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# It takes two to tango… Public services and information technology staff collaborate to launch a new discovery system

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## Abstract:

*In this paper we will review the implementation of a home grown discovery system using Blacklight. We will explain the overall approach to implementation by sharing training tools, methods for organizing staff input, and approaches to developing staff skills/knowledge relating to discovery systems.*

**Keywords:** Discovery Systems, Collaboration, Public Services Staff, Information Technology Staff.

## Introduction

Over the past decade academic libraries have expanded their collections to include extensive electronic resources, digitized materials, institutional repositories, Internet archives and many other types of materials. Users must be aware of multiple collections and search interfaces to explore and access all this content. This situation does not meet user expectations: "Users expect [sic] simple, fast, and easy searching across the entire range of library collections, relevance-ranked results that exactly matched what users expected to find, and convenient and seamless transition from discovery to access" (Trapido, 11). A will to meet this need has lead many libraries to implement discovery systems to offer users a search that targets multiple library collections. This was the case at the University of Alberta Libraries. This paper will review the collaboration that occurred between staff from public services, bibliographic Services and library information technology services staff to implement and test our discovery system.

Rather than purchasing a discovery system from a known vendor, The University of Alberta Libraries decided to develop their system in house. We used Blacklight, an open source code, to develop a system that we could customize and adapt to meet our needs. At this initial stage of development, our new Discovery System searches the contents of our Library Catalogue and over 260 article databases. It also highlights relevant journal titles and further databases for searching.

The decision to create an in-house system is not unique. To name a few, developers at organizations such as Cornell, Stanford, Columbia, and the Europeana collection have used Blacklight to implement their own discovery systems[1][2]. A small group from our information technology team worked diligently over several years to create our discovery system when it was time to launch, they recognized that involvement of staff working in public services was going to be essential to making sure the product worked well to meet student and faculty information needs. When you work with a vendor who provides your discovery system, there is ongoing give and take between yourselves as clients and expert users and the vendor as developer and service provider. If you decide to implement a home-grown discovery system, it is essential to build the opportunity for this type of give and take in the development and implementation of the system. It has to take place within the institution, between your own discovery system developers and expert users such as public service staff and cataloguers. Close collaboration at various stages in the design process was essential to the success of our Search. To do this we created a joint team called the "Discovery Testing & Training Team." The team worked together to test the system and develop an extensive training program for staff.

**The Importance of Collaboration**

Why is collaboration important? Libraries are consistent collaborators. We build consortia that share collections, systems, chat reference services, and inter-library loan systems to name just a few ways we collaborate. It was soon into the implementation of our new system that we determined how important a collaboration between our reference staff and information technology staff was going to be to the success of this project. Implementation of a radical change to searching required input and assistance from those who would use the system and those who help others to use the system. A positive adoption of this system relied upon this collaboration.

Lunsford and Bruce (2001) describe the attributes of an effective collaboration as being "collaboratory-like." These attributes include:

> • Shared inquiry. Reflecting its origins in scientific communities, the term collaboratory suggests that participants share not just common goals (say, a party) but a common set of problems or issues - ones that interest them and that they are working together to study more deeply and perhaps to solve.
> • Intentionality. Although people regularly work together under many circumstances, a collaboratory (as perhaps, collaboration) tends to be recognized by its participants as a joint venture; there is a shared consciousness of the site's status as a mutual project. This awareness can cause it to become a generative space in which each participant

[1] http://projectblacklight.org/#examples
[2] https://github.com/projectblacklight/blacklight/wiki/Examples

> appears to gain as much or more than they give. Thus, there is a "tipping point" (Gladwell, 2000), which leads to the critical mass awareness needed before a collective site is perceived by its members as a collaboratory.
> • Active participation and contribution. A collaboratory exists to the extent that its members use and, more important, add to its resources. Members also continually negotiate with one another over their projects. Often, a collaboratory will contain member profiles to enable further communication and to identify common interests.
> • Access to shared resources. A collaboratory provides the unique information (data, links, research findings) and tools needed by its participants.
> • Technologies. Collaboratories involve technologies, whether they are scientific instruments shared by far- flung communities, the unique symbol systems used among participants, or the information technologies needed to communicate. A collaboratory is usually Web based.
> • Boundary-crossings. Collaboratories bridge gaps and distances of (a) geography, by providing international access through the Internet; (b) time, by supplying both synchronous and asynchronous communication technologies; (c) institutions, by allowing groups access to tools and materials of common interest; and (d) disciplines, by enabling the participants to decide what resources are most relevant to a topic, without regard to traditional understandings of what constitutes a particular discipline. (55)

These characteristics were also identified by Ponti (2008) as a foundation upon which to create an LIS collaboratory to bridge the gap between research and practice. We have found that they work not only between research and practice but also between two distinct areas of practice. These characteristics describe effectively the process we undertook to collaborate on our project and can be used as the foundation of future collaboration.

**Getting Started on a new Discovery Search**

Without optimism, there would be no new development. We optimistically thought the new system would be ready to launch in August 2015. Unfortunately, it wasn't. There had not been enough usability testing. Late August was bad timing for a change as well, and user feedback was not positive. The predicted launch was changed to January 2016, then, ultimately, to the ideal time of May 2016. Eight more months gave our developers time to improve the system, and a spring launch gave both library staff and the academic community time to experiment with the new system before the start of the 2016 fall term. The eight extra months of development time included the establishment of our Discovery Testing and Training Team (DTTT), a sub-committee of the Libraries' Web Architecture Team. DTTT included the Discovery Services Librarian, and representatives from cataloguing and public services staff from a number of our branch libraries.

The team had a shared goal of working together to improve the functionality of the system. They each shared common and different understandings of what features worked well and what needed more attention. Intentionally gathered to work together, this group gave us an important communication channel and expert feedback loop, which led to significant improvements in the new discovery system. These included a range from fundamental improvements, such as relevance and precision improvements, as well as a renewed focus on the details of the user interface. All of these improvements were developed by the large team or subgroups of the team that shared knowledge and used technology to

effectively gather and test user feedback. The end result was not only an improved discovery system, but enhanced knowledge transfer between several distinct areas of practice.

## How the Discovery Testing & Training Team Worked

The Discovery Service Librarian (Sam) and developers used Github as their source for Blacklight code, communication with other Blacklight users, and to manage the development project. Sam gave all members of DTTT access to the library's Discovery channel in Github. Committee members used Github to present questions and concerns, so that the development team could communicate with each other and DTTT members simultaneously. Introducing this level of transparency to the project led to a better understanding of the challenges facing the development team by the DTTT members, and more broadly across the library system.

With a direct line to the development team, DTTT members could present their concerns with examples and ask questions. This give and take sometimes involved a two-way conversations, and sometimes morphed into a fulsome discussion involving developers, cataloguing, and public services staff members. All UAL staff are able to see the Github conversations. The Discovery Services Librarian categorized these conversations in order to accurately prioritize and track issues for effective project management. Categories include: bug; enhancement; high priority; for discussion; investigating; usability, etc. At present, there are 145 open issues and 895 closed issues in the Github Discovery channel, so all staff can see the progress on solutions to issues and priorities of the project.

Access to the project planning app improved ongoing communication. We also held periodic DTTT meetings starting in September 2015 where Sam reported on progress. Team members provided their input on project priorities, and made recommendations on user interface design, naming of search limiters, and search functionality. We formed a sub-committee to focus on the development of staff training materials. Staff training is a fundamental aspect of rolling out any new type of discovery system, including a home-grown one.

Upon reflection after the initial unsuccessful launch, we recognized our failure to build in time for training. Library staff work in an environment of constant technological change. We cannot allow ourselves to become complacent, and expect all changes to be organically absorbed. *Intentionality* and *active participation and contribution* are fundamental elements from the collaboratory framework (Ponti 2008; Lunsford and Bruce 2001) as applied to knowledge sharing and staff training. Staff must be engaged, informed, and empowered to understand the reasons for change, learn and incorporate new skills and knowledge into their daily and strategic work, and contribute to working with the library community on using new systems. As Trapido emphasizes, "whatever the scope of the library discovery layer is, it needs to be communicated to the user with maximum clarity" (22). Regrouping in 2015 gave us time to develop a training program for all staff. Sam wrote extensive notes explaining the reasons for moving to a new discovery system and how it works under the hood. We incorporated his explanations into the training presentation that we gave to all library staff. For example, we explained:

> "Early databases were primarily based on either a standard or extended boolean model, and as a result, these were the models library workers were first exposed to, and that library schools continue to teach. Boolean logic is a binary system: values can be either T(rue) or F(alse). So, documents can either match or non-match a query.

> If a searcher suspects that a result set is incomplete, or that it contains false positives (bad hits), the solution is to refine the search in order to manipulate the result set so that it will match more or fewer documents. The underlying assumption here is that searchers are looking for everything in a database that matches their queries, and nothing that doesn't. When databases were metadata-only, and of a manageable size, this assumption was a valid one. With full-text databases of enormous size, this understanding of the function of the search is no longer valid. The new discovery tool represents a change from Boolean to an algebraic system."
>
> So, Why does the new search work differently? The search engine doesn't use boolean logic. The new library search engine uses the Apache Solr indexer, which uses the algebraic model (to be precise, Solr uses the *vector-space model*). Here's how the Solr documentation describes the vector-space model: "In general, the idea behind the VSM is: *the more times a query term appears in a document relative to the number of times the term appears in all the documents in the collection, the more relevant that document is to the query.*" In light of this new model -- Instead of long queries, create shorter, simpler searches with fewer search terms, then use the filters to narrow down your search…"[3]

In our demonstrations to staff we even included a video of Yoda instructing "You must *unlearn* what you have learned." While we intellectually understood that this was a big change for library staff and library users, we didn't realize the enormity of the adjustment we were asking from expert staff. It took us years to collectively become experts in boolean searching, and we need to give ourselves time to become experts with the new system. Mugila and Namei address the same topic in their 2016 study:

> "Un-learning: Librarians have an arsenal of strategies for searching for information. Yet, in the discovery system environment, many of these strategies can get in the way, leading to time wasted at best and failed searches at worst. Discovery was designed, in large part, for novices to be successful, but many librarians continue to rely on pre-discovery search strategies, providing more information than the system needs to return relevant results. Some un-learning of once essential approaches is necessary in order for librarians to become more effective in using these new search tools." (9)

When you work with a vendor, the company provides useful handouts, videos, and sometimes in-person training sessions for staff. When developing a home-grown system, all accompanying materials must be developed in-house. Our training materials include an FAQ, Training Outline, and worksheets with answers[4][5], a Search Guide[6] and Tutorial for staff and users. Written explanations of various aspects of the search system can be accessed via the links above. Developing presentations and other materials by committee can be a dicey prospect. The existence of all of our training materials are the product of successful teamwork and significant effort by all members of the training team and colleagues who

[3] Sam Popowich and the UAlberta Libraries Discovery Testing and Training Team, 2015.

[4] Discovery System "Rap Sheet" for new staff https://drive.google.com/a/ualberta.ca/file/d/0B6SaZY2g97H-eHp4WkRzTVdGN28/view?usp=sharing

[5] Search examples with possible answers (first, staff were only given the questions for practice) https://docs.google.com/a/ualberta.ca/document/d/1gj9GEr9LJJqoCfQgkgDwFanw1O7eo-OqdeXyzxdnBi

[6] Many thanks to colleagues at Stanford who gave us permission to use their SearchWorks guide https://library.stanford.edu/guides/searchworks-basics-searching-library-catalog as the basis for our Search guide.

contributed design and tutorial development expertise. All of these materials require an investment of time for constant updating and maintenance.

Training for new staff and training updates for all staff are part of our ongoing commitment to the success of this project. Our IT colleagues have just started on the development path. The new system has great potential to expand. In addition to the library catalogue and databases, the discovery layer could also search and present results from other important content management systems such as our institutional repository, web archive as well as digitized content. When updates happen, staff will be involved through feedback and training so that users will be well-informed and equipped to search successfully.

The next big undertaking of the Discovery Testing & Training Team will be *shared inquiry* in the form of usability studies with library users. A sub-committee has started by investigating appropriate methods, and will work with colleagues from across the library system on usability testing in the coming year. Gathering feedback from students and researchers will give our developers the information they need to identify and prioritize ongoing system refinements and future directions.

Collaboration among the Information Technology, Public Services and Cataloguing staff has made the Discovery Search project a success. The staff involved have had many opportunities to bridge gaps in understanding and knowledge transfer that benefit not only our new search but each individual's professional growth. Individuals have come to know each other better professionally and personally. This has great implications for future projects and for the ongoing improvements to our discovery search.

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