

Higher Education Library Technology

Rethinking the Library Services Platform

Briefing paper

DOI: 10.13140/RG.2.1.4989.4481

Ken Chad, Ken Chad Consulting Ltd. January 2016

(ORCID ID: orcid.org/0000-0001-5502-6898)

This is the second Higher Education Library Technology briefing paper. HELibTech¹ is a free and open community resource which aims to provide a starting point for anyone interested in library technology in Higher Education. This paper was supported by sponsorship from EBSCO Information Services.² The author is a consultant who takes an independent and impartial view of the issues.



This briefing paper is licensed under a Creative Commons (CCO) license to enable free re-use.³

¹ <http://helibtech.com/>

² <https://www.ebsco.com/>

³ <https://creativecommons.org/publicdomain/zero/1.0/>

Rethinking the Library Services Platform

Contents

Introduction: “Interoperability...more myth than reality”	3
The nature of software platforms.....	3
A focus on the library user – the customer	4
Defining the LSP from the library user perspective	5
The impact of The Cloud	6
Size matters	6
A role for open source?.....	7
Opportunities and barriers to an interoperable library technology ecosystem	8
Interoperability standards	8
Organisational change from vendors	8
Conclusion: a next generation platform for library services	8
The Author	9
REFERENCES.....	10

INTRODUCTION: "INTEROPERABILITY...MORE MYTH THAN REALITY"

Surveying the library system landscape over a decade ago Andrew Pace (at the time Head, Information Technology, North Carolina State University Libraries and currently Executive Director, Networked Library Services at OCLC) wrote: "Managing library automation is now far more complex than the traditional maintenance of an integrated [library] system". He added: "Many expect that new modules will communicate with old ones, products from different vendors will work together, and a suite of existing standards will make distributed systems seem transparently whole".¹ However, he was disillusioned and went on to say: "Today interoperability in library automation is more myth than reality".

The picture is only a little different in 2016. While a new generation of library services platforms (LSPs) has emerged there remains a very significant lack of interoperability between the various components that make up the library technology 'ecosystem'. As libraries struggle with the need to manage a diverse and growing range of print and digital materials, so the library systems environment gets increasingly complex.

Trying to deliver those resources in a convenient and coherent way to users requires interdependent, seamless systems. LSPs have integrated print and electronic resource management but this ignores the bigger picture. University libraries may manage Institutional repositories, archives and special collections and are moving into new areas such as research data management and even publishing.

There remains a very significant lack of interoperability between the various components that make up the library technology 'ecosystem'

It seems unlikely any one LSP could swallow up all these activities into a single solution. Instead we will need much improved interoperability between a wide range of applications from a variety of sources.

For librarians, the time, effort and cost entailed in integrating mission-critical library technology

solutions is frustrating. By the same token, university management may wonder why they are 'paying twice' for student record and finance system functions to be duplicated in the library system. There *are* interoperability initiatives. For example the NISO-led Open Discovery Initiative (ODI)² "aims at defining standards and/or best practices for the new generation of library discovery services". Another standards body, BIC, has produced the Library Communications Framework (LCF) – "a set of library interoperability standards which defines a framework for the communication of data between self-service and other library terminal applications to and from library management systems."³

Technologies such as web services and service orientated architecture (SOA) can certainly facilitate better interoperability, but much still remains to be done before we achieve the goal described by Carl Grant, President at CARE Affiliates and Executive Advisor to the Dean of Libraries at Virginia Tech University, to "cleanly integrate the best solutions together".⁴

THE NATURE OF SOFTWARE PLATFORMS

So, although we talk of library services *platforms*, libraries and library system vendors have not yet fully realised a platform-based, interoperable library ecosystem. The classic example of a software platform is the Windows operating system. Microsoft produces some of the most widely used Windows software applications (Word, etc) but *most* Windows software applications are *not* produced by Microsoft. We don't expect to buy Word and then have to

integrate it ourselves with Windows or the Mac OS. That's already been taken care of. Microsoft gives developers from other, sometimes competing, companies the tools and services to develop applications using the Windows platform. Indeed, using developer networks and other enticements it actively *encourages* third party companies to use its platform. Why? The more Windows applications there are the more valuable the Windows platform becomes. So Microsoft extends these services even to competitors. Apple makes applications such as QuickTime and iTunes available on Windows and Microsoft makes applications such as Word available on the Apple OS.

This approach to a platform is more than just a question of technology. In his book *Invisible Engines*,⁵ an analysis of how software platforms drive innovation and transform industries, David Evans explains: "Such software platforms are at the heart of economies or ecosystems that consist of mutually dependent communities of businesses and consumers that have a symbiotic relationship with the platform". The platform approach is therefore transformative and potentially challenging to many long-established industries.

Think of the transformative platform effect of the Apple and Android ecosystem of apps. Could such an approach do the same for libraries? It's still early days for LSPs but, to date, they have largely continued the route taken by their library management system/integrated library system predecessors. They offer APIs for finance, student record and self service systems but we don't see library system vendors developing applications on competitors'

This approach to a platform is more than just a question of technology

platforms. When will we see ProQuest provide developer support for EBSCO applications on the ProQuest platform and vice versa?

There have been some modest steps to encourage third party developments. Both the OCLC WorldShare and ExLibris Alma platforms have established developer networks⁶ but they remain small and unattractive to third party developers, so have gained little traction. But a little history provides perspective and maybe even encouragement. Innovative Interfaces is so named because back in the late 1970s it made use of the OCLC platform (though not a term used at the time) to develop an application that enabled OCLC records to be integrated, without rekeying, into a local (CLSI) circulation system. The Innovative 'OCLC interface' was a core offering in their solution and remained so for a generation. This was a mutually-beneficial, comensal relationship that benefited libraries, Innovative Interfaces, OCLC and, ultimately of course, library users.

A FOCUS ON THE LIBRARY USER – THE CUSTOMER

In the wider world the pressure to be increasingly 'customer-driven' or 'consumer- focused' seems almost universal and relentless. "Consumerisation" has taken on a specific meaning in the context of information technology – the growing tendency for new technology "to emerge first in the consumer market and then spread into business and government organizations."⁷ The consumer market is seen as the *primary* driver of information technology innovation but it wasn't always so. Information technology typically focused first on the 'back end' tasks and then evolved to meet consumer needs. A good example is banking systems. Library systems also evolved in this way with the public-facing catalogue or "OPAC" arriving relatively late as a module.

Perhaps the nearest we have come to a significant level of interoperability between systems from competing library system vendors is discovery services. It is not uncommon to see libraries using a resource discovery service from one vendor with a back end resource management system from another. However, Marshall Breeding noted in 2012 that this trend could be starting to reverse. "As the back end modernises and becomes more comprehensive itself, and has more hooks into the remote resources, it reintroduces the opportunity to integrate discovery and back end automation".⁸ To date, customers moving to the Alma LSP have had to use Primo as their discovery service though the University of Sussex has worked to integrate the VuFind open source discovery service.⁹ As ExLibris gets absorbed into the ProQuest family we will see increasing integration with ProQuest products – but will integration extend to competitors or other third parties?

DEFINING THE LSP FROM THE LIBRARY USER PERSPECTIVE

One of the defining characteristics of a LSP¹⁰ has been fully integrated resource management for print and electronic materials, or what consultant Marshall Breeding describes as: "[A] more inclusive platform designed to handle all the different forms of content".¹¹ So ProQuest (pre acquisition of ExLibris) and EBSCO have been deemed *not* to have a 'proper' LSP because they didn't offer print resource management capabilities. This is a very 'back end' view. Prioritising the library customer perspective might change how we think about LSPs. If a student or researcher uses a discovery services like Summon or EBSCO Discovery Service (EDS) they will typically be able to find print materials and electronic

Prioritising the library customer perspective might change how we think about LSPs

resources integrated into the same user interface. They are not really concerned about how that is achieved. After all, libraries are a means to an end and success ought to be measured in terms of the best possible customer experience and

outcomes. Academic libraries routinely survey their users and in the UK pay close attention to how students rate library services in the annual National Student Survey (NSS). These results factor in to how universities are ranked.

Print circulation remains for most libraries an important function. From the user perspective, especially in the UK, that means using a RFID-based self-service circulation kiosk. These solutions are taking on some of the characteristics of the 'stand alone' circulation systems of the past and embody a lot of functionality that we normally think the preserve of a LMS/ILS circulation module. The cataloguing module is often seen as the heart of the LMS/ILS, but almost no libraries catalogue journal articles and many have outsourced the cataloguing of books to providers such as Dawson or YPB Library Services, that deliver 'shelf ready books.'¹² Although this is an over-simplification, it does suggest that the LMS/ILS tail still wags the library platform dog. Print management is certainly important but most money is spent on electronic resources. According to Carl Grant, the development of LSPs has been hampered because: "Existing ILS products, while containing limitations in serving today's digital environment, represent hundreds of person-years of development, testing, and documentation. You simply can't replicate all this functionality in a new software architecture in a short period of time, even with agile development techniques". But maybe that is the wrong way to look at it. A new user-focused perspective on the LSP might help redefine and simplify the elements of print resource management (broadly the functionality of a conventional LMS/ILS) and lead to some helpful innovations. Platforms are often characterised as doing the 'heavy lifting'. Developers use a platform to simplify and speed

up the creation of an application because the platform deals with much of the hard work. An open library platform that meets the criterion of being “at the heart of economies or ecosystems that consist of mutually dependent communities of businesses and consumers”¹³ will do some valuable heavy lifting for vendor and other development partners. ProQuest and EBSCO have vast repositories of metadata and content and provide services that might replace the conventional acquisitions module of a LMS/ILS. OCLC has a global repository of catalogue metadata which it has enriched in a number of ways, including using linked data. Why duplicate that in a catalogue module? This means rethinking library system modules as platform ‘services’, a trend which is being accelerated by the move to The Cloud.

THE IMPACT OF THE CLOUD

The Cloud is another of the key attributes that distinguishes a LSP from a LMS/ILS. A conventional LMS/ILS may be installed in hundreds of libraries in multiple versions, on a variety of hardware using different operating systems. Each new release must be tested with all these variables and then implemented in each separate library system. This is time-consuming and takes up significant vendor and customer resources. It also militates against interoperability. Brian Gammage, Chief Market Technologist at VMware warns: “Most investment...is consumed in updating hardware and operating systems – by the need to replace end-of-life assets, rather than embracing new capabilities that deliver productivity or revenue benefits. The money is spent to stand still, not to move forward, so end-user computing is seen as a “cost of doing business”.”¹⁴

Cloud computing presents new opportunities to grow partnerships more easily and offer Independent Software Vendors (ISVs) tools, training and support to develop their applications

Cloud computing could help break this paradigm. LSP customers are ‘tenants’ on the same single system, so integration with another application needs to be done only once. Enterprise Resource Planning (ERP) systems such as SAP and Oracle are seizing this opportunity and both companies are investing heavily in their Cloud platforms. Of course they had ‘certified partners’ before The Cloud existed, but Cloud computing presents new opportunities to grow partnerships more easily and offer Independent Software Vendors (ISVs) tools, training and support to develop their applications using the SAP or ORACLE platforms. As discussed above, we haven’t yet seen the same kind of pace of development with library platforms. One reason may be scale – LMS/ILS businesses are small compared to giants like SAP and ORACLE.

SIZE MATTERS

We often think of library system companies such as ExLibris, SirsiDynix and Innovative Interfaces as large companies but EBSCO and ProQuest are much larger. ProQuest was acquired in 2007 by Cambridge Information Group and its 2014 annual revenue of around \$500m is roughly the same as Marshall Breeding’s estimate for the *entire* (US) library systems market. ProQuest is roughly five times larger than ExLibris, which is one of the largest library system vendors. And, of course, compared to the largest library company of them all – Google¹⁵ they are minnows.

It may be that we need much bigger companies to realise the full potential of a library services *platform*. It looks likely that the largest library technology companies like EBSCO,

ProQuest and OCLC will continue to grow and acquire or develop new assets. They will want to integrate those assets into a coherent offering to libraries. One way to do that is to create a Cloud platform to embrace them. It makes sense to start with assets owned by the company, to deliver efficiencies and reduce costs. OCLC did this with the UK-specific Inter Library Loan (ILL) solution that was based on a product from a company (Fretwell Downing) it had previously taken over. That solution is now based on the OCLC WorldShare platform. Once the platform approach has embraced the products and services owned by the vendor the next step is, of course, to open up the platform to ISVs. This has already happened in the ERP market. Gartner, an information technology market research and advisory firm, argues that as ERP products move to The Cloud it encourages a process of deconstruction. An ERP system doesn't solve all problems any more than the LMS/ILS does. The monolithic ERP is losing relevancy. The existence of disillusioned users is one of the core drivers in this change to what Gartner characterises as the 'postmodern' ERP.¹⁶ ORACLE is no longer a single product suite but sits in The Cloud alongside interoperable applications from ISVs. In summary, Gartner's analysis is that the ERP suite is being deconstructed and the result will be a more loosely coupled ERP environment with much of the functionality sourced as Cloud services or via business process outsourcers. Will we see the same trend in library technology?

A ROLE FOR OPEN SOURCE?

Open source is generally taken to imply a more open, interoperable architecture to facilitate a diverse and loosely coupled community of developers working together. But too often, open source and proprietary systems are seen as being in conflict.

A more interoperable approach could enable open source solutions to better flourish together with proprietary solutions – and an extended library platform would be a way to do that. We have seen some progress with open source discovery systems such as VuFind and Blacklight being integrated with proprietary LMSs. Up to now, though, these

Newer open source solutions such as Kuali OLE and Tind have been transformative in terms of their open source/community business model rather than in terms of functionality

integrations have taken place on an ad hoc basis, library by library, rather than as part of an overarching shared platform. There are signs that this might change. For example, EBSCO has funded development of the open source Koha library system which it offers as a plug-in within its app and Cloud services.¹⁷ It has also become a development partner in the Kuali OLE project.

However, open source library systems have tended to be conservative in terms of their approach to functionality. For example Koha is a recognisable LMS/ILS rather than a LSP. Newer open source solutions such as Kuali OLE and Tind have been transformative in terms of their open source/community business model rather than in terms of functionality. In that regard they mimic many existing proprietary approaches. A librarian reviewing the Kuali solution commented that while the community development model of OLE is a key selling point, the librarians helping to develop the software are not thinking radically and the outcome has been a traditional, conservative LMS/ILS. Kuali hit the problem that Carl Grant described earlier: OLE had to catch up with "hundreds of person-years of development, testing, and documentation". These initiatives have discovered that: "You simply can't replicate all this functionality in a new software architecture in a short period of time, even with agile development techniques". Size

matters here too. An open source operating system like Linux can command a far bigger community than a relatively niche library system.

Is it possible to approach the problem in a different way? Suppose an open source component were developed, maybe taking advantage of the BIC LCF framework, to integrate RFID self service solutions with a re-imagined LSP. Other services could be integrated in a similar way. For example, YBP Library Services “provides book acquisitions and collection development services to academic libraries”. Coutts Information Services and Dawson also provide a wide range of library services including the management of acquisitions and cataloguing. The components of an LSP are already in place and open source could be one way to integrate them. In this way the notion of a single ‘complete’ library system becomes redundant.

OPPORTUNITIES AND BARRIERS TO AN INTEROPERABLE LIBRARY TECHNOLOGY ECOSYSTEM

Interoperability standards

Simple, effective interoperability standards could be achieved if libraries and vendors worked together better – and sector bodies could be playing a larger and more determined role. In 2013 the Jisc LMS Change project report noted: “The failure of the library community to better contribute to the development of modern web-centric library interoperability standards has hampered the evolution of an open ‘loosely coupled’ library systems environment”.¹⁸

Organisational change from vendors

Creating a technology platform to enable the diversity of vendor-owned assets to work together as part of a single shared platform is only part to the process of change. The technology barriers between applications are also reflected in organisational silos and it can take some time before these are broken down. A company may buy a competitor or a company it views as having an attractive offering. Technical synergies may already exist but it still takes time for one organisation to ‘digest’ another and offering developer, technical and training support to ISVs can be seen as a distraction. Consequently, the development of a genuine platform approach is delayed or thwarted.

It is a platform-based ecosystem model that will be the “next generation” in library automation

CONCLUSION: A NEXT GENERATION PLATFORM FOR LIBRARY SERVICES

No single vendor will be able to develop all the applications necessary to meet the technology requirements of a complex library – and librarians like to see choice in the market. A more open library technology ecosystem would eliminate the restrictions of a closed and monolithic suite of services from a single vendor. However: “Offering tools such as application programming interfaces (APIs) and software development kits (SDKs) only gets you halfway there. You have to create incentives for prospective partners to extend your platform and build different planks for your mutual benefit”.¹⁹ This is the key element missing from the current library system market. Solutions are moving to The Cloud but aren’t yet really platforms. It is a platform-based ecosystem model that will be the “next generation” in library automation. The promise for libraries is a more flexible and cost effective solution and for users a much improved user experience.



The Author

Ken Chad, Director, Ken Chad Consulting Ltd

www.kenchadconsulting.com

Twitter: @kenchad

Skype: kenchadconsulting

Linkedin: www.linkedin.com/in/kenchad

Ken has over 20 years' experience in the library software business working in support, project management, implementation, sales and marketing and at Executive Director/Board level. His customers included a wide range of academic, research, college, public, special, corporate and national libraries in the UK and throughout the world.

He established Ken Chad Consulting in 2007 to help make libraries more effective through the better and more imaginative use of technology. The scope of projects has encompassed strategy, innovation, improving the user experience, requirements gathering, reviewing and renewing technology infrastructure and the procurement of new systems, eBooks, research data management, resource discovery, open and linked data repositories and archives. He also provides market intelligence and horizon-scanning services for and about the information and library technology sector.

Ken has published articles and presented widely on the strategic impact of technology-driven change. He is a member (MCLIP) of CILIP, ALA and a Main and Research and Innovation committee member of UKSG. He set up and manages a number of free, open community resources including Higher Education Library Technology (HELibTech), Local Government Library Technology (LGLibTech) and Open Specifications for Library Systems (LibTechRFP).

REFERENCES

NOTE: Links were current at December 2015

-
- ¹ Dismantling Integrated Library Systems: Librarians and their vendors have created a tougher world for themselves, with interoperability the only solution. By Andrew K. Pace Library Journal, 1st February 2004
- ² NISO Open Discovery Initiative <http://www.niso.org/workrooms/odi/>
- ³ BIC LCF: Library Communications Framework <http://www.bic.org.uk/114/lcf/>
- ⁴ The Future of Library Systems: Library Services Platforms. By Carl Grant. NISO. Information Standards Quarterly. Fall 2012. Vol. 24. Issue 4. ISSN 1041-0031
http://www.niso.org/apps/group_public/download.php/9922/FE_Grant_Future_Library_Systems_%20isqv24n04.pdf
- ⁵ Invisible engines: how software platforms drive innovation and transform industries. By David S Evans. MIT Press 2006. ISBN 0-262-05085-4
- ⁶ OCLC Developer network <https://www.oclc.org/developer/home.en.html>
Alma Developer network: <https://developers.exlibrisgroup.com/alma>
- ⁷ See Wikipedia 'Consumerization' <http://en.wikipedia.org/wiki/Consumerization>
- ⁸ ALA Midwinter 2012: From Consumer Electronics Through Post ILS, Top Tech Trends Run the Gamut.' David Rapp. Library Journal. 22 January 2012. <http://lj.libraryjournal.com/2012/01/future-of-libraries/ala-midwinter-2012-from-consumer-electronics-through-post-ils-top-tech-trends-run-the-gamut/#>
- ⁹ Alma real time holdings availability for VuFind. Chris Keene Works [blog] 2 September 2, 2015
<http://work.nostuff.org/alma-real-time-holdings-availability-for-vufind/>
- ¹⁰ See Higher Education Library Technology (HELibTech) 'Library services Platforms'
<http://helibtech.com/Next+Generation>
- ¹¹ Library Services Platforms: A Mature Genre of Products. By Marshall Breeding. Library Technology Reports (Vol. 51, No. 6). ALA 2015
- ¹² See for example: Dawson <http://www.dawsonbooks.co.uk/productsservices/total-book-management/servicing/> and YPB http://www.ybp.com/tech_services.html
- ¹³ Invisible engines: how software platforms drive innovation and transform industries. By David S Evans. MIT Press 2006. ISBN 0-262-05085-4
- ¹⁴ Brian Gammage, Chief Market Technologist at VMware quoted in "The future of end user computing" By John Dix. Network World. 22 February 22 2012 <http://www.networkworld.com/article/2221754/tech-debates/the-future-of-end-user-computing--two-visions.html>
- ¹⁵ Google's mission is to organise the world's information and make it universally accessible and useful
<https://www.google.co.uk/about/company/>
- ¹⁶ Gartner Press Release. 29 January 2014 <http://www.gartner.com/newsroom/id/2658415>
- ¹⁷ Ebsco app and Cloud services. <https://cloud.ebsco.com/apps>
- ¹⁸ Jisc LMS Change project. Library Systems Support and Guidance. <http://lmsguidance.jiscinvolve.org/wp/the-library-service-platform-context/landscape-library-systems/>
- ¹⁹ Don't Build Products. Build Platforms. By Phil Simon. Inc. [Blog]. 19 March 2012. <http://www.inc.com/phil-simon/why-your-company-should-build-platform.html>