

Open-Source Integrated Library Systems To Library Services Platforms: A Way Forward For Libraries

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Abstract

Methodology

The paper has been based on exploratory research methodology. The data required for the research has been collected and analyzed from the contents of the websites of the respective Library Services Platform (LSP), focus has been given specifically to FOLIO (Future of Libraries is Open) being only open source LSP.

Purpose

This paper provides a brief overview of the LSP and explores different LSPs using exploratory research. In addition, the paper discusses in detail FOLIO, the only open-source library services platform currently available.

Findings

Currently, FOLIO is the only open-source LSP system available. Despite being an open-source FOLIO has been found relatively less popular and utilized than other LSPs.

Originality/Value

The paper highlights feature of different LSPs available and discusses FOLIO open-source LSP in detail. This helps librarians in understanding and deploying LSP in their libraries.

Keywords:- Library Services Platform, Next Generation Integrated Library System, LSP, FOLIO, EBSCO

1. Introduction

Library Automation initially focused on acquisition, cataloguing and circulation, etc. With the advent of technology, LMS offered additional functionalities like web-based interface, copy cataloguing, Unicode, etc. Over a period, LMS developed incorporating new features and enhancements becoming well-established for managing print resources. Meanwhile, libraries also got transformed from print resources to electronic resources, ILS found not able to work efficiently for both formats of collections. This led to the incorporation of add-on products like

Electronic Resource Management Systems, federated search tools, etc. Users found multiple interfaces of library applications confusing. Hence, the need arose to have a system with a unified workflow. As a result, some vendors started developing and implementing next-generation library ILS, known as Library Services Platform (LSP).

LSPs are technically cloud-based, web technology-driven platforms serving as unified solutions. They offer discovery services with relevance ranking, faceted search, and cross-content searching for both physical and digital library materials. Libraries can manage the resources and associated licenses from one place. Different LSP products with different names are transforming the way libraries operate.

2. Literature Review

In 21st century, vendors started working to develop LSP to manage both print and digital resources (Wang and Dawes, 2012). Vendors had to update backend and user interface to meet the current and future needs of libraries (Yang, 2013). In recent years, libraries have seemed to be transitioning to LSP (Pradhan, 2019).

LSPs are available in limited numbers as compared to LMS. (Adegbilero-Iwari and Hamzat, 2017). Due to mergers and acquisitions of vendors, the availability of LSPs is limited (Wong, 2020). Budget, Manpower, technical skills of staff, and electronic resource management (ERM) should be considered while selecting LSP (Guo and Xu, 2023). Alma and WorldShare Management Services (WMS) are the earliest LSPs (Wilson, 2012).

More academic libraries are participating library consortia to adopt LSP (Liu and Fu, 2018). The Creation of an organizational framework found effective in consortial migration to Alma (Scott *et al.*, 2023). Direct communication between vendors and libraries enhances migration experience than communication with the project leaders of consortia (D'Amato and Erb, 2018). Alma Analytics has the potential to be a valuable tool to enhance services (Sharpe, 2021).

Cornell University, part of the developer team of FOLIO and the first library to adopt FOLIO through migration (Colt and Howell, 2021). Being open-source, libraries can modify FOLIO as per their requirements (McCracken, 2018). FOLIO has been successfully adopted in Chinese libraries forming the Chinese FOLIO community (Zhou *et al.*, 2023). The Chinese community is actively engaging with the global community to foster the growth of FOLIO (W. Liu, 2021). Duke University implemented the FOLIO ERM module to manage the licensing of e-resources (Wickes *et al.*, 2022).

FOLIO is driven by the community (Owens and Thomas, 2019). Libraries should join the FOLIO community to share their knowledge and expertise (Moonasar, 2022). FOLIO can become one of the prominent LSPs (T. Liu, 2021). Academic libraries are interested in adopting LSPs resulting in a reduction in regular workflow (Grammenis and Mourikis, 2020). Despite its numerous capabilities, FOLIO remains overlooked within the Indian context (Chauhan *et al.*, 2023).

3. Purpose and Objective of the Study

The main purpose and objective of the study is to explore the landscape of LSPs and to find out how they are different from LMS and to elaborate on open-source LSP FOLIO, the only open-source library services platform available at present.

4. Research Methodology

The paper has been based on exploratory research methodology. The data required for the research has been collected and analyzed from the contents of the websites of the respective Library Service Platform, focus has been especially given to FOLIO.

5. Integrated library systems vs. Library services platforms

The ILS systems were unable to manage ever-growing digital collections efficiently and lacked provisions to handle subscription details, license terms and user restrictions. Supplements like OpenURL link resolvers, federated search platforms, etc. emerged to enhance the functionality of ILS in managing digital resources. LSP combines the functionalities of different add-ons, replacing supplementary products and ILS.

LSP offers full e-resource management integration, including acquisitions, license and database management, vendor tracking, e-resource subscription tracking etc. Metadata management of e-resources enables faster retrieval of e-resources.

6. Library Services Platforms (LSP)

The term LSP was first coined in the year 2011 by renowned library technologist and consultant Marshall Breeding. LSPs are next-generation ILS systems with the addition of new characteristics and functionalities to cater for the current and future needs of the libraries. Though different LSPs have many similarities, each one has its own features. Following are some of the popular LSPs available.:

6.1 Alma

Alma (<https://exlibrisgroup.com/products/alma-library-services-platform>) ExLibris provides a commercial LSP known as Alma released in 2011. It is a cloud-based, multi-tenant with a unified workflow having Primo as its discovery layer.

Key features of Alma include:

- **Unified Management** – unified solution for Managing various resources.
- **Alma Analytics** helps extracting library data into reports.
- **Digital Resources** - manages print and electronic resources.
- **Collaborative Networks** - Libraries can work together to enhance workflows and services.

- **Cloud Apps** - accessible through the searchable App Center, enhancing Alma's functionality.
- **Open Platform** - supports open standards.

ExLibris claims more than 1000 libraries including Swinburne University (Australia), University of Leeds (UK), California State University, and New York University have adopted Alma.

6.2 Bibliovation

Bibliovation (<https://liblime.com/bibliovation/>) A web-based, cloud-hosted LSP unified software having an active user community supporting mobile devices. It was first released in 2015. Libraries from the USA, Canada, Spain, Japan etc have adopted Bibliovation.

Distinctive components of Bibliovation include:

- **Discovery layer powered by API** - Full-text search capability for digital documents, cross-lingual search translation, etc.
- **Acquisitions** - Manages purchase requests, orders, budgets, invoices, etc.
- **Circulation** – Offers circulation policies for union catalogue, diverse patron messaging choices, reservation, etc.
- **Cataloguing Editor** - Compliant with MARC 21, Z39 searching, functionality for cloning records. Support for GeoMARC cataloging for visual retrieval.
- **Serials Control** - Supports multiple subscriptions, centralized ordering, etc.

6.3 BlueCloud

BlueCloud (<https://www.sirsidynix.com/bluecloud/>) is a web-based multi-tenant LSP, released in 2013. BlueCloud is a commercial product that supplements Symphony or Horizon ILS of SirsiDynix. It was unveiled during the COSUGI 2013 conference in Utah, USA.

It has three important components.

- **BlueCloud Staff** - cloud-based cataloguing, acquisition, circulation, etc.
- **BlueCloud Discovery** - coursework, mobile, mobile for kids and enterprise.
- **BlueCloud Connections** - Commerce, eRM and central.

The modules of BLUEcloud are acquisitions, analytics, cataloguing, circulation, commerce, course lists, eRM, mobile, APIs, community engagement platform, visibility+, enterprise eResource central, web services, SymphonyWeb, etc. The Palos Verdes Library District, libraries of Western Australia and European University Institute etc. have adopted BlueCloud.

6.4 FOLIO

FOLIO (<https://www.ebsco.com/academic-libraries/products/ebsco-folio/services>) is an open-source project with the collaboration of librarians, vendors, and developers, developed in 2016. It is an expansion of Kuali OLE product. FOLIO covers apps such as circulation, acquisitions, cataloguing, e-Resource management, administration, panorama essentials, and tasks. It is ISO 27001 compliant, ensuring the security of data.

6.5 Sierra

Sierra (<https://www.iii.com/products/sierra-ils/>) is a commercial LSP announced by Innovative in 2011 that can be installed locally or hosted on SaaS architecture. Innovative repackaged their product Millennium using open-source database.

The key features of Sierra include:

- **Unified Application** – Combines various workflows into a single interface.
- **RESTful APIs** - Enables libraries to connect with libraries having communities that Sierra serves.
- **Workflow on the Go** - Integrated with one mobile application avoiding repetitive handling of resources

Innovative offers supporting services. Sorbonne Interuniversity Library and Charleston Library Society have implemented Sierra.

6.6 WorldShare Management Services (WMS)

WMS (<https://www.oclc.org/en/worldshare-management-services.html>) is a proprietary cloud-based LSP released in 2009 by Online Computer Library Center (OCLC) that includes applications for managing library functions such as acquisitions, circulation, cataloging and metadata, ILL, Analytics and License Manager. It is continuously improved based on feedback from OCLC member librarians. WMS has a single, intuitive interface. University of Bristol, Radford University and West Virginia University are using WMS.^s

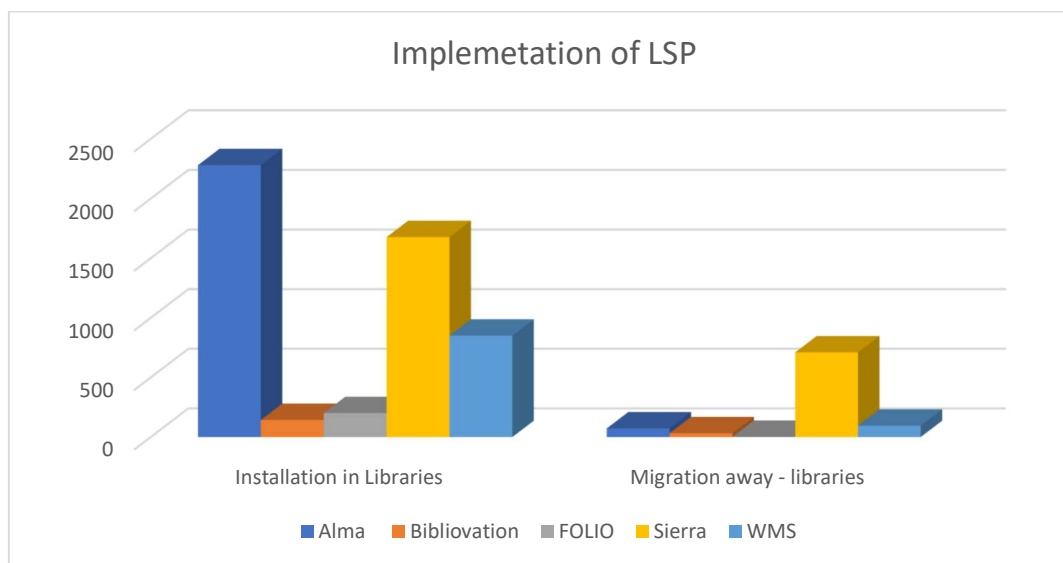
7. Overview of LSPs

Following Table-1 provides an overview of LSPs:

	Alma	Bibliovation	BlueCloud	FOLIO	Sierra	WMS
Release Year	2011	2015	2013	2016	2011	2009
Developer	ExLibris	LibLime, PTFS	SirsiDynix	Open Source	Innovative	Worldcat Local
Hosting	Cloud Hosting Saas	Cloud Hosting Saas	Cloud Hosting	Cloud Hosting	Cloud Hosting/Local hosting	Cloud Hosting
Knowledge Base	Central Knowledge Base	Yes	Yes	GOKb, EBSCO knowledge Base, eRM	KBART std	Worldcat knowledge base
Discovery Layer	Primo/Summon	API Driven	Yes	Yes	Encore	Worldcat local
Data Analytics	Alma Analytics	Yes	Yes	Yes	Yes	Yes
Link Resolver	Alma Link Resolver	Yes	Yes	Yes	Open URL Link Resolver	Open URL Link Resolver
Metadata Mgt	Yes	Yes	Yes	Yes	Yes	Yes
License Management	Yes	Yes	Yes	Yes	Yes	Yes
Report	COUNTER	Yes	Yes	Yes	SUSHI	Yes

Table 1: Overview of LSPs

The following figure 1 shows the number of libraries installed LSP and the number of libraries migrating away from LSP.



Data Source: librarytechnology.org (<https://librarytechnology.org/>)

The figure indicates Alma has been installed in more libraries and a few libraries have installed Biblionation. The figure also shows more libraries are migrating away from Sierra and very less libraries are migrating away from Alma compared to installation. However, no such data was found for BlueCloud LSP.

8. Analysis of FOLIO

The project was started in 2016 jointly by EBSCO, OLE, and Index Data with financial support from EBSCO along with other partners. It is an expansion of Kuali OLE open-source project. It is now hosted by the Open Library Foundation (OLF), an independent not-for-profit organization. FOLIO is a multi-tenant, cloud-based, web-based Interface having Special Interest Group (SIG) which is a community of subject matter experts. It is a group of libraries, developers and vendors who contribute to specific functional areas such as metadata management SIG, user management SIG, Consortia SIG, Reporting SIG, ERM SIG, Acquisitions SIG, etc. in the development of the FOLIO project.

OLE is a FOLIO community of libraries that contributes to the development of FOLIO project and owns its intellectual property. Index Data is a software company that leads FOLIO's technical development. The software is available under a permissive Apache 2 license. FOLIO generates three releases per year, identified by their alphabetical "flower name." FOLIO launched its latest release Poppy in February 2024 (<https://folio.org/about/news/folio-launches-poppy-release/>).

FOLIO has a global community of libraries like Cornell University and Duke University, Missouri State Libraries, Texas A&M University Libraries, University of Chicago, etc., actively participating in the project.

The FOLIO community uses various channels to manage its development and facilitate communication.

- Wiki – Confluence FOLIO wiki to store documents.
- Github – To store the source code of FOLIO.
- Slack - A real-time chat for developers and community members.
- JIRA - To track development activities

8.1 Features of FOLIO

FOLIO offers the following key features:

- **Community-driven:** FOLIO is developed through collaboration among librarians, developers, and vendors. Librarians contribute as subject expertise to inform features and functionalities, developers create modules and platforms on this input, and vendors offer implementation, hosting, and support services.
- **Extensible:** FOLIO's platform is extensible, meaning developers can enhance it with new services on input from different teams. The platform also provides APIs to support external functions.
- **Modern Interface:** The system has a modern user interface that facilitates smooth workflow and navigation.
- **Service choice-oriented:** FOLIO is an open-source library service platform allowing libraries to implement independently or through the service provider.

8.2 Modules of FOLIO

FOLIO includes the following modules:

- **Cataloguing** – Bibliographic management of resources.

- **Acquisition** – Management of vendor details, different budgets, orders, and invoices.
- **E-Resource Management** – Management of e-resources.
- To manage users such as library staff, students, faculty
- **Reports** – Generation of different reports
- **Circulation** – To manage transactions like defining circulation rules, fines, notices, etc.
- Managing import and export of data.

8.3 Councils of FOLIO

FOLIO's Governance model comprises three councils, each assigned specific responsibilities.

- **Community Council** - ensures a strong, healthy community and smooth project operations.
- **Product Council** – This guides functional development and manages the scope of FOLIO.
- **Technical Council** – This maintains technical policies, infrastructure, operational health, and best practices.

8.4 Service Providers of FOLIO

Libraries can use and host FOLIO for free as it is an open-source platform. However, some vendors provide supporting services for FOLIO.

- **EBSCO** (<https://www.ebsco.com/academic-libraries/products/ebsco-folio/>) - EBSCO Information Services, also known as EBSCO FOLIO Services, is a vendor for FOLIO and has been involved in its development from beginning. It has provided financial support and technical expertise to FOLIO. EBSCO's sales team promotes FOLIO globally offering implementation, hosting and support services integrating with other EBSCO services such as EBSCO Knowledge Base, and EBSCO Discovery Service to optimize library workflows and enhance patron services. Universities like Missouri State University, Cornell University, etc. are among EBSCO Information Services customers.
- **Index Data** (<https://www.indexdata.com/folio/>) is a software development and consultancy company. Index Data is a lead architect of FOLIO and involved in the development of FOLIO since its inception. It has a YouTube channel for FOLIO Tutorials. Simmons University, Duke University, Lehigh University, etc. use Index Data's hosting and services for FOLIO.

- **ByWater Solutions**

(<https://bywatersolutions.com/products/folio/>) – This is America's leading support provider for open-source library solutions. They provide hands-on, personalized training through on-site visits, live webinars, and internal training materials such as manual and video tutorials. Their clients include Warner University, St. Thomas University, Washington College

9. Implications for libraries towards the transition from ILS to LSP

Implications for libraries towards migration from their existing ILS to LSP vary across the LSPs. It is somewhat like migration from one ILS to another ILS but given the very nature of LSP having flexible metadata structures and an ecosystem of components built around it, it tends to differ. In the case of commercial LSPs, it depends on the vendors' system supporting APIs (Application Programme Interfaces). In case of the non-availability of such a feature, the migration may happen only with the same vendors LSPs, who have supplied ILS earlier. However, this may involve higher costs towards using third-party plugins and vendor lock-in. In case, the library uses open source LSPs, it may tend to be more flexible as it is easy to

adapt, customize, and integrate with the existing systems owing to its open architecture. Here the key is integrating different resources and services from one platform rather than using multiple systems to manage resources and services.

The use of LSPs in libraries may lead to:

- Introduction to new services, building collaboration and acquiring new skills.
- Reduced infrastructure costs and automatic system updates minimising the need for local server maintenance and software installations owing to cloud-based architecture
- Enhancing users' experience by offering better search capabilities and discovery tools.
- Better data analytics as LSPs allow to generation of various reports facilitating decision-making to optimize usage or improve collection development policies, etc.
- Requires providing staff training and support to adapt to the new platform.
- Effective management of e-resources and their licenses

The implications may vary depending on the library's needs, goals, and the chosen LSP.

10. Conclusion

LSPs have different features, functionalities, characteristics, and modules to perform various library activities and manage print as well as electronic resources. As compared to open source, a significant number of commercial LSPs are available in the market. At present, FOLIO is the only open-source LSP available for application in libraries. Libraries from different parts of the world have been found using the FOLIO, as greater support from service providers is available. India

is also one of the countries that have started adopting LSPs. In the future, looking into the advantages of managing digital resources, more libraries may move to LSPs, and FOLIO has the potential to become a leading library services platform in the coming future.

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