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Don't Touch that String! There Went the Databases

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Don't Touch that String! There Went the Databases

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ABSTRACT

Web discovery tools can change not only the way users search and retrieve information, but also, how libraries and librarians work with information. When the University of North Florida implemented web scale discovery tools, we discovered that the technical implementation was challenging, but the most difficult changes were related to the library culture. Our students were “early adopters” moving from over 26 different entry points to finding most library materials in one search. But our staff and faculty were more resistant to the change.

Technical challenges related to implementation included coordinating the various technology pieces to customize the search interface, convert link resolvers, and to maintain interaction with the proxy server. Because of the complicated nature of web-scale discovery, we learned that no matter how much you prepare for implementation, there will be new and unexpected issues to resolve. Solutions for these problems require input from external entities and not just the library.

Cultural challenges involved library faculty and staff that had the perception that the discovery tool did not produce comparable results to a search done directly in a specific database. When we analyzed this issue, we found that not only did the discovery tool return more accurate results, but also more relevant results. In addition, the results were from databases faculty and staff would not have normally thought to use. The issue then demonstrated the need for more training for library faculty and staff to learn how to

refine searches in the discovery tool to achieve maximum results.

By implementing web scale, we essentially untied the string that contained our expectations and experience regarding how search engines work and how users interact with them--and this *unraveled* all our previously held assumptions about how the library provides research service.

The University of North Florida Library's internet presence consisted of access points to over 300 databases which were available to users only by subject grouping and alphabetized lists. The Library realized that we were limiting access to content by forcing users to choose a database before starting a search. Therefore, relevant content in databases that the user might not think to search was excluded. Additionally, it was difficult to becomingly increasingly difficult to maintain the subject access approach using a list.

In the past, UNF Library had dabbled unsuccessfully with federated search services. We chose to look for a technical solution that could unite our databases, make access to content easy, and make searching less cumbersome for our users. So we chose to look at new web scale discovery tools to answer our needs. We looked at emerging library discovery tools such as EDS by EBSCO, Summon by Serials Solutions, and Primo Central by Ex Libris.

LITERATURE REVIEW

While web scale discovery tools are recent additions to the library market, their antecedents stem from the decades old business discovery tools that are used to data mine internal documents. Both Forrester and Gartner have tracked the software maturation process of these tools over the years. Breeding first reported in library literature the migration of these tools to the library market.¹ Vaughan describes the potential of web scale discovery tools as well as the key concepts of the tool.² He also highlighted the connection between user expectation and use of discovery tools.

Way provided one of the first analysis the impact of web scale discovery tools on full text searching as well as abstracts and indexes³ He showed that full text searching provided greater use of content. However, he did not cover the changes that would happen to the organization.

By starting a web scale discovery project the Library ventured into new workflows. This was a major change event for the Library. It was not a one-time event as initially thought, but rather, a series of improvements made to library workflows as systems were integrated, metadata tweaked, parameters adjusted, new collections added to the index, and even personnel changes occurred.

Although Cervone wrote about new digitization projects and the impact they had on library personnel, much that he described about resistance to change in digital projects

is relevant to new web scale discovery projects.⁴ Cervone mentioned that change in an organization should be considered when undertaking a new library project. The bulk of the responsibility usually fell on library management and the project manager. However, the expected organizational outcomes were not what are usually produced by a new project.⁵ Several important elements were identified by Hannan and Freeman as factors that created “structural inertia” in an organization. In their article they stated:

Some of the factors that generate structural inertia are internal to organizations: these include sunk costs in plant, equipment, and personnel, the dynamics of political coalitions, and the tendency for precedents to become normative standards. Others are external. There are legal and other barriers to entry and exit from realms of activity. Exchange relations with other organizations constitute an investment that is not written off lightly. Finally, attempting radical structural change often threatens legitimacy, the loss of institutional support may be devastating.⁶

We easily identified some of these factors in any library organization, but there were other factors that could very well be involved. For example, Stanley et al found that resistance to change can be primarily attributed to employee cynicism.⁷ Their cynicism was based on not believing in the motives of others, specifically management. Furst and Cable found that the quality of the relationship between employee and manager had a significant influence on resistance to change.⁸ In other words, managers who interacted with their employees frequently were better able to integrate change into an organization whereas in organizations with low levels of manager-employee interaction, resistance to change was almost always higher.

DISCOVERY SYSTEM AT UNF

In August 2011 the Web Scale Implementation Work Group formed. The work group developed a project charter outlining the scope, goals and evaluation criteria for a successful implementation of a discovery system. See appendix for charter.

The team included librarians from Technical Services, Public Services and Library Systems. In consultation with the rest of the library staff, they developed business requirements for the system. Building from the recognized problem that the library limited user access to content by forcing them to choose a database, the team defined the process in three steps.

1. The patron searches the system
2. The system returns relevant results
3. The results direct the patron to the corresponding full text

From the defined process, the work group developed web scale discovery business requirements. They wanted a system that:

1. Effectively matched its metadata to existing library resources
2. Returned relevant search results
3. Allowed users to combine facets in order to refine search results
4. Provided the option to include or exclude results linking to full text resources outside of the library's own holdings
5. Provided prominent links to full text
6. Included detailed reports supporting analysis for the evaluation of the tool's effectiveness

The work group tested the system against the requirements with the assistance of several Reference volunteers. These staff performed dozens of searches and collected hundreds of results in order to ensure relevance and reliability.

A seamless, easy flow from discovery through delivery is critical to end users. This point may seem obvious, but it is important to remember that for many end users, without the delivery of something he or she wants or needs, discovery alone is a waste of time.⁸

The work group had an ambitious timeline to get the pilot project ready during the Fall Semester 2011.

IMPLEMENTATION

The Web Discovery Work Group outlined nine major issues to resolve when they implemented the Discovery System. We found that these issues were like strings. These strings were not a one to one relationship or cause and a single effect. Once a string was pulled, it unraveled several workflows or policies the library had been using. While implementing this new technology, we were, in effect, unraveling nine strings which affected the way we worked.

The first string affected library policies. The work group needed to assure that the work matched the Library policies. After reviewing the library policies, the group modified some policies and developed new policies to describe what content went into the discovery system and what content was pulled from the catalog. What they did changed cataloging and acquisition workflows. No longer would the library add all new content into the online catalog. New collections of electronic content were added directly to the web scale discovery system, this system *became* the new catalog for the library. This change in how collections were added then required new ways to track material ownership.

Second, they worked on system interoperability. They listed the other library systems and web content that the new discovery system would impact and decided how they would tackle system integration. The Aleph Integrated Library System (ILS) would have to export the MARC data of the print collection. EZProxy was integrated into all of the URLs for databases and e-journals to provide seamless remote access. Custom search boxes had to be created to work with LibGuides as well as the university's content

management system to ensure patrons could search directly from the Library's home page.

Third, the work group felt that training library staff to use the new tool would be essential. They worked out a plan to train all staff on the new discovery system. The main components of the staff training were setting up user accounts, accessing search history, and sorting results. The group also set up a method for other staff members to report unexpected results, i.e. to support troubleshooting.

Fourth, the group wanted front-end customization. This included using the UNF web skins required to provide the consistent look and feel of the library's web site. The group designed default and advanced search boxes, set up processes for how RSS feeds would be extracted, and configured a small number of databases to add within the discovery tool's federated search portals. (These were not typical resources available or offered as part of our discovery tool.)

Fifth, the work group negotiated the contract with the discovery system vendor. They worked to make sure that the record loading was provided by the vendor and that the proper MARC record configuration was available. As part of the negotiation, price increases were capped, and the Library purchased more database content from the vendor at favorable terms.

Sixth, the work group wanted to be sure that the database content be well integrated in the new system. This was new ground for many of them as they established record loading destinations, scheduled daily record loads, extracted MARC records from the catalog, added open access databases available through the vendor, and uploaded the Library digital repository.

Seventh, honing full text functionality was crucial. The work group fine tuned the system by ranking databases according to their ability to deliver full text reliably. They also spent many hours working with the vendor on the custom linking for full text. Along the way they gathered knowledge and data on how best to setup full text linking and the link resolver.

Eighth, Facet searching needed to be concise. When the team tested the facet searching, they found inconsistencies that required resolution by the vendor. The work group considered facet searching a requirement because result sets were large and the ability to refine them was critical. The vendor worked with the group and resolved the searching inconsistencies.

Ninth, the work group was aware of two development issues that the vendor would need to work on while the work group was implementing the product. The first issue included searching Ulrich's Periodical Directory so students could complete known projects. The second issue was if there were no full text resolution to a citation within Discovery, then the result should link to an interlibrary loan request for the user to request full-text. Neither of these issues was included in the initial study of competing

systems, but they were considered critical by some of the team members upon implementation.

Within 30 days, the work group had a pilot project ready for the fall deadline.

TECHNICAL OUTCOMES

We were eager to see what if any changes there would be in user behavior when we rolled out the discovery system. More specifically, we wanted to see if our most expensive databases would show a good return on the investment. We established a baseline of database usage for the most expensive databases before the discovery tool was brought online. It showed the library had about 9000 full text downloads during peak term paper writing in March in both 2010 and 2011. We saw a three percent decrease in our top database usage in 2011 from 2010. While we did not add any new collections in 2011 our findings mirror Way's pre web scale discovery implementation.¹⁰ We believe that this year-to-year decline may be explained by stagnation.

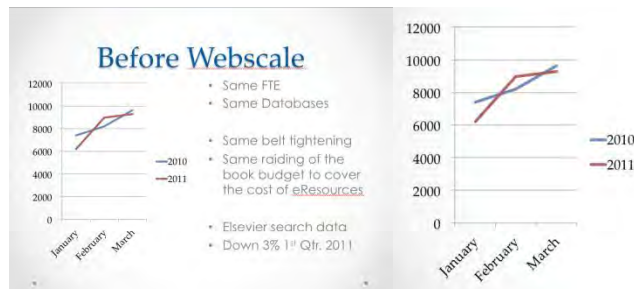


Figure 1. Full text downloads 2010-2011

After the discovery tool was implemented we saw a major increase in full text downloads. In the first full quarter of operation, the four most expensive databases were up over 50% in full text downloads compared to the same time period the previous year without web scale.

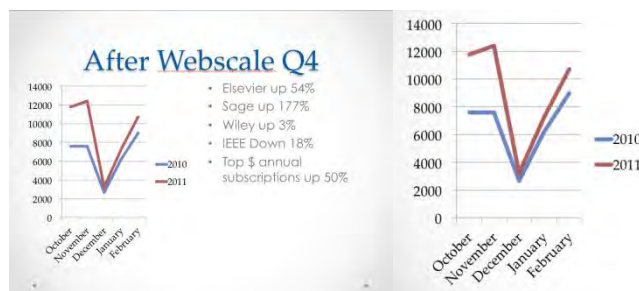


Figure 2. Full text downloads 2010/2011-2011/2012

The Library was interested in return on investment, particularly on very expensive databases. Of our four most expensive databases, two showed dramatic increase, one displayed a mild increase and one showed a dramatic decrease. Full-text downloads from Elsevier were up 54% over the first quarter. Sage had a 177% increase. Wiley was up 3% and IEEE down 18%. The use of Elsevier, Sage and Wiley was attributed to the full text

content and their relevancy ranking. There were two possible reasons that IEEE statistics declined. UNF did not require undergraduates to use the database, and the graduate program had just begun. The second reason was possibly related to metadata. IEEE metadata may not have been as robust as competing vendors, thus pushing relevancy ranking down.

One of the many strings was the decision to not load new e-book collections into the library's ILS. We decided the catalog was a physical representation of our collection. The e-book collection was treated as a database and added directly to the discovery tool as opposed to the catalog. Statistics were derived from the web discovery tool's administrative function. Usage during our peak paper writing period in February affirmed our decision. The library saw a 2451% increase in the e-book collection's usage.

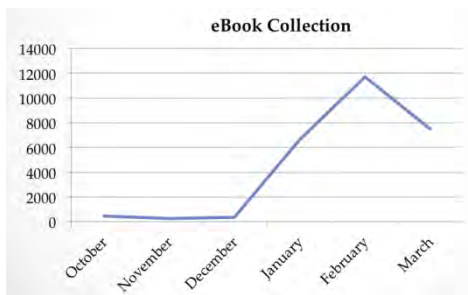


Figure 3. Ebook downloads

We chose to make article interlibrary loan seamless with our discovery system. Meaning, if we did not have the full text, the user was sent to an auto populated interlibrary loan page without requiring authentication. Interlibrary loan decreased, supporting the theory that users were finding enough content to support their research without having to use interlibrary loan.

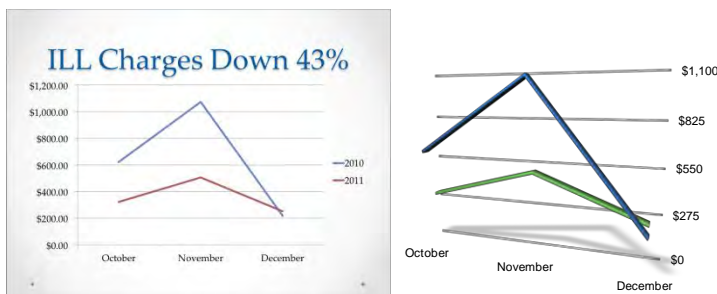


Figure 4. Interlibrary loan charges 2010-2011

SHIFTING VIEWPOINTS

Web scale discovery tools represented a giant leap in how libraries provided access to their collections. Where database silos existed based on subject content or provider content, the web discovery tools united the content into one index. It no longer mattered where content resided. What mattered was a source had indexing and full content.

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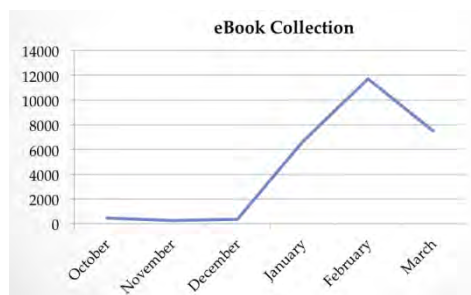


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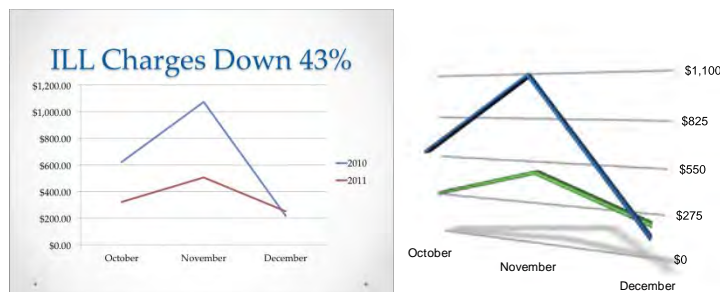


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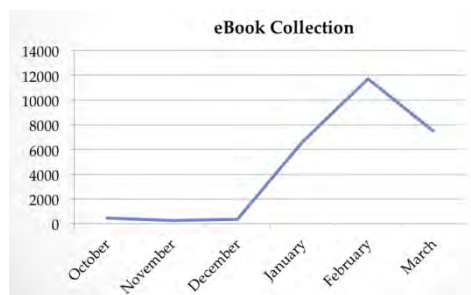


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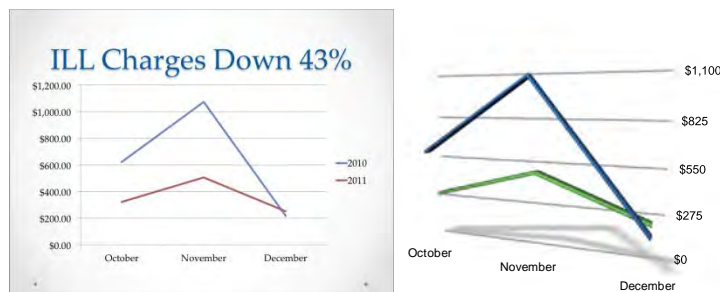


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Walls came down on down on some points of view for the discovery work group and the library. This changed our way of looking at content and workflows. We shifted from a qualitative to a quantitative view point and developed new requirements for our vendors including:

- “The first question we ask database vendors is does it work with our Web scale system.”
- “If we can’t find reliable statistics to show the number of full text downloads for a given database, we cannot justify purchasing it.”
- “It is the vendor’s responsibility to provide good indexing and metadata for their product, not ours.”

We worked hard with our vendor to improve the way statistics are reported and that they were reported in a timely manner. We used vendors’ Counter reports (Database Report 1 and Journal Report 1) for our statistics. The reports were used to determine the worth of a database by measuring cost per use through full text downloads and searches. Search and session numbers reports became an irrelevant method to measure usage. Searches performed within a web scale system search every resource indexed within its knowledge base regardless of relevancy. Thus, search statistics were inflated. Full text download reports provided a better understanding of user preferences but we expected to continue exploring other methods. For example, non-Counter reports that included “linked-to” and “linked-from” data enabled us to better understand the value of a database’s metadata and the impact of indexes and abstracts.

LIBRARY CULTURE

When we started the web scale discovery project, the library did not anticipate the multitude of changes that could occur to our workflows. The work group planned for training on the new tool; however, the fundamental shift from using a traditional online catalog to discovery tool as a starting point was more difficult anticipated.

Unlike other state universities, many of UNF’s original library staff have continued to work at the university. They built and shaped the library vision for over 30 years. This influential group of original librarians long emphasized building a traditional print collection. In contrast, recent faculty hires brought a mixture of different concepts into this homogenous culture. The most notable concept was the change from primarily collecting content in print to providing content access electronically. The tipping point for the library was the influx of librarians with diverse backgrounds and strong support from the library administration.

Following the ideas put forth by Hannan and Freeman, the library had “political coalitions, and the tendency for precedents to become normative standards.”¹¹ The work group also encountered Stanley’s “employee cynacism” that the project would not be accomplished within the timeframe.¹² Some library staff did not believe that the library administration and the work group could accomplish the necessary steps within the timeframe and consequently they were not prepared for the rapid change.

The Dean's Office was very supportive of the web scale discovery project. One of the most critical documents for the adoption of the Discovery tools was an administrative email stating that the Library would use the Discovery tool first in reference, first in instruction and first on the web site.

Birnbaum noted that leaders can drive significant change from the top most easily in universities that are in a state of acknowledged crisis, are small, are conspicuously out of date, and have autocratic leadership.¹³

With an enrollment of around 12,000 UNF has been called a small university. The emphasis on print collection development prior to the web scale project dated the library. We had to have a strong leadership stance otherwise web scale implementation would have failed to launch on time.

USABILITY FEEDBACK

Once the project was launched, the work group collected web scale feedback via presentations for faculty, one-on-one sessions with users, library classes for students and the reference desk. The core work group felt that they had done a good job ensuring that the system provided solid results. They set standards to check against over time and are still providing that data to our library faculty.

The UNF Library had several categories of database users. Each group presented different challenges to using the new discovery tool. We had Library faculty and staff, UNF faculty, UNF Students, as well as the general public. For the purpose of this paper UNF Students and the general public were considered one group. For each group the usability issue or acceptance was slightly different.

Library Staff and Library Faculty

The web scale discovery system affected the way library faculty worked. They needed to incorporate the new system into their workflows. The resistance to change was evidenced by reluctance to acknowledge the change. Library staff did not want the new system to change the way they accomplished their work.

Creating a bridge between the comfortable and familiar to new systems that require different abilities and offer new functions was difficult. The work group provided training on how to use the new system to all library staff. Changes needed to be made in all library-related web content. Instruction librarians changed the way they taught searching using individual or subject databases to how to interpret or evaluate search results. This refocused the teaching of how to search and lead to more emphasis on critical thinking about referred journals, scholarly journals, and to discerning news bias.

UNF Faculty

Based on feedback gathered UNF Faculty tended to either love it or hate it. Faculty who were not heavy users of the databases easily adapted to using the new system. They liked the facets and how easy it was to use. They found more relevant articles and books and they found them easily.

Faculty that did not like the discovery system wanted only to go to certain databases. One faculty member demanded that the library go back to the way it was, but our subject area specialist/liaison resolved the issue. Our Liaison Librarians showed faculty how easy it was to use the system and helped them put links into our course system (BlackBoard). Once faculty saw how easy it was, dissention died out.

A serendipitous outcome was that faculty updated their lesson plans and had real conversations with their liaison librarians. This helped library faculty work more closely with faculty and better plan for the future.

UNF Students

The third set of users was our student population. The students were part of the born digital generation. They did not want to understand the difference in scope among the catalog, databases, digitized collections, or free scholarly content. They were accustomed to using Goggle and wanted similar intuitive usage.

Concerns were voiced that students would complain or not be able to do their work for their classes and that the staff would be overwhelmed at the Reference Desk. This never happened. Questions went down. Usage went up and online comments were enthusiastic. One student wrote: It took you long enough!

LESSONS LEARNED

What did we do right? We had a very detailed technical implementation plan that we followed. This helped maintain focus. Assignments were given out and milestones established. We met our deadline. The library administration was a vocal champion for web scale discovery. We implemented an effective system that worked well.

What did we do wrong? The Library did not anticipate all the drastic changes that would impact our workflows. We did not develop a good introduction to the discovery tool for all staff. Adequate training for the tool was given; however, we did not judge well the scope of changes that would need to occur in teaching the tool to the students, in talking to faculty, and in working with patrons while on the Reference Desk.

The new web scale discovery tool presented unanticipated changes affecting library faculty outside the discovery work group. The web master and the discovery work group placed the new tool prominently on the library's home page, but neglected to consider the scope of new navigational changes and searching. Web scale discovery

allowed users to simultaneously search the online catalog and databases rather than the traditional method of separate and multiple interface searching. Making the catalog an optional tab was antithetical to many librarians and was an abrupt change.

FUTURE THOUGHTS

Technology implementation is not a one time event. It is an ongoing cultural process that must be communicated frequently. Cultural change is not rapid. It can be done incrementally but we should not lose sight of the ultimate goal. While UNF thought that the resistance among Library Faculty was unique, we found that other state institutions working on discovery tools experienced similar, if not more traumatic, issues than UNF. One institution lost the battle for using the discovery tool was forced to bury it on the library's home page. No other Florida state university has demonstrated (to date) the success that UNF achieved. We believe our result is a factor of having focused and committed to our goal.

Communication is critical. We had weekly meetings for the Discovery work group and weekly reporting to Management. We had faculty meetings to showcase the tool, but it was still not enough. We could have used more time to disseminate and talk to library faculty so that they could have started earlier thinking about the changes in their workflows that would need to happen.

Individual talks with key UNF faculty and staff about "what's in it for me" would have been helpful. The discussions would have eased some fears and promoted the behaviors we would have liked to have seen among the faculty.

Never assume anything. A simple assumption by one team member will lead to false expectations by another team member. Clear and direct communication among the work group is essential. Repetition of ideas from one meeting to another also provides a consistent point of reference for the project work group.

Be ready to watch your organizational structure change. We found that our traditional work silos are collapsing. Lines are blurring among Public Services, Technical Services and Library Systems. We are considering a major reorganization along work group lines and flattening the organization.

APPENDIX

EDS Implementation Project Charter

Project Scope

The responsibilities of the team begins with the technical implementation of a functioning, searchable system which provides at least the minimal capabilities documented by the business requirements. A successful implementation will provide for the following:

- Integration with existing systems including CMS and EZProxy
- Training of staff
- Troubleshooting and methods of internal communications
- Reporting and statistics supporting long-term evaluation

The team has complete decision making authority over the implementation of the system. Promotion of the new system will fall under the purview of the Communications Committee.

Goal Statement

Implement the core functionality of the Ebsco EDS as the primary library search tool for the University by September 30. The system will index the library's physical and covered virtual holdings to integrating seamlessly into our existing systems (e.g. CMS and EZProxy) providing end users with enhanced search results and direct access to full-text content online. The library will be able to use EDS first and foremost for searching, teaching and one on one instructions.

Project Team Facilitator: Michael Kucsak

Team Members:

Sarah Philips, Jeff Bowen, Alice Eng, Susan Massey, Lauren Newton, and Jim Alderman

Measures of Success:

A successful implementation will allow users to search and retrieve local and online holdings through the library website on or off campus with full- text links delivering students directly to content at least 90% of the time. Library staff will be trained in basic functionality and able to work with patrons on common technical issues. A system of problem reporting will be in place for all library staff and issues will be recorded for resolution and analysis. Reporting systems will clearly demonstrate any value add to users.

Bench Strength:

Robb Waltner (UNF) Oliver Pesch (Ebsco) Peter Favazza (Ebsco)

Timeline: The project will be completed by September 30, 2011 with the modification of the CMS site.

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