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# Next Steps in Discovery Implementation: User-Centered Discovery System Redesign

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## Abstract

This paper will discuss a discovery system redesign project at the University of Houston Libraries, and in particular the Discovery Redesign Team's collaborative, user-centered approach. Throughout the redesign process, the team collected information about the needs and expectations of internal and external users regarding the Library's discovery system. The team worked with two internal working groups to gather and evaluate the collected information. The results of this evaluation were used to make user-centered design decisions.

The Discovery Redesign Team worked with the Discovery Advisory Group, made up of library employees from various departments, to seek feedback and suggestions throughout the redesign process. Working collaboratively with this Group informed design decisions made by the team while also generating buy-in for the discovery redesign.

The team worked with the Discovery Usability Group to collect information from end-users to inform the Team's design decisions. The Committee held focus groups with the Library Information Desk staff to learn how the discovery system was serving users, and where it was falling short; they conducted usability tests with students to find out where users were experiencing breakdowns while completing common tasks. The methodologies and findings of the team's various activities will be discussed.

Changes to system interfaces affect both internal and external users. The University of Houston's discovery system redesign is an example of a successful, user-centered, collaborative design project.

## Background

Over the past several years the University of Houston (UH) Libraries has made several attempts to implement a discovery solution that would provide an intuitive and seamless search and retrieval experience for users, and improve access to electronic resources. Initially, we offered our patrons federated search tools such as the Library Find developed by Oregon State University Libraries. Later we implemented the Encore platform from Innovative Interfaces, bundled with a federated search tool called Research Pro. At the time, both products required a heavy investment in staff time for implementation and maintenance. Encore was just completing its beta-test period and required installation of numerous updates; the number of resources available with

these federated search tools was very limited. None of these products were well received by librarians and staff. In particular the Encore implementation left many here with a negative impression of discovery systems.

In 2010 we implemented SerialsSolution's Summon discovery system. Summon became the default search option on the library website, and was branded OneSearch. Electronic resources usage statistics in the following years indicated that Summon exponentially increased exposure to and use of electronic resources, an important consideration for the UH Libraries. Relevancy ranking and usability were also much improved from previous discovery implementations. These factors helped restore confidence in discovery among librarians and staff. However, Summon

was not without its weaknesses. Summon had very few customization options, which was a point of frustration for the department responsible for managing it. Summon customers did not have a lot of control over what new features were implemented and when. For example, when SerialsSolutions developed Summon 2.0, customers were initially required to migrate to it by a certain date. Evaluations by the Summon community and our own internal evaluation revealed significant flaws in the 2.0 platform; we were not comfortable releasing it to our patrons, or being on the vendor's timetable for deploying new releases.

Two years after implementing our first discovery platform, we decided to take another look at the discovery systems available. Our reevaluation of discovery systems began in 2012. We used our previous experiences with discovery systems as a starting point for evaluating the options and in deciding on our next steps with discovery systems. In 2014 we implemented the Primo discovery system from Ex Libris; it was selected primarily for the customization capabilities available to us as customers.

We completed the Primo implementation during the spring of 2014, and launched the new system in a soft rollout on the first day of the 2014 summer session. We did not promote the new system to end users, and presented it as a OneSearch upgrade rather than a completely new system. Having fewer patrons on campus during the roll-out period allowed librarians and staff time to adjust to the new interface before the start of the fall academic session. Primo was implemented with few modifications. This allowed us time to become more familiar with the administrative functions, evaluate user feedback on the interface, and plan for additional features and customizations.

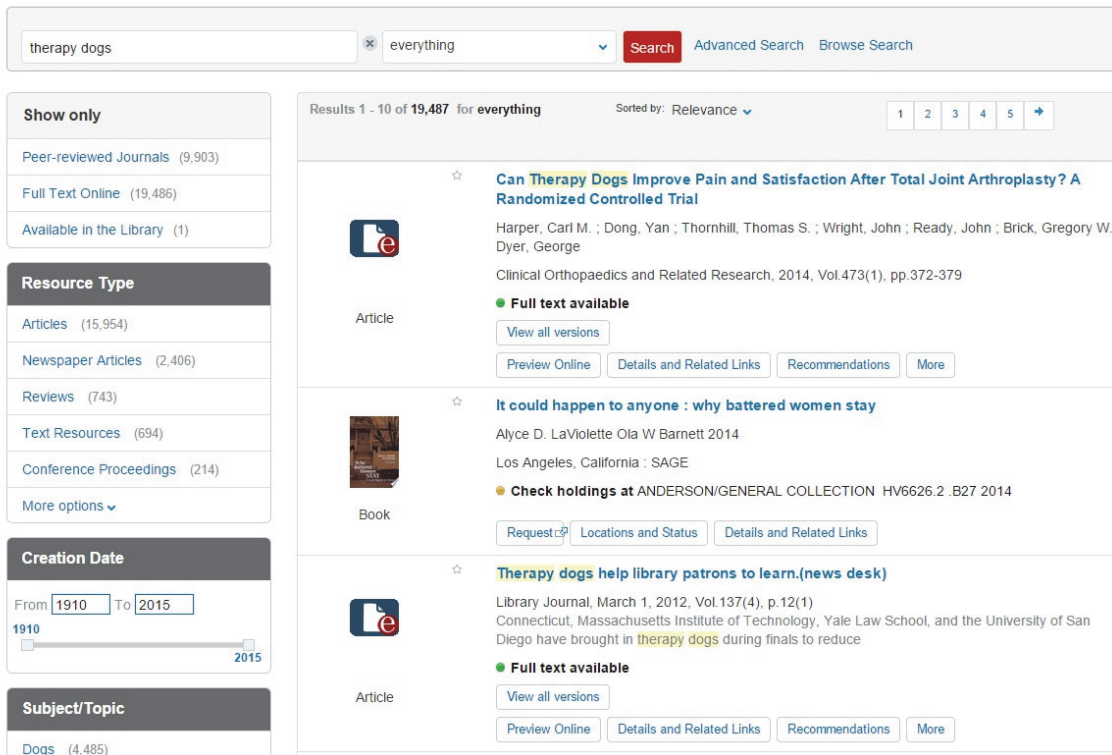
### **Conversations With Internal Users**

At the UH Libraries the maintenance and development of the discovery platform is one of the responsibilities of the resource discovery systems (RDS) department. In order to foster buy-in from internal stakeholders, it is important that RDS work collaboratively with colleagues to make

decisions about the system interface. This collaborative approach had been used before by RDS to facilitate the deployment of new OPAC releases and enhancements. The department worked closely with its OPAC Advisory Group. After implementing Summon, the OPAC group was asked to evaluate the interaction between Summon and the OPAC; the group eventually began evaluating the Summon interface as part of their charge.

As the discovery system became the prominent user-interface for search and access, the group shifted its focus to discovery and was renamed the Discovery Advisory Group (DAG). The members of the DAG represent various library departments and bring unique perspectives and experiences. During the initial implementation of Primo, the DAG provided support for including some OPAC elements into the discovery interface. For example, the material type icons used in the OPAC were carried forward into Primo as content types. The DAG also recommended that the advanced search and browse Search options be more prominent and allow users to conduct phrase searches for known items. Their perspectives were valuable and carefully considered as we made implementation decisions, and their involvement in the process helped strengthen buy-in and support for Primo from our colleagues.

We continued to collaborate with the DAG in the months following the Primo implementation to collect feedback and suggestions from various departments to improve Primo. One activity conducted by the DAG during that time was a competitive analysis of Primo instances at peer and aspirational institutions. This gave us several ideas about how we could improve our Primo interface, and we drew heavily from some of their examples while we developed it. One advantage of Primo was having access to a development sandbox where we could experiment with different ideas. RDS implemented several of the DAG's suggestions. We reviewed them together on the sandbox and decided which changes to implement on the live Primo instance. RDS made numerous changes to the look and feel of the Primo interface in the development sandbox, and



**Figure 1. Primo: Soft rollout with minimal customizations.**

planned to launch a redesigned interface in the summer of 2015—one year after the initial implementation.

### Conversations With External Users

Just as it is important to work collaboratively with internal stakeholders, it is also important for RDS to collect feedback from end users to inform the development process. RDS works with an additional group, the Discovery Usability Group (DUG), which is made up of individuals from various departments and is charged with determining what our users need from a discovery system and testing the usability of the discovery system to help determine its effectiveness. Similar to the Discovery Advisory Group, the DUG started out with a focus on the OPAC and shifted toward discovery as it became the prominent search interface. The DUG uses a variety of methods to assess the discovery system, such as focus groups and usability testing. The results of these assessments are used to make recommendations for Primo customizations and developments. In the year following the Primo implementation, the

Discovery Usability Group conducted a series of activities that helped RDS and the Discovery Advisory Committee determine needed improvements and make customizations to improve usability.

In the fall of 2014, the DUG conducted a focus group with student workers who staff the library’s information desk, which provides both reference and circulation services. The focus group took place several months after the Primo implementation and the participants had experience with both Summon and Primo. The DUG was interested in their perspectives because they commonly assist users at the desk and see firsthand the strengths and weakness of the system. Several student workers attended the session and provided valuable feedback. Some of the primary takeaways from the focus group included the following:

- OneSearch is most useful for finding electronic resources—if a patron is looking for a physical item the library catalog is the preferred tool

- OneSearch is a good tool “if you do not know what you are looking for”
- The limit to full-text and limit to peer review features are extremely helpful when assisting patrons
- The “View Online” option is confusing because it opens in a small window within the search results page
- Finding an item in OneSearch that we do not have access to is not helpful for users
- The most used facets are resource type and date
- The current save functionality is not useful because it is not permanent
- Links that do not resolve properly are extremely frustrating but have noticeably improved
- Experiences with OneSearch are more positive than negative

Based on the feedback and suggestions collected from the focus group, RDS made several modifications to the discovery interface on the Primo sandbox. The facets were redesigned to look cleaner and less cluttered; enhancements to the date facet made it more functional; and the most useful facets were promoted to the top of the facet list. Additionally, the “View Online” tab was renamed “Preview Online” because it more accurately represents the function of the tab and search results that were limited to the Libraries’s holdings as a default. RDS also began exploring the possibility of implementing accounts for users to permanently save search results.

In the spring of 2014, the Discovery Usability Group conducted a usability study to find out if users could complete common research tasks using Primo. The group developed a usability test which asked users to complete a set of common research tasks and verbalize their thought process as they completed each task. Because significant customizations had already been made to the development sandbox, the Group tested users on the sandbox rather than the live site.

Key findings from the usability study include:

- Users appreciate pre-search filtering options and expect more of them
- Users tend to change their search terms if they do not find what they are looking for
- Users typically do not make use of the facets
- Users click on the title to access resources rather than system-provided mechanisms such as the “Preview Online” tab
- Users do not understand the meaning of library and academic jargon such as peer-reviewed, Digital Library, and checkout
- Users do not readily distinguish between newspaper articles and scholarly articles

Several recommendations were made as a result of the usability study. RDS used the recommendations to make additional customizations in the Primo development sandbox. We renamed the “Peer-reviewed Journals” facet to “Peer-reviewed Articles” because the word “Journals” confused users trying to find an article. We removed the “UH Digital Library” as a limiting option in the drop-down menu next to the search box because participants misinterpreted it several times throughout the study. We added “Articles+” as an option in the drop-down menu in order to increase pre-search filtering options that participants expected. Finally, we ensured that a title click would take the user directly to the resource.

Some recommendations could not be implemented at the time due to limitations of the system or lack of consensus. Among these were call numbers that linked to their appropriate places on the stacks guide, and removing newspaper articles from the default search. It should be noted that many of the breakdowns identified during the usability study, such as misunderstanding academic jargon, cannot necessarily be addressed with technological solutions.

## Redesign, Features, and Enhancements

An incremental approach to rolling out the discovery platform allowed RDS to make gradual improvements to its interface. These improvements were informed by the Discovery Usability Group's (DUG) analysis of external users and the Discovery Advisory Groups (DAG) input from internal users. To a great extent, we were able to keep the user's perspective in the forefront of our design decisions.

One of the reasons for selecting our current discovery platform, Primo, was that it provides users with the ability to customize their search experience. This functionality is made available in the "My Account" feature. Incorporating this feature into the discovery display was delayed because RDS wanted this feature to work in conjunction with a single sign-on solution for the library—which had not yet been developed but was under consideration. In the initial release, users only had access to the "e-Shelf." This allowed them to save search results, but only for the current session. Once the browser was closed, saved results were lost. Information provided by the DUG indicated that this was a point of frustration for users.

Wanting to fully implement the "My Account" feature, we began discussions with the library's web services and computer support and networking departments. After some investigation, it was determined that the implementation of a centralized authentication service (CAS) would allow us to roll out "My Account" features. A key factor in selecting the CAS was that it could be used with the library's off-campus authentication services, EZProxy. The CAS also has the potential to become a single sign-on portal for the library's online services. Once a user logs into one of the library's online platforms, they can use other library services without having to reauthenticate—thus providing a more seamless library experience.

With the implementation of the "My Account" feature, students have the ability to permanently save search results and have access to a customized relevancy ranking of search results

based on a subject area they have associated with their user account. Off-campus users, once they log into their discovery platform accounts, are seamlessly authenticated for off-campus access to resources.

From internal users, there was a desire to have research guides display more prominently in the search results. To accomplish this, subject specialists added metadata—in the form of tags—to the research guides, using the guide's native interface. This additional data would be included in the XML export file. The normalization rules—used to ingest data into the discovery index—were modified to make use of the additional metadata. The result was a slight boost in visibility for the research guides in search results. The additional metadata also made it possible for patrons to find course-specific research guides by using variations of the course name or course number. In some instances, however, the guides were not displayed on the initial page of search results as desired. After some consideration, adjustments to the relevancy settings in the discovery platform were made; more weight was given to title and subject categories. This allowed us to achieve the desired result. It should be noted that adjustments to relevancy settings should be made sparingly and with care so as to avoid undesired changes in search results.

Another way that we improved visibility of the research guides was the inclusion of the subject area specialist's photo in the search results. These images were available in the research guide's native interface. The URL for the images was included in the XML export file. A local field was added to the normalization rules for research guides, and tweaked with HTML so that once processed, the subject specialist's image would appear in the search result. Custom CSS was applied to the images so that their appearance was consistent in the discovery interface.

One take-away from the focus group discussion with the Information Desk was that sometimes features need to be scaled back in order to be useful. The initial rollout of discovery interface was described as busy, cluttered, and difficult to read. A close examination of the information

The screenshot shows the Primo search results page for the query "therapy dogs". The search bar at the top contains "therapy dogs" and "Everything" is selected in the dropdown menu. The search results are displayed in a list format, showing the first 10 results out of 22,555. The results are sorted by Relevance. The left sidebar contains filters for "Personalize your results", "Show only", "Resource Type", and "Creation Date". The main results area shows four items: a newspaper article titled "Therapy dogs", an eBook titled "Physical therapy and massage for the dog", a journal article titled "Dogs, humans and lymphoma therapy. (Aratana Therapeutics' anti-CD20 monoclonal antibody) (Brief article)", and a book titled "Great Dane : gentle giant". Each result includes a thumbnail, title, author, publication information, and options to preview online or view full text.

Figure 2. Primo: Results of redesign, summer 2015.

displayed coupled with feedback from the DAG’s competitive analysis gave us some ideas about how to address this issue. We took the following actions:

- Redundant displays of information and features that were used infrequently were removed
- Features that were not easily understood, such as the Bx recommendations at the top of the search results display, were hidden
- Additional whitespace was incorporated into the display, especially within the facets groups and the details of individual search results
- Tabs in some areas were converted to buttons for a cleaner and more intuitive appearance
- Labels for facets and tabs, some of which contained library jargon, were modified in an effort to more clearly convey their purpose (e.g., “Queries” was changed to “Search History”)
- Facets categories were prioritized—the most frequently used facets were moved to the top of the list, and the least used facets were removed
- The functions of some actions in the discovery display were modified to better meet user expectations (e.g., clicking the title now takes the user to full-text instead of taking the user to additional details about the item)

These adjustments to the discovery interface have remarkably changed its appearance and have received feedback from internal users indicating that the interface is easier to read and understand.

## **Conclusions**

- Combining our previous discovery experience with a collaborative evaluation of the discovery landscape allowed us to select a system more suited to our user needs, as well as generate buy-in from internal users.
- Deploying the discovery platform during the summer session, when the user population is lower, allowed internal users the much needed time to become familiar with the new system, its features, and functions.

- Enlisting the experience and expertise of existing OPAC groups for discovery provided valuable user-centered input for the redesign. Information provided by the DAG and the DUG significantly informed decisions made for the redesign, inclusion of features, and deployment of enhancements.

## **Future Plans**

- Continue conversations with internal and external users
- Work with branch libraries to develop scoped views
- Work with special collections to include finding aids in discovery
- Work with digitization services to improve access to digitized collections