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Library Search: History and Future Directions

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History and Future Directions

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Introduction

The [Library Search Service Team](#) presents this summary of Library Search's history and current state in response to a request from the Library Search Service Team sponsors. The goal of this summary is **to outline the benefits and investments needed to sustain the University of Michigan Library's discovery layer**.

As of this writing, Library Search encompasses almost 15 million catalog records, over 500 million article citations, 3,000 online databases, 400,000 online journal entries, and hundreds of selected web pages.

Background: How We Got to Library Search

Since the early 2000s, the U-M Library has provided our research community with an evolving suite of locally managed discovery environments (databases, catalog, article-level content, etc.). For example, we designed and built a database and journal subscription finder, dubbed Search Tools.

In 2004, the library's discovery environment primarily consisted of two Ex Libris tools: the Aleph OPAC (named Mirlyn, and with local customizations) and the Metalib database and journal finder and cross-database search tool (named Search Tools). In 2009 we designed and supported a VuFind-based discovery layer that took on the Mirlyn brand; the Aleph OPAC continued as Mirlyn Classic but no additional customizations were implemented. In 2009 we replaced Metalib/Search Tools with two products: a locally developed database and journal finder that kept the "Search Tools" name and simultaneously also launched ArticlesPlus, a locally managed interface to access the ProQuest Summon article discovery product which exploited the Summon API.

When we first licensed Summon, it was provided by Serials Solutions. Not long after our product launch, ProQuest acquired Serials Solutions and the Summon product. Later ProQuest purchased Ex Libris, and we moved to Primo and the Alma Link Resolver together with the larger Aleph-to-Alma system migration. Recently Clarivate bought ProQuest.

The technological trend in libraries at the time was to consolidate the user interfaces and platforms to enable a more seamless interaction for library users. The University of Michigan Library was no different, in that in 2008-2009, we consolidated both catalog and article discovery interfaces into our overall web presence to offer a one-stop

discovery layer on top of the existing services, labeled "MLibrary Search". MLibrary Search was our initial foray into a bento-box style interface, displaying a handful of results to a user query from each of several underlying systems (Mirlyn catalog, ArticlesPlus, the Search Tools database, online journal finder, and other sources). To go beyond the first results, users were directed to the interface provided by the corresponding underlying tool.

In the mid 2010s, the complexities of maintaining and supporting multiple search interfaces for different types of content grew challenging for library staff and increasingly complicated for users. For example, as a result of multiple user research projects and data collection efforts, we learned that users struggled with the variety of interfaces and the varying search-and-display behaviors of each tool. To solve some of these issues, we developed a single application with a consistent user interface across different kinds of information in MLibrary Search, while preserving connections to library expertise (such as people and services).

The new tool, called simply Library Search, launched in summer 2018. All the previous tools and "brands" were retired at this time. (The exception was the Aleph OPAC (Mirlyn Classic), which was preserved until Aleph's retirement three years later.)

Through continued user research, design, and application development from 2016-2018, the discovery environment began to provide users a highly accessible, usable, and consistent experience across all search types previously used in MLibrary Search. The library manages its own Solr search indexes for the Catalog, Online Journals, Database, and Guides and More searches. Articles Search (as was ArticlesPlus), is provided via API from a search index managed by Ex Libris. This index is currently called the Central Discovery Index, which is the successor to the Summon index we started with.

Every development and implementation stage in our discovery environment evolution has been based on user needs assessment (researched / expressed in feedback) and the available technology at the time.

Our Implicit Guiding Principles

While not expressly articulated as guiding principles at the time, throughout the evolution of our discovery environment, individuals involved in Library Search-related projects have embraced the following influential ideas.

- In service to the **diverse needs of faculty, staff, clinicians, researchers, and students at the University of Michigan Ann Arbor**, Library Search is designed to **provide an all-in-one interface to find the library's curated, owned and licensed content.**

- Library Search offers clear pathways to finding and accessing both physical and digital materials. Because **different kinds of content require different kinds of searching and filtering behaviors, Library Search presents both an overview of all resources and focused results lists for each materials category.** For those researchers who know what they want, but not where to start, we provide an "Everything" search for relevant items from across all material categories (Catalog, Articles, Databases, Online Journals, and Guides & More). In contrast, users who know they are looking for materials that would traditionally fall within a library catalog -- including books, maps, videos, and archival materials -- can look in the catalog section. Articles and other licensed content types have their own area, as do online journals, databases, and website content.

- No matter where a user finds themselves in Library Search, the **user interface is consistent across all search types and provides an accessible, mobile-friendly tool for everyone**. It is compliant with WCAG 2.1 AA standards.

Building on our Principles: A Product Statement for Library Search

Library Search is distinguished from many of the individual products the library licenses in that it offers a single user interface spanning multiple sources, provides a consistent campus-centric approach to user privacy, integrates with Canvas, and provides access paths to both physical and digital content.

To provide a foundation for our future path with Library Search, and to capture the implied guiding principles from past iterations, in 2023 the Library Search Service Team created a "product statement" that concisely envisions our discovery tool evolution:

Library Search is a search engine that provides access to the library's curated physical and digital content through a usable and accessible interface. It is designed to respond to the diverse and evolving academic and research needs of the University of Michigan Ann Arbor's faculty, staff, clinicians, researchers, and students.

Library Search prioritizes easy discovery of library resources, the interface also connects people to access and delivery services as well as expert research support. With the flexibility of a locally customized interface and infrastructure, Library Search [respects users' privacy](#) and helps faculty integrate library resources into campus learning management systems.

Benefits and Costs of Library Search

Through user research, direct service to users, and intentional conversations with library employees over the years, we understood the benefits and costs of maintaining the Library Search application and interface in comparison to our previously deployed interfaces.

Benefits/Advantages

An integrated search engine and display for many of our search tools aids in the discovery of library materials, citations, and database and journal subscriptions. The advantage here is the **interdisciplinary nature of discovery**, revealing content and/or subject connections one might miss when searching separate products or platforms. For example, having subject relationships (using our locally developed Academic Discipline taxonomy) across information silos allows discipline-based connections to databases, without having to know the specific name of a database.

With our integrated and locally controlled search interface, we created **intuitive paths to important library services** (e.g. Ask a Librarian, Get This/interlibrary loan/document delivery, Library Account features) through results prompts, **and to our local expertise**, for example, through insertion of subject specialization in search results, and by displaying detailed location information within a catalog record.

Library Search has been designed and continues **to meet accessibility standards for web interfaces**. Through accessibility audits, we discovered the Ex Libris' Primo interface has many accessibility problems, some of which can only be remedied by Ex Libris on their own timeline. While some minor issues were identified with Library Search recently, those issues were resolved in June 2023.

Because we control the infrastructure and programming of Library Search, we are able to fix issues or problems ourselves. This ability to customize the interface, behavior, and performance is a distinguishing element of Library Search, as it allows the library **to**

respond to local needs and suggestions, and to manage user expectations through established channels and academic relationships.

Library Search **insulates our users from vendor changes and/or product migrations**. For example, we did not lose all development and functionality in our interface when the library migrated to Alma (library service management platform), or when the university migrated from Sakai to Canvas as the learning management system for campus. The unique or custom content we try to expose in Library Search might go missing or become inoperational if we use a third-party product for our discovery layer.

And finally, **user privacy is entrusted to the University** and not a third-party vendor who may or may not manage the data in an ethical manner.

Costs/Disadvantages

The most obvious disadvantage of investing in Library Search as our discovery layer is the one of **personnel cost** (approximately 4.5 FTE in FY 2022 and 3.5 FTE in FY 2023 distributed across 5-7 individuals). It costs the library to maintain not only the specialized skills of LIT developers, UX researchers, and accessibility specialists, but also the associated equipment.

We recognize that when our commercial database and information providers launch interesting features or new functionality, our users expect our platform to perform similarly. When we decide to adapt those emerging functions into Library Search, **tensions develop around resource allocation and project management**. For example, Ex Libris' Primo smoothly integrates unique resources such as finding aids directly into its interface. Library Search has yet to present that functionality.

Expert users, including some library employees, may **prefer a precision-focused tool** (like Mirlyn Classic) that retrieves small result sets rather than the breadth-focused interface we offer.

Maybe less critical but still a possible disadvantage is **real-time updating**. When staff update, add, or delete bibliographic records in Alma, those changes are not reflected in Catalog Search until the following morning because we make updates to the index overnight. With other products (e.g. Primo), those changes would be closer to real-time.

And finally, one cost of investing in a locally controlled interface is that **future partnerships with other campus or U-M libraries potentially become complicated**. For

example, if we considered collaborating with Flint or Dearborn libraries on a unified search interface or discovery product, many library employees and decision makers would need to weigh in on access issues, funding, product licensing, maintenance costs, etc.

2023: Today's Library Search

In the last 20 years, user experiences and expectations for academic research tools have changed and evolved, requiring library-provided interfaces to also change and evolve. Some processes, tools, materials, and research methodologies have significantly impacted how users think about library interfaces. For example:

- scholarly article output has sky-rocketed
- big data, text mining, and other techniques have changed how research and analytic projects are conducted
- interdisciplinary research across multiple subject domains is the norm
- access to open content is more readily available
- more of our owned/licensed content is provided by third-party vendors, and within their own proprietary platforms (e.g., streaming media and ebooks)
- not only are more archival materials available digitally but also more research content is available only in an online format
- and, competitors' products or search engines have modeled a "discovery" interface where a user searches broadly and then filters to narrow results into a manageable set

Since 2018, Library Search has been improved, enhanced, and tweaked to prioritize Ann Arbor users' research and search needs. Recent user research and interface development to Library Search have focused or will focus on:

- Provide author, Library of Congress subjects, and call number browse in Catalog Search as alternate paths to discovery, including linking to browse options from items' catalog records
- Complete indexing infrastructure updates to improve indexing speed and to accommodate indexes for the three browse tools
- Improve the accuracy, focus, and speed of Catalog Search results
- Improve article searching behavior in Articles Search and add direct-to-PDF links within records
- Launch Simplified/traditional Chinese cross-searching and cross-indexing

- Investigate and make recommendations to improve the way "availability" and "location" filters work
- Build custom web analytics to deeply understand end user behaviors, trends, and pathways for discovery and access of physical and electronic materials through Search and complementary web applications (Aeon, ILL, MGet It, Library Account, etc.)