

Smart Libraries Newsletter

News and Analysis in Library Technology Developments



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Smarter Libraries through Technology

The Evolving Academic Services Ecosystem

By Marshall Breeding

Products and services oriented to academic institutions, including teaching, research, and libraries, address a wide range of activities crossing many different stakeholder groups. This newsletter focuses primarily on products and services related to libraries, but these companies are increasingly expanding into other aspects of the academic enterprise.

The products in this ecosystem address a range of users or stakeholders. One set of products are offered by companies primarily selling to libraries. For example, integrated library systems (ILSs) and library services platforms are used by library personnel. Many libraries use selection and ordering platforms to acquire new materials. These resource management systems usually have a public-facing interface, such as an online catalog or discovery service, to give students, faculty, or the general public ways to search and gain access to library materials. The relatively new genre of reading list managers is oriented to those teaching courses, enabling them to efficiently tap into resources provided by the library or their own personal materials.

These library technology vendors increasingly compete with another set of companies in the academic publishing industry. These companies include Elsevier, one of the major

academic publishers, but also include organizations such as Clarivate Analytics and Digital Science that do not necessarily publish content directly but that provide search and workflow tools addressing differing aspects of the scholarly communications ecosystem.

The product portfolios of EBSCO Information Services and ProQuest can be considered in the perspective of the broader arena of scholarly communications. Both organizations have a core business background in content and databases. They directly compete in the library economy for abstracting and indexing products as well as many other specialized content resources and offer major academic e-book platforms. On the library materials acquisitions front, EBSCO provides GOBI for monographs and is the only major serials subscription agent left standing. ProQuest's OASIS and MyiLibrary also enable libraries to acquire print and digital books.

EBSCO and ProQuest compete directly in the discovery services arena. ProQuest was an early mover in the index-based discovery service category with the launch of Summon in 2009 and gained Primo in its acquisition of Ex Libris. EBSCO Discovery Service, building on the company's expertise in subject indexing, builds on the EBSCOhost platform and has become established as the most widely implemented index-based discovery service.

ProQuest has become established as the leading player in the resource management front, with Alma capturing most new sales of systems to large libraries and consortia in addition to its legacy Aleph and Voyager ILSs that continue to represent a large portion of the installations in academic libraries. EBSCO has opted not to develop its own product in this category but has instead executed a strategy of integration and open source support. The company reports that it has partnered with sixty ILS developers to create integration paths for EBSCO Discovery Service. These integrations enable the online catalog of the ILS to incorporate article-level results via the EDS API or for

IN THIS ISSUE

Ex Libris Expands Learning and Research Division
PAGE 2

Elsevier Acquires Aries Systems
PAGE 6

Smart Libraries Q&A
PAGE 6

EDS to serve as the complete patron-facing interface. More recently, EBSCO has helped launch and continues to contribute financial, technical, and organizational resources toward the FOLIO project, working to create an open source library services platform.

ProQuest is increasingly moving into the competitive arena characterized by Elsevier, Clarivate, and Digital Science. Many of its recent products do not compete with its usual competitors, like EBSCO, but instead with this other set of organizations. ProQuest has organized these product offerings under its recently formed Learning and Research division. In many cases, the key stakeholders or decision makers may reside outside the library organization. Pivot, for example, tends to be marketed to a university's office of research rather than its library. The new Esploro research services platform being developed by Ex Libris addresses three stakeholder groups—the office of research, the researchers themselves, and the library. The products of *Research likewise primarily address the university's research community. The acquisition of *Research by Ex Libris is featured in this issue of *Smart Libraries Newsletter*.

So far, EBSCO has not ventured into the product categories marketed outside the library. It is interesting to note that it acquired Plum Analytics in 2014. Plum Analytics addresses the impact on an institution's research output and would typically be marketed to the institution's office of research. In one of the rare examples of EBSCO divesting a component of its business, it sold Plum to Elsevier in 2017. This move points to an interest in EBSCO continuing to focus on products

marketed through libraries and not to broader institutional stakeholders.

The competitive matrix shown on page 3 (Table 1) illustrates how a narrow set of companies are building or acquiring products to address different activities and stakeholders within the academic enterprise. This matrix shows products oriented to library personnel, article and research data repositories, and search tools for students and scholars. To view the complete table, which also shows platforms for institutional research stakeholders, workflow and analytics to support article publication by researchers, content production and publishing, and ownership and investors, please see <https://librarytechnology.org/vendors/competitive-matrix/>. Each of these companies seeks to expand its business opportunities by exploiting the niches represented across the rows of the matrix. These companies are assembling product portfolios addressing ever broader activities and stakeholders within this ecosystem. There will naturally be synergies among the products offered by the same vendor. It will be important to observe whether the synergies develop into more comprehensive platforms or product stacks that may nudge organizations into working with a single organization for all the services represented. In the coming months and years, it will be interesting to see whether these organizations work toward filling in any missing products from this matrix, whether new categories of products emerge, and whether the products themselves will converge into more unified platforms.

Ex Libris Expands Learning and Research Division

In a move that strengthens its position in the research services arena in research-oriented universities, Ex Libris has acquired Research Research Limited, or *Research, a company based in London, offering content and services related to research initiatives and funding opportunities. This move follows the shift of the RefWorks reference manager, the Pivot research opportunities resource, to Ex Libris in October 2017 and the launch of Leganto in 2015. These products are now managed under the Learning and Research division of Ex Libris, led by corporate Vice President Shlomi Kringel. The expanding efforts of the company in the broader higher educational arena can be seen as seeking opportunities beyond its well established stable of products and services focused on academic libraries.

Alma Powers through the Academic Library Market

The recent efforts of Ex Libris creating products and services in the broader academic environment can be seen as a natural extension of its success in the narrower academic library market. Alma has become well established as the leading product for academic libraries seeking new resource management systems. The momentum for libraries selecting Alma continues to increase. Growth opportunities for Ex Libris can be anticipated not only in ongoing sales of Alma, but also through exploiting new product categories within the academic enterprise.

Table 1: Competitive Matrix of Products and Services

Product	ProQuest	EBSCO	Elsevier	Clarivate	Digital Science	Other Competitors
Products oriented to Library Personnel						
Resource Management	Alma; Aleph; Voyager	FOLIO; Full Text Finder; Holdings Management; Integration services with 60 ILS products				OCLC WorldShare Management Services; Innovative Sierra; SirsiDynix Symphony
Selection and ordering for Librarians	OASIS; MyLibrary	GOBI EBSCONET Subscriptions Management				
Bibliographic metadata and Knowledge bases	Alma Community Zone; SFX Global Knowledge Base	EBSCO Integrated Knowledge Base				OCLC Cataloging and WorldCat
Reading List—Copyright Management	Leganto	Curriculum Builder (learning management system plug-in)				Talis Aspire
Article and Research Data Repositories						
Institutional Repository	Esploro (included functionality)		bepress		FigShare	DSpace; eprints; Fedora; Samvera; TIND Institutional Repository
Research Data Repository			Mendeley Data	[Related: Data Citation Index]	FigShare	TIND RDM
Search tools for students and scholars						
Index-based Discovery	Primo; Summon	EBSCO Discovery Service				OCLC WorldCat Discovery Service; Google Scholar; Microsoft Academic
Citation Database			Scopus (71 million records)	Web of Science (90 million records)	Dimensions (premium version includes grants, patents, and clinical trials)	CORE (134,272,290 open access articles) (https://core.ac.uk/); 1findr from 1Science (90 million records); Unpaywall (19.4 million open access articles)
Browser Plug-in				Kopernio	Anywhere Access	Unpaywall-Impactstory Library Access—Lean Library
Citation Manager	RefWorks		Mendeley	EndNote		Zotero—open source (George Mason University); EasyBib—Chegg

Ex Libris has been especially successful among the top tier of academic libraries and consortia. OCLC represents competition in the library services platform category and has seen considerable success especially among mid-sized academic libraries. Many academic libraries remain loyal to their ILSs provided by SirsiDynix and Innovative Interfaces. A growing number of smaller academic libraries have opted for the open source Koha ILS, often using Coral as an electronic resource management component.

Alma, introduced in 2012, has been adopted by over 1,200 libraries. It has been selected by 54 out of the 125 members of the Association of Research Libraries (ARL). An additional 30 ARL members continue to use its Voyager or Aleph ILS. In recent months, major organizations selecting Alma include:

- the Ontario Council of University Libraries and Partnership Among South Carolina Academic Libraries (PASCAL), comprised of 51 libraries spanning public and private educational institutions in the state;
- the California Community College Library Consortium, including the campus libraries affiliated with all 114 community colleges in California serving 2.1 million students;
- 13 members of the Ontario Council of University Libraries, including 6 members of the ARL;
- the libraries of the 61 campuses of the State University of New York;
- Michigan Shared System Alliance of 7 academic libraries;
- the National Library of Poland;
- the University of Sydney; and
- University of New Hampshire.

Continued Expansion Beyond Library-Specific Products

Products and services supporting the research agenda of universities leverages the domain expertise Ex Libris developed in the course of almost four decades of developing technology products for academic libraries. Ex Libris launched its Leganto resource list management application in 2015, and in August 2018, the company reported its selection by over 100 institutions, with 65 in production.

Pivot: Funding Opportunities Resource

ProQuest, the parent organization for Ex Libris, has a long-standing involvement in research support through its Pivot funding opportunities resource. Pivot traces its lineage to the Community of Science, a set of resources initially developed in 1988 at John Hopkins University, including COS Expertise

(later Scholar Universe) managing researcher profiles and COS Funding Opportunities aggregating research grants available in North America. The Community of Science was acquired by CSA (formerly Cambridge Scientific Abstracts) in December 2005. CSA was a division of Cambridge Information Group, now the parent company of ProQuest. COS and RefWorks were merged into RefWorks COS as a new subsidiary business of ProQuest in 2008. ProQuest placed both RefWorks and Pivot under Ex Libris in October 2017.

In addition to its own direct sales efforts, ProQuest and Ex Libris have also extended the reach of Pivot through partnerships with other organizations. In May 2017, ProQuest partnered with InfoReady Corporation to integrate Pivot into InfoReady Review, a platform designed to help the office of research in a university manage grant administration (<https://www.inforeadycorp.com/>). In March 2018, Ex Libris formed a partnership with Cayuse, a company specializing in products and services for research support, as a reseller for Pivot (see <https://cayuse.com/>).

*Research Joins Ex Libris

Consistent with Ex Libris's expanding involvement with products beyond library management and discovery services, it has acquired a company specializing in news gathering, analysis, and policy issues in the field of scientific research. London-based *Research (Research Research Ltd.) is a major source of news and analysis on funding opportunities, research initiatives, and governmental policy issues. Its focus has been primarily on Europe, Africa, Australia, and New Zealand.

*Research Professional, the company's flagship content product, provides discovery of funding opportunities, news, and editorial coverage for the scholarly research sector. The company's publishing platform has been designed to integrate with institutional systems for research management. Around 250 institutions subscribe to *Research Professional, including most higher educational institutions in the United Kingdom as well as governmental agencies and other research-oriented organizations.

*Research was founded by William Cullerne Bown in 1994, following a career in academia, public policy, and journalism. His involvement in journalism included writing for *The Independent* and as the policy editor of *New Scientist*. Cullerne Bown launched *Research Fortnight* as the initial publication of the company, largely in response to the increasing competition for research funding in the UK and the increased need for information regarding funding opportunities and related editorial content. The company subsequently launched additional publications focused on other geographic

regions: Research Europe Onderzoek Nederland and Research Africa. In May 2017, *Research published the 500th edition of *Research Fortnight*.

In 2001, the print publications of *Research were consolidated into the web-based platform *Research Professional. *HE was recently launched as a new service providing concise briefings oriented to higher education decision makers and is available through *Research Professional as a premium option. In addition to *Research Professional, the publications also continue to be distributed in print form. In addition to subscription revenue, *Research also sells advertising placed in its publications, primarily for job openings, funding opportunities, and conferences.

*Research Professional includes personalization features enabling individuals at subscribing institutions to receive information streams tailored to their areas of interest. The platform also includes Funding Insight, a database of over 20,000 entries detailing grants and awards from major UK and European funding sources as well as interviews and other articles providing information and advice for developing successful grant applications.

*Unity Collaboration Platform Shuttered

*Research had helped launch a new collaboration platform for scholars in 2014 along with the Apereo Foundation, based on software created by the Open Academic Environment. Apereo also supports the development of other open source projects, including the Sakai learning management system uPortal, Open Equella digital repository, and the CAS single sign-on environment (see <https://www.apereo.org>).

*Unity was launched as a platform for file sharing and communication, envisioned as something like Dropbox for scholars but designed specifically for academics and researchers. It aimed to provide a convenient way to store and share documents and resources among persons working together on a project, especially those involving multiple institutions. While researchers usually have other platforms for their work, *Unity was developed to be easier to use than typical internal platforms like Microsoft SharePoint and better suited for cross-institutional collaboration. Services like Box or Dropbox provide general file-sharing, but don't handle the institutional issues involved in research collaboration and are not integrated with authentication services and other campus infrastructure. When a researcher leaves a project, for example, general file sharing services do not necessarily have features that ensure that the other members of the team continue to have access to the resources. Platforms such as GitHub and Jira provide robust collaborative capabilities but can be quite complex for set up

and management for non-technical academic researchers.

The *Unity platform was pre-configured to provide tenants for over 20,000 institutions. Each of these tenants was available to support members from those institutions, either joining individually or as part of an institutionally supported service.

The project was based on a business model where individual researchers could join without cost with a premium service, where institutions could take control of their instance for an annual fee through a Service Level Agreement. This agreement also conferred ownership of resources stored on the platform to the institution. *Research operated the *Unity platform and received the revenue from institutional subscriptions.

*Unity will be discontinued as of September 10, 2018 and will not be supported by Ex Libris as it takes ownership of *Research. Though initially promoted to individual users invited to join the platform for free, the success of the project depended on institutional subscriptions. Prior to the closing date for the service, users will be able to download individual files, but a tool for bulk transfers is not available. The *Unity website states that all personal data and files will be destroyed once the service is closed. The Open Academic Environment software will continue to be developed for other implementations, such as the ESUP-Portal supporting a French consortium of research institutions.

Details of the *Research Acquisition

Ex Libris has acquired full ownership of *Research, which was previously privately owned by Cullerne Bown. Ex Libris, a ProQuest company, is owned by Cambridge Information Group and Goldman Sachs. Bar Veinstein leads Ex Libris as President, reporting to Matti Shem Tov, Chief Executive Officer of ProQuest. The *Research organization will become part of the Ex Libris Learning and Research Solutions business, reporting to Shlomi Kringel, Vice President.

*Research produces original publications through its own news gathering and editorial personnel. These publications will continue to operate under Ex Libris with the same level of editorial independence in place prior to the acquisition.

At the time of the acquisition, *Research employed around 80 personnel. Cullerne Bown joins ProQuest as Research Principal and will bring his extensive knowledge and understanding of the research arena to help guide Ex Libris as it deepens its involvement in this aspect of the academic enterprise. The financial details of the acquisition have not been publicly disclosed.

The acquisition of *Research expands Ex Libris's portfolio of products and services related to academic research support. In addition to the publications and services of *Research, the

product portfolio of the Ex Libris Learning and Research Services division now includes the Primo and Summon discovery services, RefWorks reference manager, Leganto reading list and copyright management platform, the recently launched Esploro research services platform, and the Pivot funding opportunity resource. For more information on the Esploro research services platform, see the March 2018 issue of *Smart Libraries Newsletter*.

*Research and Pivot both include global funding opportunities components, but with some difference in the geographic focus and features. The European focus of *Research complements Pivot, which covers funding opportunities primarily from a North American perspective. Both *Research

Professional and Pivot provide discovery features and content related to funding opportunities that can be integrated into external systems.

Pivot and *Research are natural integration components for the Ex Libris Esploro research services platform. This combination seems consistent with the general strategy of Ex Libris to not just develop software, but to create platforms populated with knowledge bases, central indexes, or other content components. Earlier examples include SFX with a global knowledge base, Primo with a central discovery index, and Alma with its Community Zone.

Elsevier Acquires Aries Systems

Elsevier continues its pattern of business acquisitions of companies offering scholarly workflow tools, compared to earlier phases where its focus was more on the expansion of its portfolio of publications. Its most recent move involves acquiring Aries Systems and its platform for managing publication submissions, peer review, and production tracking.

Aries Systems was founded in 1986 by Lyndon S. Holmes and Sandra Holmes. Its original product, Knowledge Finder, was a search engine for MEDLINE and other medical literature. In 2001, Aries created Editorial Manager for managing manuscript submission and peer review. By 2013, over 5,000 journals had adopted Editorial Manager, including many owned by Elsevier, such as those published under its Cell Press subsidiary.

This acquisition is consistent with Elsevier's recent string of acquisitions involving various aspects of scientific workflow and research processes. Earlier examples include Pure (August 2012), Mendeley (April 2013), NewsFlo (January 2015), SSRN (May 2016), Plum Analytics (February 2017 from EBSCO), and bepress (August 2017).

Competitors to Aries Editorial Manager include ScholarOne and Publons from Clarivate Analytics, Atypon from Wiley, and Scholastica. In the current environment, there is no direct alignment between submission management platforms and the corporate ownership of journals. Many non-Elsevier journals rely on Editorial Manager, and Elsevier-owned titles are managed through many other platforms. Whether such alignment emerges in the future will be a notable development.

Smart Libraries Q&A

Each issue, Marshall Breeding responds to questions submitted by readers. Have a question that you want answered? Email it to Samantha Imburgia, Associate Editor for ALA TechSource, at simburgia@ala.org.

What is the state of the art of integration between new integrated services platforms, OPACs, institutional repositories, open access journal portals, and discovery services?

Libraries today generally have a very high expectation that the technical platforms they use work well together, both in how

they are managed and from the perspective of their users. But while seamless interoperability is held as an ideal, many challenges remain. These challenges can be seen both in the technical options for connecting systems together and in the realm of the competitive business environment.

On the technical front, system developers have made great strides in providing APIs (application programming interfaces) and other mechanisms for exchange of data and services among diverse applications and services. Most library-oriented products readily work with centralized authentication services for single sign-on using standard protocols like SAML

and services including Kerberos or Open Athens. APIs provide the primary mechanism for interoperability among diverse systems and for enabling libraries to create new features, services, or interfaces regardless whether the underlying product is available as open source or proprietary software.

In a more complex set of interactions, most online catalogs and discovery services now offer relatively seamless integration with external digital lending forms such as those from OverDrive and bibliotheca CloudLibrary. Expected functionality includes the inclusion of e-book and audiobook content in search results through MARC record ingestion, the ability to check out and download items via API transactions between the online catalog and external content platform, and the inclusion of digital checkouts along with physical materials in the patron account. This nicely integrated approach represents an incredible improvement beyond the early days of library e-book lending, which was a very fragmented and cumbersome process for library users.

It is also common for libraries to implement discovery interfaces other than the online catalog provided with their ILS. Many libraries have deployed open source discovery interfaces such as VuFind or Blacklight as a more user-friendly alternative than built-in online catalogs. The ILS-DI specification (integrated library system – discovery interface) describes the specific functionality and technical mechanisms to enable a discovery interface to displace most, or all, of the functionality related to search and retrieval of content and for patron profile and personalization features. All of the major ILSs support separate discovery interfaces, using standard protocols such as SIP, NCIP, Z39.50, as well as system-specific APIs. Connector packages have been developed for Blacklight and VuFind to latch onto any of the major ILS products. Proprietary discovery services, such as BiblioCore from BiblioCommons likewise include connectors and APIs able to fully replace the native catalog of an ILS.

We also see a trend of broader consolidation of services into product platforms. The genre of library services platforms, for example, brings together aspects of resource management previously implemented among separate products. OCLC's WorldShare Management Services and Ex Libris Alma, for example, enable a library to manage multiple formats of resources together instead of relying on both an ILS and an electronic resource management tool. These products also contain internal knowledge bases and link resolvers to further strengthen built-in interoperability. Further expanding the scope of functionality, Ex Libris Alma also includes

some capabilities for managing digital collections, including the use of Dublin Core metadata. Ex Libris supports the use of Alma with open source discovery interfaces, including VuFind and Blacklight, as well as with Summon, though the vast majority of Alma installations are paired with Primo, the company's flagship discovery service. In another move toward consolidated platforms, Ex Libris has recently launched Primo VE, a version of the discovery service fully managed through the Alma back office rather than its own management console.

Content from institutional repositories and other sources of open access content can also be incorporated into a library's discovery environment relatively easily. Protocols such as OAI-PMH (Open Archives Initiative Protocol for Metadata Harvesting) and other content transfer methods enable a library to index these resources and link to articles and other open access resources. Open access content can also be expected to be included in the indexes of discovery services and citation databases. Even when searching through Google Scholar or other tools outside the library environment, researchers can take advantage of browser plug-ins such as Unpaywall, Koperio, or Lean Library to easily view the PDF of subscribed or open access articles, using transparent search and authentication mechanisms as needed.

Almost all genres of library systems can be implemented using open source software. Major open source ILSs include Koha and Evergreen; VuFind and Blacklight were noted above as open source discovery interfaces; and the dominant institutional repositories that are open source are DSpace, Fedora, Samvera, and eprints. These open source tools enable libraries to work with vendors or their own developers to create well integrated environments and to solve interoperability issues.

Yet, many gaps in interoperability remain in the library technology and content ecosystem. Even when technical solutions are possible, competitive business issues can impede interoperability. Rivals such as Ex Libris and EBSCO Information Services have yet to resolve some core issues in the realm of discovery and resource management systems. To date, EBSCO Discovery Services cannot be used as a supported front-end discovery environment for Alma, and critical resources from EBSCO are not available through Primo or Summon discovery services due to the longstanding absence of business agreements between these two organizations. I'm optimistic that these issues will be resolved at some point, but they illustrate the importance of cooperative business relationships in addition to technical mechanisms to achieve full interoperability among diverse systems and content resources.



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