



Smart Libraries™

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Smarter Libraries through Technology: Resource Management, Discovery, and Content Interwoven

By Marshall Breeding

The industry of organizations oriented to libraries has gradually evolved toward an overlapping array of products and services around creating and publishing content as well as technology platforms for the discovery and management of collection materials. Today a growing set of companies provide both technology and content products, sparking a variety of issues for libraries.

Previously, in the landscape of library-oriented suppliers, organizations occupied more homogeneous categories. The library technology industry was once almost entirely dominated by organizations that primarily developed specialized software for the management and access of content. During the era when library collections comprised primarily print materials, this distinction was clear. Publishers operated in a separate category and were not involved in generalized resource management technologies. They naturally had platforms for the selection, procurement, and access to their own offerings,

but were not especially involved in providing tools that addressed the broader scope of library collections.

Ongoing rounds of mergers and acquisitions as well as diversified product strategies have resulted in the creation of a small number of very large companies that offer a diverse range of content, metadata, resource management, and discovery products to libraries. The most conspicuous examples include EBSCO Information Services, OCLC, and ProQuest.

Knowledge Bases and Central Indexes

The management and access of electronic resources has advanced through the creation of knowledge bases pre-populated with data describing the titles and holdings of each of the content packages available. These knowledge bases power both context sensitive linking applications, such as the original SFX product from Ex Libris, and those that followed from Serials Solutions, Openly Informatics, EBSCO, and OCLC. The ability to provide article-level discovery centers on massive central indexes populated with metadata and full text from this same body of scholarly and professional content.

Creating technology to manage and provide access to library collections necessarily includes both software and content components in the form of these central indexes and knowledge bases. The creation and maintenance of the content components requires considerable investment of capital and personnel resources and developing a network of business relationships with content providers. Organizations that are content providers themselves are particularly well positioned in this regard. Populating knowledge bases and central indexes

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doesn't happen passively, but requires concerted effort. Organizations must establish business and legal agreements to gain access to content and also develop technical platforms and processes to ingest, normalize, and index it.

Knowledge bases and indexes provide valuable capabilities to the libraries that use these associated products. It's far beyond the resources of individual academic and research libraries to track at a granular level the vast amount of material held within the many packages of electronic resources to which they subscribe or have purchased, plus what is open access. A commercial or community-based project can assemble this data once for the benefit of thousands of libraries. But it is essential that these knowledge bases and indexes are constructed to cover the full range of publishers and content products of interest to a library and to guide access to users in a neutral way.

Content Neutrality

The intent for content neutrality is a given for any resource management or discovery product developed for libraries. While there may be some speculation or implication that a given discovery service may give preferred treatment of one publisher's content, I do not believe that any of these products have been designed with intentional bias. Any overt or intentional bias of favoring content from a company's own content over that of competitors would likely not be tolerated by libraries that purchase either the content or technology products.

In the current discovery arena, scenarios exist where creators of content—especially those involved with abstracting and indexing services—resist contributing those assets to index-based discovery services. The presence or absence of such metadata has implications regarding the performance of content from those providers in discovery services. I expect that the gaps in participation of producers of A&I resources will eventually narrow or close, mitigating these concerns. But I do not see evidence that the technical design of any of the discovery product intentionally favors in-house content over that of competing publishers.

Overlapping Roles

Given the high levels of investments involved in creating and maintaining knowledge bases and discovery indexes, it is not surprising to see a only small number available. Currently only Ex Libris, OCLC, ProQuest, and EBSCO Information Services have created these components in a way that generally addresses the range of electronic content published globally. The Global Open Knowledge Base (GOKb), has been launched more recently as an effort to create an open access community supported knowledge base, but does not yet match the

comprehensiveness of the established products. The commercial knowledge bases and indexes are created by organizations with different profiles of business activities: Ex Libris develops technology products; OCLC offers a wide range of services including metadata, resource sharing, and community research, in addition to is technology-based products; ProQuest and EBSCO both produce and distribute content products and are increasingly involved in resource management and discovery technologies. Organizations that produce content as well as provide resource management and discovery tools, such as ProQuest and EBSCO, are naturally subject to the most scrutiny regarding neutrality of these overlapping products.

The recent acquisition of Ex Libris by ProQuest—covered in this issue of *Smart Libraries Newsletter*—consolidates two of the organizations that have developed knowledge bases and discovery indexes. Although the messaging surrounding the yet-to-be-finalized acquisition emphasizes that no products will be eliminated, it does leave open the possibility that the knowledge bases and indexes that power the products of both antecedent organizations might be jointly managed. I see considerable benefit in initially filling in gaps across the two sets of knowledge bases and indexes or even eventually consolidating them. Given the differences in architecture of the Ex Libris and ProQuest platforms, creating a converged knowledge base or discovery index able to drive both products would not happen overnight, but has the potential to strengthen both product families.

I do not see the acquisition of Ex Libris by ProQuest having a major impact on the issue of product choice or content neutrality in the library resource discovery arena. For the reasonably long term, I anticipate that the number of index-based discovery services will remain at the current four products.

Apart from the official messaging related to the acquisition announcement, it makes sense for the combined organization to continue to develop and support both Primo and Summon. These two products offer substantially different approaches to library resource discovery and appeal to different types of libraries. Primo offers a more complex and configurable interface, while Summon takes a bit more turnkey approach. Libraries that have selected one of these would not likely be quite dissatisfied if forced to shift to the other. The history of the library technology industry has reinforced multiple times that preserving products over a relatively long time leads to better business success than abruptly or prematurely terminating well established products.

Does the potential consolidation of the underlying knowledge bases have implications regarding content neutrality? Ex Libris has been able to position Primo as unbiased because the company functions as a technology provider and not as a content publisher. While Primo is designed for content neutrality, the current gap in content from EBSCO and other

A&I providers remains an ongoing issue. ProQuest has positioned Summon as providing “democratic discovery” through its architecture of combining all references to a given content item to a single record and giving libraries the ability to prioritize the versions presented to users. Given my perception that all four products embody a high standard of content neutrality, as long as ProQuest does indeed preserve both Primo and Summon, any cross-pollination or even consolidation of the two knowledge bases and discovery indexes will make only a nuanced difference in the choices available to libraries.

Resource Management Neutrality

Issues also arise as organizations with primary interests in publishing and distributing content provide resource management tools. Libraries depend on strategic technology platforms to manage the totality of their print and electronic collections. In previous times libraries implemented integrated library systems to manage their print collections and separate systems, either formal electronic resource management systems or local spreadsheets or databases to track their subscriptions to e-journals and e-books. This bicameral approach is increasingly being displaced by a unified model as embodied by library services platforms such as Ex Libris Alma, OCLC WorldShare Management Services, and ProQuest Intota.

The issue of neutrality arises as much in the resource management arena as it does in with index-based discovery services. EBSCO and ProQuest both provide resource management tools. EBSCO has to date not directly entered the market to offer its own integrated library system or library services platform, but rather has engaged in a strategy to integrate EBSCO Discovery Service with all of the other products on the market. ProQuest has more directly engaged. The company has long offered the 360 suite of products for managing electronic resources and has been developing Intota as a library services platform to manage a library’s full range of resources. ProQuest has now acquired Ex Libris, which offers the now well established leader in this genre, Alma.

Because it is a given that libraries will purchase content from a variety of providers, it is essential that any resource management tool function objectively relative to all potential providers. These products provide a sophisticated set of services surrounding the acquisition, description, and fulfillment of resources. Libraries increasingly require tools that provide sophisticated support in building collections with the highest impact within severe budget constraints.

The issue of neutrality applies even more to resource management products as it does to discovery services. Academic and research libraries acquire content products from dozens or even hundreds of suppliers. The reality of limited budgets

requires that librarians constantly make difficult decisions regarding what materials to acquire and which to deselect. Supporting collection decisions, library services platforms include integrated collection analytics that collect and analyze statistics and other data on the relative performance of existing items and of those under consideration.

In the same way that libraries must have confidence that discovery services provide unbiased access to collection materials, they must also be confident of a neutral and objective platform for the selection and management of resources. The 360 suite of resource management products from ProQuest has earned a good reputation for not privileging the company’s own content products. Ex Libris, which does not produce or market content has never to my awareness been considered to favor the content of any publisher. As ProQuest completes its acquisition of Ex Libris, it will be essential to avoid any glint of preference in the way that Alma or Intota support the acquisition of collection resources.

Content-oriented companies can gain benefits from offering resource management platforms while keeping to a strict firewall of content neutrality. On one hand, the library technology sector has proven to be a strong and stable business environment. These sale or subscriptions of technology products provide an additional source of revenue, though on a smaller scale than its content products. But resource management products can also create synergies that support the content business indirectly without crossing any lines of neutrality. If a content company’s tools to help libraries operate more efficiently, funds for additional collections may become available, and the company may compete for these purchases. These tools also provide insight into the internal processes behind the selection and management of content resources. Such insight might enable the company to strengthen its content products to better meet the needs of libraries and to eventually improve its competitive position.

The increased involvement of content-oriented organizations with strategic library technology products and services comes with an interesting set of dynamics. Publishing content, managing resources, and providing discovery products are related business activities, but they must be performed in ways that do not compromise the ability of libraries to work with competing providers in any of these areas.

Earlier phases of consolidation in the library technology industry consisted mostly of the mergers of companies with similar product profiles. We’re now entering a phase where the consolidated library technology companies are of interest to larger organizations in adjacent, though highly related industries. I can’t predict what might happen next, but it is likely that this latest business transaction will not be the last in the ongoing evolution of the library business landscape.

ProQuest to Acquire Ex Libris

In a move that alters the business dynamics of the library technology sector, ProQuest has announced that it will acquire Ex Libris in a deal expected to close later in 2015. Ex Libris, under the ownership of Golden Gate Capital since November 2012, will become a wholly owned business of ProQuest. This merger significantly extends ProQuest's offerings of technology-based workflow and resource management tools and places a broader portfolio of products under the responsibility of Ex Libris. While this merger represents a major step in the evolution of the industry, it is not anticipated to compromise the availability of current product offerings. Longer-term product strategies will be developed over time in collaboration with the company's customer base.

Following the sale's close, a new business group will be formed called Ex Libris, a ProQuest Company. This new entity will combine the portfolio of Ex Libris and the Workflow Solutions division of ProQuest and will be headed by current Ex Libris President and Chief Executive Officer Matti Shem Tov and a combined management team built from Ex Libris and ProQuest executives. Shem Tov will report to Kurt P. Sanford, Chief Executive Officer of ProQuest, who has led the company since July 2011. The workforce of both companies will continue intact in their current business locations and roles with their respective products. John "JG" Chirapruath, appointed as Senior Vice President and General Manager of ProQuest Workflow Solutions in June 2015, will continue in this role until the transaction is complete and will also immediately be the Chief Product and Strategy Officer for ProQuest reporting to Sanford.

Continuity of the Ex Libris strategy and management team forms one of the fundamental cornerstones of the acquisition agreement. The arrangement for Shem Tov to continue with Ex Libris under the ownership of ProQuest is not an interim arrangement, but a long term commitment. Shem Tov and his executive management team have navigated Ex Libris through multiple ownership arrangements preserving key products and strategies. These continuing strategies, primarily based on aggressive research and development to create new technology products for libraries and other institutions, have proven successful as Ex Libris has seen impressive growth in terms of library customers, revenue, and personnel employed. Shem Tov has served as President and Chief Executive Officer of Ex Libris since March 2003.

Ownership arrangements for Ex Libris include:

- ProQuest (Beginning in 2015)
- Golden Gate Capital (November 2012–2015)
- Leeds Equity Partners (August 2008–November 2012)
- Francisco Partners (June 2006–April 2008)
- Hebrew University of Jerusalem (1980–2006), Tamar Ventures, and Walden Israel (1999–2006)

The value of Ex Libris increased substantially through each phase of ownership. According to business reports published at the time, Francisco Partners purchased Ex Libris for \$62 million in 2006. The value of the current transaction has not been disclosed.

Product Strategy

Executives interviewed, including Kurt Sanford and Matti Shem Tov, emphatically assert that the existing products of both companies will continue to be developed and supported according to previously established timelines and customer commitments. They position the merger as one that will continue to support the choices which libraries have made and with potential to strengthen all the products involved through the combined expertise and capacity of the two organizations. The slate of products under the merged business includes:

- **360 Link:** link resolver and knowledge base product developed by Serials Solutions.
- **Aleph:** the original integrated library system developed by Ex Libris in the mid-1980s.
- **Alma:** library services platform released by Ex Libris in 2012, with initial development beginning in 2009.
- **bX Recommender:** an article recommendation technology developed by Ex Libris.
- **campusM:** mobile-oriented content management platform for academic institutions acquired by Ex Libris in April 2015.
- **Intota:** library services platform in the development by ProQuest Workflow Solutions.
- **Intota Assessment:** workflow tool developed by ProQuest to provide analytics and predictive business information to support more intelligent collection development.

	Development	Support	Sales	Admin	Other	Total
ProQuest Workflow Solutions	224	107	75	63	11	480
Ex Libris	208	234	65	47	11	565
Ex Libris, a ProQuest Company	432	341	140	110	22	1,045

- **Leganto:** course list management system recently developed by Ex Libris.
- **Primo:** discovery service initially released in 2006, with the Primo Central index.
- **Rosetta:** digital preservation and asset management platform developed by Ex Libris.
- **SIPX:** tool for the management of copyright and costs for digital course packs acquired by ProQuest in April 2015.
- **SFX:** the context sensitive link resolver, acquired by Gent University in 2000 and subsequently re-developed and commercialized.
- **Summon:** index based discovery service launched by Serials Solutions in January 2009.
- **Voyager:** Integrated library system originally developed by Endeavor Information Systems in the mid 1990s and acquired by Ex Libris in November 2006.

According to both Sanford and Shem Tov, the merger of Ex Libris into ProQuest will not eliminate existing products. Ex Libris and ProQuest have both previously acquired companies and left their products intact even when duplicative of existing offerings. When Ex Libris acquired Endeavor, it developed Voyager even more aggressively than its previous owner, Elsevier. Voyager continues to be supported and developed and is used in some of the world's largest libraries, including the Library of Congress and Cambridge University. In parallel to ongoing support of Voyager and its original Aleph ILS, Ex Libris developed Alma as an entirely new product, both as a long-term migration path for the libraries using those products and especially to attract new customers. ProQuest demonstrated a similar strategy with its e-book strategy, preserving the platforms of ebrary which it acquired in January 2011 and Ebook Library acquired in June 2013, as it developed its new Ebook Central platform that combined the capabilities and business models of both products, which entered its beta test phase in June 2015.

There may be some scenarios where the joining of the companies may have the potential to enhance product offerings. Both Primo Central and Summon depend on central indexes, which may be mutually enhanced with content not previously addressed. Likewise the SFX and 360 Link products may be improved through collaboration in the population of their respective knowledge bases.

It is important to note that at this time the acquisition has not closed and that product, personnel, and business strategies are still under review. More specific product roadmaps will be developed and announced in the coming months once the merger is finalized.

Creation of a Library Technology Leader

This merger forms the largest entity in the library technology industry, though not as large as companies with broader business activities such as EBSCO, OCLC, or Gale. The number of personnel employed by the two incumbent organizations at the end of 2014 totaled 1,045, with 432 involved in some aspect of product development, according to figures provided for the annual Library Systems Report, published by *American Libraries*. Once the acquisition of Ex Libris completes, ProQuest will have a workforce of approximately 1,800 employees across all its business units. The following table shows the personnel statistics of the two companies prior to the merger and the combined totals. Once the merger is completed and the organizations become integrated, the personnel counts may vary considerably from the totals shown.

Ex Libris was already the largest of the companies oriented primarily to the development of library software, as measured by personnel employed. Other large companies in this category include SirsiDynix with 421 personnel and Innovative with 416. OCLC reported total personnel of 1,315, including its many different products and services. EBSCO Information Services, a company with many similarities to ProQuest in terms of content and technology offerings, employs 2,982.

ProQuest Background

ProQuest is owned by Cambridge Information Group and with a minority investment by Goldman Sachs. Cambridge Information Group is owned Robert N. Snyder (founder), Andy Snyder (CEO), and their family.

ProQuest ranks as one of the major producers of content products, with a wide portfolio that includes databases and e-books. The company offers dozens of databases in the social sciences, science and technology, medicine, business, research, and many aggregations of news sources. ProQuest markets its

content products to colleges and universities, public libraries, corporations, and K-12 schools. Its content brands also include CSA, Chadwyck-Healey, and SIRS. ProQuest traces its roots to publication of collections on microfilm and continues to offer newspapers, dissertations, primary works, and other materials on this medium.

In addition to these content products, ProQuest has created or acquired a variety of technology products that assist libraries in the acquisition and management of electronic and print resources. The acquisition of Ex Libris dramatically accelerates and expands ProQuest's capacity in the support of libraries with workflow and resource management tools.

Smart Libraries Newsletter covered the new business strategy executed under the leadership of Kurt Sanford in March 2014: "ProQuest Unifies its Business, Drops Serials Solutions Brand." This strategy created a more unified business from a variety of units that previously operated mostly independently. As part of this strategy, the company discontinued the brand of Serials Solutions, a company it had owned since March 2004, folding all its products and activities in to ProQuest Workflow Solutions.

[The following section is based on updated text of that article]

Cambridge Information Group

Cambridge Information Group is a privately held company founded by Robert N. Snyder in 1971. Today the company remains under the ownership of the Snyder family. Robert N. Snyder led the company as its CEO through 2000, when James McGinity was appointed to that role. In December 2005 Andrew M. (Andy) Snyder, who had previously worked at Goldman Sachs, was named as Chief Executive Officer for Cambridge Information Group. Robert N. Snyder continues as the CIG Chairman of the Board.

A large investment firm, Cambridge Information Group holds portfolio companies in diverse industries. In addition to its library-oriented companies, CIG also owns Sotheby's Institute of Art, the Back to Rock school of music, and is a major investor in Navtech, which develops aircraft navigation products. CIG's initial portfolio company was Cambridge Scientific Abstracts. Its investments expanded to include many other library-oriented companies. In 2001 CIG purchased R.R. Bowker from Reed Elsevier. Backed by CIG, Bowker subsequently acquired other companies including Syndetic Solutions and Medialab Solutions and its AquaBrowser Library discovery interface, both in 2007. CSA also expanded, including the acquisition of Community of Science in 2005. CIG supported the establishment of RefWorks in May 2001.

CIG acquired ProQuest in February 2007 in partnership with private equity firm ABRY as a minority investor. At this time ProQuest was merged with CIG's CSA subsidiary to form ProQuest-CSA, subsequently named ProQuest in May 2007. Marty Kahn was appointed Chief Executive officer.

Following the acquisition of ProQuest, many of CIG library-related assets were organized under ProQuest, including Bowker and its subsidiaries. During this period, ProQuest made a number of strategic acquisitions, including purchasing Dialog from Thomson Reuters in July 2008.

In November 2013 ABRY divested its stake in the company with Goldman Sachs stepping in as a new minority investor.

ProQuest

ProQuest traces its corporate history to a company formed by Eugene B. Power in 1938 called University Microfilm International based in Ann Arbor, MI. Based on the experience gained with its original product of doctoral dissertations, the company expanded into abstracts of scholarly articles and other types of content. Ownership of the University Microfilm International changed hands in 1962, when it was acquired by Xerox, and again in 1985, when Bell & Howell purchased the company. Bell & Howell Information and Learning expanded through a series of strategic acquisitions and through the creation of new product lines.

The company launched its flagship ProQuest series of products in 1995, originally distributed on CD-ROM, and in 1997, via the Internet through ProQuest Direct. The success of the brand led to the use its name when Bell & Howell Information and Learning and Bell & Howell Publishing Services merged in 2001, forming the ProQuest Company.

In 1999 Bell & Howell acquired Chadwyck-Healey in a deal valued at £30 million. Other acquisitions made in this period included the Canadian company Macromedia in 2002, which published a variety of products on CD-ROM and print. In June 2003 ProQuest acquired SIRS Publishing, which had developed a variety of information products oriented primarily to K-12 school libraries, from Elliot Goldstein and Eleanor Goldstein.

Serials Solutions

In March 2004 ProQuest acquired Serials Solutions from its founders. The products of Serials Solutions, oriented primarily to the management and access of electronic resources, came to form the basis of the ProQuest Workflow Solutions division.

Serials Solutions was founded in May 2000 by Peter McCracken, Mike McCracken, Steve McCracken, and Chris

Pierard. In June 2005, about a year after the ProQuest acquisition, Jane Burke was named Vice President of ProQuest and General Manager of Serials Solutions. Burke is a veteran of the library automation industry, having held executive positions in CLSI, NOTIS Systems, Ameritech Library Services, and Endeavor Information Systems. Burke continues her involvement at ProQuest as a Vice President, Market Development. Through the acquisition of Ex Libris, Burke is once more involved with Voyager, the product developed under her leadership by Endeavor Information Systems.

ProQuest acquired Coutts and its MyiLibrary digital content platform and Online Acquisitions and Selection Information System (OASIS) from Ingram Content Group in June 2015. Details of this acquisition were covered in the June 2015 issue of *Smart Libraries Newsletter*.

ProQuest acquired ebrary in January 2011 from its cofounders Kevin Sayer and Christopher Warnock. In January 2013 ProQuest acquired the Australian company Ebook Library. The company's new Ebook Central is under development as its strategic platform for the management and access of e-books.

[The following section is based on the profile of Ex Libris originally published in the January 2013 issue of Smart Libraries Newsletter]

Ex Libris' Corporate and Investment History

Ex Libris traces its roots to efforts to create automation software for the libraries of Hebrew University of Jerusalem, beginning in 1980. The Automated Library Expandable Program, or ALEPH-100, system soon attracted interest by other universities. Yisum, the technology transfer unit of the University, facilitated the formation of a new company called Aleph Yisum to further develop and commercialize the software. Azriel Morag, an Israeli businessman with experience in the software industry, was recruited to lead the company. In 1986, another company was formed, Ex Libris, Ltd., to market the software outside of Israel, with Morag as its principal owner. Aleph Yisum and Ex Libris, Ltd. were merged in 1995 and shortly reorganized under the name Ex Libris Group. In July 1997, Ex Libris acquired a German company Dabis and its BIS automation product used by around 300 academic libraries.

In 1999, two Israel-based venture capital firms, Walden Israel and Tamar Ventures, made a combined \$4 million investment in Ex Libris. The injection funded the company's entry into the United States and commercialization of the SFX linking technology, which it acquired from Ghent University. At this point, Morag and other company executives shared

ownership along with Hebrew University of Jerusalem (30%), Walden Israel (20%), and Tamar Ventures (20%). In addition to SFX, the company created a variety of other products to support academic libraries, such as the MetaLib federated search tool, Verde electronic resource management system, and DigiTool digital collections platform.

Beginning in 2005, Ex Libris Group began exploring other investment opportunities. In September 2005, the company attempted an initial public offering on the AIM (Alternative Investment Market) of the London Stock Exchange. At this point, Morag retired from Ex Libris, selling his ownership stake to the other investors. The IPO failed to generate the anticipated capital and was withdrawn.

Francisco Partners, a San Francisco-based private equity firm acquired Ex Libris Group in June 2006 for \$62 million, marking a major transformation of the academic library automation sector. In a subsequent transaction in November 2006, Ex Libris, with support from Francisco Partners, also acquired Endeavor Information Systems from Elsevier. This merged company went forward with two flagship ILS products, Aleph and Voyager, continuing ongoing development, marketing, and support for both. One of the key strategic products created during this period was Primo, positioned as a discovery and delivery interface for academic libraries, which could be used not only with both Aleph and Voyager, but with the ILS products from competing companies. The company also invested in the development of Rosetta, a new digital preservation platform created in partnership with the National Library of New Zealand, and going to general release in January 2009.

Francisco Partners held on to this investment for just past two years, selling Ex Libris Group to Leeds Equity Partners in August 2008 for an estimated \$150 million. Shortly after the acquisition by Leeds, the company began the development of a new Unified Resource Management product, subsequently branded as Alma. As a new library services platform built from the ground up, Alma represented a significant research and development project. Offering a forward migration path for existing customers using Aleph and Voyager, Alma also held potential for attracting new library customers using ILS products from competing companies.

Golden Gate Capital acquired Ex Libris from Leeds Equity Partners in August 2013. During the period of its ownership by Golden Gate, Ex Libris entered a phase of sales and implementation of Alma, reaping the rewards of the investment made in the product's development. New products developed include the bX Recommendation Service and the Leganto course list management solution. Ex Libris expanded its involvement into the campus mobile technology arena with its acquisition of oMbiel and its campusM mobile-oriented SaaS platform.



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