INN>Touch

Sierra Services Platform: An Introduction

Today's libraries are being buffeted by a wide range of new challenges and buoyed by emerging technological opportunities. At the same time, many solutions being offered in the marketplace fall short in terms of libraries' demanding expectations. The Sierra Services Platform, from Innovative Interfaces, is the first system that offers complete ILS functionality in a modern, open services approach.

The library community is undergoing significant technological changes once again. These changes present yet another wave of challenges for libraries to face. At the same time, these changes present opportunities for libraries to re-invent themselves in new ways and continue to serve an ever-changing and increasingly technology-savvy user base.   There are several key trends which affect both libraries and the technology vendors who serve them:

Changes in content format and consumption – The rapid shift to electronic resources and the emergence of e-books are a few examples of how content formats and consumption is changing. Users are expecting immediate and seemingly unlimited access to the content they need when they need it. Anything, any time, any place, anyhow.

Disruptive technologies – We're increasingly living in an iPad™, iPod™ (and now iCloud™) world. The accelerating adoption of the smartphone as a personal communication and information management device, all but guarantees that how a library interacts with its users is changing forever.

New generation of patrons & librarians – More collaborative, prone to multi-tasking, and technically-savvy, the new generation of both librarians and patrons are placing new demands on libraries and their technology infrastructure. Whether it's a "do-it-yourself" systems librarian or an e-book collecting patron, library technology will need to react quicker and more responsively than ever before.

New technology architectures - As the web continues to evolve, a new class of infrastructure--cloud computing—has emerged and has become commercially feasible not just for large organizations, but for any size institution with an appropriate business case. The options, however, don't end there. Managed services,

Complete, Customizable ILS Functionality

Full-featured library operations support

Integrated resource management

New integrated, roles-based staff client

Trusted, dependable performance

Power and Scale of Modern Software Architecture

Services-Oriented Architecture (SOA) design

PostgreSQL open source relational database

Lucene indexing engine

Documented, flexible application programming interface (API) extension

Cloud- and Local-based deployment

Solid upgrade path

software as a service "SaaS" and locally implemented offerings are all viable alternatives each of which offers a unique set of benefits.

Integrated information environments - In the past, ILS systems were exclusive domains of the library. Today, these systems need to "play well" with larger systems of which the library is a part--whether it is the campus, municipal, or corporation. As a viable member of its larger community, the library needs to be able to inter-operate across multiple platforms and environments.

In response, there are several solutions being offered including "web-scale" and open source options. When considering the trends mentioned earlier, these solutions fall short in several key areas. Web-scale options, for example, offer a one size fits all approach that simply doesn't work for many libraries. After working with thousands of libraries, Innovative knows that each library is different--from its loan rule and accounting codes to its concerns regarding privacy and data ownership—and trying to shoehorn a library's unique workflows into a single solution is sub-optimal at best. For open source offerings, the promise of customization comes at a high price. Libraries that go in this direction find themselves re-creating much of the functionality already available in established systems and consuming precious resources in code-level development.

Each library needs the ability to customize service offerings, deploy technical infrastructure, and plan for these changes in ways that address its unique mission in its community.

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Introducing the Sierra Services Platform

The Sierra Services Platform provides complete ILS functionality with the power and scale of modern software architecture. As an open services platform, Sierra provides all the benefits of fully-developed, stable business logic and integrated resource management on which thousands of libraries rely. At the same time, it has several characteristics that result in unmatched flexibility to meet changing needs of libraries and their users.

The Freedom to Choose

Sierra gives you the freedom to decide what you want your library to be. With its commitment to open services, each library can decide on what new services or functionality it wants to offer and, equally as important, when and how best to implement them. Libraries can choose from Innovative-developed products, writing their own custom applications, or share software among other Sierra libraries.

Sierra has been designed with a modern Services Oriented Architecture (SOA) approach that offers:

- ✓ Increased opportunities for open development with Innovative's partners and customer libraries—libraries will have complete flexibility in determining their priorities and development options;

- ✓ Flexibility in deployment methods (cloud-based, local, and SaaS); and

- ✓ A platform for rapid application development, device adoption, and resource independence.

A high-level view of the Sierra Services Platform architecture is provided below:

Sierra's SOA-compliant design has four layers, each of which exposes applicable services and provides an independent, distinct set of functionality. The services architected within each layer are loosely-coupled and operate in widely adopted "wrappers" (including DAO, SOAP, Java, and http).

Database Layer – Implemented using industry-standard open source technologies, this layer includes a PostgreSQL database and Lucene indexing. These technologies provide the technical underpinnings of Sierra. Database access and index management tools allow control over these resources while at the same time exposing them to third-party applications such as report writers and other SQL-compliant tools.

Data Access Services Layer – In the Sierra environment, the data access services layer provides a consistent set of interfaces to the database and indexing tools. It also provides access to low-level resources maintaining persistence of key data structures that will be exposed to higher levels through a SOAP wrapper.

Business Logic Services Layer – This layer includes objects that handle all of the business rules, processes, and workflow logic that support the core functions of the library (circulation, cataloging, etc) along with newer functions such as discovery and e-workflow. In addition, it is within this layer where authentication and authorization enforcement is applied. Objects in this layer are developed and maintained separately from user interface and application display management as well as lower-level resource interaction. This allows development activities in the higher and lower layers to be conducted independently and without impact on the underlying business logic supported by Sierra.

Sierra Architecture
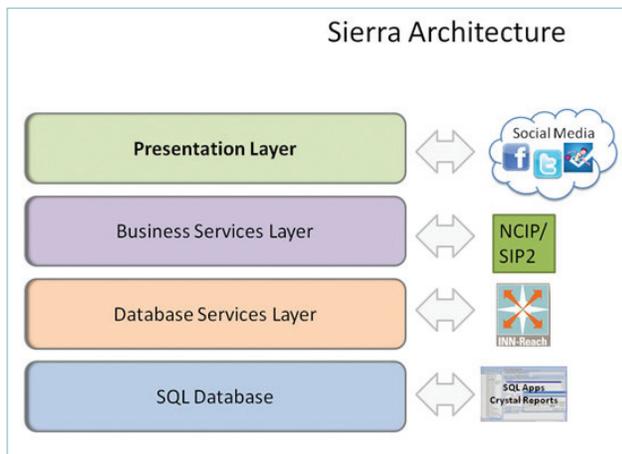
Presentation Layer – This layer implements the full suite of end-user applications including the enhanced Sierra application. It manages the presentation and user interaction in an ordered and meaningful manner and is aware of device dependencies. It provides multi-device support including that for client, web, tablet, and mobile devices. In addition, this layer exposes various RESTful API extensions where services are identified by their URLs. A broad set of API sets are envisioned to support functionality spanning OAI/PMH-compliant data delivery, Patron

Management, "My Account" access and more. This Sierra presentation layer also "consumes" APIs of various third-party sources including harvestable content, web-scale resources, social networking, and other web properties.

Based on open-source tools including the PostgreSQL database and Lucene search engine, Sierra will dramatically expand library options in terms of integrating library data and content into other systems and will provide the opportunity for integrating the library with social networking sites where users spend a great deal of time. Sierra will dramatically enhance the ability of the library to customize its applications for its users and reach them where they want to be.

Sierra's open services-based design also provides ultimate flexibility in how to deploy Sierra. Options include managed services, private cloud, and local implementations. Unlike web-scale only offerings, Sierra will work in the way that is best for the library.

The Scale to Grow

Sierra's seamless information access and fully-functional workflow/business logic empowers better decisions and Sierra starts with a full-featured set of library operations workflow functionality. Whether it include circulation, cataloging, patron management, serials handling, or purchasing and accounting management, Sierra offers the trusted business logic and flexible workflow support for which Innovative is renowned.

Our focus on integrated resource management design principles means that not only is Sierra agnostic about the types of materials (physical, electronic, program, service) the library manages, but Sierra knows that handling a book or an article is different. Whether it's providing the location and status of an audio CD or the subscription information on a licensed electronic journal, Sierra provides flexible and best-in-class information and workflow management. This foundation of universal, integrated resource management offers enhanced e-resource/e-book support, the management of which is an increasingly important aspect of library service offerings.

Along with the trusted workflow offerings, Sierra comes with a state-of-the-art public catalog that offers powerful searching with Innovative's RightResult™ search algorithm and is compliant with CSS technology allows library control over information content and presentation.   For libraries that seek next generation discovery, Sierra works "out of the box" with Innovative's Encore Discovery and Encore Synergy offerings.

Sierra offers simplified administration and simplified and security which will provide additional efficiencies to the staff workflow. There is an integrated staff client with updated usability. Reporting isn't second nature for Sierra. Its comprehensive design utilizes a full range of Boolean combinations to allow searching of any data element in any type of record and allows library staff to create sophisticated reports and statistics without IT assistance or programming expertise

And since no library system stands alone, Sierra offers multiple ways to connect to other critical systems on which libraries rely: Single sign-on support (Shibboleth), LDAP compatibility, courseware integration for Blackboard™ and other courseware management systems, or application interfaces for fines payment make Sierra the system for libraries that find interoperability a must for their operational needs.

Another advantage of the SOA design is the ability to "right size" Sierra to fit any library configuration and needs. From the smallest branch library to a statewide consortia system, Sierra's stable and expandable design means that Sierra can be configured to meet any library's system specifications.

The Tools to Connect

The big win for Sierra libraries will be the availability of a robust set of well-documented and multi-purpose application program interfaces (APIs). APIs expose Sierra functionality in a variety of new ways and offer endless possibilities. Unlike open source programs, libraries benefit from well-tested-business rule implementations without the burden of dealing with detailed software coding, thus freeing valuable programming staff to be more focused and productive.

And that's just the beginning. Proliferation of new devices (mobile, tablet, wireless) is accelerating. Not only are the devices students and staff use to interact with the

library changing, but the very nature of the content that the library provides is rapidly shifting from physical to digital, licensed content and local digital collections. Sierra's architecture will make it possible for the library to more quickly and easily connect with these new devices and display rich content as they "come to market" and resources expand.

Sierra's open services approach means libraries will have practically unlimited options of connecting operations to a wide variety of open source, library developed, and third party software. Using an API approach ensures consistent enforcement of business logic and significantly reduces interfacing effort. Sierra manages the details, freeing valuable library resources to work on high-impact projects and activities.

But Sierra not only provides a library with better ways to connect to its operations, it also means that Sierra will also utilize APIs offered by a broad range of third party entities to dramatically expand its content and functionality. Sierra's services-based offerings include connecting to 3rd-party content providers such as Syndetic Solutions™, EBSCO™, OCLC's WorldCat™, SkyRiver™ and more. This flexible use of third party content dramatically expands the library's reach, allowing it to offer the most current and broad-based resources possible.

More importantly, Sierra will offer libraries the opportunity to connect to its users by utilizing APIs and "hooks" provided by social media and other web-based properties. Facebook™, Twitter™, and LinkedIn™ for example, all offer a suite of APIs that facilitate displaying activity (such as a "tweet" stream), linking sign-on information (using Facebook logins across library applications), and managing a library's presence within these sites. With Sierra, "going social" and connecting to users will be a big part of today's library.

Allowing a library to connect with its data is another big part of what Sierra offers. With Sierra's open source PostgreSQL database implementation, libraries will initially be able to implement any of the SQL-complaint reporting tools such as Crystal Reports™. The table editor functionality will allow you to change the "views" of the database and add fields to address a library's changing needs.

The Sierra desktop is the flexible, single-point application that busy librarians demand. It offers operational efficiencies by streamlining the various staff functions typically used in the library. The "app" is Java™-based and we've focused on putting vital initial functionality where it counts most, together and into an integrated client. The app will have performance improvements in the staging and management of the software and will offer a modern look and feel and streamlined user interface.

And, since it's critical for libraries to be able to think up [create? innovate?] new advancements on their own, Sierra won't hold them back. Sierra allows Innovative to engage user- and partner-developers in more ways than ever before with targeted trainings, and community-based services that engage and empower the "library developer."

The Journey to Sierra

The Sierra development initiative was publicly announced in April 2011. Many of the technical underpinnings for Sierra, however, were already well underway. Currently, Innovative plans a suite of releases over the 2011-2012 timeframe where each release will offer a combination of web services and enhanced staff/client functionality. The initial release—scheduled for late 2011—will be a major foundational release that includes exposure of the PostgreSQL database and Lucene index structures, as well as the new integrated staff client that spans across traditional module-based client architecture. Subsequent releases will include enhanced eworkflow functionality, continued API development, and the release of a thin web client. The Sierra roadmap includes specific deliverables to address exciting opportunities to engage library-developers such as a Developer Sandbox and Developer Community.

Innovative's development plans also include ongoing support of its flagship Millennium ILS so libraries that currently use Millennium need not worry about the future of the system. Simply put, a library's investment in Millennium and its products is quite safe and our commitment to Millennium stands firm for the foreseeable future. We plan to support Millennium for a long time. Enhancements that make use of Sierra's new architecture and technologies will only be available in Sierra, but enhancements to workflow and business logic will be made for both systems.

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In addition, with the launch of Sierra, Innovative will be offering a new suite of training and support programs to all of the new functionality being offered. Along with system- and app-specific training programs, training programs in APIs and SQL are also under consideration. Better yet, we hope to foster a developer community so that key learnings can be passed among libraries in new and innovative ways.

> Innovative fully appreciates the need for careful change management both within a complex system environment and for mission critical systems.

Uptime

The overall design of both our services and applications will fit in well with these goals. Sierra is designed to run 24 hours per day, seven days per week, and libraries can expect it to be available well over 99% of the time. Aside from software upgrades, there are no administrative or management tasks within the application that require the application to be shut down.

Scalability

Sierra can be sized to support a virtually unlimited number of simultaneous users and records while maintaining top performance.

Recovery

Innovative's cloud based hosting provides a level of redundancy that all but eliminates the need for downtime and data recovery.

Customer Support

Innovative staffs an around-the-clock, live-staff help desk, which is available 24 hours a day, seven days a week, and can be reached by the Internet (using CSDirect Innovative's Web-based support center), e-mail, telephone, or fax. Innovative's 24/7/365 support is provided as part of our standard support package, and emergency assistance is always available, with no additional "after hours" surcharges.

Thousand of libraries around the world rely on our products to perform in a "minimally intrusive" and stable manner and, for libraries that want a turnkey installation, Innovative's professional services team will work with you to customize a solution that fits your specific needs.

Join the Journey

Library system conversion is never a simple task, but with Innovative's experienced implementation and project management teams, we make it as pain-free as possible. While Innovative's commitment to support its flagship Millennium ILS is ongoing, we're planning a streamlined conversion process if or when a Millennium library decides to "go Sierra". For libraries looking at Sierra for the first time, Innovative's professional services team will work with you to customize a solution that fits your specific needs

Technology-driven opportunities for libraries are evolving rapidly and, as your library adapts to today's dynamic environment, Innovative prepares you for the future at every turn. The Sierra Services Platform is the next step in Innovative's commitment to solving the technology challenges faced by today's libraries. Sierra is the perfect, highly scalable bridge between where your library is now and where you've always imagined it could go.

sierra

FREEDOM TO CHOOSE | THE SCALE TO GROW | THE TOOLS TO CONNECT

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