Smarter Libraries through Technology: Library Technology via Nonprofits

By Marshall Breeding

The roster of companies providing technology products and services to libraries and related organizations includes an interesting mix of business models. The for-profit companies, SirsiDynix, Ex Libris, Innovative, The Library Corporation, Auto-Graphics, and many others, dominate the traditional resource management and discovery sectors oriented to libraries, offering products based on proprietary software. Another set of for-profits provide support services for open source products, including Equinox Software, ByWater Solutions, and a few others in the United States and many others internationally.

Nonprofits also contribute to the mix of organizations involved in library technologies. OCLC, for example, in addition to its many services related to metadata and resource sharing, also offers WorldShare Management Services as one of the main competitors in the library services platform arena. One of the sector's larger and more complex organizations, OCLC itself is organized as a nonprofit, but also operates its European operations as a for-profit, at least partially because its activities do not fall within what can be considered a "charity."

No particular association exists between business models and types of licenses or development models for the software products. Both for-profit and nonprofit organizations are involved with proprietary software. OCLC's WorldShare Management Services has not been released via an open source software license and is considered proprietary software. For-profit companies such as ByWater Solutions and Equinox

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Software offer paid support services surrounding open source software. HTC Global Services is a for-profit company that has been contracted for much of the development of the open source Kuali OLE resource management system for academic libraries. Commercial activity falls well within what is allowed with open source software. The software itself must be made freely available to be downloaded and implemented without any licensing fee. That requirement does not preclude organizations charging for related services, such as hosting, help-desk support, implementation, migration, and custom development. The challenge naturally lies in offering services that will be perceived as valuable and worth the cost.

Nonprofits have often been associated with the governance of open source software projects. These organizations can provide a neutral setting for the assignment of copyright, coordination of development priorities, and other activities needed for larger-scale open source projects. The Kuali Foundation is a nonprofit related to the Kuali suite of open source projects for higher education. The Open Library Environment, now known as Kuali OLE, attached itself to the Kuali Foundation rather than establish a separate nonprofit for its governance. The Evergreen ILS manages its governance through the Software Freedom Conservancy, a nonprofit that provides administrative and financial services for a variety of open source software projects (http://sfconservancy.org). Koha places its governance within the Horowhenua Library Trust, a nonprofit organization related to the library that sponsored the original development of the software in 1999. The Apache

Software Foundation is a nonprofit that provides governance for some of the most widely implemented core technologies implemented globally.

This issue of *Smart Libraries Newsletter* features two other nonprofits that play important roles in open source software widely used in the library, archives, and museum communities. LYRASIS has become increasingly involved in open source software since its founding. It has become the favored institution of the Andrew W. Mellon Foundation for the governance and institutional support of funded library-related open source, such as ArchivesSpace and CollectionSpace. The key repository platforms used in libraries and related organizations have also created nonprofit organizations for their governance: the DSpace Foundation and Fedora Commons. The two projects eventually converged under a single nonprofit, DuraSpace. In recent weeks the consolidation of the projects governed within both LYRASIS and DuraSpace has been all but finalized. This consolidation parallels what has happened in the for-profit side of library technology, where many rounds of mergers have resulted in a small number of much larger organizations. Not unlike dynamics seen among the for-profits, the consolidation of nonprofits involved in open source software increases the dependence on a smaller number of organizations, while offering possibilities for increased efficiency needed for sustainability and long-term viability and for attracting the resources needed for more aggressive development and improved services.

LYRASIS and DuraSpace Pursue Merger

In a move that would result in the consolidation of two major nonprofits providing services to libraries, LYRASIS and DuraSpace are considering a merger of their two organizations. The merger has been approved by the boards of directors of both organizations and has entered a period of public review. Both organizations will continue to operate independently until final approval for the merger takes place.

Both LYRASIS and DuraSpace operate as nonprofit organizations. LYRASIS ranks as the larger, with around 65 employees and annual income of about $75 million. DuraSpace employs about 10 personnel with less than $2 million in income. This proposed merger will expand LYRASIS' portfolio of services oriented to open source technology and will provide the projects shepherded by DuraSpace with a stable and sustainable organizational home.

Both LYRASIS and DuraSpace were formed through the mergers of antecedent organizations. LYRASIS brings together a number of organizations that were previously involved as regional networks for OCLC billing and other services. DuraSpace was created to combine Fedora Commons with DSpace Foundation.

LYRASIS Organizational Background

Formed in 2009, LYRASIS brings together a variety of organizations and projects under its fold. By virtue of its membership of libraries, it is able to leverage discounts on electronic resources and other products. The organization has developed a large array of training programs, digitization services, and many other services for libraries. Its services related to technology have emerged as a strategic priority in recent years.

LYRASIS has received a variety of grants, primarily from the Andrew W. Mellon Foundation, to develop its capacity to support open source software. The Mellon Foundation has channeled a number of the projects it funds into LYRASIS for organizational support, technical infrastructure, and governance. Support and hosting for open source software represents a growing portion of the business activity for LYRASIS.

LYRASIS was founded in the context of the former OCLC regional networks needing to consolidate as a result of dramatically reduced income opportunities as OCLC shifted to more centralization and self-sufficiency in its operations. The vestiges of many of the former OCLC regional networks were consolidated into LYRASIS.

independently. The networks also provided support and training for OCLC products. Each network received income from the OCLC products brokered. The networks would also offer products and services that were not directly related to OCLC.

In July 2009 OCLC introduced significant changes in its business practices that ultimately meant the demise of the OCLC regional networks. Standardized pricing nationwide reduced the compensation of the networks, and OCLC began providing more services directly. These changes resulted in substantially less income for the OCLC regional networks. While most of these organizations also offered other services, this change left many with marginal operational viability. Those that had a more diversified set of services less dependent

Table 1. OCLC Regional Networks

Name	Area Served	Headquarters	Founded	Status
SOLINET	Southeastern United States	Atlanta	1973	Merged into LYRASIS April 1, 2009
PALINET	Mid-Atlantic Region	Philadelphia	1936	Merged into LYRASIS (originally Union Catalog of the Philadelphia Metropolitan Area) April 1, 2009
NELINET	New England	Southborough, MA	1964	Merged into LYRASIS April 2009
Amigos	Texas	Dallas, TX	1974	Active
NEBASE	Nebraska	Lincoln, NE	1976	Merged into BCR in April 2009
BCR	Alaska, Colorado, Idaho, Iowa, Kansas, Montana, Nevada, Oregon, Utah, Washington, and Wyoming	Aurora, CO	1935	Operations phased out in October 2010. Members offered transition to LYRASIS
WLN	Western United States	Olympia, WA	1972	Merged into OCLC Pacific in January 1999
CAPCON	District of Columbia, Maryland, and Virginia	Washington, DC	1974	Acquired by OCLC in November 2003; became OCLC Eastern in 2008
MINITEX	Minnesota, North Dakota, South Dakota	Minneapolis, MN	1968	Active
Nylink	New York	Albany, NY	1973	Phased out operations in May 2010

A look back into these regional cooperative networks provides some context for the organization that LYRASIS has become. As OCLC grew to deliver services throughout the United States, and internationally, it facilitated the emergence of partner organizations, or regional networks, to provide specific functions within a specific geographic regions. Table 1 presents a partial list of the OCLC Regional networks, the areas served, and their current status.

The regional networks served as a type of business agent for OCLC. They worked directly with member libraries within their service area to provide services related to OCLC. Each network would re-sell OCLC products to their members, based on negotiated pricing that each was able to establish

on OCLC revenues, such as SOLINET, Amigos, and MINITEX, were able to survive. Others eventually either phased out operations or merged with other organizations.

LYRASIS was formed through the consolidation of multiple former regional networks as a nonprofit membership organization, providing a diverse set of services independent from OCLC. The initial merger included SOLINET, based in Atlanta, originally known as the Southeastern Library Network, serving the southeastern states, and PALINET, serving the mid-Atlantic region. That merger was approved by the boards of both organizations, vetted through a period of public comment, and was finalized on April 1, 2009. Kate Nevins, executive director of SOLINET, led LYRASIS in a similar

capacity until her retirement in June 2015. Catherine Wilt, executive director of PALINET, served as President of LYRASIS following the merger in 2009 through June 2010. Following on the merger of SOLINET and PALINET to form LYRASIS, NELINET, serving states in New England, announced in April 2009 announced that it would also be merged into LYRASIS, effective in the fall of that year. BCR, originally the Bibliographical Center for Research, founded in 1935, also operated as an OCLC Regional Network. BCR, which had absorbed NEBASE the previous year, phased out its operations in 2010 with its members offered an opportunity to shift to LYRASIS. (The merger of SOLINET, PALINET, and NELINET was covered in more detail the July 2009 issue of *Smart Libraries Newsletter*.)

Following its formation, LYRASIS branched out into a number of areas of service. Though rooted to an extent in the geographic area served by its antecedent organizations, its scope is increasingly national and international.

LYRASIS operates as a nonprofit organization designated as a 501(c)(3), which requires an annual filing of a 990 form with the Internal Revenue Service that must also be made available publicly. Some basic organizational statistics, derived from these 990 filings and financial reports made available through the organization's website, are presented in Table 2. LYRASIS has become one of the largest nonprofits dedicated to providing services to libraries, though still roughly a third of the size of OCLC (LYRASIS annual revenue: $74 million; OCLC: $213 million). The revenue LYRASIS receives for its technology-related services and programs represent a minority of its business activity.

Table 2. LYRASIS Business Statistics

Year	Employees	Revenue
2014-15		74,819,624
2013-14	66	74,917,841
2012-13	75	76,480,405
2011-12	88	77,699,157
2010-11		112,787,989

LYRASIS gained new management in May 2015, following the retirement of Kate Nevins, with the appointment of Robert Miller as its Chief Executive Officer. Miller was previously General Manager of Digital Libraries at the Internet Archive. Kate Nevins led LYRASIS and its antecedent organization SOLINET for 20 years. Kathlin Ray, Dean of Libraries and Teaching and Learning, University of Nevada, Reno currently serves as chair of the LYRASIS Board of Trustees. John

Herbert was named Director of Digital Technology Services for LYRASIS in April 2015.

Grants for Open Source and Governance

Support and governance activity has grown prominent as LYRASIS has become the organizational home for an increasing number of open source projects. The Andrew W. Mellon Foundation has channeled many of the software projects it has sponsored in the library, museums, and archives arena to LYRASIS for organizational and technical support.

In October of 2009 LYRASIS was awarded a planning grant of $192,000 by the Andrew W. Mellon Foundation to help launch a new set of services to assist libraries with the adoption and support of open source software. As LYRASIS investigated expanding its services in this area, it needed to develop internal expertise and capacity, survey the projects available, and gather input from stakeholder communities. This planning grant was followed by a variety of other programs and activities related to open source software.

In April 2011, the Mellon Foundation awarded an additional grant of $486,000 to help fund the startup of LYRASIS Technology Service, a new program within the organization dedicated to the services defined in the earlier planning grant. Peter Murray, formerly of OhioLink, was Assistant Director of the newly formed Technology Services Department. One of the outcomes of this grant was the creation of FOSS4LIB, Free/Open Source Software for Libraries (http://foss4lib.org). This initiative included tools to assist libraries, archives, and museums in assessing the applicability of open source software for their organizations and to evaluate and compare the capabilities of the available products.

In October 2012 LYRASIS received an additional $670,000 grant from Mellon Foundation. Among other activities, this grant supported the creation of programs related to decision support for open source alternatives. Through this grant, LYRASIS organized a set of conferences and meetings surrounding the topic of open source software in libraries. With the support of the Mellon Foundation, LYRASIS continued to expand its leadership in the area of open source software.

In April 2012 LYRASIS was designated as the organizational home of ArchivesSpace. A grant from the Mellon Foundation funded development of the software and enabled LYRASIS to provide the organizational infrastructure it needed for this role. ArchivesSpace was created to help archives and related organizations describe and manage their collection, with support for the metadata formats and workflows appropriate for those organizations. ArchivesSpace itself was a convergence of the two leading open source tools

for managing archival collections, the Archivists Toolkit and Archon. By November 2015 more than 250 organizations had joined as member supporting ArchivesSpace.

In January 2014 LYRASIS became the organizational home for CollectionSpace, supported through an additional two-year grant of $1.5 million from the Mellon Foundation. Collection-Space, an open source collection management system for museums and related organizations. A group of North American and European organizations with museum collections began development in 2008. The Mellon Foundation had provided funding to support the initial development of CollectionSpace.

LYRASIS provides commercial services for hosting and support for both ArchivesSpace and CollectionSpace in additional to facilitating the communities surrounding these two open source projects.

Foray into Commercial Open Source ILS Support

In addition to educational opportunities promoting open source software, LYRASIS also began offering commercial services for hosting and software support. When libraries in the United States implement open source ILS products, they often use an external firm to provide hosting and support services. These arrangements enable a library to implement and operate an open source ILS without local technical expertise beyond what would be needed for a proprietary system.

LYRASIS joined the fray of organizations offering hosting and support services for Evergreen, an open source ILS oriented to consortia of public libraries. It initiated contracts to provide Evergreen support for at least three organizations, Including the Maine Balsam Library Consortium; the Michigan Evergreen consortium, organized through the Midwest Collaborative for Library Services; and the Virginia Evergreen project, organized through the Virginia State Library.

Commercial services for open source ILS products were by then a well-established niche, dominated by commercial companies, especially Equinox Software. LYRASIS involvement in this particular activity was short-lived; these consortia shifted to support from Equinox in 2012.

DuraSpace Joins LYRASIS

In yet another phase of expansion into open source software, DuraSpace, a nonprofit organization in open source repository software has proposed a merger with LYRASIS. DuraSpace was founded in July 2009 in the merger of two organizations surrounding the leading open source repository platforms, DSpace and Fedora. Subsequently it has taken

on organizational responsibilities related to VIVO. DuraSpace characterizes its mission through the tagline: "open technologies for durable digital content."

The DSpace Foundation was established as the governance organization for DSpace, an open source application designed to provide a platform for institutional repositories with a low threshold of technical difficulty. As a turnkey repository, DSpace has been very widely adopted in almost all global regions, primarily by educational institutions. The development of DSpace began in 2002 through collaboration between MIT and Hewlett Packard.

As its use became widespread, DSpace required a stronger organizational and governance structure. The DSpace Federation was launched in 2004 as an informal community of DSpace users and developers. In 2007 the DSpace Foundation was established as a nonprofit organization by MIT and Hewlett Packard. Michele Kimpton served as its executive director from the founding of the organization through its merger into DuraSpace in July 2009. Plimpton continued as Chief Business Officer of DuraSpace through 2011 and as Chief Executive Officer for DuraSpace through early 2015.

Fedora was developed as technology infrastructure for repositories. Its initial development was centered at Cornell University in the mid-1990s. The University of Virginia collaborated with Cornell to further develop the Fedora architecture into a stable and more robust repository platform. Fedora differed from DSpace in that it was a more complex set of technologies that required technical expertise for implementation and customization. This complexity enabled flexibility in the types of content, organizational structure, and presentation interfaces that the software could support.

Fedora also saw very wide implementation across many different types of organizations. The Gordon and Betty Moore Foundation awarded a $5 million grant to establish Fedora Commons as a nonprofit organization, led by Sandy Payette. Payette served as the organization's executive director, through June 2011.

DuraSpace also serves as the institutional home for VIVO. This project traces its beginning to about 2003 to the Virtual Life Science Library, developed at the Albert R. Mann Library at Cornell University by a team led by Jon Corson-Rikert. This project has since seen significant technology development and has an ever growing network of participating institutions, and has had a great impact on the way that academic and research institutions share data and collaborate. VIVO, based on semantic web technologies, provides an environment for collaboration among scholars and researchers, spanning many disciplines and inclusive of all institutions. The environment incorporates detailed profiles of researchers,

including publications and courses taught. VIVO facilitates collaboration by helping researchers connect with each other, institutions measure the impact of research or highlight areas of excellence, and funding agencies identify experts, as well as a variety of other scenarios. As an environment based on semantic web technologies, all data are stored as RDF triples.

The VIVO project joined with DuraSpace in July 2012, initially as one of its incubator projects and its organizational home. Layne Johnson was hired as VIVO Project Director in April 2014.

DuraSpace has developed services surrounding each of these open source technologies, including DuraCloud, DSpace Direct, and ArchivesDirect. Its DuraCloud provides a cloud-based platform for the storage of digital objects in repositories. Replicates can be maintained spanning multiple cloud storage providers. DuraSpace launched DSpaceDirect in 2014, providing a fully hosted service for institutional repositories based on DSpace. In February 2015 DuraSpace launched a new offering, ArchivesDirect, a hosted cloud-based service for digital preservation. This service is based on the Archivematica open source platform for digital preservation (https://www.archive matica.org) developed by Artefactual. This menu of services can address any of a variety of needs an organization may have related to repositories and digital collections. These fee-based services complement memberships and grants as sources of revenue to sustain its operations.

The Digital Public Library of America, Stanford University, and DuraSpace received a $2 million, 30-month grant from the Institute of Museum and Library Services to further develop a national network of interoperable repositories based on Hydra, announced in April 2015. The role of DuraSpace for this project includes the implementation of scalable infrastructure for Hydra hosting.

Table 3. DuraSpace Business Statistics

Year	Employees	Revenue
2013	10	1,809,956
2012	10	1,347,048
2011	10	1,868,873
2010	10	1,913,097
2009	9	1,409,168
2008		627,230

DuraSpace recently has come under new leadership. Debra Hanken Kurtz was appointed as the Chief Executive Officer of DuraSpace in February 2015. She previously served as the executive director for the Texas Digital Library. Michele

Kimpton remains involved as a strategic advisor. Selected statistics describing the organization are seen in Table 3, with data derived from the organization's publicly available 990 filings. Fedora Commons continues as the organization's legal name, though since its merger with DSpace Foundation it operates as DuraSpace.

The Shape of the Proposed Merger

LYRASIS and DuraSpace have both become established as the organization of record for a growing set of open source software projects. LYRASIS has earned the confidence of the Mellon Foundation to take responsibility for two of the projects it has sponsored, ArchivesSpace and Collection Space, and has attracted additional funding to build capacity for the support, governance, and promotion of open source software in libraries, archives, and museums. DuraSpace has gained a leading position in the open source arena of repositories and research support.

Though LYRASIS ranks as a much larger organization overall, much of its activity falls outside the scope of open source technologies. The technology-oriented component of LYRASIS and DuraSpace may be more equally paired. Both organizations have created organizational infrastructure for the support and governance of open source software projects in addition to deep technical knowledge related to the specific products and projects they have adopted.

Announcements related to this proposed merger state that Robert Miller would be Chief Executive Officer and Debra Hanken Kurtz will serve as Chief Operating Officer. It has not yet been stated publicly whether DuraSpace will be merged into LYRASIS or if a new nonprofit organization will be established.

This proposed merger brings together two well respected nonprofits involved in open source software to consolidate a large portfolio of projects under a single organizational structure. The software products of the two organizations address distinctive areas. Consolidation of the organizations has the potential to improve efficiencies in the area of overhead related to administrative support, software governance and support, and technical infrastructure. Both organizations offer hosted services and there may be opportunities to leverage infrastructure. The combined organization will have greater capacity for outreach needed to expand membership and improve financial support.

Organizations that provide support for open source software projects face many challenges. Activities related to performing or coordinating the development of open source software can be complex and expensive. Finding sustainable

business models can be extremely difficult. It's a given that the software can be accessed and implemented without cost. Revenue to sustain the organization must be earned by offering services that will be valued by the organizations interested in the software, such as through membership fees and paid hosting and support services. Providing these services to a community of libraries, archives, museums, or educational organizations, themselves nonprofits with limited budgets, amplifies the challenges in establishing adequate revenue streams to fund the organizations. This proposed merger will provide a more efficient organizational framework with the potential to strengthen the position of open source software within these communities.

Innovative Names New Chief Executive Officer

Innovative Interfaces, Inc. has named James Tallman as its new Chief Executive officer. Tallman comes to Innovative from Wolters Kluwer, where he served as the General Manager for Enterprise Legal Management. He was Chief Executive Officer of Datacert from 2008 until 2014, when the company was acquired by Wolters Kluwer. Datacert created the Passport enterprise legal management platform to help organizations manage legal risk and compliance. Although Wolters Kluwer offers some of its products to libraries, the Enterprise Legal Management division is not specifically focused on this sector.

Bert Winemiller, an Operating Partner with JMI Equity, has been serving as Chief Executive Officer of Innovative since the departure of Kim Massana in January 2016. Winemiller will continue his involvement with Innovative as Executive Vice President of Strategy.

Kuali OLE Receives New Grant

The Andrew W. Mellon Foundation has awarded Duke University a grant of $1.17 million for the continued development of the Kuali OLE open source integrated library system. Table 4 itemizes the grants that the Mellon Foundation has awarded to support the Kuali OLE project and the related Global Open Knowledge base.

As of February 2016, three institutions have implemented Kuali OLE for management of print materials: Lehigh University, University of Chicago, and the School of Advanced Oriental Studies in the United Kingdom. Planned development includes completion of functionality related to electronic resource management and integration with the Global Open Knowledge base.

Table 4. Mellon Funding of Kuali OLE

Date	Amount	Lead Institution
Kuali OLE		
December 2015	$1,170,000	Duke University
December 2013	$882,000	Indiana University
December 2012	$750,000	Indiana University
December 2009	$2,380,000	Indiana University
June 2008	$475,000	Duke University
Global Open Knowledge Base		
December 2009	$499,000	NCSU

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