

Report of the Resource Discovery Working group

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Pascal Calarco (chair)

Doug Archer

Aaron Bales

Tracy Bergstrom

Mark Dehmlow

Alan Krieger

Rob Kusmer

Kitty Marschall

Eric Morgan

Linda Sharp

Introduction

The working group has articulated a set of 47 criteria by which to evaluate the available Resource Discovery solutions. We initially identified twelve solutions and after some preliminary analysis, we narrowed the list to five which we assessed in greater detail against these criteria, contacting vendors and implementation sites, and “test-driving” the solutions ourselves. After this more careful analysis, we would like to present three candidate solutions for LEC to consider. We have documented the extent to which these solutions meet the needs of the community of users at Notre Dame and MALC. This report is accompanied by a visual scatter graph of available solutions, evaluative matrix of our final candidate solutions, and a verbal report with opportunity for further exploration of our findings.

Introduction and Purpose

In February 2008, Dan Marmion asked Pascal Calarco and Eric Morgan to provide an assessment and environmental scan of the various 'next generation catalog' solutions available. There were some significant salary savings that were unspent due to vacancies this year, and this presented the Libraries with an opportunity to procure and implement a system while the eXtensible Catalog (XC) project led by the University of Rochester was developing their open source resource discovery platform. The Libraries are a partner in the XC project in which our primary role is to document how to make XC work with Aleph's functionality, along with exporting our data to XC, and enabling circulation status checks, authentication, and some other technical work. We have also agreed to test XC in our environment, although we are not committed to using it in a production environment.

Our working group was tasked with the following:

- articulate what features and functionality are appropriate for our community of MALC users, with the goal of providing enhanced search and discovery against our catalog, local digital collections, and externally-hosted commercial and open resources distributed on the Web
- offer a few candidate solutions that library administration can consider; they are not looking for a single recommendation, but rather 2-4 potential solutions with some comparative assessment
- offer a final report of findings no later than March 31, 2008

We had a small working group of five librarians at Notre Dame that had been assessing, discussing, and following these developments over the past 12-18 months. Thus we had a good idea of the features, available systems, and the general problems that these systems attempt to provide solutions for. We had attended several professional meetings, hosted a symposium on the topic, and worked to educate ourselves and the Libraries on these issues during this time.

We decided to form a larger working group out of this core to help with this evaluation effort and, at the same time, further educate our group as to what the issues, solutions and feature sets of the available systems were. The members listed on the front page of this report contributed to this effort.

Evaluation Method and Scope Refinement

1. Evaluation Method

Our early meetings, beginning on February 15, 2008, focused on exploring the various systems that we were aware of and discussing how to best approach the assessment task in the time allotted to us. We decided to repurpose some of the evaluation methodology used by the CMS Task Force, a subcommittee of the University Committee on Academic Technology (UCAT), which presented their draft findings to the UCAT at the February 2008 meeting. The Task Force was charged with finding a replacement for the Blackboard Vista Course Management System through evaluating and testing alternate solutions, and then making a recommendation to the UCAT. Pascal Calarco was the Libraries' current representative to the UCAT, and Mark Dehmlow served on the Task Force. Along with the working group, we devised a lightweight approach to articulate desired features and functionality and offer a qualitative assessment on the various solutions available.

We developed a set of 47 criteria divided into several categories, over two meetings, February 22 and 29, and revisited this again in mid-March:

1. Search functionality
 1. Indexing improvements
 2. Simplified search & browse
 3. Spelling correction/suggestions
2. User experience
3. Integratability
 1. Index capability
 2. Record enrichment
 3. Supported data formats/sources
 4. ILS integration
4. Web 2.0 functionality
 1. Social computing
 2. Enhanced services
5. System and personnel requirements
6. Extensibility
7. Support options

The complete evaluation matrix, along with assessment of our candidate solutions, is included following this report.

2. Scope Refinement

After our initial meetings, and as we started to look at solutions, we began to further refine the scope of features and functionality that we were looking for. After discussion, we articulated the following additional criteria upon which to determine if available solutions were in scope or not:

- solutions need to focus on the resource discovery component. We were not looking for a replacement for our current Aleph 500 Integrated Library System (ILS)
- because the goal is to bring a solution that quickly addresses the shortcomings of our current catalog and electronic resource search environment, we preferred solutions

that were as complete as possible and did not require extensive local development to meet our needs; we are already involved in a software development project in the form of eXtensible Catalog, and as such, we did not want to become involved in a second development project

- the solutions should demonstrate that they are flexibly customizable and provide a platform upon which the Libraries can innovate new services and deliver content to our users. We need solutions that we can tailor and integrate into our existing information environment

We should mention that we did not have complete consensus on the working group on whether the Libraries should implement a resource discovery system at this time. Some members felt that adoption of another system now obfuscates the commitment the Libraries has made to the eXtensible Catalog project, or that we do not know enough yet to be able to adequately know what features we need for our user community. Others felt that we need to do something now to improve search as soon as possible, to keep up with the rapidly changing commodity search and mass digitization environment, and that there are definite opportunity costs for doing nothing in the interim. The working group Chair's opinion is that there is significant risk in doing nothing as well as some risk in adopting a platform that might be superseded in the relatively near future by a superior solution, should that be XC or something else; it is probably worthwhile to get started in working on one of these solutions sooner rather than later, and the Libraries will learn valuable data extract, transformation, enrichment and presentation skills with whatever solution is selected. Members of Library Systems and DAIAD had planned to get started on data extract and other activities for XC in January, which was ahead of schedule. However, when we contacted the project's Principal Investigators, the technical implementation for this activity is still being defined, and so we will revisit this in May 2008.

Resource Discovery Solutions

All members of the group were encouraged to offer suggestions for candidate solutions, both open source and commercial. We selectively compiled twelve solutions to consider, listed in the Appendix.

Full details on these solutions are available on the Libraries' wiki, at <https://libwiki.library.nd.edu/bin/view//MalcWiki/ResourceDiscoveryAssessment>

1. Solutions Assessed Out of Scope

After some analysis and investigation, the following solutions were deemed out of scope and eliminated from further consideration:

- **Encore (Innovative Interfaces Inc.)**
Encore is a relatively new entrant to the field. It provides tag clouds, faceted results browsing, and contextualized new results for MARC data. It is tightly integrated to Ill's Millennium ILS, although at least one Aleph 500 library, SUNY at Binghamton, is

currently employing it. After assessment and further investigation with Michigan State University, which has recently implemented Encore, we decided to eliminate it from consideration as a final candidate solution. There is little customization available with the product, and all data that can be loaded into the system must come through the ILS. Despite offering most of the feature set that we had articulated, Encore does not offer enough flexibility for our needs.

- **Endeca (Endeca Technologies Inc.)**

Endeca is a company and an indexing engine that is largely focused on the corporate e-business sector. Endeca drives many e-commerce sites such as Home Depot, Barnes & Noble, and Walmart. It was first adopted for library use by NCSU in 2005, which helped to start much of the next-generation activity to improve library catalogs. It is now used by a small but growing set of libraries, mostly to provide a faceted interface to catalog-based data. A library must build the user interface for Endeca, and even such staples within libraries such as result sets and baskets must be built around the engine. Despite offering a best-in-class proprietary indexing engine, Endeca requires significant development to build a resource discovery solution for a library, and so we eliminated this from further consideration of being a final candidate solution.

- **Evergreen (Equinox Software)**

Evergreen is an open source ILS that grew out of the Georgia PINES project, and has been adopted by a consortium of public libraries in [Indiana](#), [British Columbia](#), [Canada](#) and several universities in Ontario, Canada. The community of developers involved with Evergreen is still developing some core functionality, such as serials and acquisitions modules. Although Evergreen offers some of the features and functionality that we have articulated, the developers confirmed that the back-end ILS cannot be separated from the front-end public interface, and for this reason Evergreen was eliminated from further consideration.

- **Koha (Lib Lime)**

Koha is another open source ILS originating from New Zealand. Developed in 1993, it is currently in beta testing for the version 3.0 release. Koha is reportedly used by several hundred libraries worldwide. Although Koha offers some of the features and functionality that we have articulated, some implementation sites assessed that it would be a significant effort to separate the back-end ILS from the front-end, public interface and for this reason Koha was eliminated from further consideration.

- **OpenLibrary**

Open Library is an effort led by RSS creator and *wunderkind*, Aaron Schwartz. The project has received seed money funding from the Internet Archive to create a wiki-like catalog of digitized books from the Open Content Alliance and other sources. The ambition of the project is to offer an alternative and competitor to OCLC's WorldCat, which is the largest union catalog in the world, comprising over 1 billion holdings worldwide. Eric Morgan attended an initial advisory session in California to help further the project. To date, this is still at the formative stage and is too early to be considered

a final candidate solution.

- **Summa (State and University Library, Arhus, Denmark)**

Summa is an open-source Resource Discovery development effort led by the Arhus University in Denmark. Eric and Pascal met Birte Christensen-Dalsgaard at the University of Rochester eXtensible Catalog meeting in February 2007. The team at Aarhus has done some compelling user studies and is slowly building a system, but so far the software has not yet been released. For this reason we eliminated Summa from further consideration as a final candidate solution.

- **WorldCat Local (OCLC)**

WorldCat Local is a hosted, subscription-based, locally branded version of WorldCat that leverages and advances innovations first introduced in worldcat.org. It offers many of the core features that the workgroup has articulated, with notable improvements in relevancy, and a practical FRBR implementation that is commendable. Additionally it exposes the user to resources held by consortial partners and other libraries in the initial results list. Subscribers can then configure context-sensitive links back to their local systems for users to request materials. However, the solution can only be customized in the most minimal way, and the promise of being able to load vendor or local collection records, provide direct consortial borrowing, or link to external abstracting & indexing services is still a future development with no articulated availability date. For these reasons, we eliminated WorldCat Local from further consideration. (The working group believes that WorldCat_Local could advance resource sharing significantly, especially if it were adopted widely throughout the state of Indiana.)

- **Zebra (Index Data)**

Zebra is provided by the Danish firm, IndexData, which has been providing open source software of interest to libraries since the early 1990s. Zebra is a library-specific indexer and search engine. It can index everything from MARC files to any structure of XML. IndexData built the YAZ toolkit which has been incorporated in most current commercial ILS Z39.50 back-ends. Zebra supports both Z39.50 and SRU search protocols. Zebra is a component solution, which, like Endeca, offers an engine only and requires a library to develop an interface to provide a complete resource discovery system. For this reason, we decided to eliminate Zebra from further consideration as a final candidate solution.

2. Solutions Assessed in Scope: Final Candidate Solutions

We feel that all of our final candidate solutions would provide benefits if adopted for our user community. Each one of them offers a rich feature set that could improve resource discovery and delivery for our patrons. All three require between one and two FTE for implementation, and typically one FTE for ongoing support. Most implementations take 6-9 months to

implement from start to finish - discussing configuration, interface integration, and data scope as well as more technical aspects. Customer sites for all three solutions felt strongly that they made the right choice for their institution. Selective links to current implementations are included in the Appendix. Choosing among the three largely becomes one of assessing which has the best fit for an institution. The summary information provided below is intended to be considered along with the requirements matrix and the enchanted quadrant scatter-plot diagram. The following discussion focuses on features and functionality that distinguish each candidate from the other three, the matrix details which features each solution provides, and the scatter-plot measures the vision of the solution along with the ability for Notre Dame to implement.

- **Aquabrowser (MediaLab)**

Aquabrowser was developed by MediaLab Solutions in The Netherlands. They initially entered the commodity Internet search market hoping to compete with Google in their home country. The company became interested in the challenges libraries face with discovery across vast amounts of complex structured metadata, and they repositioned themselves to focus exclusively on this market. They were acquired by R.R. Bowker last year, but retain a good degree of independence. They are represented exclusively through Serials Solutions in North America for the academic market. Aquabrowser is deployed at a reported 200 libraries globally. In North America, the University of Chicago has a high-visibility implementation that has attracted much attention, and MediaLab reportedly has 120 sales in North America. The company recently announced a new social networking set of functionality integrated into Aquabrowser called MyDiscoveries, offering users the ability to review and tag.

The application has been adopted as a means to provide both faceted browsing and term clustering for a wide variety of structured data, ranging from MARC, Dublin Core, XML, websites, and even databases. It is notable for the flexibility of types of data that one can load, index, and query using it. Adding support for a new metadata type is a fairly straightforward matter of customizing an XML stylesheet and related transformation. Aquabrowser features visualization of results for related term navigation that seems somewhat overly-complex at the beginning, but we can see how this would benefit some more visually-oriented users. The enriched metadata is comparatively easier to export from Aquabrowser than the other candidate solutions, should one wish to migrate to another solution in the future. Aquabrowser uses a proprietary non-relational database which is optimized for search.

Tod Olsen from the University of Chicago reported that “launching Lens [Chicago's local branding for Aquabrowser] has created more positive feedback for the Library than anything else in quite a while.” In addition to their catalog records, which are enhanced with tables of contents, authoritative reviews and book covers from Syndetics Solutions, Chicago has loaded finding aids to manuscript collections, and even selective parts of their website, so users can access as much relevant information as possible from a single interface. Chicago is also interested in the functionality for searching distributed indexes and integrating abstracting and indexing metadata from vendors which is supported similar to Primo.

- **Primo (Ex Libris Group Inc.)**

Primo is the resource discovery platform from Ex Libris Group, Inc. The product represents the company's first strategic move to decouple the user interface from the back end system in the traditional Integrated Library System (ILS). A successor to the current Aleph and Voyager ILS products, "Unified Resource Management" (URM) is currently being defined by the company, and it is anticipated that Primo will represent one possible resource discovery solution for the eventual system. Primo has approximately 85 institutional sales worldwide at this time, and is in full production with 7+ libraries and consortia, including the University of Iowa and Boston College. Notre Dame and MALC have a strong relationship with Ex Libris and they are the best known vendor of any of the solutions the working group examined.

Primo integrates well with our existing environment, supporting Aleph, Digitool, SFX and MetaLib better than the other candidate solutions since they are all produced by the same vendor. Primo has the most mature and best performing FRBR solution in place of the available candidate solutions which would help address the problems of discovering primary, derived and related works. Primo offers a very complete list of features and functionality. Primo is the only candidate solution currently targeting Course Management System (CMS) integration. Ex Libris has articulated a strong vision in extending resource discovery to wherever the user is, and is actively working on toolbar, desktop, social networking sites and other extensions and integration into user spaces. Ex Libris has been a leader in articulating resource discovery via distributed indexes, where in addition to local catalog and digital collections, an institution could also index metadata optimized for Primo representing A&I databases and other sources from vendors, other Primo implementations, and other repositories. Primo currently converts all data to a Dublin Core-based optimized metadata schema, which does mean that the richness of the original record is lost, to a certain extent. This normalization, however, is highly configurable, with complete crosswalks for several metadata types, down to the subfield level, in terms of MARC21. Primo, like VUFind, uses the open source indexing engine Lucene, which has been shown to scale to tens of millions of records. Primo 2.0 is scheduled for release in August 2008 and reportedly supports up to 35 million records in addition to many other features and enhancements.

All of the Primo production sites that we spoke with (Boston College, Minnesota, Vanderbilt) remarked at how well the collaboration has worked with Ex Libris as a vendor and partner. Documentation is reportedly very well done. Pricing has been an issue and Ex Libris is working on revising its pricing model to make Primo more price-competitive to a wider range of libraries.

- **VUFind (Villanova University)**

VUFind is a project of the Villanova University Library, with the principal developer, Andrew Nagy leading this open-source project. Nagy works on VUFind as well as other projects in the Library. Amongst all of the open source solutions we examined,

VUFind has the most maturity and is the clear leader in available open source solutions, at least until XC is released. There are a number of sites currently beta testing VUFind, and Nagy is aiming for a summer 1.0 release which will add many features and new functionality. George Mason University and the College of William and Mary, both in Virginia, are two institutions actively contributing to VUFind.

VUFind offers a very attractive and clean interface, which should engage users. It offers a fairly complete feature set, although VUFind does not currently have many developer resources to add functionality to the solution. Nagy mentioned that Villanova is hiring another developer to work on VUFind in the near future. Selecting VUFind for Notre Dame and MALC would require investment into Apache Solr development, which the Libraries has not spent any formal time doing to this point. VUFind is built on top of Apache Solr, an open-source project that provides a service layer (or kind of API) to Lucene. VUFind is not currently focusing on desktop integration or extension into user spaces as Primo is.

In our discussion with Andrew Nagy, it is clear that he is ambitious about the future for VUFind. VUFind clearly, however, needs some more libraries to adopt it and contribute if they want to remain a viable competitor to the other candidate commercial solutions, which have large development teams behind them. VUFind would be a good match if the Libraries wishes to have an interim open-source resource discovery solution while eXtensible Catalog is being developed, as it is likely that working more directly with Solr and Lucene will feed into expertise with some of the technologies XC is based on, and this might enable the Libraries to contribute more to XC.

3. *Additional Services: Syndetics Solutions and LibraryThing for Libraries*

There are two other services that came up multiple times during our investigation which provide value-added data that can enrich the search usefulness and experience for the user: Syndetics Solutions and LibraryThing for Libraries. Both of these services require ISBNs, so will have limited value with older collections.

Syndetics Solutions offers tables of contents, authoritative reviews, and book summaries for a wide range of content that the Libraries have. Carole Pilkinton recently received a quotation for Syndetics Solutions, which is attached following this report. This service is of high value, because our print book collection represents such a heavy investment over time--yet above all, the metadata for good access has always been a limiting factor in identifying useful books. Currently the TOC and other enhancements can only be linked to ISBN and displayed, but in either Aquabrowser or Primo environment they can be fully indexed and searched, thus leading users to chapters on topics that aren't reflected in title or LC subject classification. The best part is that this is a relatively inexpensive annual subscription, so if we would decide that it didn't have the hoped for impact we could simply drop the subscription.

LibraryThing (<http://www.librarything.com/>) is a social networking site for users to organize and tag their personal collections. There are currently over twenty-five million books represented in the Library Thing system. The company, founded by Tim Spalding, has also recently been making these tags and FRBR relationships between works available in either library OPACs or as options to enhance resource discovery solutions, branding this service as LibraryThing for Libraries (<http://www.librarything.com/forlibraries/>). A free 60-day trial is available for libraries, and subscriptions can be priced by contacting the company. The benefit that this service adds is that the tagging environment can be “seeded” at the beginning of a resource discovery launch, enhancing its value. The FRBR relationships in the system can also enhance “findability” between works for the user.

Conclusion

We hope that our work will be found useful to the library administration. We feel that we were able to meet the charge as laid out, in the timeframe required, using strategies that gave us a good look into each of the solutions, and the working group looks forward to providing any additional information to help inform the decision making.

Appendix I: Required Features Matrix

Features	Product		
	Aquabrowser	Primo	VuFind
Search Functionality			
Indexing improvements			
Relevance Ranking	yes	yes	yes
FRBR	qualified no	yes	future development
Simplified search & browse			
Simple Search	yes	yes	yes
Faceted Browse	yes	yes	yes
Results Sort	yes	yes	yes
Visualization (tag clouds, EBSCO Visual Search, etc.)	yes	qualified yes	qualified yes
Spelling correction/suggestions			
Did you mean? (alternate spelling)	yes	yes	qualified yes
Alternate terms/thesaural options	yes	yes	no
Recommender features	yes	near complete	yes
User Experience			
Usable interface	..	yes	yes
Flexibility of customization	yes	yes	yes
Pleasing presentation -- aesthetics	yes	qualified yes	yes

	Aquabrowser	Primo	VuFind
Integratibility			
Index capability			
Metasearch for query expansion	qualified yes	yes	future development
Distributed Indexes	yes	yes	no
Record enrichment			
Book Covers (Syndetics Solutions)	yes	yes	yes
Authoritative Reviews	yes	yes	yes
TOCs (Blackwell, Syndetics, etc.)	yes	yes	yes
"LibraryThing for Libraries" type services	yes	yes	yes
Supported data formats/sources			
MARC data	yes	yes	yes
Dublin Core data	yes	yes	qualified yes
Extended data formats support (EAD, TEI, etc.)	qualified yes	qualified yes	no
A&I Data	yes	yes	qualified yes
OAI harvesting	yes	yes	near complete
ILS Integration			
Circulation availability	yes	yes	qualified yes

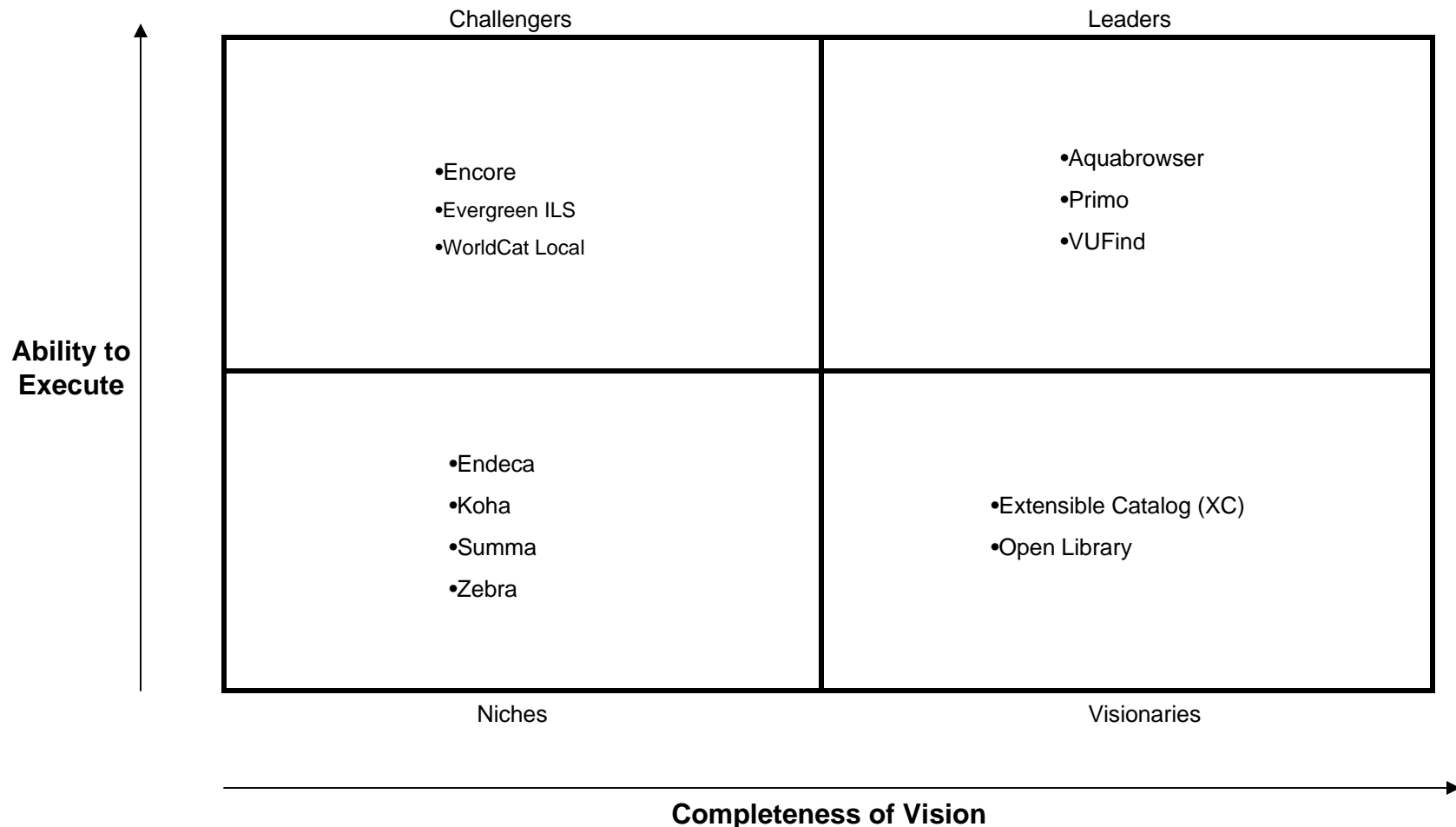
	Aquabrowser	Primo	VuFind
Web 2.0 Functionality			
Social computing			
User Reviews	yes	yes	yes
User Ratings	yes	yes	no
Tagging	yes	yes	yes
Enhanced services			
RSS	yes	yes	yes
E-mail notification	no	yes	yes
Persistent URLs a la tinyURL	no	yes	yes
Bibliographic management export	yes	yes	qualified no future development
System & Personnel Requirements			
Hardware: amount required to host service	modest commodity hardware needs	sites report 2-7 servers utilized, depending how much you want to segment activity; indexing and search layer;	10k students; 750k records; 400k-500k physical items; 1 server dual-proc 8GB RAM, George Mason is running 1.1 million records on 2 servers (however this is still all in Beta)

	Aquabrowser	Primo	VuFind
Implementation (Personnel)	"Installs and configures in days, not months" Chicago: 6-9 months 1.5 FTE	6-9 months 1.5 FTE	6-9 months 1.5 FTE
Support (Personnel)	parts of 3 people; vendor does upgrades; Tod does XSLT, data loading, UI, documentation 1.0 FTE	1.0 FTE	1.0 FTE
Ingest toolkit	yes, any kind of structured metadata using XSLT	yes	yes
Export toolkit	yes	yes	qualified yes
Usage statistics	yes	yes	future development

	Aquabrowser	Primo	VuFind
Extensibility			
API			
programming language	Z39.50 support	Java; Tomcat/JBOSS	Apache Solr supports a wide variety of programming languages
web services API	..	yes	partially - search results since Solr is web services based
SRU	yes	yes	no
Embed data into outside tools (Google, Toolbars, Desktop Apps, etc.)	yes	yes	no
Course Management System (CMS) integration	no	future development	no
Mobile device integration (does tool work with microbrowsers?)	yes	yes	no

	Aquabrowser	Primo	VuFind
Support Options			
Vendor/community support	Happy with support from vendor; clustered enhancements and activity for each customer	Developer community part of wiki; extensible	community support; discussion lists: general and tech lists; setting up commercial support model via PALINET;
Future vision	Chicago really likes future vision of company	Primo as first step in Next Gen system; URM	agile development model; goal to be single resource discovery interface for a library; development plan is 3-6 months
Collaborative record			
Flexibility of offering			

Appendix II: Enchanted Quadrant Scatter-plot



Within each quadrant, solutions are listed alphabetically, not in a ranked order

Ability to Execute reflects how relatively easy it will be to implement

Completeness of Vision refers to the particular solution's vision for the product and what it should do now and in the future

Leaders score higher on both criteria; the ability to execute and completeness of vision.

Challengers score higher the ability to execute and lower on the completeness of vision.

Visionaries score lower on the ability to execute and higher on the completeness of vision.

Niches score lower on both criteria: the ability to execute and completeness of vision.

Appendix III: Further Resources

1. Background and Environment

- OCLC 2003 Environment Scan:
<http://www.oclc.org/reports/escan/introduction/default.htm>
- Karen Calhoun, *The changing nature of the catalog and its integration with other discovery tools* (2006):
<http://www.loc.gov/catdir/calhoun-report-final.pdf>
- Aarhus University, *The hybrid library from the users' perspective* (2006):
<http://www.statsbiblioteket.dk/summa/resolveuid/ed225c050698b9d5998a2cfa9bbe776e>
- University of Rochester, *Studying students: The undergraduate research project of the University of Rochester* (2007):
<http://www.ala.org/ala/acrl/acrlpubs/downloadables/downloads.cfm>
- Ontario Consortium of University Libraries, Discussion document for scholar's portal 2.0 (2007):
<https://libwiki.library.nd.edu/pub/MalcWiki/ResourceDiscoveryAssessment/ocul-sp.pdf>
- Notre Dame Libraries, Examples of catalog 'library 2.0' features, April 2007:
<https://libwiki.library.nd.edu/bin/view/MalcWiki/FeatureListApril2007Examples>
- 'Next generation catalog' interview notes with Notre Dame Libraries' faculty, October 2007:
<https://libwiki.library.nd.edu/bin/view/MalcWiki/NGCinterviewNotes19October2007>
- *On the record: report of the Library of Congress Working group on the Future of Bibliographic Control* (2008):
<http://www.loc.gov/bibliographic-future/news/lcwg-ontherecord-jan08-final.pdf>
- Draft recommendations of the DLF Workgroup on ILS and Discovery Systems, 2/15/2008:

2. Resource Discovery Solutions: Links

- Aquabrowser
 - MediaLab Solutions: <http://www.medialab.nl/>
 - University of Chicago: <http://lens.lib.uchicago.edu/>
 - King County Library System (WA): <http://explorer.kcls.org/>
 - Oklahoma State University: <http://boss.library.okstate.edu/>

- Encore:
 - University of Kentucky: <http://infokat.uky.edu/EncoreTab.htm>
 - Michigan State University: <http://discover.lib.msu.edu/iii/encore/search/C>

- Endeca:
 - Endeca Library Solutions: <http://endeca.com/byIndustry/media/libraries.html>
 - North Carolina State University: <http://www.lib.ncsu.edu/catalog/>
 - State of Florida University Libraries: <http://catalog.fcla.edu/ux.jsp>
 - Michelle Newberry, *Endeca at FCLA IGeLU 2007*:
http://igelu.org/files/webfm/public/documents/conference2007/8_newberry.pdf

- Evergreen ILS:
 - Equinox software: <http://esilibrary.com/esi/>
 - Georgia PINES: <http://demo.gapines.org/>
 - Indiana State Library: Evergreen Initiative: <http://www.in.gov/library/5592.htm>

- eXtensible Catalog (XC):
 - XC blog: <http://www.extensiblecatalog.info/>
 - XC information sheet: <http://www.extensiblecatalog.info/wp-content/uploads/2008/01/XC%20Info%20Sheet2.pdf>
 - XC presentations: http://www.extensiblecatalog.info/?page_id=61

- Koha
 - LibLime: <http://liblime.com/>
 - Koha: <http://www.koha.org/>

- Open Library
 - Project page: <http://www.openlibrary.org/>
 - Stanford Libraries Open Source Lab presentation: <http://www.archive.org/details/StanfordOpenSourceLab>
 - RedHat Magazine: Open Source on Campus <http://www.redhatmagazine.com/2008/02/12/open-source-on-campus-the-stanford-open-source-lab>

- Primo:
 - Primo Overview: <http://www.exlibrisgroup.com/category/PrimoOverview>
 - Boston College: http://agama.bc.edu:1701/primo_library/libweb/action/search.do?vid=BCLIB&reset_config=true
 - University of Iowa: <http://smartsearch.uiowa.edu/>
 - University of Minnesota: http://prime2.oit.umn.edu:1701/primo_library/libweb/action/search.do?vid=TWIN_CITIES
 - Royal Library of Denmark: http://primo-7.kb.dk/primo_library/libweb/action/search.do?vid=KGL&reset_config=true
 - Royal Library of Denmark, IGeLU 2007: http://igelu.org/files/webfm/public/documents/conference2007/8_madsen.pdf
 - Primo Overview and Roadmap, January 2008: https://libwiki.library.nd.edu/pub/MalcWiki/ResourceDiscoveryAssessment/Primo_Status_and_Roadmap.pdf

- Summa:
 - Summa features: <http://www.statsbiblioteket.dk/summa/features-text-in-english>
 - CNI 2007 interview with Birte Christensen-Dalsgaard <http://connect.educause.edu/blog/gbayne/cnipodcastaninterviewwith/46105>

- VUFind:
 - Project page: <http://www.vufind.org/>
 - Demo site: <http://www.vufind.org/demo/>

- WorldCat Local:
 - Product page: <http://www.oclc.org/worldcatlocal/>
 - INCOLSA Notes: <https://libwiki.library.nd.edu/bin/view/MalcWiki/WorldCatLocalNotes>
 - Ohio State University: <http://library.osu.edu/>
 - University of Washington: <http://www.lib.washington.edu/>

- Zebra:
 - Index Data: <http://indexdata.com/>
 - Product page: <http://indexdata.com/zebra/>

Appendix IV: Some Feedback from two Notre Dame Students on Candidate Solutions

AquaBrowser

Student A

My immediate impression with this search engine was its crowded layout. There is almost too much information on the results page to make sense of it all. I appreciate the myriad amount of ways to narrow the search, but it could have been formatted differently. Also, the "constellation of terms" on the left panel of the page does not really help me and I would rather do without it.

Another problem I had with this engine was its insistence on providing too much information for each result. Most sites will simply display the title and author on the main results page, with a link to a page with further information. This site, however, listed all alternative titles or edition updates in the same style as the main title. This created some listings that were 7 or 8 lines long, which further adds to the cluttered nature of the page.

Other comments:

I find it very interesting that when I tried my test search with quotes ("death and life of great american") I received no results, despite the fact that the words came directly from the title. When I searched without the quotes I was able to find the book I was looking for and it came up as the first result. The current ND catalog had no problems with my quotation marks.

Student B

First problem: I was on a public computer that did not have flash. While I could still search, some of the elements of the site were lost.

Once on computer with flash:

A lot more organized in terms of search results. Also, gives you back a lot of information when you search. The left frame that shows associates, other spellings, etc. is useful and kinda fun however I think that if it were organized differently, students would take it more seriously. Right now it just looks like some strange graphic where you'd have to tell the students what it was about before they actually began to use it.

I really like the top portion of the search results where you can choose to limit the books you look at by call number range and gives what type for section that is. You also have the option to reorganize by title, author, year, relevance which seems to be a helpful feature if you are looking for something newer or older, etc.

I liked the author function on the left hand frame because it allowed you to look at authors with the same name and if you're accidentally looking at the wrong person or just know them by the last name, this could be very helpful. I liked the option to look at a book summary once you'd clicked on a certain

search result. I also liked that there was a map/guide option once you'd found the book that you wanted so that you had its exact visual location. Overall, it seemed like a very good site.

Primo

Student A

I like the look of this search engine (especially on the Boston College web site). I ran into a few hitches, though. For example, I searched "death and life of great american" and returned no results, but when I either removed the quotes or selected the "that contain my query words" search option (instead of "exact phrase") I received numerous hits including the book I was looking for (The Death and Life of Great American Cities by Jane Jacobs).

I like the easy-to-find links to other places that have the book like Amazon and WorldCat.

The options to write reviews on the books is very appealing, although many people can find those through other sources like Amazon. It would still be neat to have reviews from ND students who are studying the particular topic.

I also like the ability to narrow down your search by using the links on the right-hand side of the page. It's nice to see specifically how many results you have within the various categories (like how many hits you have for the different campus library locations).

The book cover images are visually appealing, but they are rather sparse.

Student B

It doesn't have the option to search for something by the isbn - i think it should I have a problem with the link to go to amazon- seems like there is a financial relationship there where the school is trying to make money off the student.

I liked that you could click on the cover of the work and get book reviews (though I assume this is part of the amazon.com connection).

When you have found your search result and click on it, the book record is kinda messy. As a whole, the website is not very aesthetically pleasing. It seems disorganized, but being able to search for images from the library search is a nice plus.

VUFind

Student A

I immediately liked the almost Google-esque feel to this search engine. The search-refining categories on the right-hand side of the page seem more intuitive than the Primo ones. For example, you can easily narrow your search by format, author, or topic using VUFind, and those didn't catch my eye quite as quickly in Primo.

The ability to leave comments and tags on books is compelling, but I'm not sure how many people will actually do this.

The book cover images jumped out at me more with this site. Unfortunately, the fact that this happened also meant that I noticed when there were numerous cover images missing. If there were more of these it would add to the Google or Amazon feel of the site which is a

format that many people are used to already.

Student B

The ability to search for different formats from the first page of the search is very convenient. I don't really like the scrolling news text on the page. Graphically, it could stand to have more exciting colors on it. It just looks boring.

I didn't really like how they organized their search results. Couldn't really see much at one time because the font size was so big. I did like that they had a meter that told you how relevant the result was to your search, but didn't like the way it was displayed.