The library management system is dead – *long live the library ecosystem*

In increasingly complex information landscapes, is it time to stop thinking in terms of the library management system or integrated library system, or even a 'library services platform' – and instead start talking about an 'ecosystem', asks **Ken Chad**.

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THE library management system – LMS (or integrated library system – ILS in US parlance) is, for most organisations, just one part of a wider library systems infrastructure. Indeed, for many libraries it is of diminishing importance. Pearson College, a new Higher Education (HE) institution, doesn't even have one. When academic libraries looked for e-journal solutions or public libraries looked for solutions to manage e-books, they found the LMS wanting. In the main they employed alternative solutions to enable staff to manage and users to discover those resources. 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. Lorcan Dempsey summed it up in 2007: 'One of the main issues facing libraries as they work to create richer user services is the complexity of their systems environment. Reductively, we can think of three classes of systems: **1** the classic ILS [Integrated Library System] focused on "bought" materials; **2** the emerging systems framework around licensed collections; and **3** potentially several repository systems for "digital" resources'.

Best of breed

For a while it seemed as if the answer was 'best of breed' library system components interoperating together. For example, new library 'discovery systems'[1] began to supplant conventional Opacs and interoperate with many different 'back-end' LMSs. Nearly a decade ago, Andrew Pace was talking about 'dismantling' the integrated library system:[2] 'XML, web services, OpenURL, OAI-PMH, and the rapid development and approval of new standards are the true hope for the ILS. Perhaps we'll come to call them interoperable library systems, or even integrated library services.' Interoperability, however, remained a problem. In 2012, speaking about what he calls a new generation of 'library services platforms', Marshall Breeding noted that this trend might be beginning to be reversed. '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.'[3] As well as the re-integration of discovery services, these new platforms integrate back-end electronic resource management (ERM) systems, which had been separate applications. For example, the ExLibris Alma Library Services Platform replaces both the Aleph library management system and the Verde ERM system.

Let's talk about an ecosystem

What is going on? Maybe it would be better to stop thinking in terms of the LMS/ILS, or even a 'library services platform' and instead talk about an 'ecosystem.'[4] Looking at the top ten global strategic technology trends for 2013, Gartner noted: 'The market is undergoing a shift to more integrated systems and ecosystems and away from loosely coupled heterogeneous approaches'.[5] The report goes on to say: 'Driving this trend is the user desire for lower cost, simplicity, and more assured security. Driving the trend for vendors is the ability to have more control of the solution stack and obtain greater margin in the sale as well as offer a complete solution stack in a controlled environment'. This is not to say the vendor develops and provides *all* the elements in the ecosystem. Apple is the obvious example here. It provides a platform for the 'community' (including HE) to develop content and apps which are nonetheless delivered as part of a coherent 'ecosystem', over which Apple exerts considerable control.

An increasingly complex landscape

If this is a trend for technology in general, perhaps it is no surprise to see it beginning to be reflected in the library system environment. So what is, or might be, encompassed by a library technology ecosystem? In the last century, we spoke of 'stand alone' library management systems and by the late 90s these systems had become functionally rich, with many 'modules' to manage different aspects of library management. With the advent of more digital resources, especially electronic journals and the web, things became more complex.

The number of elements or functions covered in such a systems environment – or 'ecosystem' – has grown

over the years. In addition to the familiar modules of the library management system, the library may be responsible for, and have separate systems to manage, electronic journals, e-books, reading lists, archives and special collections, local digital collections and the institutional repository for research outputs. If public libraries deliver e-books to users, they do it with a separate e-book platform such as Overdrive. Quite often this sits alongside the LMS as a parallel system. The e-book platform and the LMS may barely interoperate at all.

For academic libraries in particular, library responsibility has extended into areas of university activity such as teaching and learning and research. Here they can apply core skills such as metadata management (cataloguing as it used to be known). An institution's research outputs (scholarly articles) are often managed in an Institutional Repository (IR) which, in many cases, is the responsibility of the library. A new wave of reading list systems is being implemented in UK universities, partly with a goal to bring libraries closer to teaching and learning. In some cases the Virtual Learning Environment (VLE) also comes under the library's purview. And, as primary research data gets more attention, some libraries are developing a role in,[6] and acquiring systems for, Research Data Management (RDM).

Much of this complex landscape remains one of silos rather than an interconnected, interoperable 'ecosystem'. This becomes very apparent when users try to discover resources. They still have to navigate a number of systems with different search interfaces and ways of displaying and describing resources. Even a basic element such as a 'name' may appear differently in the library catalogue and institutional repository.

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Bringing silos together

Some libraries have managed to bring a number of these silos together under a unified discovery service umbrella but with only partial success. Harmonising metadata to provide a single central index across such diverse systems and, from a vendor's point of view, across many institutions is not a trivial task. Jisc recently described the problem: 'Over the years various metadata schemas and models have emerged, but clarity on the best metadata strategy to adopt or how to achieve interoperability between scholarly systems has been a hard nut to crack.'[7] And of course the foregoing assumes the metadata is available in the first place to harmonise. Currently there are still battles going on between content providers and discovery services providers. Some of the former will not allow the latter to have the metadata to index.[8] So it is not yet clear whether 'more integrated systems and ecosystems' or 'loosely coupled heterogeneous approaches' will win out although as we have seen, Gartner suggests the former.

Knit me an ecosystem

If Gartner is right, how might a coherent ecosystem

develop to knit together the extended landscape of system silos? As noted above, library resource management and discovery is becoming 'unified' across both print and electronic (primarily e-journal articles) resources. The manifestation of this is a number of next generation 'library services platforms'.[9] Vendors clearly have ambitions to extend the ecosystem to digital repositories and digital archives – for example, ExLibris positions its 'Rosetta' product in this way.[10] However, progress remains slow and each 'silo' still retains distinct approaches to metadata and, perhaps inevitably, to workflows. The cross-domain Europeana project has mandated 'semantic elements'[11] (Dublin Core based) to bring some order to the field. The problem is recognised outside libraries, with Google and other search services cooperating on a common metadata 'schema'[12] that is gaining attention in the library domain. These do represent progress but in Jisc's view: 'The use of schemas and also vocabularies associated with particular fields (restricted set of keywords/classifications) has been patchy at best'.

As institutions work together and share library systems,[13] the need for harmonisation of data and workflows increases. As technology moves to 'the cloud' and as libraries begin to share common cloud-based 'multi-tenant' library services platforms, the opportunity for a more integrated library ecosystem may grow. Higher Education is naturally wary of giving vendors 'control of the solution stack' so may continue to value a 'loosely coupled' approach, perhaps containing strong elements of open source software and 'above-campus' community services. But in hard economic times, if a vendor-controlled integrated ecosystem can deliver 'lower cost, simplicity, and more assured security', as suggested by Gartner, it may prove very compelling. Certainly public libraries appear to be less concerned about commercial vendors running their assets. Seeing the potential for economies, some have outsourced their entire library operations.[14]

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8 See for example: 'Discovery silos vs. the open web'. Adrian Pohl. Open Bibliography and Open Bibliographic Data [blog] 23 June 2013. http://bit.ly/1cax2AG

9 For information on library services platforms see the Higher Education Library Technology (HELibTech) website 'next generation' page http://bit.ly/S4sDed

10 See ExLibris website: http://bit.ly/4cm6my

11 See Europeana 'Technical Requirements' http://bit.ly/1ccfG8t

12 Schema.org is an initiative launched on 2 June 2011 by Bing, Google and Yahoo! to 'create and support a common set of schemas for structured data markup on web pages.' http://bit.ly/m3kNgI

13 HE institutions in both Wales and Scotland are investigating shared systems. See the Jisc Library Systems programme http://bit.ly/SStGhm

14 'List of outsourced and prospective outsourced library authorities', Public Libraries News. http://bit.ly/10OtFLk