Smarter Libraries through Technology

Phases of Business Evolution

By Marshall Breeding

Each of the companies creating products and services for libraries has its unique business history. This newsletter has chronicled the major business events that have shaped the library technology industry over recent decades. To provide background and context, most articles covering major company or product events include details of the history of the business involved. The broad trend has been toward consolidation of products and services into a small group of large businesses. Within this context, each company brings its own story, driven by influential founders and executives and contributing distinct products and services. Among these companies, we see several patterns in business development.

Almost all the companies in the industry began under the ownership and management of one or more founders. An entrepreneur with a good product idea can start a company, but it is exceptional when the founder can retain control of the company over the long term. Only a few companies in the library technology industry active now remain under founder ownership and management. The Library Corporation, founded in 1974, continues to be owned and led by Annette Murphy. Some of the smaller companies in this group include ByWater Solutions, Media Flex, LibraryWorld, Keystone Systems, and Biblionix. These companies have managed to fund their software

development and operations through organic revenue without ceding equity to external investors.

Most companies, however, seek funding to accelerate their business strategies and product development. Early stage companies may attract the attention of venture capital firms. These investments tend to be modest in size and usually do not involve giving up control of the company. Some of the examples of venture capital assisting a library technology company advance to its next phase include the investments of Tamar Ventures and Walden Israel in Ex Libris (1999), the recapitalization of Sirsi Corporation by CEA Capital Partners (1999), and investments by Active Venture Partners and Telefónica Amerigo in ODILO. Venture capital firms balance the risk of investing in newer companies with the possibilities of higher returns for those that prove most successful.

Private equity investments have been a more conspicuous factor in the library technology industry. These firms invest only in well established companies with demonstrated business success, with the potential for additional growth. Private equity firms usually acquire full ownership of the companies in which they invest. These arrangements may also include acquisition of multiple companies, consolidated into a single business. Some of the major acquisitions involving private equity takeovers include: SirsiDynix acquisition by Vista Equity Partners (2006) and later by ICV Partners (2014); Innovative Interface acquisition by JMI Equity and Huntsman Gay Global Capital (2013); Francisco Partners' acquisitions of Ex Libris and Endeavor Information Systems (2006); Leeds Equity Partners acquisition of Ex Libris (2008); Golden Gate Capital acquisition of Ex Libris (2012); and One Equity Partners multiple acquisitions that assembled bibliotheca (Bibliotheca RFID Systems, Intellident, Integrated Library Group in 2011; 3M Library Systems in 2015). These examples of private equity investments contributed to industry consolidation but also funded the development of some of the seminal products used by libraries today.

Buy-outs of companies by larger players with related business interests fall into a category of strategic acquisitions. These

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companies may not be direct competitors, but offer products and services that may complement each other's business strategies. Examples of these types of transactions include ProQuest's acquisitions of Ex Libris (2015) and Innovative (2019), Lyngsoe Systems acquisition of P.V. Supa (2021), the acquisition of Talis (2018) and Lean Library (2018) by SAGE Publishing, and the multiple acquisitions of ILS companies by Axiell. The pending sale of ProQuest to Clarivate likewise fits within this category of strategic acquisition.

The entry into the ranks of publicly traded companies usually marks the full maturity of a business. Instead of full ownership by private equity firm, shares of these companies are traded on a public exchange. An example of a public company in the library technology industry is Data Research Associates, which was founded in 1975 by Mike Mellinger, issued an IPO in 1992, and became private again when it was acquired by Sirsi Corporation in 2001. The strategic acquisition of ProQuest by Clarivate makes it part of a public company.

This issue of *Smart Libraries Newsletter* features the acquisition of ProQuest by Clarivate. The story of Ex Libris, ProQuest and Clarivate includes all these chapters: founding by an entrepreneur, Azriel Morag, early investments by venture capital, multiple rounds of private equity ownership, followed by a strategic acquisition, and shifting to become part of a public company.

Clarivate to Acquire ProQuest

The commercial landscape that includes the scholarly communications sector and library systems and services will take new form with the proposed acquisition of ProQuest by Clarivate, a large publicly traded company with diverse products and services spanning the scientific research and intellectual property sectors. This $5.3 billion transaction is the largest by far in the library sector. See Table 1.

The acquisition means a change of ownership for ProQuest, but does not substantially change the competitive landscape for the products and services purchased by libraries. Clarivate's products are not sold primarily through libraries, but rather to other parts of research institutions. As part of Clarivate, ProQuest and its technology businesses Ex Libris and Innovative potentially gain access to resources to strengthen capacity in product development and support. This acquisition also comes with expectations for streamlining operations to achieve savings as the companies combine.

ProQuest and Clarivate announced the definitive acquisition agreement on May 17, 2021 with anticipated closing in the third quarter of 2021. In the interim, both businesses must operate as before with no internal collaboration, as defined by regulations applicable to public companies. Clarivate issued statements describing their businesses and the details of the acquisition as part of the announcement. Additional information regarding possible business integration or

product strategies remains speculative and will begin to take shape following the close of the acquisition.

This acquisition represents a new type of consolidation for library vendors. The initial phase of mergers mostly took place among direct competitors. Companies such as SirsiDynix were formed through successive acquisitions of other ILS companies. The next phase involved the consolidation of the broader library services sector. Companies specializing in library technology products became part of larger businesses which some combination of content, technology, and services for libraries. Examples include the acquisitions of Ex Libris and Innovative by ProQuest. Clarivate's purchase of ProQuest can be seen as a new phase where library services companies are consolidated

Table 1. Valuations of Related Business Acquisitions

Date	Company	Buyer	Seller	Value*
2021	ProQuest	Clarivate	CIG and Atairos	$5,300
2016	Clarivate	Onex Corporation and Baring Private Equity Asia	Thomson Reuters	$3,550
2015	Ex Libris	ProQuest	Golden Gate Capital	$500
2012	Ex Libris	Golden Gate Capital	Leeds Equity Partners	$250
2008	Ex Libris	Leeds Equity Partner	Francisco Partners	$170
2007	ProQuest	Cambridge Information Group	ProQuest Company NYSE: PQE	$220
2006	Ex Libris	Francisco Partners	HJU, Walden Israel, Tamar Technologies	$62
1998	Ex Libris	Walden Israel	Investment	$4

*Millions USD

into adjacent industries, in this case the scholarly communications and analytics sector.

Details of the Acquisition

Clarivate has agreed to purchase ProQuest for $5.3 billion, split between $4 billion in cash and $1.3 billion in Clarivate stock, representing about a 7 percent ownership stake. ProQuest is currently owned by Cambridge Information Group and Atairos, a major strategic investment firm. Cambridge Information Group is owned by the family of Robert N. Snyder, its founder.

ProQuest is expected to come under the Science group within Clarivate, which also includes another group of businesses involved in technologies and services related to managing intellectual property. The science group brings in 64 percent of the company's revenues. Combined 2020 revenue for the two companies totaled $2.6 billion, including $876 million from ProQuest.

Andrew M. Snyder currently serves as the chairman of ProQuest and is the CEO of Cambridge Investment Group. Once the acquisition closes, Snyder will become vice chairman of the Clarivate board of directors. Michael Angelakis, CEO of Atairos, will also join the Clarivate board.

Jerre Stead is the executive chairman of the Clarivate board and the CEO. No specific changes in executive leadership for Clarivate or ProQuest have been announced.

Drivers of the Acquisition

The merger is driven by business advantages the companies gain through combining. One factor stated includes the ability to cross-sell products. Existing ProQuest sales channels will be able to promote Clarivate products to libraries. Likewise, Clarivate can provide broader exposure to ProQuest products. The Ex Libris product for research services, Esploro, Research Professional, and Pivot-RP would likely benefit from Clarivate's established connections with research offices in educational and corporate organizations.

Acquisition documents state that the companies will save $100 million in annual operational costs by combining. These synergies would come through facilities, technology infrastructure, and personnel. Between the workforces of Clarivate, with 8,500 personnel, and ProQuest, with 2,700, selective consolidation of workspaces will gain savings. Clarivate states it has already achieved similar levels of cost efficiencies with its previous acquisitions (CPA Global, DRG, Darts-ip, SequenceBase, and TrademarkVision).

Expanding Workflow and Analytics

Clarivate falls within a category of businesses that can be characterized as providing tools for workflows and analytics for scholarly research. Its peers include Digital Science, owned by Holtzbrinck Publishing Group, which also holds majority ownership Springer Nature Group (53%); as well as Elsevier and other companies that had been considered primarily scholarly publishers but are shifting their emphasis toward workflow and analytics.

Companies in this sphere share an interest in technologies and data services to support research workflows. The lifecycle of the scientific research process involves a complex set of processes and activities, both at the level of the institution and individual researchers and labs. The companies in this space compete vigorously to build or acquire products and services that address the complete research cycle.

Academic libraries play an important role in the scientific research cycle in addition to their other services. They play a central role with completed research outputs, such as scholarly articles and monographs, acquiring and enabling access to these materials on behalf of the researchers within their institutions. Many academic libraries also maintain repositories for local copies of scientific papers, graduate student theses or dissertations, and research data sets. Some libraries offer services to researchers to assist with development and execution of data management plans routinely required by funding agencies.

Libraries in research institutions are increasingly interested in involvement with earlier stages of research process. Opportunities include providing services able to strengthen institutional research capacity through resources that identify funding opportunities from governmental and private grant-making organizations or that highlight research outputs to attract funders and researchers to the institution. These activities facilitate the advancement of individual researchers within their own institution and beyond. Such research services tools and technologies have traditionally been acquired through the institutional office of research. Ex Libris positions its Esploro research services platform to enable libraries to engage with the university's research agenda and to strengthen their strategic role within the institution. Potential synergies between Clarivate, with its Converis research services product, and Ex Libris Esploro are an example where libraries may gain benefits from the combination of the product families from the two companies.

The combined products of the two companies will address a broad range of scientific research needs, starting from the funding phase through to final outputs in the form of scholarly papers, and then to the acquisition of that content to inform new research via academic libraries. A key part of the

value proposition of the merger involves assembling a more comprehensive set of tools for scientific research that benefits research organizations and their libraries.

Impact on Public Libraries

ProQuest has a small, through growing, involvement with public libraries. The company entered the public library technology arena through its 2019 acquisition of Innovative Interfaces. Public libraries represent most of the organizations using the Polaris integrated library system (1,316 out of 1,499 libraries); over 60 percent of Sierra installations are in public libraries. Vega, the new discovery and patron engagement environment recently launched by Innovative, has been specifically designed for public libraries. Public libraries also invest in ProQuest database and other content products, though this represents a relatively small portion of the company's overall revenue.

The acquisition of ProQuest by Clarivate seems unlikely to bring a major change to ProQuest's public library business. The need to expand beyond its core markets into new business sectors applies just as much to Clarivate as it does to ProQuest. As part of Clarivate, Innovative gains the potential to become a more focused and formidable competitor in the public library technology arena. It will be interesting to see the progress of Innovative as the merger closes and business and product strategies emerge.

Impact on Competitors

On the library technology and database front, ProQuest competes most directly with EBSCO Information Services in the areas of content, discovery, and technology. Both companies offer major disciplinary abstracting and index products, delivered on the EBSCOhost and ProQuest One platforms, respectively. EBSCO Discovery Service competes with ProQuest's Primo and Summon and has a larger market share. Possible synergies with Clarivate's Web of Science and tools for analytics and impact may have implications for the balance of power in

Table 2. Clarivate and ProQest Product Comparison Matrix

	Clarivate Web of Science Group	ProQuest
Scholarly Discovery	Web of Science	Primo; Summon
Serials directory for libraries		Ulrichsweb
Citation Management	EndNote	RefWorks
Citation impact and analytics	InCites Benchmarking and Analytics	
Browser plugin for full text access	Kopernio / EndNote Link	
Library Services Platform for Academic libraries		Alma
Integrated library Systems for Academic libraries		Voyager; Aleph
Integrated library systems for public libraries		Sierra (overlap with academic); Polaris
Public Library discovery and engagement		Vega
Digital Preservation		Rosetta
Resource Sharing		Rapido; RapidILL; INN-Reach
Research data management	Converis	Esploro
Pivot-RP		
Research Funding support		Research Professional; Pivot-RP
Course List integration		Leganto
Mobile content management		campusM
Workflow management for journals, books and conferences	ScholarOne	
Tracking of publications for Researchers	Publons	
Journal analytics	Journal Citation Reports	
Text Data Mining		ProQuest TDM Studio
Bibliographic utility		Skyriver
Repository / Digital Asset Management		Vital
Library Content Marketplace		ProQuest Rialto; OASIS
Library Content products		ProQuest
Ebook marketplace		ProQuest Ebook Central
Dissertations		ProQuest Dissertations & Theses Database
Historic and other primary source content		News and Newspaper Collections
Streaming Video		Academic Video Online
Alexander Street		
Disciplinary research and full text		ProQuest One family of databases

the library discovery services arena. EBSCO Information Services has recently made partnerships in the scientific research arena, including protocols.io and Code Ocean, but these are small moves relative to the large-scale infrastructure of the combined Ex Libris and Clarivate product suites (see Table 2). Alma holds a dominant position in the library services platform arena, with EBSCO-backed FOLIO as a nascent competitor. The acquisition seems likely to turn up the heat between rivals ProQuest and EBSCO Information Services.

ProQuest Joins the Ranks of Public Companies

Through this acquisition, ProQuest becomes one of the few public companies in the library technology industry. Auto-Graphics until now has been the only public company in this sector, which is unusual for a smaller business of $5.35 million in revenue.

When ProQuest becomes part of Clarivate, its financial position and business activities will be openly available. Public companies are required to publish quarterly and annual financial reports. These filings will make available financial data that ProQuest, as a privately held company, has not previously disclosed. Non-profit corporations, such as OCLC and LYRASIS, must make their annual IRS 990 tax filings available to the public. Privately held companies have no requirements for public reporting of financial data. In the library technology sector, most of the private companies have provided sales and personnel data for the Library Systems Report.

ProQuest Background

ProQuest, with headquarters in Ann Arbor, MI, offers a wide range of content and technology products to libraries. According to figures provided by Clarivate, out of ProQuest's $867 million in 2020 revenue, 62 percent came through its content offerings and 34 percent from its technology products. Forty percent of revenue comes from outside North America. ProQuest employs a workforce of 2,723, including 538 in product development. Higher education represents 81 percent of revenue; 12 percent from other libraries, and 7 percent from the corporate sector. Table 3 shows major events in ProQuest's history.

Clarivate Background

Clarivate was formed in October 2016 when the Intellectual Property and Sciences division of Thomson Reuters was sold to private equity firms Onex Corporation and Baring Private Equity Asia. Some of the products related to science and

Table 3. ProQuest History

Date	Event
1938	Eugene B. Power creates University Microfilm International, based in Ann Arbor, MI to commercialize services for creating microfilm copies of doctoral dissertations. The company expanded to also product abstracts of scholarly articles and other academic materials.
1962	University Microfilms International acquired by Xerox Corporation for $8 million
1985	UMI acquired by Bell & Howell to form Bell & Howell Information and Learning
1985	Bell & Howell launch ProQuest database products on CD-ROM.
1997	ProQuest Direct launched as an internet service.
1999	Bell & Howell acquire Chadwyck-Healey for £30 million.
2001	Bell & Howell Information and Learning and Bell & Howell Publishing Services merge to form ProQuest Company.
2002	ProQuest Company acquires Macromedia.
2003	ProQuest Company acquires SIRS Publishing from Elliot Goldstein and Eleanor Goldstein.
Mar 2004	ProQuest Company acquires Serials Solutions.
Jan 2005	ProQuest Company acquires Voyager Expanded Learning.
Dec 2006	Cambridge Information Group and ABRY Partners acquire ProQuest Information and Learning for $222 million from ProQuest Company.
Jun 2007	ProQuest Company becomes Voyager Learning (now Voyager Sopris Learning, part of Cambium Learning.
Feb 2007	ProQuest Information and Learning and CSA, both majority owned by Cambridge Information Group, merged to form ProQuest CSA.
May 2007	ProQuest CSA becomes ProQuest.
Jan 2008	ProQuest acquires RefWorks.
Jan 2011	ProQuest acquires ebrary.
May 2013	ProQuest acquires Ebook Library (EBL).
Nov 2013	Goldman Sachs makes investment in ProQuest, replacing ABRY Partners as minority owner.
Dec 2015	ProQuest acquires Ex Libris from Golden Gate Capital.
May 2019	Atairos makes investment in ProQuest, replacing Goldman Sachs as minority owner.
Dec 2019	ProQuest acquires Innovative Interfaces, Inc.
May 2021	Clarivate announces intent to acquire ProQuest.

research included Web of Science, EndNote, and Journal Citation Reports, including its widely used metric Impact Factor. Clarivate has since acquired other scholarly workflow solutions including Publons and Kopernio.

Clarivate became a public company in May 2019 and is traded on the New York Stock Exchange under the symbol CLVT.

Other Clarivate Business Acquisitions

Clarivate has implemented a business strategy based on strategic business acquisitions. In both of its major areas of business, intellectual property and science, Clarivate has built on the assets inherited from its divestiture from Thomson Reuters through acquiring related businesses to fill out its product portfolio and expand its reach internationally. Table 4 lists the business acquisitions Clarivate has executed to expand its business offerings. A visual representation of the acquisitions is available at: https://librarytechnology.org/mergers/clarivate

Perspective

In contrast with other acquisitions in the library sector, the acquisition of ProQuest by Clarivate does not mean less competition within the core content or technology product sectors. When direct competitors within a product segment merge, choices available to customers narrow. In the library arena, however, the products tend to persist even when the vendors consolidate. In the research services market, the two companies offer complementary products. Both companies offer a citation management product, Clarivate with EndNote, and ProQuest with RefWorks. With few directly competing products, this merger will not eliminate options on either the content or technology front. Therefore, it is less likely to be perceived as anti-competitive, unlike ProQuest's recent acquisition of Innovative Interfaces, which triggered a review by the Federal Trade Commission.

On the library technology front, becoming part of Clarivate seems consistent with ProQuest's ever-expansive product strategies. Ex Libris, for example, has followed a trend of continually extending the reach of its software solutions. Its Alma library services platform supports the management of resources within the library, with Primo providing access to patrons. In recent years, Ex Libris has launched additional products for integration of library materials for classroom use (Leganto) and to provide services in support of research activities and outputs (Esploro). Ex Libris describes its expanded technology scope as cloud-based solutions for

Table 4. Clarivate Business Acquisitions

Date	Event
1959	Institute for Scientific Information founded by Eugene Garfield
1965	Science Citation Index Institute for Scientific Information
1988	JPT holdings and Ted Cross acquire majority ownership of ISI.
1992	Institute for Scientific Information acquired by Thomson Scientific & Healthcare and named Thomson ISI.
1997	ISI launches Web of Science.
2007	Thomson Corp acquires Reuters Group to become Thomson Reuters.
2008	ProQuest acquires Dialog from Thomson Reuters.
Oct 2016	Thomson Reuters Intellectual Property & Science business acquired by Onex Corporation and Baring Private Equity Asia with resulting company named Clarivate.
Jun 2017	Clarivate Analytics acquires Publons.
Apr 2018	Clarivate Analytics acquires Kopernio.
Oct 2018	Clarivate Analytics acquires TrademarkVision.
May 2019	Clarivate Analytics becomes a public company.
Sep 2019	Clarivate Analytics acquires SequenceBase.
Dec 2019	Clarivate Analytics acquires Darts-ip.
Mar 2020	Clarivate Analytics acquires Decision Resources Group.
May 2020	Clarivate Analytics begins operating as Clarivate.
Oct 2020	Clarivate acquires CPA Global.
Oct 2020	Clarivate acquires Hanlim IPS.
May 2021	Clarivate acquires ProQuest.

higher education. As part of Clarivate and benefiting from its product portfolio, these cloud services seem well positioned to reach further into the scholarly communications infrastructure.

Becoming part of a business based on workflow and analytics brings implications for ProQuest and its library customers. Data and analytics wield great power to inform and optimize business processes. Such power must be harnessed within the bounds of professional values and privacy policies. These values and policies may not always be consistent among the commercial sector, educational institutions, and the library community. Beyond this business change, the role of analytics continues to be an important conversation in the library and education sphere.

Smart Libraries Q&A

I would be interested in how changes in library software design and use will impact the future of library technology staff. Until recently, my title was systems librarian. I have held systems librarian positions in public, law, and medical libraries. Both the law and medical libraries were downsized, and neither place retained the systems librarian position. Has this title already morphed into something different?

The decrease in positions designated as systems librarian coincides with the shift to more core library services implemented through software-as-a-service and other hosted implementations. As the requirements for local systems administration has decreased, some libraries have evolved the position descriptions and titles.

Positions with the title *systems librarian* emerged in the early phase of automation. The individuals in these positions were tasked with management of the integrated library system, which often involved a combination of technical administration of servers, operating systems, and software as well as assisting other staff with its functional capabilities. One of the key roles of the systems librarian involves enabling technical systems to optimally support the daily tasks of the work of the library.

Even as roles evolve, it seems important to have individuals with expertise that can ensure the smooth operation of technology-based products and that can translate local library issues or concerns to vendors or system developers. Even when given other titles, it remains beneficial to invest in positions that blend technical expertise with a strong understanding of library operations and values.

Especially in smaller organizations, the shift to SaaS-based technology diminishes the need to have a dedicated position for managing the core automation system. Some may have full-time technology positions focused more on the library's website and other patron-facing services, carrying the title *web services librarian*. Other technology-oriented roles include those involved with digital humanities, analytics and assessment, or digitization services. This trend seems mostly beneficial to libraries, shifting resources from managing underlying computer infrastructure to technologies more closely connected with patron services.

Questions or suggestions for topics in future issues?

YOUR COMMENT COUNTS!

Contact Patrick Hogan at **phogan@ala.org**

July 2021
Smarter Libraries through Technology

Smart Libraries Newsletter

Marshall Breeding's expert coverage of the library automation industry.

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