmentation through the scope of search. When presented with a search box, it is natural for users to expect it to address all aspects of content referenced throughout the site. This implied expectation is often not met in library websites. Although many libraries have implemented a discovery service that works well to provide access to an increasingly comprehensive representation of its collection resources, many gaps persist relative to other aspects of the site. One of the most obvious and common omissions is the textual content of the website itself. All of the descriptions of the library, current events, opening hours, programs, or other featured content often aren't indexed in the main catalog or search tool. Many libraries offer an additional search box for website content. Creating truly comprehensive search functionality that addresses content managed by different

applications can be quite challenging. It seems beneficial to not only avoid the complexity or confusion of multiple search tools, but it also presents important opportunities for users to receive information about relevant library services as they explore collections.

A variety of techniques can be implemented to avoid some of these problems of fragmentation. Locally-crafted or vender-provided discovery tools can be populated with content from a wide variety of applications and repositories. Special attention should be given to include basic website content and data from event management systems, or other specialized applications. Presentational uniformity can be improved through aggressive use of style sheets or code inclusions to make each of the interfaces used within the library's web presence look and operate more consistently.

Another approach might include the creation of a comprehensive presentation layer, which serves as the library's website. The library website would not use the native interfaces of its underlying systems or components. Rather, it accesses the content or functionality of these systems through APIs and presents the content through its unified web presence. This model has the potential to create a fully-customized website for a library, avoiding the fragmentation imposed by linking to external interfaces. It also represents a high degree of technical difficulty and may be limited by the absence of APIs in the underlying applications.

The genre of library-oriented content management environments or portals also aims to blur the lines between discovery interfaces and library websites. These products include a discovery interface able to replace the native online catalog associated with the integrated library system (ILS) supplemented by an additional set of tools to deliver the other

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elements commonly included on library websites. A variety of products fall within this genre of library portals. Axiell introduced Arena in 2007 to provide a front-end for its diverse family of systems for managing libraries, archives, and museums. Infor Libraries released Iguana to provide both catalog and website functionality in 2009. This category of comprehensive library portal did not gain traction as quickly in North America. Following its success with its BiblioCore discovery service for public libraries, BiblioCommons created BiblioCMS, initially in partnership with Chicago Public Library. BiblioCMS was completed in 2014. This issue of *Smart Libraries Newsletter* features a new addition to this genre called Stacks. This product emerges from a Canadian company, Hybrid Global, which has worked with many library clients in addition to its work in other government and business sectors to create customized websites based on Drupal technologies. Stacks has a close relationship with EBSCO Information Services, which serves as its exclusive partner for sales and support.

It is interesting to see a variety of new products and services emerging to help libraries deploy their websites and related services in more cohesive ways. Some libraries will have the technical or financial resources to program their own customized environments, which will be able to integrate their online catalogs, discovery services, and other underlying content sources. Others may prefer to work with a platform able to deploy a customized website that integrates diverse resources through non-technical means. While these portal management products may have some limitations, many libraries may see benefits in achieving a more unified website that can be configured and maintained without the intervention of developers or other technical personnel.

Stacks: A New Service for Deploying Mobile-Friendly Library Websites

Addressing the need to create mobile-friendly websites that can be managed without technical expertise and can provide a complete set of features, a new company called Stacks has launched a web content management system designed specifically for libraries. Some features of the system include integrated discovery and access to library services and

information. The product, with the same name as the company, is offered through software-as-a-service via a redundant and scalable platform, requiring no local web server or other technical components. Stacks has a close business relationship with EBSCO Information Services as its exclusive distribution and support channel.

The Stacks service enables a library to develop a full website adhering to modern design principles, including all of the common components and elements, and managed through a non-technical console interface. The product provides tools that focus on the content and presentation of each element without the need to have detailed skills in the underlying coding. Library personnel overseeing their site manage each configuration element or content component through tiles on its administrative interface, called the Dashboard, which prompts for any needed details or content.

According to Stacks President and Chief Executive Officer Kristin Delwo, "Our focus continues to be driven by our belief in the value of a meaningful user experience; not just for the patron, but also the librarian. We've made it our mission to give the librarian ultimate control and ease-of-use with the end goal of providing superior digital library experiences." Stacks can provide libraries more freedom in how they develop their websites than might be possible when hosted by local IT departments. Sites hosted locally may exert limitations in the design or functionality of a site and may not be able perform regular updates in design.

Deployed via Software-as-a-Service

The product is deployed through a software-as-a-service (SaaS) subscription. Libraries using Stacks do not need to operate their own web server since Stacks is a fully hosted service. The Stacks platform operates on hardware and software maintained by the company, with redundant components deployed that are able to achieve high availability. Despite being hosted on an external platform, a library's implementation of Stacks can be configured to use its own domain name. The link address of an organization ranks as one of the most important elements of an organization's identity and branding, so deploying the Stacks-based website via the library's domain name is an important feature.

Delwo states that "Stacks is the first true SaaS web solution for libraries that boasts the configurability to suit any combination of core business tools and subscription services a library may have, while offering rich functionality like event registrations and room booking in one easy-to-use platform."

Turnkey Platform Replaces Custom Development

The individuals behind Stacks have been working with libraries and other organizations to create customized websites based on Drupal and related technologies for a number of years. Building on this body of expertise and experience with previous clients, Stacks has been created as a turnkey platform

that aims to deliver much of the same type of results through a fully hosted service, without the need for local hardware and software or the need to have design or development personnel on staff or as external contractors.

Features and Functionality

The Stacks product includes two interwoven levels of functionality—that of a discovery interface and that of a full library website replacement. This approach results in the search and patron services functionality being thoroughly blended into the website as a whole, unlike the traditional model where the online catalog is deployed separately. Libraries using Stacks manage their website via a web-based administrative interface.

Discovery Interface Functionality

Stacks functions as a discovery interface, providing a complete environment for search and retrieval, including user account and online self-service features. Discovery functionality is carried out via a set of APIs that interact with the organization's ILS. As with other discovery interfaces, queries and search results are conveyed through its own presentational skin rather than that of the native online catalog module.

The Stacks platform maintains full patron account functionality, based on data resident in the ILS, but presented through its own interface. The MyAccount function, linked to the patron record and circulation module of the ILS, enables patrons to login to the site and perform self-service activities. Patrons are able to carry out activities such as view their profile details, list items charged, renew materials, place or cancel holds, view fines or fees, or create and manage lists of items of interest. This account functionality is implemented via connectors to the library's ILS. This integrated discovery aspect of Stacks replaces all of the functionality that would otherwise reside in the library's online catalog.

Supported ILSs currently include Symphony and Horizon from SirsiDynix; Polaris, Millennium, and Sierra from Innovative Interfaces; and Invenio from TIND Technologies. Additional ILSs will be supported as needed. Stacks makes use of the types of connectors with ILSs that have become routine in the implementation of third-party discovery interfaces.

The search functionality of Stacks can be configured to address the content of interest to the library. As with any third-party discovery tool, queries entered through Stacks will return results from the library's online catalog. Stacks has also been optimized to work with EBSCO Discovery Service, integrating article-level search results either blended with those from the ILS or presented separately according to the Bento Box model. Libraries can also include institutional

repositories, digital collections, or data sets in search results, as well as content from their website, events, and other local information.

A login function enables patrons to perform self-service tasks to view restricted subscriber resources. The login credentials can be derived from the local ILS or a campus authentication service.

Stacks can present cover art, reviews, and other content enhancements for libraries that have subscriptions to those types of services from providers such as ChiliFresh, Baker & Taylor, or Syndetic Solutions. Part of the configuration of Stacks includes a tile for integrations access through the staff interface that prompts the library to enter the relevant details for their subscription to activate their display in search results.

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Comprehensive Website Functionality

The Stacks platform not only provides a new interface for discovery, but also serves as a fully functional website. The platform provides a content management system specifically designed for libraries, with tools to create content or services blocks that can be assembled into a coherent design. Websites produced through Stacks feature a search box optimized for EBSCO Discovery Service and their local online catalog, but it also delivers all the other website content and features via a consistent set of presentational styles. The content and functional modules are activated, populated, and displayed according to selections that the library makes in the staff administrative console.

The staff dashboard interface includes tools for creating many of the features common on library websites. The branches or facilities can be defined in order to offer listings or maps. Taking advantage of the Google Places API, addresses and coordinates of the branches can be quickly captured without having to manually type each address element. To use the locational features, libraries will need to obtain a Google Places API Key, available for limited use without cost.

Other website features that can be created include a directory of library personnel, programs or events, and news articles. Visual elements include sliders or carousels of images that link to featured services or content. The administrative console also prompts libraries to enter the links for each of the social media networks that they use to provide link-outs on page footers. The administrative interface can be used to construct multilevel drop-down menus without the need to work with complex coding details.

The presentational look of the site is controlled through themes that can be selected or customized using the staff interface and then are applied consistently throughout the site. The platform automatically propagates these changes to the underlying coding and style sheets.

Training videos have been produced that provide an overview of the features of the product and step-by-step instructions for library staff members describing how to set up and manage the website with Stacks. Support for the product is provided both directly through the Stacks customer support desk and through EBSCO Customer Service.

Optimized for Mobile

The Stacks service has been designed to work well for mobile users, incorporating a responsive web design that detects and adjusts to the display size and capabilities of the device. The concept of responsive web design is a fundamental tenant of the Stacks platform. The layout, content, and component choices are automatically adjusted to appropriately display for all types of devices. No separate effort is required to provide a site for mobile access. Mobile design has been a core aspect of Stacks and its antecedent organizations.

Stacks can also facilitate the development of mobile apps with similar scope and functionality. For libraries that subscribe to this optional service, their patrons with iOS or Android devices would visit their respective app store to download and install the app branded for their library. Stacks manages the process of compiling the app and submitting it to the app store. The apps extend the content and functionality of the responsive website with some additional capabilities, such as using the camera of the mobile device to scan barcodes.

Technology

Stacks is based on a hosted hardware and software platform, with little need for libraries to interact with or be aware of the details of the specific underlying components. This platform has been deployed with redundant components scaled for fast performance and high availability. The product makes use of a variety of current web technologies, standards, and frameworks such as HTML5, CSS, and jquery. Aspects of its

functionality are based on Drupal 7, though libraries need not maintain a Drupal installation locally or have any technical training. All interactions with the platform are mediated via the forms and widgets presented in the staff interface.

Interactions between Stacks and the organization's ILS, external services, or content providers are conducted via representational state transfer (REST) APIs.

Early Adopters

By October 2016, Stacks was approaching completion of its initial production release and in its early phase of marketing and adoption. The California Institute of Technology (Caltech) Library has been involved as an early adopter and development partner. Stacks is also working with a number of other libraries, not yet named, which anticipate implementation of the product during 2016.

Caltech has worked closely with Stacks to refine its functionality for academic libraries and plans to use the platform beyond its turnkey features. According to University Librarian Kristin Antelman, "Because we have local expertise and unique needs, we are doing some additional custom development that is likely to continue. Hybrid Forge has been very receptive to us using Stacks as more of a framework to meet our needs within the environment of their product."

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Comparable Products

Stacks falls into a category of library technology that might be termed a comprehensive web portal, providing a managed website with integrated discovery functionality. These products aim to provide better user experience for patrons by creating a more seamless environment spanning multiple areas of functionality and managed through a non-technical staff interface. Other products with similar ambitions include BIblioCMS paired with BiblioCore from BiblioCommons, Iguana from Infor Libraries, and Arena from Axiell. Like Stacks, the BiblioCommons products are designed to operate in tandem with any major ILS. Those from Axiell and Infor must be paired with one of their own ILS products. SirsiDynix Enterprise or the Polaris PowerPAC are discovery environments that can also be implemented to provide some broader website capabilities, but are designed to link with only their own automation products.

This discovery component of Stacks bears similarity to open source discovery interfaces, such as Blacklight or VuFind, or proprietary offerings, including Primo from Ex Libris or Encore from Innovative Interfaces. All of these tools are able to present search results from their native catalogs or other discovery environments through a new interface, with customized presentation elements and features not necessarily available in the native environment. These discovery interfaces require technical implementation, customization, and configuration processes, in contrast to Stacks, which is administered via a non-technical dashboard.

Stacks Company Background

Stacks is a relatively new startup spun out of Hybrid Ventures, a digital consultancy based in Alberta that provides funding and resources to incubate new companies and products. This organization established Hybrid Forge in 2006 as a company specializing in Drupal technologies, which was rebranded as Hybrid Global in August 2016. Hybrid Global has provided customized web development services, primarily based on Drupal technologies for organizations in a variety of business and government services sectors, including libraries. This latest venture, Stacks, is entirely devoted to the library sector and builds on many of the technologies and tools created by Hybrid Global. This set of companies is based in the Canadian province of Alberta, with offices in Calgary and Edmonton.

Hybrid Forge, sister organization for Stacks, provides development services for websites for libraries in addition to their work in other sectors. Experience with these organizations informed the creation of Stacks. A sample of these library organizations includes:

- The Yellowhead Regional Library, which became part of the TRAC Consortium in Alberta
- MacEwan University Library: Hybrid Forge developed both a website and a mobile app that integrates with the libraries' SirsiDynix Symphony ILS, EBSCO Discovery Service, and other campus systems.
- University of Lethbridge
- Microsoft Faculty Library
- Fayetteville Public Library

Hybrid Forge's work with libraries included custom consultation services for website design and deployment as well as the creation of customized Drupal-based content management systems.

Stacks was founded and is led by an overlapping set of principles with Hybrid Global. Kristin Delwo is a principal of Hybrid Ventures and has been President and Chief Executive Officer of Stacks since its founding in August 2015. Delwo brings a library perspective to the company having served as a systems manager and consultant for TRAC Consortium in Alberta prior to partnering with Hybrid Forge. She was also previously the Manager and Head Librarian of Millett Public Library, a member of the Yellowhead Regional Library. Chad Smith is a founding partner for both Stacks and Hybrid Global and serves as the Chief Technical Officer of Stacks. Dennis Bridges, also a co-founder, serves as product manager for Stacks. Kevin Horek, also a partner in Hybrid Ventures, is the Creative Director for Stacks.

Those individuals involved in this set of related endeavors each bring different aspects of expertise in user interface design, mobile, and enterprise applications. While Hybrid Global provides a range of services to organizations in developing customized websites and mobile apps, Stacks brings together a variety of the tools and technologies underlying those services into a consolidated platform offered as a turnkey service. The Stacks content management system avoids the need for expensive customized custom development by incorporating tools that can be configured and populated by libraries themselves to produce a customized website.

Relationship with EBSCO Information Services

Stacks works in close partnership with EBSCO Information Services, which serves as the exclusive distribution and support partner for the product. Stacks works with a variety of other partners to integrate their services into the platform.

EBSCO has facilitated the integration with Stacks to ILSs and the EBSCO Discovery Service. This integration leverages the same connectors and mechanisms EBSCO has developed for direct integration between those ILS platforms and EBSCO Discovery Service.

EBSCO does not have an ownership stake in Stacks, which is entirely owned by its founders. EBSCO's involvement with Stacks seems consistent with an important dimension of its strategy in the library technology arena to engender an ecosystem of interoperability between EBSCO Discovery Service and a wide range of ILSs and other relevant applications.

Pricing

Stacks is offered via an all-inclusive annual subscription fee, which is scaled according to the size of the library. No upfront fees are charged for the initial setup and configuration. Since the product is deployed via SaaS, the organization does not incur local technology expenses, including local server hardware or hosting fees, systems administrators, personal costs, or consulting fees associated with the design and development involved in traditional website implementations.

For more information, see **stacksdiscovery.com**.

Simon Fraser University Ends Development of CUFTS

Simon Fraser University Library is well known for its creation of open source tools and knowledge bases for the management of electronic resources. The library began the creation of these tools in the mid-1990s. Collectively known as reSearcher, this set of tools includes several related modules, including:

- CUFTS, an electronic resource module, released as open source software
- GODOT, an OpenURL-based link resolver
- cufts2marc, a utility to create basic MARC records from the knowledge base
- Open Knowledgebase, an open access knowledgebase of e-resource holdings, which has been primarily populated by

the staff of the SFU library and supplemented by contributions from other organizations that have adopted reSearcher
- CUFTS Resource Comparison Tool, a hosted service to compare coverage of electronic resources
- CUFTS Journal Search, a tool for searching the journals covered within the Open Knowledgebase

The suite previously included a federated search tool, dbWiz, which was discontinued in 2011 when the library adopted the Summon index-based discovery service.

The reSearcher suite has been used not only by the Simon Fraser University Library, but has also been adopted by other library organizations, such as the PALS consortium

in Minnesota. The SFU Library offers hosted access to these services for an annual fee. A small consulting firm, TrueSerials, also provides commercial support for the reSearcher suite. Over 40 libraries were using reSearcher in 2011, though that number has diminished in recent years.

In September 2016 the library announced its selection of Ex Libris Alma and Primo as its comprehensive resource management and discovery environment. The adoption of Alma, a comprehensive library services platform, will displace the need to maintain separate electronic resource management tools and e-resource knowledgebases. The library will therefore no longer continue to maintain these resources. In August of 2016, just prior to the public announcement of its selection of Alma, the library notified the community of those involved with reSearcher of its intent to decommission this project.

According to the project website, software development will cease on May 1, 2017. After that date, the software will continue to be available for download. Since the software is released as open source, other organizations may choose to continue its development and to update the knowledgebases. On August 31, 2017 all services related to reSearcher will end. Those relying on the services will have had a full year to find alternatives.

The reSearcher suite will not necessarily cease to exist following the withdrawal of development and services by Simon Fraser University. TrueSerials reports that it will continue supporting the reSearcher suite for its customers. The company will assume maintenance of the knowledgebase, continue its partnership integrating CUFTS with libraries using the Polaris ILS, and continue working with WiLS (formerly Wisconsin Library System) as a marketing partner.

Questions or suggestions for topics in future issues?

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Contact Marshall Breeding at **marshall.breeding@librarytechnology.org**

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