Blurring services and resources: Boston College's implementation of MetaLib and SFX

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Keywords

Academic libraries, Technology, Innovation, Library services, Information resources management, Systems design

Abstract

Over the past year, the Boston College libraries have been engaged in making available to our users two new resources, MetaLib and SFX. MetaLib is portal/gateway software that allows for simultaneous searching of several databases, as well as some options to customize the interface. SFX technology provides context-sensitive reference linking from citations to extended services. In this article we review the pedagogical, technical, and service reasons for making these resources available. We discuss how we believe these technologies respond to current student use of the library, and how we approached the installation process. We also review the challenges of the installation (both technical and service) and future possibilities.

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Why: the service perspective

Davis and Meyer (1998) have written *Blur: The Speed of Change in the Connected Economy*. Their premise is that in a blur economy, content and service are closely connected and three major factors symbolize blur:
(1) connectivity;
(2) speed; and
(3) what are called intangibles.

One of our premises, and why we think technologies like MetaLib and SFX will succeed, is that the libraries in which we work are in constant blur. There are myriad ways in which our library lives are blurring. Resources blur content and service. There is boundary blurring in the way in which we work, and between the academic and commercial Web. Often this blurring can make librarians highly uncomfortable, as we struggle with our role identity. This is precisely because librarians are seeing the library from the perspective of the user. For years, we called this ambiguity, and users called it confusion. The question now is, how do technologies such MetaLib and SFX help and respond to the issue of blur and meet the needs of the user?

A blurred world is a connected world. Today's students demand connectivity and they want it any time, anywhere, wired, and wireless. Check your e-mail anywhere. Connect to resources at any time. A library terminal should not access just the online catalog and subscription databases: it should have such software clients as e-mail, word processing, PowerPoint, and provide easy access to course information and class syllabi.

A world bound by physical location has now become a quaint notion. The demand in libraries for remote access to all resources all the time is just another example of this world view. The expectation that all resources will be available in electronic format is also behind this thinking. Connectivity is expected and assumed, and resources are evaluated often on the basis of how easy they are to locate and use. Students want, and often expect, to be connected to the full text of information. Lippincott and Cheverie (1999) have noted that the sequential way in which libraries make resources and services available must change

and become more integrated. It is, of course, just this connectivity and linking that has led to the success and acceptance of the World Wide Web. We need to learn from this fact, and design systems and services that respond to this user need.

The demand for connectivity is also linked to the blurring of resources/content and services. Indexes and databases now function in multiple ways. They index articles, but they also serve as e-journal collections, alert services, document-delivery mechanisms and interlibrary loan (ILL) tools. Databases combine access to content, but also provide an immediate service or a link to a service. This reflects the blur concept of "no product without service; no service without product." This may not be conceptually different from having call numbers next to book titles in a bibliography, but it is more immediate and seamless. Seamless connectivity is the desired goal.

SFX works wonderfully in this environment by offering additional connectivity and services. SFX offers options such as checking the local catalog for holdings, linking to the full-text of the article, and options to conduct follow-up searches using the citation metadata in appropriate resources selected by the library. This powerful SFX linking capability is just the type of blur activity that current library users want and expect. There is no need to end a session and connect to another resource. Even with all of the instruction that librarians provide, students still have trouble understanding library distinctions, such as the fact that the online catalog does not contain journal articles. The student perspective on this is, why not? MetaLib contributes to this blurred world by offering students the opportunity to search a variety of resources simultaneously, such as library catalogs, indexes, e-journals, or image collections. In a blurred world, this makes sense to the user, and saves time.

Speed is of essence in this blurred world. We see it every day in library interactions. Students want the full text of a document immediately, off-site books delivered as soon as possible, interfaces that allow for quick and simple searches, and resources delivered rapidly.

Libraries have responded imaginatively to these issues with full-text electronic delivery of ILL journal requests, purchasing books from online vendors, and working hard to deliver materials quickly. Again, both MetaLib and SFX also respond to these issues. Students will sacrifice advanced searching techniques for the ability to search multiple databases simultaneously. For example, Boston College researchers can simultaneously search the Boston College online catalog, OCLCs WorldCat, and several other library catalogs from the Boston Library Consortium via MetaQuest (http://metaquest.bc.edu). SFX offers rapid linking to a variety of these resources. Connecting from a citation to the full-text is dramatically upgraded, and a basic task, such as checking the online catalog for holdings information, is a true user enhancement since it saves the time of the user.

Another key blur concept is the Intangibles. The very nature of the word means that this is a difficult concept to grasp, yet it is a crucial blur concept which refers to many concepts. For our purposes, it is related to the services and information that we offer: talented staff, high quality service, and emotions such as trust and loyalty. Clearly, libraries have always emphasized intangibles, but the point to be made here is that this is an area of growth in a blurred world. When we make decisions about database subscriptions, when we configure SFX and MetaLib, we are making deliberate recommendations about sources to consult and it is vital that we do it right if we want to maintain (or gain) the trust of our users. There are many stories of students searching for hours on the Web for resources, when using the appropriate library resources would have been more beneficial. Conversely, we have all worked with patrons who have become frustrated using library resources and opted for the simple Google search. One of our goals with MetaLib and SFX was to reduce this frustration that students feel using library resources. This frustration is often connected to the many steps required to track down resources and to verify their availability after using a database. We have successfully decreased the number of steps needed to reach these goals: library location and holdings information or its electronic full-text availability. By offering links, we highlight the intangible of staffing expertise and the professional and informed thinking that

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resulted in the selection of these resources for the library's collection. We want to formalize, in the electronic world, the trust that users feel for the traditional library. In the future, this aspect will only expand, as we offer SFX links to virtual reference services, subject research guides, e-mail reference services, and the scheduling of research consultations.

How MetaLib and SFX work

MetaLib is an interface that patrons can use to access resources, search across multiple resources, save searches and search results, and customize lists of resources. Librarians populate MetaLib with resources based upon what the library wants to offer. At Boston College we choose to add all of our subscription Web-based databases and selected library catalogs to MetaLib; about 250 resources. Of the total resources, 90 resources have been configured using Z39.50 or other protocols to be searched using the MetaLib search engine. The remaining resources have not been configured, usually due to technical reasons on the vendor side, and therefore can be linked to directly through MetaLib. Librarians also control how the resources are categorized and this affects how patrons can locate appropriate resources for their research.

SFX is linking software that uses the OpenURL protocol to link from a particular citation to a menu of services related to that citation. Some of the services that are offered through SFX include links to the full-text, the option to check holdings in one or more online catalogs, the option to search for additional works by an author, the option to link to ILL services, and the option to search the World Wide Web. SFX works with databases that support the OpenURL protocol.

At Boston College, we have configured 25 databases from six different vendors with SFX links, and from those databases a patron is linked to many of our electronic journal and database collections, as well as some of the services mentioned above that are controlled by librarians. By controlling the services offered through the SFX menu, librarians can recommend appropriate resources to students.

Why: the systems perspective

The decision to purchase and implement MetaLib and SFX was based upon a variety of factors. First, there was a recognized need for improving the way we organize and provide access to online databases and e-journals, which account for an increasing percentage of our budget and collection use. Second, we had already established a good working relationship with Ex Libris during the online catalog implementation, and were anxious to be early implementers of these new products, with the expectation that we could help to influence their further development in a way that maximized their usefulness in our environment. Third, the timing seemed right, given that a new position, Digital Resources Reference Librarian, had been created in the Reference and Instructional Services Department, and a focus of the new position was to coordinate better the process of acquiring, organizing, and providing access to electronic resources. Implementing a framework (MetaLib and SFX) within which to approach these efforts seemed a logical step (see Table I).

The Boston College Libraries Systems Department was a strong advocate for, and closely involved in, the implementation of MetaLib and SFX. The major tasks for systems included the following:

- acquiring the necessary hardware;
- coordinating the installation of the hardware, operating system, and application software;
- configuring and testing MetaLib and SFX resources;
- specifying and coordinating implementation of appropriate user-authentication mechanism;
- troubleshooting; and
- designing the Web interfaces to meet local requirements.

Hardware

The hardware requirements for MetaLib and SFX were hard to pin down. With few SFX sites and no existing MetaLib sites in North America in production, we had no comparable installations to use as a basis for determining how to size the server that would be used. Ex Libris' initial recommendation was for a

Table I SFX and MetaLib implementation timeline

May 2001	MetaLib 1.2 installed on Phase I server
June 2001	Formed SFX and MetaLib Users Groups at BC Libraries SFX group included public services, systems, serials and branch libraries staff. MetaLib group included public services, systems, cataloging and branch libraries staff
July 2001	Began discussing MetaLib InfoGateway and Subject categories for BC resources SFX 1_2 installed on Phase I server SFX Training by Ex Libris Staff Began loading SerialsSolutions Data into SFX to activate Targets Began contacting vendors to set up test accounts for SFX Sources MetaLib 1.3 installed on Phase I server MetaLib Training by Ex Libris Staff
August 2001	Began adding and changing resources in the MetaLib KnowledgeBase Systems staff began configuring priority resources Set InfoGateway categories and Subject terms for MetaLib
August-October 2001	SFX Users Group met to test SFX, customize menu options, prioritize resources, develop SFX FAQs and local targets such as Feedback form
October 2001	Library-wide testing of SFX Changed name of MetaLib to MetaQuest
August-December 2001	MetaLib Users Group worked on HTML changes, configuration testing, MetaLib Help and MetaLib FAQs Additional databases were added and changed in MetaLib SFX links within MetaLib were tested and configured
November-December 2001	BetaTest for MetaLib. Held focus groups with faculty, staff and students
November 7, 2001	Vendors were contacted to move SFX connections to live account Went live with SFX in 10 databases (Ebsco, CSA, ISI, ProQuest) with 20 targets
January 8, 2002	Went live with MetaLib
February-March 2002	Set up additional SFX Sources (SilverPlatter, OCLC)
April 2002	MetaLib 1.3.3 and SFX 1_3 installed on Phase II server

dual-processor Intel server running Linux, and our initial funding request for hardware to support MetaLib/SFX was based on this recommendation. Based on some additional performance testing and experience at other implementation sites, Ex Libris revised the hardware recommendation upward, to a Sun E450, but we decided to proceed with the initial implementation on the Linux box, as local hurdles involved in funding the Sun server acquisition would have delayed our implementation by several months.

The basic hardware configurations for our Metalib/SFX implementation are as shown in Table II.

To date, we have not experienced any significant performance problems on either platform. Due to the nature of the products, stable and robust network connectivity is critical, machine resources less so.

Table II The basic hardware configurations for the MetaLib/SFX implementation

Phase I server	Phase II server
IBM NetFinity × 240 PIII	Sun E450
2 × 800MHz processors	4 × 480MHz processors
1GB memory	4GB memory
118GB disk storage	144GB disk storage
RedHat Linux 7.1	Solaris 2.8

How: installation

We made a conscious decision early on that the MetaLib/SFX server would be housed in

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the library, and maintained and supported by the libraries' systems department. This is different from the integrated library system implementation in which the campus information technology (IT) department houses the server and provides all hardware and operating-system support. We felt it would be advantageous to have full control over these servers, and had already begun developing Unix and SQL skills during our online catalog (ALEPH) implementation. For both servers, we installed the operating system, created the necessary filesystems according to Ex Libris specifications, and worked with IT's Network Services group to resolved potential security-related issues before external Web access to the servers was enabled in the campus firewall.

Once the servers were up and running, Ex Libris installed the MetaLib (http://www.exlibris_USA.com/MetaLib/index.html) and SFX (http://www.sfxit.com) applications, which include the major components shown in Table III.

Configuring and testing resources

Systems staff spent a significant amount of time configuring and testing MetaLib resources. The work involved modifying existing Z39.50 profiles in the KnowledgeBase provided by Ex Libris, and in creating new profiles for resources not yet in the KnowledgeBase. (A full glossary of terms used in this article is shown in the Appendix.) For new profiles, the configuration process involved locating technical information on the database vendor's Z39.50 server implementation, and translating that information into a standard table format used by Ex Libris. The availability and quality of the Z39.50 server information varied greatly from vendor to vendor.

Figure 1 is a sample MetaLib Z39.50 configuration record, for OCLC's ArticleFirst database. In this example, the first section of the record includes the information necessary to establish connection with the database using the Z39.50 protocol. This includes the hostname of the OCLC Z39.50 server, login information, database code, and record structure (typically MARC or SUTRS). This is followed by parameters for different types of keyword ("find") and browse ("scan") searches, with settings for the various Z39.50 search attributes (use, relation, position, structure, truncation, and completeness). The last section of the record defines available sort orders.

In some cases, we were able to use Z39.50 configuration information we had collected

Table III The major components of SFX and MetaLib

SFX	MetaLib
MySQL	Oracle
Perl	Apache
Apache	Cobol
Java	Perl
	Java

Figure 1 A sample MetaLib Z39.50 configuration record

```
##############################################
#Comment:   OCLC ARTICLEFIRST
##############################################
target          OCLC_ARTF
hostname        fsz3950.oclc.org:210
database        ARTF
auth                    [BC account information]
recordtype      USMARC

find    WRD  u=1016
find    WTI  u=4
find    WAU  u=1003 t=l,r,b s=pw c=1
find    WSU  u=21
find    WYR  u=31
find    ISBN  u=7
find    ISSN  u=8

scan    AUT   u=1003
scan    TIT   u=4
scan    SUB   u=21

sort    01    u=31
sort    02    u=1003
sort    03    u=4
```

previously, in support of EndNote use on campus. EndNote, currently marketed by ISI ResearchSoft, is a desktop Z39.50 client for which Boston College has a campus license. In other cases, we had not yet developed local EndNote connection or filter files for some of our Z39.50-compliant databases, and gathering the necessary configuration information during the MetaLib implementation will allow us to add the EndNote component easily at a later date.

User authentication
At our request, Ex Libris developed a mechanism in the MetaLib application to authenticate users against our integrated library system (ILS) patron file, which includes a campus-standard user identification (ID) and personal information number (PIN) field for each registered borrower. This is in keeping with an ongoing IT initiative to promote the use of a single login philosophy.

Troubleshooting
Both MetaLib and SFX provide debugging modes that allow library staff working on the implementation to diagnose problems as resources are configured and tested. We used the debugging mode extensively during the early stages of implementation, as resources for both products were localized and activated. The debugging mode usually provided sufficient information for us to determine whether a problem in SFX was due to incorrect configuration on our end, a problem with the MetaLib or SFX software, or a problem with a database vendor's Z39.50 implementation or support for OpenURL.

Web interface
We made extensive changes to the Web interface for MetaLib, based upon input from the MetaLib users group on the campus, and on a concurrent redesign of our online catalog and library Web site. Our intent was to implement a consistent design across these services, incorporating elements of a recent campus-wide Web site redesign project. In a blurred world, this is all part of the intangibles. Users want to identify the brand and feel loyalty for a product. We wanted the user to recognize the connections between the library Web page, the online catalog, and MetaLib. Customization is also a blur component and MetaLib takes some small steps here. Users are able to create individual profiles for a set of databases they want to search but, unfortunately, they can only have one profile, when clearly they will be working in more than one area. More development work is needed in this area.

How MetaLib and SFX were implemented

With the creation of the new position of Digital Resources Reference Librarian came the responsibility for coordinating the implementation and roll-out of MetaLib and SFX. Work on customizing MetaLib and SFX began following two-day training sessions on each product conducted by Ex Libris staff. SFX training occurred in mid-July 2001 and MetaLib training at the end of July 2001 (see Table I). The training was heavily focused on the technical aspects of the products and most appropriate for the libraries' systems staff. However, there were some sessions of the training where other library staff from public services and technical services attended. Following the training, the digital resources reference librarian organized and managed two users' groups to assist with the customization and implementation.

The MetaLib users' group consisted of public services staff and systems staff, including the Web coordinator. The digital cataloger was also involved in developing subject categories for resources in MetaLib. It was decided that we include in MetaLib all of our Web-based subscription databases and certain library catalogs. With the product's current management interface, we learned that it was best to finalize decisions about the arrangement of content before entering records for individual resources due to the product's inflexibility. The slightest change, such as adding a subject term, meant every record related to that term would have to be updated individually. At the time we implemented, there was no way to make global changes to the databases of resources. The data entry and data deletion (fields provided by Ex Libris that we did not want to appear to our users) was very time consuming and took staff members several months to complete.

While the systems staff worked on configuring resources for the MetaLib search, the users' group worked on customizing the interface, and testing the configurations. The Help section of MetaLib was updated to reflect the changes we made to the interface and a list of frequently asked questions was developed. A naming contest for MetaLib was held within the Libraries and the name MetaQuest was chosen. Boston College's (BC) online catalog is named Quest. The name MetaQuest reflects the ability to search Quest as well as many other electronic resources provided by the BC Libraries.

Once most of the resource configurations were complete and the interface was customized, it was time to invite faculty and students to participate in the beta test. Publicity about the beta test was posted in the faculty newsletter, on our Web site, through e-mail to specific faculty groups and by subject librarians to their faculty. About 20 faculty and graduate students responded and were given access to the product, asked to complete an online survey and attend a focus group. The feedback overall was positive and included several desired enhancements for customizing lists of resources and results lists. All of this feedback was shared with Ex Libris. Overall the focus group provided a much better understanding of the pros and cons of using a cross-database search product and helped us develop a list of the *Top Ten Reasons to Use MetaQuest* which was included in publicity and training:

(1) Find and link to resources organized by subject.
(2) Customize and save a list of your favorite resources.
(3) Save your favorite searches and re-run them at a later date.
(4) Search up to eight databases across different disciplines at once.
(5) Conduct author, title, subject and keyword searching across databases.
(6) Save records within MetaQuest without having to print, e-mail or download.
(7) Search several library catalogs at once including many Boston area libraries.
(8) E-mail records from within MetaQuest.
(9) Locate books, documents and articles faster with SFX.
(10) Merge records from multiple resources into one list.

MetaQuest was rolled out in early January 2002 for the Spring semester and integrated in instruction sessions and interactions at the reference desk when appropriate.

The SFX users' group consisted of public services staff, systems staff and the serials librarian. One of the first tasks with SFX was to gain an understanding of the libraries' electronic journal collections.

Boston College subscribes to SerialsSolutions, a company that supplies lists of e-journals from aggregators and other collections. We were able to use the data that we have from SerialsSolutions to populate the SFX KnowledgeBase to reflect Boston College's holdings and activate SFX targets. We did some of this work during training. Following training, we continued to activate targets and contacted vendors to setup test accounts so we could see how SFX would work in those databases.

The SFX users' group made decisions about the services to be offered on the SFX Menu, the language to be used, and the order in which services were displayed. Members of the group also tested the SFX links. Services offered through SFX include links to full-text, check holdings in BC's online catalog, search for an author in Web of Science, send questions or comments to a librarian, and link to the SFX FAQs.

Figures 2-9 show how a patron would use MetaQuest at Boston College to locate and search resources, find records and use SFX to link to additional services.

The process of setting up SFX involved a great deal of time talking with vendors and working out technical problems with vendors and Ex Libris. At the time, few vendors were very aware of OpenURL linking, so a good deal of time was spent just finding someone within the company who had the information we needed. Of course, some vendors were very easy to work with and others very difficult. Since OpenURL linking has become more prevalent, this is no longer such a big issue.

SFX was slowly introduced to groups of library staff throughout the process of implementation and final presentations to all staff were given several weeks before we went live. SFX was moved to a limited number of live databases in early November 2001, and since then, we have increased the number of

Figure 2 After signing-in, you are brought to the home page of MetaQuest, BC's customized version of MetaLib. Here you see a brief description of the product and instructions on how to get started using it

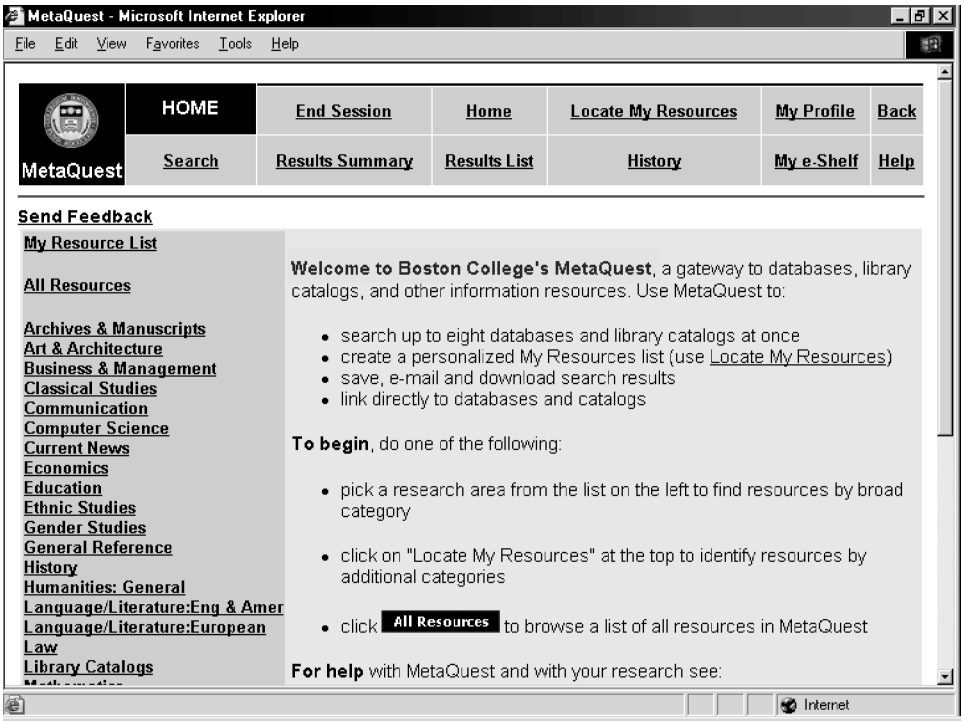


Figure 3 In order to identify resources you can use the "Locate my resources" feature within MetaQuest to find appropriate resources and add them to your "My resource list" which is then saved and can be accessed whenever you sign-in to MetaQuest. Here the patron searches for a database named "Expanded" and finds the resource Expanded Academic ASAP

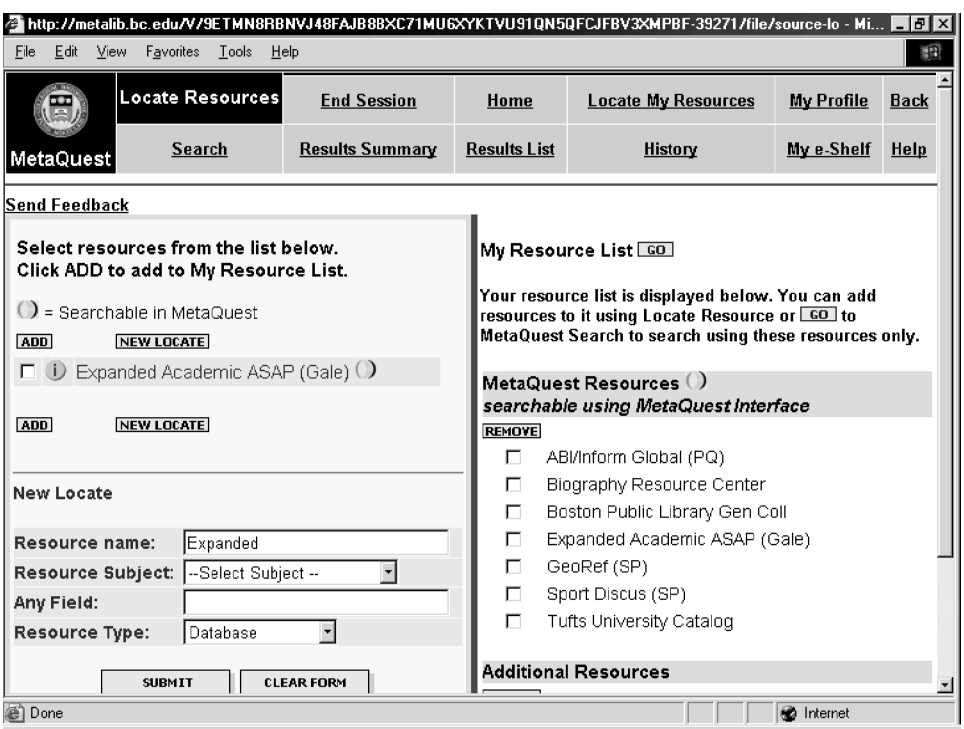


Figure 4 To learn more about a resource, such as Expanded Academic ASAP, you can view the information screen within MetaQuest. Librarians determine the content and some of the fields to be displayed to the user. This information is pulled from the MetaLib KnowledgeBase

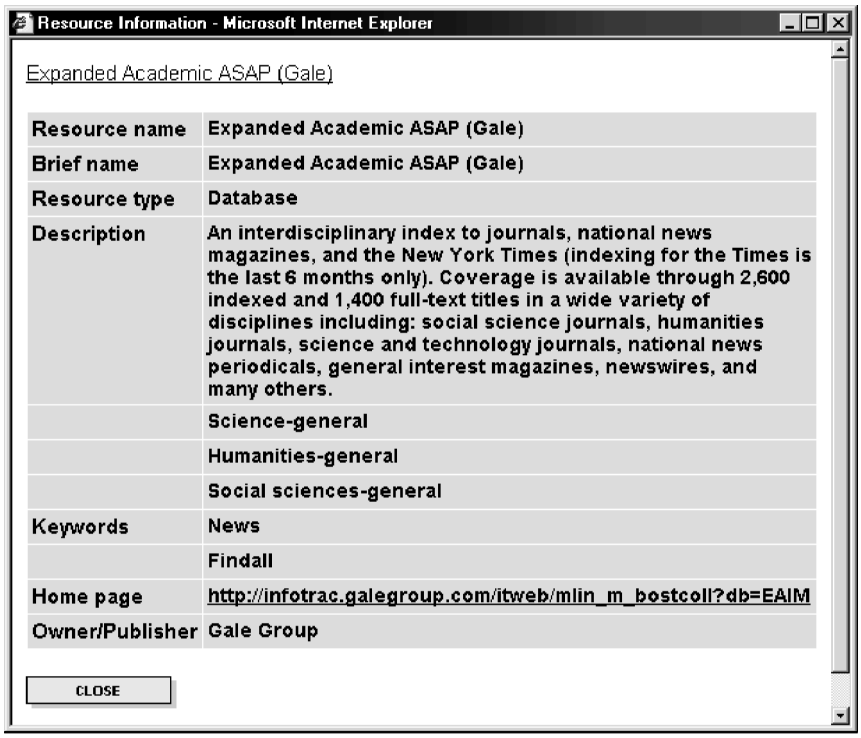


Figure 5 Here the patron chooses to search multidisciplinary resources for the phrase "library portal" within all fields. Notice the searchable resources appear in the middle of the screen and the non-searchable, or link to resources, appear below. The fields available for searching include all fields, subject, title, author, ISSN, ISBN and year

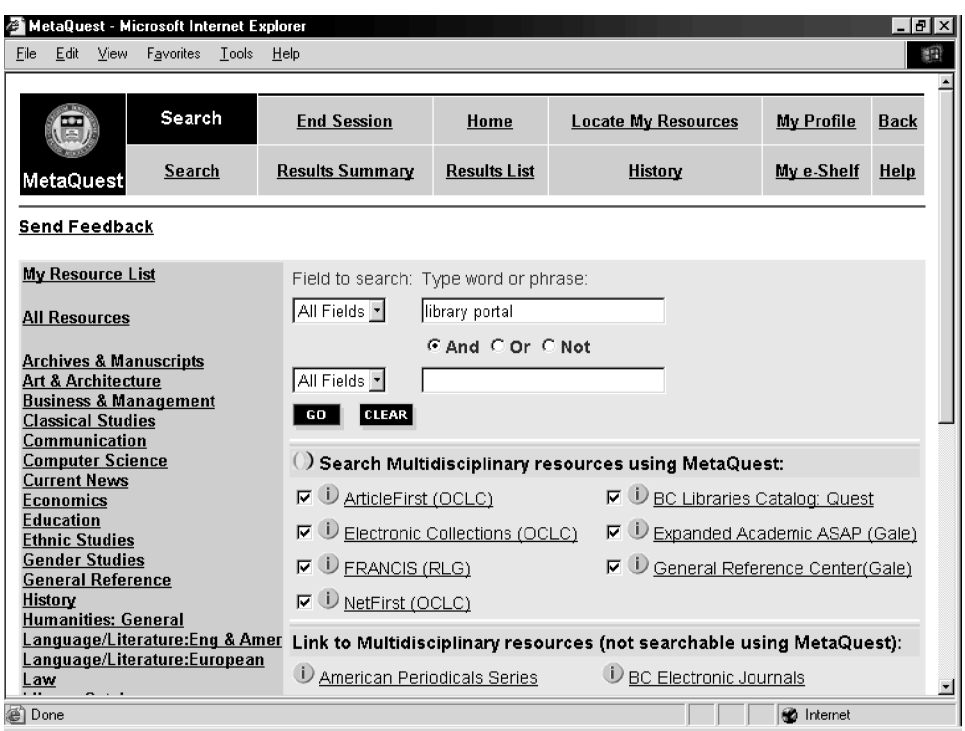


Figure 6 A view of the MetaQuest results summary shows the number of hits found in each resource that was searched

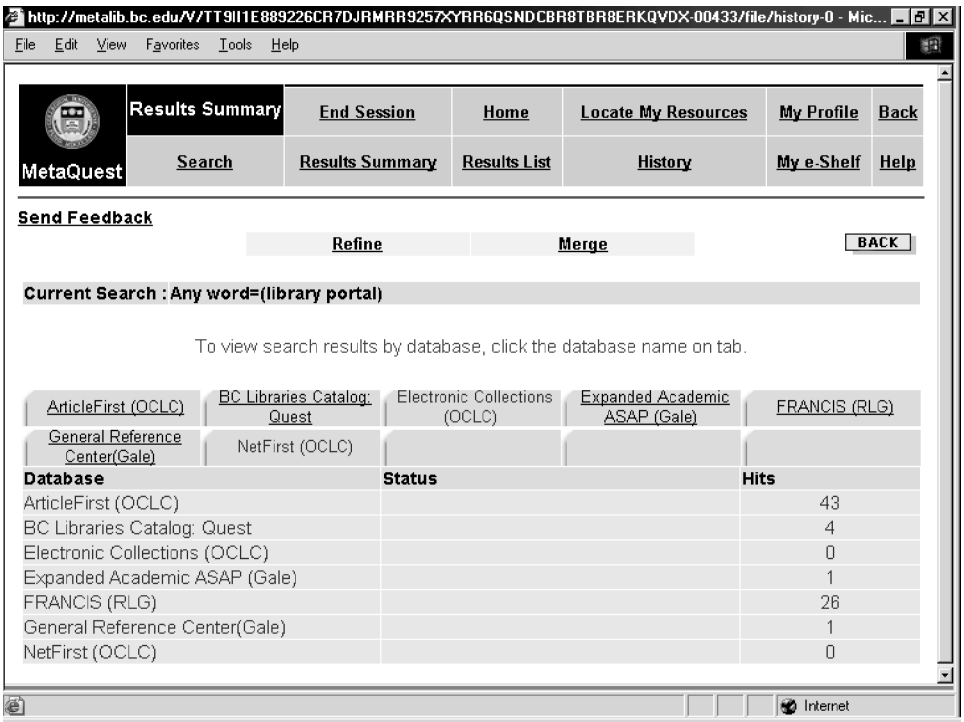


Figure 7 Here the MetaQuest results list displays a brief record for each hit from ArticleFirst

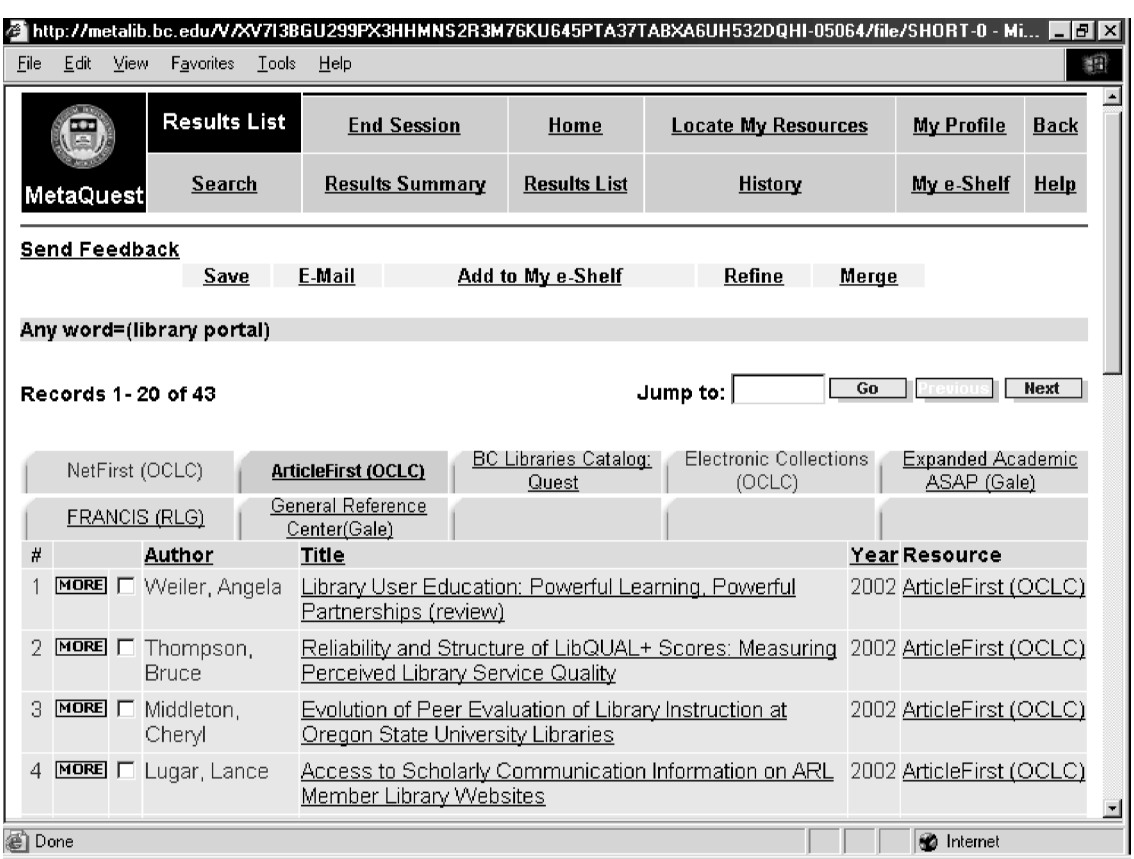
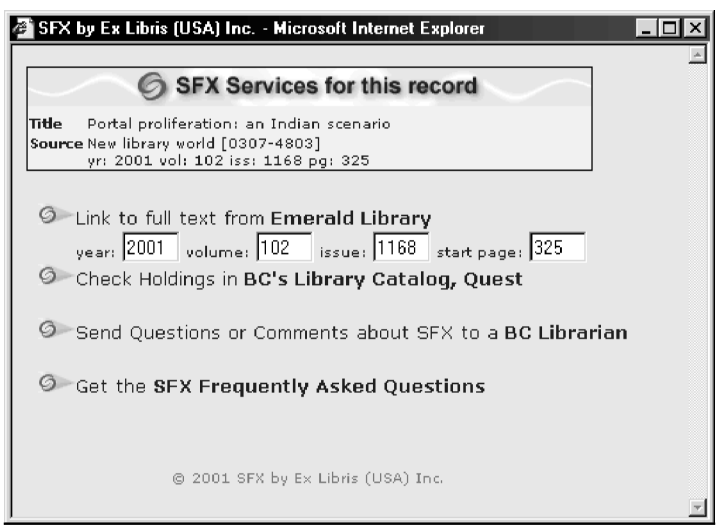


Figure 8 A view of the full record for a citation from ArticleFirst. The patron could then click on the SFX icon to see additional services for this citation

Figure 9 The SFX menu presented for the citation originally found by searching ArticleFirst within MetaQuest



databases (SFX sources) that contain SFX links and the number of resources that SFX links to (SFX targets).

Challenges of MetaLib and SFX

The major challenges of MetaLib and SFX include:

- time commitment by staff for ongoing maintenance and trouble-shooting;
- working with vendors to set up databases;
- staff awareness, training and incorporating MetaLib into the flow of reference and instruction work; and
- instructing students about when to use each product.

Specifically, SFX is challenging because it can be difficult to recognize SFX links within a database. Each vendor presents SFX differently. Some link to an SFX icon located on the library's server which is displayed in the results list of the database, others use only text that might say "SFX link to more options", while others only include SFX on the full record display and use their own SFX icon. Finding SFX links within a database can be a challenge

and here cooperation among vendors for a standard display is much desired and would benefit the user.

MetaLib instruction is a challenge because the product generally works best with simple cross-database searching and those researchers with more complex searches are directed to the databases' native interface. Also, the way that records are displayed within MetaLib is different than how records display in the native interface which can be confusing to users.

Finally, not all collections can be searched or linked to using MetaLib and SFX, so making sure that patrons are aware of what is not included is important. Often they think MetaLib and SFX have it all.

Feedback

Students love the convenience of either linking directly to the full text of a document, or being able to check holdings without leaving the database that they are searching. But there has been confusion among some students and librarians that SFX means full text, so when the library does not subscribe to the full text of the document there is a sense of disappointment. Overall, however, the feedback for SFX has been very positive.

MetaLib feedback has been mixed. Students love the convenience of searching multiple databases and library catalogs at once. Also, since SFX is part of MetaLib, those additional SFX services increase the speed of finding additional information. However, those students with more sophisticated searches are frustrated with the limited search options in MetaLib, and the short display of records does not include complete citation information. These issues can be addressed through instruction and product enhancements.

Future possibilities

As more database vendors provide access to their products through a Z39.50 client or by using the OpenURL protocol, more resources will be compatible with MetaLib and/or SFX. Additional changes will also occur as we work with Ex Libris on future enhancements to these products.

Specifically at Boston College, we see the following possibilities for the development of SFX. With the latest version of SFX (1_3) and our migration to the latest version (ALEPH 14.2) of our online catalog due in summer 2002, the link to check for holdings in our library catalog will only be offered after the catalog has been checked and items have been found. This will save on user frustration for those who currently get the message "Sorry, no records found". Also, when we migrate to ALEPH 14.2, we will add SFX links to the records in our catalog.

Additional services that we hope to add to the SFX menu include a link to ILL services, a link to Virtual Reference services, and of course additional links to our electronic collections as they grow. In the broader view, as the use of metadata sent via the OpenURL becomes more complete and is standardized, we will be able to offer more services through SFX. Examples include, linking from a citation either in an online catalog or a database to an article in an encyclopedia based on subject or author; linking from an author's work found in the online catalog to a book review found in a database; linking from a citation in *Dissertation Abstracts* to a database of full-text dissertations or a local collection of dissertations.

Another potential service based on subject information is the ability to link to a local collection of research guides. The linking possibilities are extensive, and it is a matter of working with vendors to include as much descriptive metadata as possible.

As for MetaLib, internally we will continue to work on the configuration of our local resources as they are developed at Boston College and we plan to make additional enhancements to the Web interface. From Ex Libris, we hope to receive a statistics package (as of April 2002 no statistics were available for MetaLib), and have requested enhancements such as the ability to customize more than one list of resources, better print options, the ability to download to citation management software, and a more flexible and user-friendly Administration interface. As more resources

become searchable using Z39.50, and as Ex Libris configures more resources, those will be added.

In a blurred world, independent action is difficult, and not the path to success. For MetaLib and SFX to work, there must be significant collaboration and a commitment to standards from the library, the ILS vendor, and database and e-journal suppliers. Caplan (2001) has commented accurately that this work is technically complex, but above all organizationally complex. The blur of responsibilities and boundaries touches on the issue of our work structure, the type of librarian we hire, and how we make decisions about the resources we acquire. Making MetaLib and SFX realities at Boston College resulted in new kinds of work collaborations, including reference-systems, serials-systems, reference-serials, and reference-digital cataloging. Clearly, these collaborations existed beforehand, but the nature of the current work demanded these approaches and it is something that we will continue to develop and discuss.

The speed of change is also built into the work that we do. The electronic collections and tools to which we subscribe are constantly changing. In fact, the blurred perspective is that they are built to change. Users expect that and often seem nonplussed by it. At Boston College we made major revisions to our online catalog after 18 months, and we know that MetaQuest and SFX will evolve. In fact, we market these resources as works in progress and roll out some of the features incrementally as they become available. Our future plans include continuing to monitor the use of these resources, analyzing the data we receive, and working on enhancing these tools and their interfaces, our work flow, and the associated services we provide to the Boston College community.

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Appendix. Glossary

KnowledgeBase. Ex Libris term for the databases of configuration, service, and resource information necessary for SFX and MetaLib to work. The KnowledgeBase includes both information provided by and maintained by Ex Libris and local information supplied by customers.

Native Interface. The search interface provided by the database vendor.

SFX Portfolio. A collection of metadata for a particular SFX target (e.g. subscription and title information for one of the full-text journals available from Academic Press IDEAL)

Open URL. A protocol for interoperability between an information resource and a service component that offers localized services in an open linking environment.

SFX Source. A database with SFX linking enabled.

SFX Target. The destination of an SFX link. For example, Academic Press IDEAL.

SFX Target Service. Service (e.g. full text) available from a target.

Z39.50. NISO protocol that allowing a common search interface for databases from different sources/vendors.