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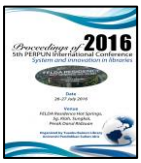

REINVENTING THE LIBRARY IN THE CLOUD: PROPRIETARY VERSUS OPEN SOURCE AND THE POSSIBILITY OF CONVERGENCE

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ABSTRACT

Library technology has been moving increasingly towards cloud and SAAS based services. With the onset of new management and discovery solutions, the prospect of exposing the full breadth of the library collection into the cloud has become a greater possibility. Traditionally the library has been centred around the catalogue and the OPAC but ever since Google emerged, libraries have been struggling to provide a new model consistent with user expectation for simple, quick and intuitive access to content while also trying to improve workflows to meet the challenge of a more electronic-oriented and less print-based collection. Cloud and SAAS technologies can provide more unified access and management solutions to these challenges. Ultimately, a shift towards a more unified model is inevitable. It is the means by which this is achieved which remains debatable. The web is increasingly a place of applications, APIs and interoperability with open source becoming a powerful alternative to commercial and proprietary options. This paper explores the possibility that open source and proprietary solutions could converge to create something more viable, open, collaborative and flexible than libraries have experienced hitherto. Ultimately, the goal is to provide the best possible outcome for users in an increasingly open and competitive research environment where the relationship between quality and quantity cannot be separated or compromised. The library can and must go the cloud but the cloud must also be adapted to the needs of the library and, above all, to the needs of its user community.

Keywords: Library technology; Software as a service; Discovery services; Library service platforms; Integrated library systems; Open source technologies; Next generation library catalogues.

1. LIBRARY TECHNOLOGY – FROM EVOLUTION TO REVOLUTION…AND BACK AGAIN

Libraries, like archives and museums, are synonymous with human history, heritage and tradition. They have been at the centre of intellectual endeavour for centuries, their continuous, though not always universal, presence being defined by their fundamental necessity as a means to preserve, store and generate knowledge in multifarious and increasingly specialised ways. The motivation for collecting, collating, archiving and disseminating information is one of the cardinal aspects of civilisation, without which, to paraphrase T.S. Eliot, there would be no data, no knowledge and ultimately no wisdom. Whether that information is shared aurally, visually or through the written word, it is through the careful and assiduous organisation of information resources that content is conserved, circulated, accessed and critically evaluated for future generations. To conduct research into any subject, the researcher, student or end user would at some stage be exposed to a library. Yet, ever since the emergence of Google, Amazon and other web-based technologies, libraries have faced a dramatic shift in user behaviour that has disrupted, compromised and depreciated their role, dislocating library services from the centre of research to the wider periphery of the open web. As the 2009 Ithaka Faculty Survey stated, the library has been "disintermediated from the discovery process, risking irrelevance in one of its core functional areas".[1]

There are two ways to look at this threat of irrelevance. One is that it is inevitable and, as the open web becomes more popular and sophisticated in its capacity to index content, libraries will fade into the background and become much narrower in their conservative function, subsumed by the wider web of content that is available. The other is to look at the ways in which libraries and library technologies have adapted to the challenge of the open web and made their services more accessible to their users via web-based platforms. Given that so much of the content on the open web is available for "free", it is not surprising that libraries, already faced with constraints to operational budget, are looking at more efficient ways to deliver services at lower cost without compromising on quality of service. Most libraries today have either implemented or are seriously considering implementing a discovery service to unify their collections for quick and intuitive access to unique content that would otherwise be undervalued and depreciated without a complementary Google-like presentation layer. Many libraries are looking at Cloud and Software as a Service to optimise workflows and unify management of print and electronic resources. No library wants to make cuts to services that are considered valuable but the pressure of rising costs and limited budget means that a tipping point between cost and benefit will be breached and difficult decisions have to be made. For publishers and providers, decline in revenue can risk investment in innovation and so there is a double negative in a scenario where there is a mutual dependence between the library as a client and the provider as a

commercial service relying on its fee-paying customers. This interdependent relationship between libraries and commercial vendors has been entrenched for the last five decades, both on the content side in terms of publishing and aggregation and in the provision of library catalogues and other complex and highly specialized workflow management systems. The partnership is ambiguous to the extent that, while market forces are central to innovation, the library, as a non-profit community-based organisation, has to justify expenditure according to value that cannot be calculated financially. The return on investment in a library is the degree to which it serves institutional objectives around provision of non-cost service and how it increases that ROI over time to justify future investment in its infrastructure. For the vendor, sales and revenue are integral to institutional integrity, no matter how well meaning or beneficent the intentions of the organisation. Some of the biggest library technology companies are owned by venture capitalists while, in recent years, major mergers and acquisitions have reduced choice in the library market and led to emergence of even larger players controlling the industry. Roger Schonfeld, the Director of Library Communications at Ithaka writes that "customers and partners of the content platforms and library systems vendors should not be surprised to see further strategic partnerships if not outright consolidation".[2]

The question remains as to how this symbiotic relationship between market forces, market consolidation and libraries will help or hinder progress in library technology strategy. One only has to look at open access publishing and Altmetrics to see that traditional ways of evaluating research are changing dramatically. Ultimately, the choice will no longer be one between a dwindling number of commercial players but between what is left of the commercial space and the exponential rise of the open access and open source communities.

2. OPEN SOURCE VERSUS PROPRIETARY

The popularity of open source as an alternative to purely proprietary and commercial services continues to increase. In the library technology and software space, open source services such as Koha, ElasticSearch, Blacklight, Kuali and Moodle have set new standards for how libraries can not only choose services but also contribute to them in creative and dynamic ways. It is this trend towards open, not closed platforms that will influence how the future of libraries is designed and built in years to come. In many ways, it is already happening as innovative librarians with vision, talent and technical know-how, no longer wait for vendors for provide the holy grail of technology but set about building it themselves. This is a task that requires significant resources at the institutional level and invariably some input from commercial organisations who still have a major stake in content, discovery and metadata management. The big difference between open source and commercial services is that the former can be potentially shared as openly licensed code, allowing for libraries and other organisations to receive and contribute back to the community upon which open source is inherently built. As Linus Torvalds, the creator of the

Linux kernel, argues "in open source, we feel strongly that to really do something well, you have to get a lot of people involved'.[3]

Open source, however, should not be seen purely as a conflict of interest between profit-based and non-profit communities. If one looks at the music, film or publishing industry, we see that commercial services have adapted to the threat of file sharing by creating new models around subscription-based services such as Netflix, Apple Music and Amazon Prime. Open source should really be seen as the compelling and viable means through which the web has worked and will continue to work as a place of interoperable applications, also known as APIs. Despite rampant commercialisation of web services like Facebook, Google and Twitter, these services continue to be freely used on multiple platforms in the same way as a smart phone has applications that can be run on a laptop or tablet, including those made by competing companies. Some apps are free while others are premium but standards of interoperability between them allow for multiple types of usage across multiple types of devices. This is a world where Apple or Android provide the platforms but where the apps are built and shared by thousands of third party creators, some commercial and some entirely free and community driven. This is a world that both the library and library technology providers have to seriously confront and adapt to if they are to remain relevant and inventive. Yet, hitherto, most libraries have expected commercial vendors to handle and deliver the vast majority of their technical services and, as the compulsion to unify and streamline operations becomes more urgent, some libraries are gravitating to one provider for everything. The perceived benefit of greater rationalisation of service also comes with the risk of undermining choice, of putting all the eggs in one basket, potentially increasing cost as more service is handled commercially and creating a blinkered perception that one vendor can do everything well. This is a trend that runs counter to the evidence of what is happening in the open web. It is a trend conceived by and for the commercial vendor so that it can maximise returns on annual software subscriptions offered as Cloud services. It also compromises and falsely concatenates the critical relationship between end user platforms like discovery and back end tools for managing workflows around content. According to Marshall Breeding, "any unbreakable coupling between specific discovery services and resource management platforms imposes concerns for libraries … Libraries need the ability to set discovery and management strategies independently and expect these systems to have mutual interoperability.[4]

Choice, interoperability, flexibility and lowering of operational costs: these are not options that we generally associate with commercial services, especially in the library market. There is exclusivity to systems that seek to bundle and unify discovery and workflow solutions in a universal whole. It is a closed model designed to lock the library in to one proprietary operating system. It is generally generic, limited in terms of core customisation, limited in

terms of APIs to work with systems that compete with it and limited in terms of the capacity of the library to contribute its own vision of how it wants a system to work for its own peculiar sets of collections and services. The assumption that there is a single standard upon which all libraries can operate and function is a false one. Even MARC, for example, has multiple variations around the world and that too is changing. Libraries are characterised by the diversity of their collections, communities and services as well by the ways in which those communities and services change over time. The top-down approach of delivering software as a service in the Cloud has the effect of diluting and narrowing the scope in which libraries operate. The library is forced to conform to a single system rather than being able to adapt a system to its own ecology. But in a world where code can be created openly to run on multiple platforms, the possibilities are almost endless. It simply requires the will, the skills and the imagination to do it differently. This is where open source can play a major role in how the library of the future evolves from a closed monolithic to a more open and manifold architecture synonymous with the open web itself. It also presents the librarian with challenges and opportunities to develop new skills and talents that have hitherto been confined to the more traditional sphere of library management and end user services. While not every librarian can or should imagine themselves as a coder or "hacker", the power of innovation can be extended to those who see change as a chance to expand the library's presence in the institution and beyond. Managers and stakeholders can budget for new job categories and roles while library schools and graduates can be much better placed to offer a curriculum that is fully aligned with open web-based platforms that are redefining education, business, culture and recreation. From academic to public and special libraries, the range of services that can be built on shared and open platforms means that librarians are not simply facilitators of change but drivers and creators of a space they can manage and control more directly in association with their user communities. It is a strategy for survival and continuity within the volatile flux of technological change. Steve Coffman from Library Systems and Services notes that

Just because we have new competition in roles once exclusively our own does not mean we should cede the field to commercial providers…No, we are librarians…Our skills, training, knowledge, and experience are inseparably tied up with the book and published literature. The services we perform are still needed in a digital age, whether everything goes electronic or we continue to operate in a hybrid environment. But we do need to take advantage of the tools and technologies now available to us to find better and more effective ways of connecting people with books and information. If we are equal to the task, librarians and librarianship have a long, bright future. If not, others now stand ready to take over for us.[5]

If libraries are capable of controlling their own destiny, commercial providers in turn have to adapt their services to make them more interoperable and modular, meaning that there is no longer a clear and defined demarcation between a commercial service and how it interoperates openly in an open source ecology that permits multiple players to operate, collaborate and even compete as they do in the open web. It is through this interchange between new and open platforms that the library will become more like the web itself, yet

remain specialised and focused on its own areas of expertise. For the user, this is a more familiar world, one they have grown up on, not something alien and set apart by centuries of tradition. The library as a service would be built on the same open architectures on which the web generally operates, merging into a sphere that ultimately provides a more diverse and flexible framework in which to evolve and adapt.

3. OPEN AND PROPRIETARY: AN ALLIANCE OF OPPOSITES?

One of the myths of Open Source is that it is completely free and self-reliant. While it is true that open source code can be written and released without a financial transaction, there are always cost implications to doing-it-yourself and running it locally. As Austin McLean once said, open source is like a puppy.[6] You have to invest in its welfare, nurture it, feed it, bathe it and walk it. If *you* don't do it, you will have to pay someone else to do it for you. The costs can be unexpectedly high if you factor in security, redundancy, implementation, maintenance, troubleshooting, training and upgrades. And if your library is part of a consortium, getting agreement between partners can be a challenge. It is for these and other reasons that large open source projects have sometimes been slow to get off the ground. They can suffer from inertia and overkill without the impetus to resolve conflicting interests. But herein is the great potential of open source in the Cloud. It does not have to be owned or managed exclusively by one operator, consortium or client. Everybody owns it and nobody owns it and it is up to each library to decide how involved it becomes in the ownership process. What it does need is a unifying impetus through strong leadership and this often comes from a business-like approach that can project manage the effort along the same lines as a commercial interest. If we take Koha as an example of a successful open source library management system, there are several key determining factors that make it viable as a solution. Firstly, it is inherently open source and 'free' to access as software. The only costs associated with managing it locally would be operational, requiring technical librarians with the skills to administer it. Not every library is in a position to do this and so you have Koha communities that offer hosting, support and service on a fee-based model. The Koha communities share and pool resources to enrich development globally and regionally, thus creating the hub of expertise that sustains the momentum for further agile development. Finally, Koha has received investment and technical input from companies such as EBSCO to integrate discovery and workflow solutions via API, thus demonstrating the potential for open source code, open source community and commercial provider to collaborate and create a value added service that relies on interoperability and partnership to deliver best of breed. The puppy can thus grow into a prize dog with valuable return on the investment. It requires the vision, the will, the capability, collaboration, leadership and support to turn it into a champion. No library exists on an island in an age where most of its content, platform and service are delivered through the Cloud. Yet the service offered via

the Cloud has to involve input from the library to be a truly viable solution that caters to its staff and user community. In the world of libraries, no one size fits all yet all are part of a much greater whole.

Another example of an open source library system is Kuali OLE. This was conceived in 2008 and centred on large academic libraries in the US. The project benefitted from financial investment from the philanthropic Carnegie-Mellon foundation and recently has evolved to include the Future of Libraries is Open or FOLIO project. FOLIO encompasses more than just Kuali and is venturing to create a new fully open source solution based on modules that will allow libraries to access, adapt and contribute code back to the solution in a self-generating cycle of continuous collaborative development based on a community-oriented approach on a potentially larger scale. Interestingly, one of the first public pronouncements of FOLIO was made in April 2016[7] by a panel of library technology companies, including commercial and open source players, some of whom are direct competitors. The uniqueness of this event should not be lost in the minds of librarians. Open source is only a contradiction of proprietary or commercial software interests where those interests are not themselves open. FOLIO is based on an Apache 2 license, meaning that it is available to any library or organisation that can use it to build new services or adapt existing services to the open source code. Providers can still compete in this new space and libraries will be able to have more choice on which parts of the service they choose to include. Some libraries may run an exclusively open source model for their catalogue while utilising a commercial discovery service. Others may use a proprietary catalogue adapted with modules from the open source code. It also means that libraries can become partners, developers and strategists, helping to build or design the service according to their own needs. In turn, these instances can be shared with the community and lead to further collaboration on a continuing basis. The library thus co-creates the platform upon which it delivers its services to its users, reducing costs by up to 50% because the underlying software is free. Should the library not be in a position to develop or manage the platform locally, hosting and support could be offered via a global or regional organisation on a fee-based model. These are the kind of exciting joint ventures that can be expected from this shift to a more open library service paradigm.

4. CONCLUSION

The emergence of open source library solutions has been underway for some time. It has taken commercial providers and libraries themselves a while to think out of the box in terms of how open source could represent the library of the future. While larger libraries with the resources and foresight have previously invested in a DIY open source approach, most rely substantially on commercial services to host and run their software, be it locally or increasingly in the Cloud. The possibility of a convergence between open and proprietary has defined how the open web works and there is a close corollary between free, open,

interoperable and proprietary software on the web. Facebook, Twitter and Google run on this principle and have become more commercialised as a consequence. Libraries have a different function as providers of free services that rely on paid subscriptions to both content and software. They need to increase usage and get a return on their investment, drive user satisfaction and deliver high quality service under budgetary constraints. Open source presents unique possibilities not simply for reducing costs but for adapting library services to the web as well as adapting the web to the needs of the library. By giving libraries and librarians more choice and greater flexibility to envisage, design, build and adopt services in an open source and open platform environment, the scope for progressive change becomes more dynamic and collaborative, harnessing skills that librarians have always had while applying new skills in the software space to what has always been perceived as an old-fashioned and traditional institution. In the not too distant future, the library may be seen as one of the more inventive and technologically innovative spaces should the new wave of open source technology become the norm by which libraries (and library tech companies) do their business. It does not reduce the threat or risk to libraries as a whole in an increasingly web-based world but it does equip them with more resources with which to become an integral part of that environment and to see the erstwhile foe (the open web) as an ally and a friend.

REFERENCES

[4] Breeding, M. (2015). A white paper commissioned by the NISO Discovery to Delivery (D2D) Topic Committee, *NISO*

[7] Breeding M. et al (2016). Keynote Panel: Executive Perspectives of the Library Tech Industry, Computers in Libraries.

[5] Cofffman, S. (2013). So Now What? The Future for Libraries. Information Today, 37 (1)

[3] Diamond, D. (2003). The Way We Live Now, *New York Times*

[6] McLean, A., Levy R. (2011) Institutional Repositories, a Gateway to eResearch, *Australian Partnership for Sustainable Repositories*

[2] Schonfeld, R. (2015). What are the Larger Implications of Proquest's Acquisition of Ex Libris? *Ithaka.org*

[1] US Ithaka Faculty Survey (2010*). Ithaka Report*