Chapter 4

Major Products

Ex Libris Alma

Ex Libris, one of the largest companies in the library technology industry, specializes in products for academic, research, national libraries, and consortia. The company created Alma as an entirely new product designed to address the needs of these libraries, especially as they have come to manage collections dominated by electronic resources.

Organizational Background

Ex Libris, based in Israel, operates as a global company with many international offices and distributors, including two in the United States. As of the end of 2013, Ex Libris employed a workforce of 536, with 194 allocated to software development. The company is currently owned by Golden Gate Capital, a major private equity firm based in San Francisco, California. Matti Shem Tov has been president and chief executive officer of Ex Libris since May 2003.

The following time line notes the key milestones in the corporate history of Ex Libris:

October 16, 2012: Golden Gate Capital acquires Ex Libris from Leeds Equity Partners.
August 5, 2008: Leeds Equity Partners acquires Ex Libris Group.
November 21, 2006: Francisco Partners acquires Endeavor Information Systems from Elsevier.
June 26, 2006: Francisco Partners acquires Ex Libris.
1999: Walden Israel and Tamar Ventures invest in Ex Libris Group.
July 1997: Ex Libris acquires Dabis, a German company offering the BIS library automation system.
1996: Company reorganized as Ex Libris group.
1995: Yissum Aleph and Ex Libris, Ltd. merge into a single company.
November 14, 1994: Endeavor Information Systems founded.
1986: Ex Libris, Ltd. founded.
1983: Aleph Yissum founded to commercialize ALEPH.
1980: ALEPH software created at the Hebrew University of Jerusalem.

Other Library Technology Products

The company offers two well-established integrated library systems, Aleph and Voyager. Aleph was developed by Ex Libris beginning in the 1980s and had been developed through multiple generations of technology and is used by some of the largest and most complex library organizations in the world. Among the 2,300 libraries using Aleph are the British Library and the libraries of the University of Oxford and Harvard University. Voyager was developed by Endeavor Information Systems, which was acquired by Ex Libris in November 2006. Voyager is likewise a very well-established product among large research libraries, with over 1,200 installations, including the Library of Congress. Ex Libris also offers a variety of other products, including Verde for electronic resource management, the SFX Link Resolver, the Rosetta digital preservation platform, and the Primo and Primo Central discovery service.

General Description of Alma

Alma embodies the concept of "unified resource management" upon which Ex Libris builds as the foundation

for its functionality. This idea of the unification of library resources was also inherent to the design and development of the company's Primo discovery interface that was launched in 2006. Alma was intended to bring together the main categories of content that libraries manage into a single resource management system.

Although Ex Libris had two very successful integrated library systems, it developed Alma entirely anew. Both Aleph and Voyager were developed in a previous era when print materials dominated library collections and before electronic resources became the focus of library content acquisitions. Both products were also based on outdated computing frameworks. The company had also developed the Verde electronic resource management system, but it was also not deemed to be a suitable foundation for the company's new flagship resource management product.

Alma base-designed from the onset to be deployed on a multitenant platform with browser-based interfaces. To support Alma's globally distributed customer base, its deployment has been distributed through data centers in multiple countries on multiple continents, including the United States, Singapore, the Netherlands, and Singapore. Consistent with the characteristics of current applications based on software-as-a-service, all of the staff interfaces of Alma are provided through the web browser used by library personnel, require no software or plug-ins for staff workstations, and do not require the library to operate any software on local servers.

Consistent with the general expectations of a library services platform and the company's key concept of unified resource management, Alma enables the library to manage both electronic and print resources. Libraries implementing Alma will not only migrate from their existing integrated library system but will also shift the management of electronic resources from previously established processes. Those that have previously implemented electronic resource management systems such as Verde will be able to migrate data. Alma also subsumes the functionality provided by link resolvers, providing a knowledge base of e-resource holdings, extending what the company originally developed for SFX.

Development Time Line

Major events related to the development and deployment of Alma from Ex Libris include the following:

December 19, 2014: Ex Libris reports 370 total institutions with signed contracts for Alma and 150 libraries in production.
December 18, 2014: Welsh Consortium chooses Ex Libris Alma and Primo for shared resource management environment.
August 2, 2014: LIBISnet Library Network in Belgium places Alma into production.
April 29, 2014: Ex Libris launches the Ex Libris Developer Network.
December 31, 2013: Ex Libris reports 329 total contracts for Alma for "Library Systems Report."
December 4, 2013: BIBSYS Consortium in Norway selects Ex Libris Alma.
October 9, 2012: Orbis Cascade Alliance selects Ex Libris Alma and Primo.
July 2, 2012: Boston College becomes the first library to put Alma in production.
January 6, 2011: Ex Libris announces that its unified resource management system will be called Alma.
December 1, 2010: Ex Libris delivers the second partner release of Alma to development partners.
July 6, 2009: Ex Libris announces development initiative for Unified Resource Management—later branded as Alma.

Adoption Phase

Alma has been in the adoption phase since its initial production implementation for Boston College in June 2012. Since that time, Ex Libris has seen positive results as it markets the product to other academic and research libraries. By the end of 2012, the company reported 126 cumulative contracts for Alma, 329 by the end of 2013, and over 370 by mid-December 2014. At that time, over 150 libraries were using Alma as their production environment.

The success of any product may not be adequately represented by the number of installations alone. A consideration of the size of the libraries reveals that a fairly high percentage of installations are in the large or very large category. For example, of 364 libraries that have selected Alma, 50 have collections of over 1 million volumes and another 78 are in the category of having at least 200,000 but less than 1 million volumes.

The overwhelming majority of libraries that have selected Alma are associated with colleges or universities (269 out of 364); 31 are special libraries; 15 serve government agencies (based on data from libraries.org).

Library Satisfaction

Forty-six libraries using Alma responded to the 2014 "Library Automation Perceptions Survey" (see table 4.1). While the satisfaction levels can be considered moderate, it is interesting to note that libraries using Alma rated their satisfaction with its management of electronic resources considerably more positively than that for print.

Table 4.1. Responses to the 2014 "Library Automation Perceptions Survey" from libraries using Alma

		Response Distribution										Statistics		
Category	**Responses**	0	1	2	3	4	5	6	7	8	9	Mode	Mean	Median
ILS Satisfaction	46			2	1	1	4	11	17	10		7	6.43	7
ILS Functionality	46		1		1	3	6	17	13	4	1	6	6.09	6
Print Funtionality	46			1		3	4	14	9	13	2	6	6.59	7
Electronic Functionality	46			1	1	1	4	12	10	14	3	8	6.74	7
Company Satisfaction	46		2		1	3	2	5	19	9	5	7	6.67	7
Support Satisfaction	46	1		2	1		4	11	20	5	2	7	6.33	7
Support Improvement	44	1		2	1	4	9	8	5	9	5	5	6.09	6
Company Loyalty	45	1	1			2	6	2	11	13	9	8	6.96	7
Open Source Interest	44	18	7	11	2	3	3					0	1.41	1

Kuali OLE

General Description and Strategy

Kuali OLE is an open-source resource management system developed through a series of initiatives with funding from The Andrew W. Mellon Foundation. Kuali OLE was created as an enterprise-level business system to support academic libraries. The software was designed to manage print and electronic materials and to support the workflows that correspond to the processing of each format. Kuali OLE is being created through a community-source development model, one where the open-source software is produced through a process organized through a defined set of participating organizations. A consortium of academic universities participated as investing partners, each contributing local personnel and financial resources.

The Open Library Environment began working under the auspices of the Kuali Foundation in 2009 as it began its initial software development. Joining the Kuali Foundation gave the project the opportunity to take advantage of both governance processes and technical components. Rather than creating its own nonprofit corporation to serve as the legal entity to manage intellectual property and provide organizational and legal support, the project was able to tap into the resources and structures already in place to support the other projects, which were primarily oriented to administrative support for higher educational institutions.

The OLE project also opted to take advantage of technical infrastructure created through other Kuali projects. The conceptual design of the software was based on the services-oriented architecture. As a complex application, the software would require the creation of many lower-level services, workflow tools, transaction management, and other components. Rather than create this infrastructure from scratch, software projects often choose to build on top of existing service bus applications, or middleware. Kuali Rice was developed to support Kuali Student, Kuali Financial System, and other projects. As part of its engagement with the Kuali Foundation, OLE opted to use Kuali Rise as the foundation for its software development.

In addition to Kuali Rice, the OLE project drew from components of the Kuali Financial System to support some of the business-oriented functions, such as those related to resource procurement and fund management.

The Kuali projects have made a major shift beginning in about September 2014 toward a commercial business model. A new organization, named KualiCo, has been founded to develop the Kuali projects more aggressively and to provide hosting and other commercial services related to the projects.

Each of the Kuali projects operates under separate governing boards. So far, the Kuali OLE board has not yet made a move to engage with the KualiCo but continues to pursue its own development and deployment agenda.

Development Time Line

Major events related to the development and deployment of Kuali OLE include the following:

September 11, 2014: The Andrew W. Mellon Foundation awards $333,000 to NCSU for Phase II of Global Open KnowledgeBase.

August 22, 2014: KualiCo formed as a professional open-source company.

August 20, 2014: University of Chicago Library placed the Kuali OLE software into production.

August 14, 2014: HTC Global Services, Inc. joined the Kuali OLE partnership as a Tier 1 investment partner.

August 4, 2014: Lehigh University places Kuali OLE into production.

December 5, 2013: Kuali OLE System Partners receive $882,000 grant from Andrew W. Mellon Foundation.

November 19, 2013: Kuali OLE Team announces the release of OLE 1.0.

June 25, 2013: EBSCO Information Services joins Kuali Foundation as a commercial affiliate.

December 6, 2012: Kuali OLE project is awarded $750,000 from Andrew W. Mellon Foundation. This grant supported a third year of development of the Kuali OLE software.

March 15, 2012: The Andrew W. Mellon Foundation awards $499,000 to NCSU for the Global Open Knowledgebase (GOKb). Allied with Kuali OLE, North Carolina State University led a project to develop the Global Open Knowledgebase to provide support for the management of electronic resources. GOKb worked to create an open-access knowledge base of electronic resources and an open-source platform for its deployment, management, and integration with resource management systems. This knowledge base would provide alternatives to those associated with commercial link resolvers and electronic management systems, including some distinctive structural extensions in addition to describing the body of scholarly resources. While GOKb was designed to be used in a variety of contexts, its integration with Kuali OLE version 2.0 helps extend its scope to electronic resource management.

January 24, 2011: HTC Global Services is the development partner for the Kuali OLE.

December 10, 2009: Indiana University is awarded $2.38 million grant from The Andrew W. Mellon Foundation to develop library software. Building on the conceptual work of the initial design phase, this two-year project began the process of specifying the functionality of the system based on teams of experts drawn from each of the participating organizations, refining the conceptual framework, and beginning the creation of the software. Now under the Kuali Foundation, the project was led by Indiana University and included Lehigh University, University of Chicago, University of Maryland College Park, University of Michigan, the University of Pennsylvania, Duke University, North Carolina State University, and representatives from a consortium of colleges and universities in Florida. A commercial software development firm, HTC Global Services, was contracted to assist the project with architecture design, project management, quality assurance, and programming.

June 13, 2008: Mellon Foundation provides $475,700 for Reconceptualizing Technology for Modern Library Workflows—OLE. Duke University was the lead institution for this project, with Lynne O'Brien, Director for Academic Technology and Instructional Services, serving as the coordinator. Other participating institutions included University of Kansas, Lehigh University, the University of Pennsylvania, the National Library of Australia, Library and Archives Canada, Vanderbilt University, the Orbis Cascade Alliance, Rutgers University, the University of Florida, the University of Chicago, Columbia University, the University of Maryland, and Whittier College. These institutions represented the interests of different types of organizations, such as large libraries from large universities, smaller colleges, consortia, national libraries, and archives. This project fleshed out the original concept into specific areas of workflow, breaking away from the traditional ILS modules. Preliminary work was accomplished to begin expressing the design into a services-oriented architecture. Organization recommendations included investigating joining with the Kuali Foundation rather than establishing its own nonprofit corporation for project administration.

Deployment and Adoption Status

Kuali OLE has been placed into production in two libraries by the end of 2014. Lehigh University became the first when it completed the migration from its SirsiDynix Symphony ILS on August 4, 2014. The University of Chicago shifted from its SirsiDynix Horizon ILS and INNOVAQ acquisition module on August 20, 2014. For both of these libraries, the initial implementation was meant to address the management of their physical resources needed to replace their legacy ILS. Their use of the product to also manage electronic resources will come in 2015 once Kuali OLE 2.0 becomes available.

Other institutions known to be actively working toward the implementation of Kuali OLE include:

- Indiana University
- Duke University
- North Carolina State University
- University of Maryland, College Park
- University of Pennsylvania
- Villanova University
- Bloomsbury Consortium of the University of London Library Systems Association

VALID is an initiative of the Virtual Academic Library Environment of the academic libraries in New Jersey. Representatives from the academic libraries in New Jersey have been involved with the Kuali OLE project since its inception in 2007. According to the project's website, institutions that have indicated interest as early implementers include New Jersey Institute of Technology, College of New Jersey, Drew University, Rutgers, and William Paterson University.

Current Status

Kuali OLE can be considered in its late development phase and early adoption cycle. The software has been placed into production successfully at one of the largest academic libraries (University of Chicago) and a smaller academic library (Lehigh University). Both of these initial implementations were based on Kuali OLE v. 1.5, which provided the ability to fully migrate from their existing ILS products. At the time of this writing, the software has not been used to also manage electronic resources, a key component of the project's stated vision. This phase of implementation is expected later in 2015.

Kuali OLE finds itself amid some recent changes related to the broader set of Kuali projects. In August 2014, following a series of workshops involving stakeholders among the various Kuali applications, a decision was made to form a new commercial company, later named KualiCo, to accelerate development and offer hosting and other services. This shift represents a change in business models that will place the new KualiCo in more of a position of control for the projects that opt to engage with it. KualiCo will employ its own team of developers and will set a development agenda that will produce new versions of the products more quickly than was happening via the community-source model. KualiCo anticipates producing more of an integrated suite of products rather than the individual products that operate entirely independently of each other. The business model for KualiCo will be based on selling services, especially hosting and support of the Kuali applications.

No immediate impact has been seen on the Kuali OLE project. As of the end of 2014, Kuali OLE continued to operate under its own board, and development continued along the previously planned course, with HTC Global serving as the primary development firm under the oversight of the Kuali OLE board and specification and testing performed by functional councils.

Any complications for Kuali OLE may relate to the other Kuali components upon which it was based. In order to jump-start development, Kuali OLE decided to use Kuali Rice as its middleware to support basic services and common tasks and workflows needed for a complex business application. Kuali Rice also provides the document store and is the basis for the delivery of the staff interface.

OCLC WorldShare Management Services

OCLC ranks as one of the largest and most influential organizations globally that provides services and products to libraries. It was founded in 1967 to provide a shared cataloging service to libraries in the state of Ohio and expanded nationally and internationally in subsequent years. Organized as a nonprofit corporation, OCLC is governed by a board of trustees and advised by councils appointed from its membership. The organization provides major services related to cataloging, resource sharing, collection analysis, virtual reference, and many other tasks. Its research division explores trends and technologies with potential interest to libraries. OCLC also has a long history of involvement in producing or distributing library technology products. It provided one of the major library automation products of the 1980s called LS/2000, but exited from the library automation arena in 1990 when it sold its Local Systems division to Ameritech. OCLC has since reengaged with library automation, acquiring a variety of companies that produce integrated library systems in different global regions, including Sisis Informationssysteme, Fretwell Downing, PICA, Amlib, and BOND.

Organizational Background

The following time line shows some of the organizations that have become part of OCLC through its organizational history. OCLC has created a wide variety of products and services both through its own development and through the acquisition of other companies and nonprofit organizations.

October 1, 2013: OCLC acquires Huijsmans en Kuijpers Automatisering.
April 18, 2011: OCLC acquires the assets of German library system provider BOND.
March 17, 2010: EBSCO Publishing acquires the NetLibrary Division from OCLC. OCLC sells NetLibrary to EBSCO Publishing.
August 1, 2009: OCLC sells Preservation Service Center to Backstage Library Works.
September 12, 2008: OCLC acquires Amlib.
January 11, 2008: OCLC acquires EZproxy from Useful Utilities.
July 3, 2007: OCLC acquires remaining shares of OCLC PICA.
August 14, 2006: OCLC acquires DiMeMa, Inc., which produces CONTENTdm.
July 1, 2006: OCLC acquires Research Libraries Group.
January 3, 2006: OCLC acquires Openly Informatics.
November 2, 2005: OCLC PICA acquires Fretwell-Downing Informatics.
June 27, 2005: OCLC PICA acquires Sisis Informationssysteme.
August 2004: OCLC absorbs 24/7 Reference Service from Metropolitan Cooperative Library System.
November 12, 2003: OCLC acquires CAPCON.
1999: OCLC acquires 60 percent ownership of PICA BV. OCLC acquires Library Technical Services (LTS).

January 1999: OCLC acquires WLN.
October 1997: OCLC acquires Blackwell North America's authority control service business.
July 1997: OCLC sells Information Dimensions to Gores Technology Group.
1997: PICA takes a majority share in newly founded company ALS International Limited.
June 1993: OCLC acquires Information Dimensions, Inc., from Battelle Memorial Institute.
April 1990: Ameritech acquires LS/2000 from OCLC.
1985: OCLC acquires MetaMicro.
August 1983: OCLC acquires Avatar.
1967: OCLC Founded as Ohio Online Library Center.

Development of WorldShare Management Service

In April 2009, OCLC announced its plans to develop a new resource management system that leveraged its massive WorldCat bibliographic service. Rather than depend on bibliographic databases laboriously created by each library, this new product would provide a complete set of circulation, acquisitions, serials management, and related capabilities to extend the cataloging and bibliographic services and resource sharing in place for WorldCat. In simplified terms, a library would manage its local collection by attaching item-specific records to its holdings as represented in WorldCat.

To support this new conceptual approach, OCLC developed a new multitenant platform and software application to provide these new resource management capabilities, generally called the WorldShare Platform, which supports specific applications such as WorldShare Management Services. Consistent with its involvement with libraries in all parts of the world, the WorldShare Platform has been deployed through multiple data centers located in multiple contents. The WorldShare Platform was developed following the services-oriented architecture. In addition to its web-based staff interfaces, the WorldShare Platform exposes APIs to enable library programmers or external applications to access its data and functionality. These APIs are intended to allow libraries or other organizations create applications or widgets beyond those developed directly by OCLC.

OCLC WorldShare Management Services provides capabilities to manage a library's collection of electronic resources in addition to its print collections holdings via a component called WorldShare License Manager. OCLC has created a knowledge base of e-resource holdings to facilitate the management of these resources.

The following time line describes the major benchmarks in the development of WorldShare Management Services:

December 19, 2014: OCLC reports that 270 libraries are live on WorldShare Management Services and a total of 340 have signed contracts.
June 12, 2014: University of Delaware is first ARL and 200th library to go live with OCLC WorldShare Management Services.
January 21, 2014: LIBROS consortium of sixteen academic libraries in New Mexico selects WorldShare Management Services.
January 9, 2014: Private Academic Library Network of Indiana of twenty-three institutions selects OCLC WorldShare Management Services as its cloud-based library management system.
December 31, 2013: OCLC reports 177 total installations of Sierra for the "Library Systems Report."
July 1, 2011: General release of WorldShare Management Services.
November 18, 2010: Craven-Pamlico-Carteret Regional Library System places WorldShare Management Services into production.
April 22, 2009: OCLC announces new Web-scale Management Services (later branded as WorldShare Platform).

Adoption Phase

Following a development period that began around April 2009, WorldShare Management Services saw its first production implementation in November 2010 by the Craven-Pamlico-Carteret Regional Library System. The implementation was based on a very early version of the platform, as this library faced the need to rapidly implement a new system due to a major failure of the hardware that supported its incumbent ILS. The general release of the system came in July of the next year.

As of December 2014, 270 libraries have implemented WorldShare Management Services as their production environment, migrating from their prior ILS installations. OCLC reported a total of 177 libraries that had signed agreements to implement the product at the end of 2013.

While a diverse mix of libraries have selected WorldShare Management Services, around three-fourths are associated with colleges or universities. Out of the 224 libraries using the product represented in libraries.org, 171 are academic, 11 are special, and 9 are public libraries.

Libraries from all size categories have selected WorldShare Management Services. Around 80 percent of these libraries are medium-sized with collections between 20,000 and 200,000 volumes. The product has not seen wide adoption in the large library sector with collections over 1 million volumes. It has entered the ranks of the members of the Association of Research Libraries with its installation in the University of Delaware in June 2014.

Table 4.2. Responses to the 2014 "Library Automation Perceptions Survey" from libraries using WorldShare Management Services

		Response Distribution										Statistics		
Category	**Responses**	0	1	2	3	4	5	6	7	8	9	Mode	Mean	Median
ILS Satisfaction	72	1		1	2	1	3	10	28	22	4	7	6.88	7
ILS Functionality	71	1			2	3	8	12	31	11	3	7	6.51	7
Print Funtionality	70	1	1			1	4	8	15	33	7	8	7.21	8
Electronic Functionality	70	1	1	1			7	10	20	23	7	8	6.93	7
Company Satisfaction	71	1		2		1	1	6	15	34	11	8	7.39	8
Support Satisfaction	70			2		1	3	8	19	18	19	7	7.41	8
Support Improvement	69			2		2	13	9	14	17	12	8	6.86	7
Company Loyalty	72	1	1	1		2	1	4	15	23	24	9	7.57	8
Open Source Interest	71	36	15	3	9	4	1		2	1		0	1.28	0

Product Satisfaction

The 2014 "Library Automation Perceptions Survey" received 72 responses from libraries that have implemented OCLC WorldShare Management Services (see table 4.2). The statistics for the satisfaction responses reflected moderate levels of satisfaction, which reflects well on a relatively new product. More in-depth analysis will be given when the full report is published based on the survey data. One preliminary observation is that the satisfaction level given for print functionality (7.21) was more positive than that for its capabilities for electronic resources (6.93).

ProQuest Intota

ProQuest ranks as one of the largest companies providing products and services for libraries. In addition to its many content products, it also provides a variety of library resource management and discovery products, primarily through its business unit Serials Solutions, which it acquired in March 2004. In January 2014, the Serials Solutions name was phased out, reflecting its full integration into ProQuest.

Organizational Background

The following time line outlines some of the major events in the corporate history of ProQuest that relate to its resource management and discovery products.

January 20, 2014: ProQuest retires Serials Solutions brand.
November 21, 2013: Initial version of Intota Assessment launched by ProQuest.
June 22, 2011: Serials Solutions announces strategy to build Web-scale management solution, later branded as Intota.
January 19, 2009: Serials Solutions launches Summon discovery service.
January 10, 2008: Serials Solutions brands its e-resource knowledge base as KnowledgeWorks.
November 15, 2007: Serials Solutions launches the 360 Counter E-Resource Assessment Service.
March 29, 2007: Serials Solutions rebrands its products under the Serials Solutions 360 suite.
October 4, 2005: Serials Solutions launches E-Resource Management System.
June 9, 2005: Jane Burke named general manager of Serials Solutions.
January 13, 2005: Serials Solutions launches Central Search federated search product.
March 9, 2004: Serials Solutions acquired by ProQuest.
December 5, 2002: Serials Solutions launches OpenURL link resolver Article Linker, later branded as 360 Link.
March 2000: Serials Solutions founded.

Development of Intota

ProQuest has taken a staged approach to the development of Intota, integrating and extending existing products as well as creating new components and functionality. The initial phase produced new functionality not offered in a traditional integrated library system. This new functionality centers on enhanced electronic resource management and collection analytics and assessment tools that span print and electronic materials. During the initial phase, libraries adopting Intota would do so in tandem with their existing ILS implementation. Only with the availability of the complete Intota product will libraries be able to decommission their legacy ILS.

ProQuest had been a pioneer in the index-based discovery realm, but initially resisted developing a resource management product that also addressed print materials. The company had held to a strategy of focusing on the electronic resource collection of academic libraries. In June 2011, ProQuest announced that it would develop a product to provide comprehensive

management of print as well as electronic resources. In January 2012, ProQuest branded this new product as Intota.

ProQuest's Summon discovery service can be considered a well-established product. It was initially released in June 2009 with a major new version in created in 2013 with a variety of new features to help library users find and explore resources related to their research interests. (See *SLN* May 2013 for more details.)[1]

On its path toward the full product, ProQuest has released what it calls Intota v1, a package of new and existing products that together provide functionality for discovery and management of a library's resources, except for the management of print resources. The package includes Summon, 360 Link, Intota Assessment, and the new Intota E-resource Management.

- The Intota ERM extends the existing capability of its 360 Resource Manager with new features and automated workflows.
- ProQuest had also developed its 360 Link OpenURL link resolver and its associated knowledge base. In June of 2014, the company released a new version that included new capabilities such as Index-Enhanced Direct Linking.
- Intota Assessment has been available since 2013, providing a variety of metrics for both print and electronic collections. Intota Assessment and Intota ERM are not deployed on the same technical platform but exchange data as needed. Intota Assessment displaces ProQuest's earlier 360 Counter service.

ProQuest continues to offer 360 Link and 360 Resource Manager as individual products outside the Intota v1 suite. Libraries interested in moving from the 360 Suite will be able to easily migrate to Intota through processes that ProQuest has in place and will not have to recreate any data or configuration profiles.

Intota v1 provides new capabilities for automated management of demand-driven acquisitions. Through an integration with Summon, records corresponding to a collections selected for DDA are activated in the knowledge base without the need for processing MARC records in and out of the library's ILS.

ProQuest has developed all of its strategic products as hosted services deployed on multitenant platforms with web-based interfaces. None of its strategic management products involve software that would be installed on a server in the library or client software for staff computers.

ProQuest has a strong emphasis on developing knowledge bases as the basis of its resource management products. Its KnowledgeWorks e-resource knowledge base originally developed for 360 Link, 360 Core, and 360 Resource Manager has been extended to represent a broader array of resources, including those oriented to print resources. The knowledge base for Intota further extends the knowledge base created for those products, addressing additional resources and including data from other content resources available in the ProQuest portfolio.

Although Intota remains in the development phase, ProQuest has been consistent in its messaging that Summon is intended as the patron interface for Intota. Both products offer APIs that make it technically possible to create other product combinations.

Intota Development Time Line

ProQuest, via its then operating division known as Serials Solutions, became one of the earliest to enter the index-based discovery arena when it announced its Summon discovery service in January 2009. The company has been a later entrant into the arena of library services platforms. The following time line gives some of the major benchmarks in the development of Intota:

Late 2015: Anticipated release of full Intota product for comprehensive management of print and electronic resources that allows replacement of existing ILS.

June 24, 2014: ProQuest releases foundation version of Intota, providing management of electronic resources and collection assessment and decision support for print and electronic materials.

November 21, 2013: Initial version of Intota Assessment released.

June 22, 2011: ProQuest business Serials Solutions announces strategy to build Web-scale management solution, later branded as Intota.

June 2009: ProQuest releases Summon index-based discovery service.

Deployment and Adoption Status

Since the full version of Intota has not yet been completed, it is not possible to show implementation as with the other members of the library services platform category. Instead, we can provide data provided by ProQuest that lists libraries that have signed for the preliminary release and that have committed to implement the full version once it is available.

As of late 2014, ProQuest reported that 31 libraries had signed contracts to license Intota v1 (Summon, 360 Link, Intota Assessment, Intota ERM as they continue to rely on their existing ILS implementations). These libraries include:

- Aarhus Universitets Biblioteker (Denmark)
- Auckland University of Technology (New Zealand)

- Babson College
- Bibliotheca Alexandrina (Egypt)
- Canisius College
- Case Western Reserve
- Charles Darwin University (Australia)
- Clemson University
- College of the North Atlantic
- Concordia University Wisconsin
- De Montfort University (UK)
- Edge Hill University (UK)
- Edith Cowan University
- Florida Institute of Technology
- Florida State University
- Higher Education Colleges of Technology (UAE)
- Hong Kong Baptist University
- Humboldt State University
- James Cook University (Australia)
- Kuwait Health Science College
- Niagara College (Canada)
- Northumbria University (UK)
- Pittsburg State University
- Queen Mary University (UK)
- Queen's University (Canada)
- Staffordshire University (UK)
- University of Southern California
- Université Paris Diderot (France)
- University Campus Suffolk (UK)
- University of Victoria (Canada)
- USCH Library (Germany)

ProQuest reports another set of libraries that have committed to the full version of Intota and anticipate migrating from their existing ILS products once it become available:

- Ball State University (to migrate from SirsiDynix Symphony)
- Johnson County Community College (Ex Libris Voyager)
- Marist College (Ex Libris Voyager)
- SUNY Geneseo (Ex Libris Aleph)
- Worcester Polytechnic Institute (Ex Libris Voyager)
- Eastern Michigan University (Ex Libris Voyager)
- University of Texas–Arlington (Ex Libris Voyager)
- Texas Health Science Libraries Consortium (five members, Ex Libris Voyager)
- University of Huddersfield (SirsiDynix Horizon)
- University of Notre Dame, Australia (SirsiDynix Horizon)
- Cooperating Libraries in Consortium (CLIC; seven libraries, Innovative Millennium)

Sierra from Innovative Interfaces

Innovative Interfaces offers a variety of products and services for libraries, primarily oriented toward the management and discovery of library resources. Founded in 1978 by Jerry Kline and Steve Silberstein, the company has created an evolutionary series of products that have steadily expanded in scope and that have been re-engineered through multiple generations of technology.

Organizational Background

Innovative currently ranks as one of largest companies in the library technology industry. For most of its corporate history, Innovative stayed out of the fray of mergers and acquisitions or external investors. Its only acquisition took place in 1997, when Innovative acquired SLS, a European company that developed the LIBERTAS automation system. The company experienced a major change in April 2012, when it was acquired by a pair of private equity firms, Huntsman Gay Global Capital (now HGGC) and JMI Equity.

The major milestones of the company can be seen in the following chronology:

June 1, 2014: Innovative Interfaces acquires VTLS.
March 31, 2014: Innovative Interfaces acquires Polaris Library Systems.
February 1, 2013: Huntsman Gay Global Capital and JMI Equity purchase remaining shares of Innovative Interfaces.
October 16, 2001: Jerry Kline purchases the outstanding shares of the company from cofounder Steve Silberstein.
April 30, 1997: Innovative acquires SLS.
1978: Innovative Interfaces, Inc. founded by Jerry Kline and Steve Silberstein.

Since the advent of its new ownership and management, Innovative Interfaces has expanded its global presence through opening a new office in Dublin, Ireland, and has launched Innovative India to assist in software development, service, and support. The company has also expanded through strategic acquisitions, purchasing Polaris in March 2014 and VTLS in June 2014.

Innovative Interfaces developed Encore as its discovery product, initially released in May 2006, providing the relevancy-ranked results, faceted navigation, enriched display of results, including cover images, tables of contents, and a simple interface with a single search box. The company continues to offer WebPac PRO as the conventional online catalog that can be used with either Millennium or Sierra, unlike other library services platforms that operate only with a discovery interface. Innovative introduced Encore Synergy in April 2010 to enable discovery of article-level content through real-time connections to remote resources using web services. Encore Synergy did not follow the index-based search model in the same way

Table 4.3. Responses to the 2014 "Library Automation Perceptions Survey" from libraries using Sierra

		Response Distribution										Statistics		
Category	**Responses**	0	1	2	3	4	5	6	7	8	9	Mode	Mean	Median
ILS Satisfaction	276	10	5	10	16	15	34	45	84	46	11	7	5.90	7
ILS Functionality	276	3	9	11	11	12	28	38	74	64	26	7	6.32	7
Print Funtionality	276	2	4	7	12	12	13	20	58	100	48	8	6.97	8
Electronic Functionality	268	9	15	12	20	30	33	50	48	36	15	6	5.38	6
Company Satisfaction	276	18	13	11	13	20	38	41	65	45	12	7	5.48	6
Support Satisfaction	267	18	12	15	21	21	28	43	57	39	13	7	5.30	6
Support Improvement	267	30	11	10	21	39	61	26	32	23	14	5	4.66	5
Company Loyalty	269	25	6	15	16	23	34	31	40	37	42	9	5.52	6
Open Source Interest	274	90	53	39	19	24	23	10	9	2	5	0	2.13	1

embodied by other discovery services. In June 2012, Innovative launched Encore Duet, which provides article-level discovery via API access to EBSCO Discovery Service. Encore Duet requires that the library also subscribe to EDS from EBSCO in addition to purchasing Encore from Innovative.

General Description of Sierra

Sierra, Innovative's latest strategic product offering, brings forward the features and functionality of the company's previous products into a newly created technology platform. The evolutionary product development can be seen in the following time line:

December 22, 2014: Innovative Interfaces reports 495 libraries live on Sierra and a total of 560 contracts signed.
December 31, 2013: Innovative reports 336 total installations of Sierra for the "Library Systems Report."
May 4, 2012: Bloomfield Township Public Library becomes the first public library to place Sierra into production.
April 25, 2011: Innovative announces Sierra Services Platform development.
May 26, 2006: Innovative Interfaces launches Encore discovery interface.
August 1995: Innovative launches its first web-based online catalog.
1991: Innovative develops INN-Reach system.
1989: Innovative interfaces develops Circulation Module for INNOPAC.
1987: Innovative interfaces develops online catalog module for INNOPAC.
1985: Innovative Interfaces develops Serials Control Module.
January 1982: Innovative launches INNOVACQ SYSTEM 100.
1978: Innovative Interfaces develops OCLC-CLSI interface.

The development strategy for Innovative has been to advance the functionality of its previous resource management products into each next-generation system. Millennium had proven itself as one of the most successful integrated library systems on the market and was generally regarded as offering quite sophisticated functionality for circulation and technical services. The product also had a reputation as a relatively closed and proprietary application. Sierra, in contrast, was designed to embrace the service-oriented architecture, providing a set of RESTful APIs for programmatic access to the functionality and data within the system. Sierra also offered access via SQL requests to the underlying PostgreSQL relational database.

Innovative completed the development of the initial version of Sierra in only twelve months—the period that occurred between its initial announcement and the first library to place the software into production. Innovative developed a new platform for Sierra that included new layers of technology surrounding the business logic carried forward from Millennium. Sierra relies on PostgreSQL an open-source relational database engine instead of its own proprietary database or Oracle, as was used by Millennium.

In contrast to Millennium, which divided functionality into separate modules for circulation, cataloging, acquisitions, and serials, Sierra offers a unified, nonmodular staff client with access to all the capabilities of the system, activated selectively according to the security profile of the staff member.

Innovative has not created knowledge bases as part of its product strategies for the management of electronic resources. Sierra was not initially developed for deployment through multitenant software-as-a-service. Rather, current deployment options are similar to Millennium, where the software is installed locally in

a library or consortium or as separate instances hosted by Innovative.

Deployment and Adoption Status

Sierra has proved to be an extremely successful product when measured by the number of libraries that have selected and implemented the product. By December 2014, Innovative reported that 560 libraries have signed contracts for Sierra and that 495 are using it as their production environment. A total of 1,625 libraries and 3,675 individual branches are recorded in libraries.org as using Sierra.

The libraries selecting Sierra represent a very diverse mix when considering library types and size categories. The largest portion, around 56 percent, falls into the medium-sized category; 16 percent are small, 18 percent large, and 8 percent very large. Public libraries dominate, with about 70 percent of the overall set; 23 percent are academic libraries.

The satisfaction levels of libraries using Sierra are moderate, as seen in the 2014 Library Automaton Perceptions Survey, which received 276 responses from libraries using the product (see table 4.3). Preliminary observations include a higher set of ratings for its print functionality (6.97) compared to its capability for electronic resources (5.38).

Note

1. Marshall Breeding, "Serials Solutions to Launch Summon 2.0," *Smart Libraries Newsletter* 33, no. 5 (May 2013): 2–5, accessed May 6, 2015, http://journals.ala.org/sln/issue/view/281.