

The *reSearcher* Software Suite: A Case Study of Library Collaboration and Open Source Software Development

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Abstract

This article examines the importance of library collaboration as demonstrated by the development of *reSearcher*, an open source software project at the Simon Fraser University Library, in British Columbia, Canada. A brief history of the project is provided, as well as an overview of each of the project's components, which offer electronic resource management, link resolving, personal citation management, and federated searching capabilities. The importance of libraries working together to ensure the success of the project is discussed, as well as the benefits received by members of the international library community participating in this open source alternative.

Introduction

Over the past five years, important new technologies have emerged for libraries, including electronic resource management (ERM), link resolving, federated searching, and online personal citation management. All of these are becoming crucial components in the library software toolbox. These technologies have increased the efficiencies in managing our rapidly growing electronic collections, and helped library users navigate these online environments more quickly, conveniently, and effectively than ever before. Unfortunately, for many small and medium-sized libraries, both in the developed and developing world, these technologies are simply too expensive to purchase from the commercial vendors. The high cost of these technologies threatens to undermine other critical budget areas, such as collections or services. Some libraries have been able to reduce the costs by collaborating in consortial purchasing opportunities, but for many others, the price still remains too high. Some have attempted to build their own “home-grown” solutions, but this is limited to libraries with the unique staffing resources to undertake such a project. The result is that for many libraries, the choice appears to be between watching these technologies be implemented elsewhere, and not provide the benefits of these services to their users, or, reducing their acquisition budgets to pay for them. The *reSearcher* project, however, provides an alternative. By combining the power of open source software with the strong tradition of library collaboration, another option is available for libraries everywhere.

What is *reSearcher*?

reSearcher is an open source software project developed by a group of libraries in western Canada, working together to come up with a solution to the problem of expanding electronic collections, and the high cost of developing the infrastructure to better manage and access them. *reSearcher* consists of four components, each representing an important new field of library technology: CUFTS for electronic

resource management; GODOT for link resolving; Citation Manager for personal bibliographic management; and dbWiz for federated searching. Each of the components can be used independently or together to provide an integrated, portal-like set of services, and are completely customizable by each library. *reSearcher* was designed for use by library consortia, but can also be implemented by individual libraries. The *reSearcher* development team is located at the Simon Fraser University (SFU) Library, in Burnaby, British Columbia, Canada.

The development of *reSearcher* goes back to 1992, when the SFU Library and the British Columbia Electronic Library Network (BC ELN – a consortium of academic libraries in British Columbia) began work on software that linked online periodical indexes to a union list of serials, and included an email document requesting system. This would eventually become GODOT, the original *reSearcher* software component. As the value of this software became apparent, more Canadian university libraries became involved, including the University of Manitoba, the University of Saskatchewan, the University of Northern British Columbia, and Trent University. In 1997, a major milestone was achieved when the Council of Prairie and Pacific Libraries (COPPUL – a consortium of western Canadian academic libraries) agreed to provide ongoing funding for the project. The money and staff resources invested by all of the partner libraries allowed for further enhancements to GODOT as well as the development of the three additional *reSearcher* components, CUFTS, Citation Manager, and dbWiz.

CUFTS

CUFTS is *reSearcher's* open source electronic resource management component. Central to CUFTS is its knowledge base, an online database of electronic resources, used to provide a variety of services to libraries. Currently, the knowledge base contains information for more than 375 collections, from a wide variety of providers, including aggregators such as Gale, EBSCO, and Proquest, electronic journal providers including Ingenta, Blackwell, and MetaPress, society

publishers, including the American Association for the Advancement of Science, the American Medical Association, and the Optical Society of America, and open access collections, such as the Directory of Open Access Journals (DOAJ), PubMed Central, and Bioline International.

	name	provider	type	titles
view edit delete	AAAS Journals	American Association for the Advancement of Science	fulltext journals	3 of 3 (bulk)
view edit delete	Academic Search Elite	EBSCO	fulltext journals	908 of 908 (bulk)
view edit delete	ACM Digital Library	Association for Computing Machinery	fulltext journals	304 of 304 (bulk)
view edit delete	ACS Journals	American Chemical Society	fulltext journals	46 of 46 (bulk)
view edit delete	AIMS - American Institute of Mathematical Sciences	American Institute of Mathematical Sciences	fulltext journals	2 of 9 (bulk)
view edit delete	AK Peters	AK Peters	fulltext journals	1 of 3 (bulk)
view edit delete	Allen Press Journals	Allen Press	fulltext journals	15 of 21 (bulk)
view edit delete	Alt HealthWatch	EBSCO	fulltext journals	197 of 197 (bulk)
view edit delete	AMA Journals	American Medical Association	fulltext journals	1 of 1 (bulk)
view edit delete	American Geophysical Union Journals	American Geophysical Union	fulltext journals	13 of 13 (bulk)
view edit delete	American Periodical Series (APS Online)	ProQuest	fulltext journals	1511 of 1511 (bulk)
view edit delete	AMS Journals	American Mathematical Society	fulltext journals	18 of 18 (bulk)
view edit delete	Annual Reviews	Annual Reviews	fulltext journals	35 of 35 (bulk)

Figure 1: CUFTS Knowledge Base

All of these collections include their complete title lists, each of which is updated centrally at the SFU Library, and shared with all of the partner libraries. Ideally, these lists are obtained from the publisher, but some must be created manually. Maintenance of the title lists is critical, and CUFTS was specifically developed for ease of updating. For some collections, such as those from small publishers, the rate of title changes is very slow and infrequent, with perhaps a new title every few years. For many of the aggregators, however, titles are added and dropped every month. To provide libraries with the most accurate picture of their electronic collections, CUFTS must be updated regularly. Any of the services provided by the CUFTS knowledge base are only as good and useful as the currency of the knowledge base. The staff time required for any one library to keep all of this information up-to-date is very high, but when libraries work together, the costs can be shared and significantly reduced. Knowledge base maintenance is just one of the many ways that *reSearcher* represents a collaborative approach to

problem solving for libraries.

Each CUFTS library has access to this main (or global) knowledge base of electronic resources, and selects from the list all of those collections to which it subscribes. For aggregator collections, a library can choose to simply activate the entire list of titles, and for collections from societies or electronic publishers, they can choose to activate only the selected titles to which they subscribe.

Atypon Journals

Search within this list:

Page: 1 |<< 1 2 3 4 5 6 ... 10 >> 11

active	id	title	issn	e issn	ft start date	ft end date	vol ft start	iss ft start	journal url
<input checked="" type="checkbox"/>	1325889	Accounting and the Public Interest		15309320	2001-01-01	2037-01-01	1	1	http://www.atypon-link.com/c
<input checked="" type="checkbox"/>	1325515	Accounting Horizons	08887993	15587975	1999-03-01	2037-01-01	13	1	http://www.atypon-link.com/c
<input type="checkbox"/>	1325549	ADHD Report, The	10658025		2001-02-01	2037-01-01	9	1	http://www.atypon-link.com/c
<input checked="" type="checkbox"/>	1325429	Administrative Science Quarterly	00018392		2005-03-01	2037-01-01	50	1	http://www.atypon-link.com/c
<input type="checkbox"/>	1325529	Advances in Cement Research	09517197		2001-01-01	2037-01-01	13	1	http://www.atypon-link.com/c
<input type="checkbox"/>	1588692	Advances in Geometry	1615715X		2001-03-01	2037-01-01	1	1	http://www.atypon-link.com/c
<input type="checkbox"/>	1588693	Advances in Geometry	1615715X		2006-01-01	2037-01-01	6	1	http://www.atypon-link.com/c
<input type="checkbox"/>	1325758	African Health Sciences	16806905		2001-08-01	2037-01-01	1	1	http://www.atypon-link.com/c
<input type="checkbox"/>	1325519	AIDS Education and Prevention	08999546		2001-02-01	2037-01-01	13	1	http://www.atypon-link.com/c
<input checked="" type="checkbox"/>	1325497	Alternatives: Global, Local, Political	03043754		2005-01-01	2037-01-01	30	1	http://www.atypon-link.com/c
<input checked="" type="checkbox"/>	1325430	American Economic Review	00028282		2002-03-01	2037-01-01	92	1	http://www.atypon-link.com/c

Figure 2: Selecting titles

For any collections not contained in the global knowledge base, libraries are able to create their own unique local resources. However, they would also be responsible for finding the appropriate title lists and keeping them up to date. At the SFU Library, we encourage libraries to send these new title lists to us, so that we can add them to the global knowledge base, making them available for everyone. Through this process of collection activation, title selection, and resource creation, a library is able to get a complete picture of their entire electronic collection.

Journal Database

Once a library has activated their collections in CUFTS, a number of services become available. One of the most important is the CUFTS Journal Database (CJDB), which provides a public interface to all of the titles activated by a library in

CUFTS.

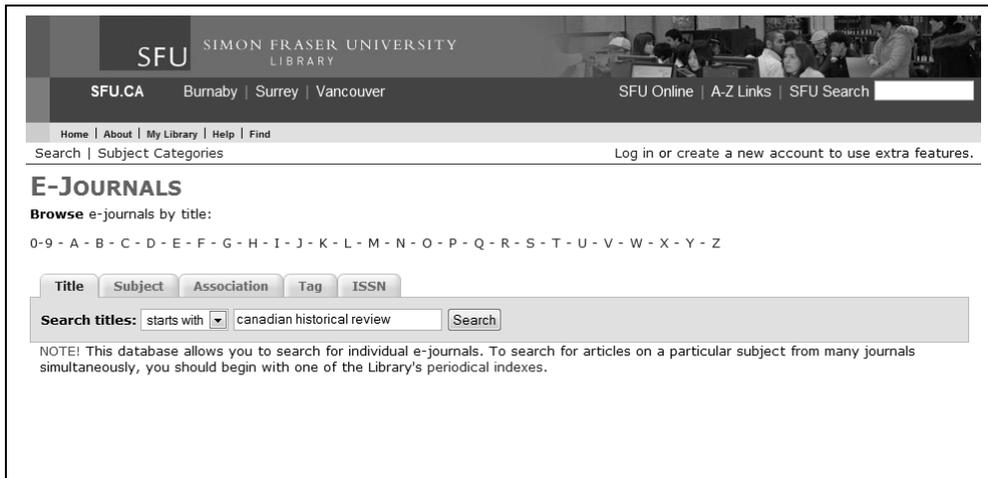


Figure 3: CJDB Search Interface

Titles can be browsed alphabetically or searched using keywords. Users can also find journals by subject, association, ISSN, or tag. Tags are individually meaningful keywords applied to digital objects by anyone interested in doing so. Tags are often applied to online photographs (e.g., flickr.com) or web sites (e.g., del.icio.us). One of the unique features of the CJDB is the option for libraries to allow their faculty, staff, and students to “tag” their favourite journals, creating their own unique “My Journals” list. Although not widely implemented at this time, the greatest use of journal tagging is expected to be by faculty, wishing to make journal lists for specific classes.

Each journal entry in the CJDB provides links to all versions of the journal, availability dates, ISSNs, alternative titles, related titles (“Continues”), subjects, associations, and tags.

The screenshot shows the SFU Library website interface. At the top, there is a navigation bar with 'SFU SIMON FRASER UNIVERSITY LIBRARY' and links for 'SFU Online', 'A-Z Links', and 'SFU Search'. Below this is a secondary navigation bar with 'Home', 'About', 'My Library', and 'Help | Find'. The main content area is titled 'E-JOURNALS' and features a record for 'The Canadian historical review'. The record includes the ISSN: 0008-3755, 1710-1093 and an 'AVAILABILITY' section with the following entries:

- Project Muse Standard - Project Muse**
Fulltext Coverage: 2004-03-01 (v.85 i.1) -
Link: Click here to access journal
- CBCA Complete - Proquest**
Fulltext Coverage: 1993-03-01 - 2003-12-01
Link: Click here to access journal
- LexisNexis Academic - Lexis-Nexis**
Fulltext Coverage: 1987-03-01 -
Link: Click here to access journal
- MetaPress - MetaPress**
Fulltext Coverage: 1997-03-01 (v.78) -
Link: Click here to access journal

Below the availability section is an 'ALTERNATE TITLES' section listing 'Canadian historical review'.

Figure 4: CJDB Journal Record

In addition to electronic journal titles, libraries also have the option to upload the MARC records for their print serials into CUFTS, providing users with an integrated journal database, containing both online and print collections.

CUFTS Resource Database

As part of the ongoing development of CUFTS, a new feature will soon be available allowing libraries to display an online database of all of the resources activated in CUFTS. This CUFTS Resource Database (CRDB) will provide an A - Z “database of databases” for libraries, eliminating the need to maintain a separate listing of resources outside of the CUFTS system. The funding for this new component of CUFTS is being provided by six partner libraries, including Malaspina University College, Simon Fraser University, Thompson Rivers University, the University College of the Fraser Valley, the University of Lethbridge, and the University of Winnipeg. In return for their financial support, each of these libraries is a participant on the development decision-making team, and will be the first to have access to the new functionality. By working together and pooling resources, CUFTS libraries are improving their technological infrastructure and

expanding the services for their clients – at a price the libraries can afford to pay.

The CRDB will include many of the features expected in an A – Z database list, such as browsing by title or subject, keyword searching, brief and full record displays, and links to the databases. It will, however, also make use of faceted browsing, allowing users to narrow (or “filter”) their searches down into more precise categories. For example, a student will have the option of selecting from a Subject listing (e.g., Business Administration) and discover that there are 22 databases matching this category. They can then choose to filter that result down even more by Resource Type (e.g., Fulltext Databases), narrowing the results to 14.



Figure 5: CUFTS Faceted Browsing Prototype

From here, they can go a step further, and limit their choice by Content Type (e.g., Statistics), resulting in only 2 databases matching all of their filtering criteria. At any point they can revise their choices and redisplay the new result set. Each CUFTS library will have the ability to create their own Subject, Resource Type, and Content Type terms. The goal is not only to build a more affordable database, but also to build a better database, which will allow users to more quickly focus in on the most appropriate resources for their research needs.

Electronic Resource Management

Another CUFTS enhancement that is currently under development, and being funded by the same six partner libraries involved with the CRDB, is a full featured electronic resource management (ERM) system. At its simplest, ERM provides a single, secure, online location for libraries to maintain all of the information about their electronic collections (indexes, fulltext databases, e-books, image collections, etc.), including prices, renewal dates, contacts, licensing terms, statistics, and more. This is another up and coming technology that will soon become a “must have” for every library with a sizable electronic collection. As part of this development, CUFTS libraries will have access to detailed data fields, which have been based on the *Functional Requirements of Electronic Resource Management: The Report of the DLF Initiative (2004)*, including sections for general descriptive information (Vendor, Resource Type, Content Type, Subjects, etc.), cost and renewal details, statistics, and administrative information (e.g., administrator username and password).

The screenshot displays a web form titled "ABI/Inform" with a navigation menu at the top containing "General", "Dates/Costs", "Statistics", "Admin", "Subjects", and "Content Types". The "General" tab is active. Below the menu are "submit" and "reset" buttons. The form is organized into a "Basic" section with the following fields:

resource identifier	ABI/Inform
main name	ABI/Inform
vendor	ProQuest
publisher	ProQuest
resource type	Fulltext Database
resource medium	Website
file type	HTML; PDF
public list?	Yes
public?	
brief description	NOTE: The SFU subscription tc
full description	

Figure 6: CUFTS ERM Prototype Fields

Libraries will also be able to create their own ERM fields, specific to their own local requirements. The ERM enhancement will also include the addition of variable staff

permissions, allowing some staff members to be “superusers” and modify any part of their account, and limiting other staff to particular sections of the interface. Detailed statistics and reports are also being developed, including an investigation into the best use of the Standardized Usage Statistics Harvesting Initiative – SUSHI. The ability to better import ERM data into CUFTS from existing sources, such as major integrated library systems, is also in development, reducing duplication and the amount of time required by libraries to enter information into the ERM fields.

MARC Records

Another service available to CUFTS users is the ability to export MARC records. CUFTS generates a MARC record for each title activated in the knowledge base, allowing libraries to add electronic journals to their library catalogues. Many libraries export their MARC records from CUFTS and upload them to their catalogue as frequently as once a week, providing a more accurate representation of their online collection than ever before. This can be particularly valuable for libraries subscribing to aggregator databases, which regularly add and drop titles from their collections. This is another example of CUFTS libraries receiving valuable services for their participation in the *reSearcher* project.

CUFTS Public Services

In addition to all of the features provided to CUFTS libraries described above, there are also three important services that are freely available to everyone: *cufts2marc*; CUFTS Journal Search; and CUFTS Resource Comparison. All of these services rely upon the constantly updated CUFTS knowledge base to provide accurate information about electronic resources.

cufts2marc

cufts2marc allows libraries that are not using CUFTS to freely download MARC records. This service allows anyone anywhere to select an individual resource in CUFTS (e.g., EBSCO's Academic Search Premier) and download an entire set of records for each title.

Create MARC records for fulltext journals in Academic Search Premier

Using this utility, you can generate USMARC records for the fulltext journals in any of the databases listed in the CUFTS link resolver knowledgebase.

Before loading records created using cufts2marc, you should consult with the maintainers of your integrated library system to ensure that you select the appropriate options below. You may also want to refer to the About cufts2marc page.

We are eager to hear your suggestions about how we can improve cufts2marc. Please email mjordan@sfu.ca if you have any questions or comments.

Filename

Enter a word or short phrase that will be used to create the filenames for your MARC communications file (max. 30 characters) (a timestamp in the format `yyyymmddhhmmss` will be added to your filename) *Required field

Leader

Position	06	17
Value	a - Language material	z - Not applicable

Indicators

Figure 7: cufts2marc Form

Libraries are provided with an online form to choose a number of options for the records (including configurable local notes for the 500, 590, 856 fields and much more).

```
LDR 00613nas 2200145za 4500
005 20070729150915.0
006 m d
007 cr u|||||
008 070729|||||d|||||
024 8 _aCUFTSResourceID365
245 00 _aScience Now
_h[electronic resource]
500 _aFull text is available from 1996-10-01 to present.
540 _aILL allowed
590 _aRecord derived on 2007-07-29 from the CUFTS (http://cufts.lib.sfu.ca/) title list fo
856 4 _uhttp://sciencenow.sciencemag.org/
_zClick here to connect

LDR 00754nas 2200205za 4500
005 20070729150915.0
006 m d
007 cr u|||||
008 070729|||||d|||||
022 1 _a0036-8075
024 8 _aCUFTSResourceID365
050 00 _aQ1
_b.S35
082 00 _a505
_z19
245 00 _aScience.
_h[electronic resource]
500 _aFull text is available from 1996-10-01 to present.
540 _aILL allowed
590 _aRecord derived on 2007-07-29 from the CUFTS (http://cufts.lib.sfu.ca/) title list fo
650 0 _aScience
_vPeriodicals.
650 2 _aScience
```

Figure 8: cufts2marc Records

Although some of the records are quite brief, they do provide information that was

previously unavailable to many libraries, in a convenient, easy-to-use way.

Journal Search

The CUFTS Journal Search is another service based on the knowledge base. This feature allows users to enter a journal title or ISSN and discover all of the resources that contain it, including the coverage dates and embargo periods.

Psychology Today [0033-3107] toggle more information						
resource	provider	citation start	citation end	fulltext start	fulltext end	embargo
Factiva	Dow Jones & Reuters			1994-01-01		1 days
Academic Abstracts FullTEXT Ultra	EBSCO	1985-01-01		1992-01-01		
Academic Search Alumni Edition	EBSCO	1984-01-01		1992-01-01		
Academic Search Complete	EBSCO	1984-01-01		1992-01-01		
Academic Search Elite	EBSCO	1984-01-01		1992-01-01		
Academic Search Premier	EBSCO	1984-01-01		1992-01-01		
Academic Source Premier	EBSCO	1984-01-01		1992-01-01		

Figure 9: CUFTS Journal Search

For anyone trying to track down the fulltext of a citation, this tool can be extremely helpful.

Resource Comparison

One final service that everyone is welcome to use is the Resource Comparison tool, which allows for the comparison of up to four resource title lists within CUFTS. This service reveals the overlap between collections, and displays what is unique to each resource. It can be used to compare different products from the same publisher (e.g., Academic Search Elite vs. Academic Search Premier) or similar products from different publishers (e.g., ABI/Inform Complete vs. Business Search

Complete).

Duplicates											
		ABI/INFORM Complete - Proquest					Business Source Complete (BSC) - EBSCO				
title	issns	citation start	citation end	fulltext start	fulltext end	embargo	citation start	citation end	fulltext start	fulltext end	embargo
AACE International Transactions	1528-7106	1977-01-01		1988-01-01			1997-06-01		2001-06-01		
ABA Bank Compliance	0887-0187	1984-07-01		1994-10-01			1997-07-01				
ABA Banking Journal	0194-5947	1971-08-01		1987-01-01			1979-04-01		1979-04-01		
ABA Journal	0747-0088	1988-01-01		1988-02-01			1984-01-01		1984-01-01		
ABACUS	0001-3072 1467-6281	1976-06-01					1965-09-01		1965-09-01		12 months
Academy of Management Journal	0001-4273	1963-03-01	1985-12-01	1963-03-01	1985-12-01		1964-03-01		1963-03-01		
Academy of Management Perspectives	1558-9080	1987-02-01		1987-02-01	2001-11-01		2006-02-01		2006-02-01		
Academy of Management Review	0363-7425	1976-01-01	1985-10-01	1976-01-01	1985-10-01		1976-04-01		1976-01-01		
Accountancy	0001-4664	1972-11-01		1992-01-01			1965-01-01		2003-11-01		
Accountancy Ireland	0001-4699	1992-10-01		1996-12-01			1997-02-01		2005-02-01		
Accounting and Business Research	0001-4788	1973-01-01		1987-01-01	1999-04-01		1982-03-01		1982-03-01		

Figure 10: CUFTS Resource Comparison

This can be very useful for librarians making decisions about database purchasing.

All of the CUFTS public services demonstrate the value of libraries working together, enabling them to do much more than they could ever do alone, and their willingness to freely share the benefits of their collaboration. The CUFTS public services are available from the *reSearcher* web site.

GODOT

A second component in the *reSearcher* software suite is GODOT, an OpenURL link resolver. Like other link resolvers, GODOT allows for the addition of OpenURL links within research databases. Although the link labels can be modified by the GODOT libraries, most use the phrase “Where Can I Get This?”

27. The Civic Value of Academic <i>Libraries</i> and the <i>Open Source</i> University. By: Shuler, John A.. Journal of Academic Librarianship, Mar2007, Vol. 33 Issue 2, p301-303, 3p; (AN 24909238)	
Where can I get this?	
28. An <i>Open Source</i> <i>Open Source</i> ILS. By: Breeding, Marshall. Computers in <i>Libraries</i> , Mar2007, Vol. 27 Issue 3, p27-29, 3p; (AN 24353501)	
 HTML Full Text  PDF Full Text (1.3MB) Where can I get this?	

Figure 11: GODOT Links

When a user selects the link, GODOT automatically searches for matching titles in

the CUFTS knowledge base and in the library catalogue (using the Z39.50 search protocol). When a fulltext match is found, a link is displayed on the resulting GODOT user interface. GODOT and CUFTS work together to link to the fulltext article. When a direct-to-article link is not available, the software will provide alternative issue-level, journal-level, or database-level links to the appropriate resource.

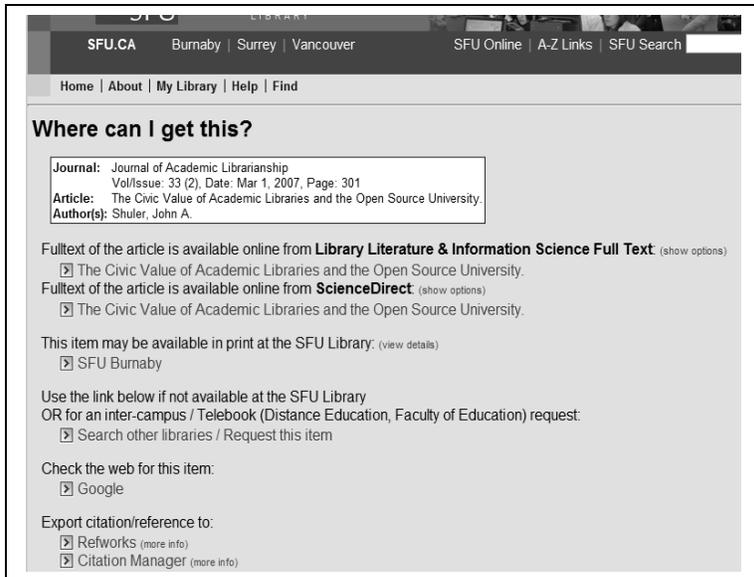


Figure 12: GODOT User Interface

In addition to the fulltext and catalogue links, GODOT will also provide a link (based upon the journal title) to major search engines, such as Google or Ask. As authors increasingly post their preprints into institutional repositories or on their own personal web sites, articles that may not be available from one of the library's subscription databases are, in fact, beginning to turn up on the open web. Search engine linking via the link resolver is one way to increase our users' access to information.

When GODOT does not find a match in the fulltext collection or in the catalogue, it provides yet another level of service to the user. In this case, GODOT provides the option of searching other library catalogues and for the user to place an interlibrary loan request.

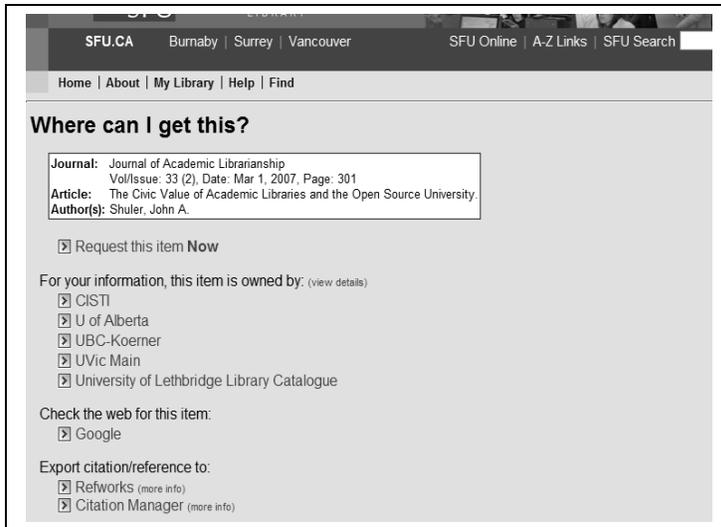


Figure 13: GODOT Remote Holdings

GODOT libraries have many options when dealing with how the software will manage interlibrary loan requests, including using patron data from the integrated library system (ILS) to identify the user (and fill in the request form for them). GODOT then takes the patron information, together with the citation information from the original database that was searched, and processes the request.

Figure 14: GODOT Patron Request Screen

The request can either go directly to the library's own Interlibrary Loans department (a "mediated" request), or can be sent directly to a partner library that holds the title

(an “unmediated” request). Whenever GODOT cannot find any holdings at a partner library, the request would revert to being mediated, and would be dealt with by local library staff.

In addition to placing interlibrary loan requests via the link generated from an index or database, GODOT also provides an online form that can be added to any library web page. Users can enter their citation information directly, have GODOT search for local holdings, and when none are available, allow them to proceed with an interlibrary loan request.

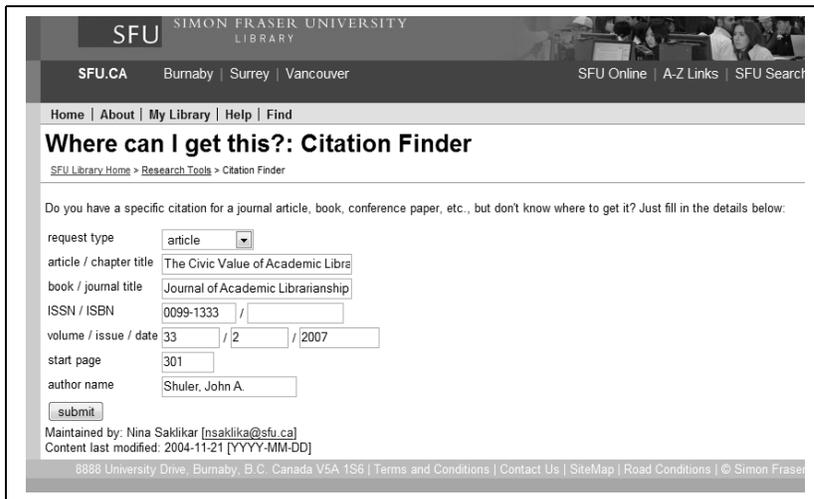
The image shows a screenshot of the SFU Citation Finder web form. At the top, it displays the SFU Simon Fraser University Library logo and navigation links for Burnaby, Surrey, and Vancouver. The main heading is "Where can I get this?: Citation Finder". Below the heading, there is a brief instruction: "Do you have a specific citation for a journal article, book, conference paper, etc., but don't know where to get it? Just fill in the details below:". The form contains several input fields: "request type" (a dropdown menu set to "article"), "article / chapter title" (text input: "The Civic Value of Academic Librarianship"), "book / journal title" (text input: "Journal of Academic Librarianship"), "ISSN / ISBN" (text input: "0099-1333"), "volume / issue / date" (text input: "33 / 2 / 2007"), "start page" (text input: "301"), and "author name" (text input: "Shuler, John A."). A "submit" button is located below the author name field. At the bottom of the form, there is a footer with contact information and a copyright notice for Simon Fraser University.

Figure 15: GODOT ILL Form

This not only provides a useful service for researchers with a list of references to find, but can also reduce unnecessary interlibrary loan requests by ensuring that each one is searched thoroughly before being processed.

Finally, GODOT also provides the option of storing the citation data from the article in an online bibliographic management tool such as RefWorks or our own Citation Manager. This provides a very convenient service for experienced users, and can help introduce the value of personal online citation management software to new users.

Citation Manager

Citation Manager provides library users with their own personal online citation database to help them better administer their research. Data can be entered either via the GODOT link resolver service, by typing the citation directly into an online form, or by importing a citation list from an article database. Citation Manager includes the ability to import citation lists in a variety of formats, including XML, tab delimited, Web of Science, and more.

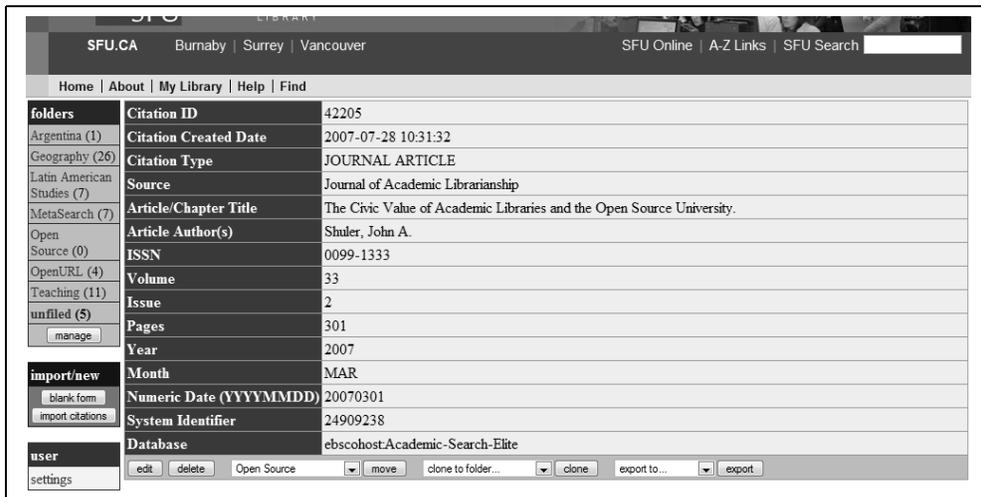


Figure 16: Citation Manager Import

Once in the system, the citation data can be organized into separate folders, which can be created, renamed, or deleted by the user. For convenience, each stored citation also has a link back to the library catalogue, as well as a GODOT OpenURL link (“Where Can I Get This?”), taking the user back to the original location of the article.

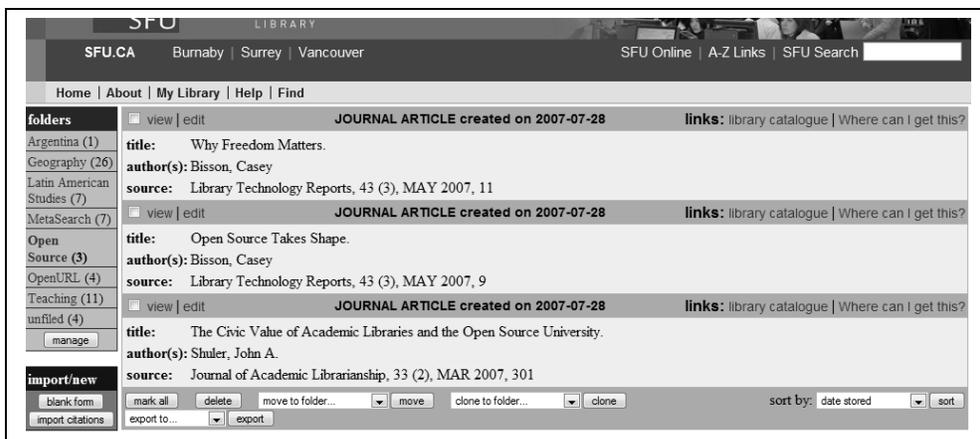


Figure 17: Citation Manager Folder

The citations can also be exported in several formats, including XML, tab delimited, or those matching major commercial reference management software like Thomson's EndNote or ProCite.

Unlike many commercial citation databases, access to the Citation Manager database can be maintained after graduation, as it is completely up to the library to determine any access restrictions. For alumni that have amassed vast amounts of research information, the ability to continue accessing this is a very important service the library can provide.

dbWiz

Another technology of growing interest to libraries is federated searching. Also known as metasearching, parallel searching, cross-searching, broadcast searching, and a variety of other names, federated searching allows users to search multiple different databases from a single interface. The query is run through all of the selected resources, and an integrated set of results is returned. While expert searches may hesitate at what they perceive as “dumbing down” the search, many students are understandably enthusiastic about an option that can quickly and easily get them “good enough” results for their term papers. As Roy Tennant has often been quoted, “Only librarians like to search, everyone else likes

to find” (2004).

dbWiz is *reSearcher*'s open source federated search tool, with the ability to search all of the major research databases. dbWiz offers both a basic search option, creating a simple “Google-like” search experience, where users enter their keywords and select a search category that has been populated by the library with the most relevant resources to that topic.

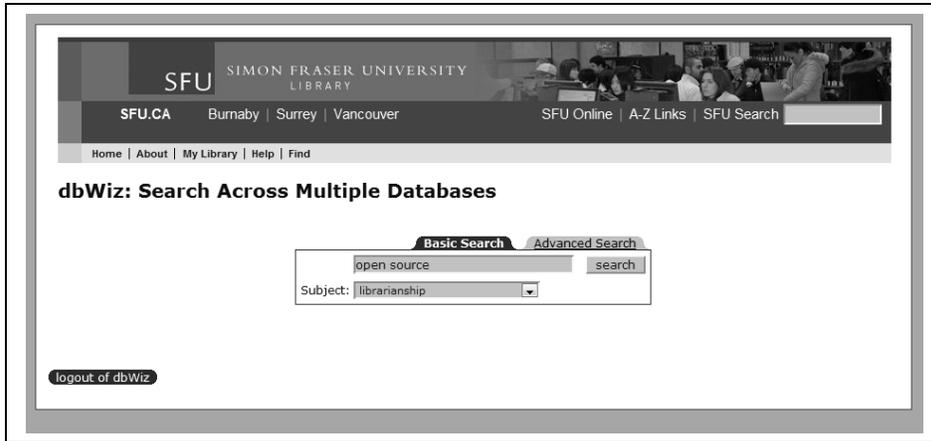


Figure 18: dbWiz Basic Search

An advanced search option is also available, allowing users to enter keywords for specific metadata fields (author, subject, and title) and to select their own choice of databases.

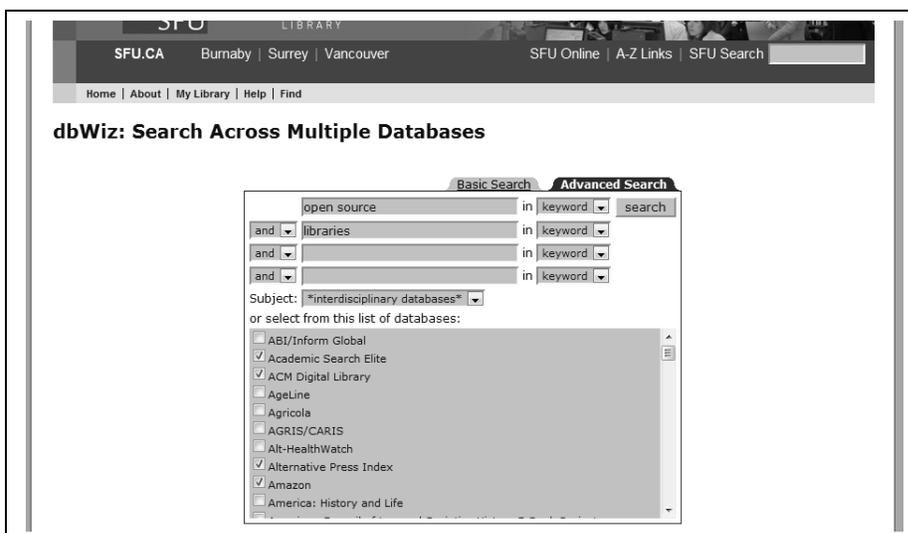


Figure 19: dbWiz Advanced Search

Using a combination of Z39.50, XML gateways, and HTML parsing, dbWiz takes the search terms and simultaneously runs them through the various databases selected by the user. The results are returned (again, in a Google-like format) in database ranked order (as set by the local library), but can also be sorted by date or by database alphabetically.

The screenshot displays the dbWiz search interface. At the top, there is a navigation bar with links for Home, About, My Library, Help, and Find. Below this is the title "dbWiz: Search Across Multiple Databases". The search interface includes tabs for "Basic Search" and "Advanced Search". A search box contains the text "open source" and a "search" button. Below the search box is a "Subject:" dropdown menu with "librarianship" selected. The search results are displayed in a table format. The table has a header "SEARCH 1: OPEN SOURCE" and a sub-header "PROFILE: LIBRARIANSHIP". The table lists the following results:

Database	Hits
Academic Search Elite	6,522
Business Source Complete	9,572
ERIC - EBSCO	1,168
Library Literature and Information Science Full Text	359
Library, Information Science & Technology Abstracts (LISTA)	997

Below the table, the search results are displayed. The first result is "History on a Postcard" by Valero, Walter E.; Perry, Claudia A.; Surprenant, Thomas T. | 2007, Library Journal (1976). The second result is "An Open Source Alternative for Libraries" by Wan Gang | 2007, Chinese Librarianship. The third result is "Executive Perspectives" by Duhon, Bryant | 2007, AIIM E-Doc Magazine. The search results are sorted by "Recommended" and are displayed in a list format. The search results are displayed in a list format. The search results are displayed in a list format.

Figure 20: dbWiz Result Screen

Each result contains some basic metadata (whenever available), including author, title, date, etc. as well as a link directly to the result within the native database. It is important to emphasize here that the goal of dbWiz was never to replace the native database search interface, but instead is a tool designed to help guide new searchers toward them, encouraging them to try an easy-to-use alternative to Google, and hopefully discover for themselves the richness of the library's online collections.

While some libraries have simply added dbWiz as another database option on their web site, others have gone a step further, and taken advantage of the ability to embed a dbWiz search box into any web page. A good example of this is when a dbWiz search box is placed into a library subject guide (see the Geography

Quick Search in Figure 21 below). The dbWiz search box is pre-defined to search only the resources most relevant to that subject (e.g., geography), and users need only enter their search terms to begin seeing relevant, high quality results.

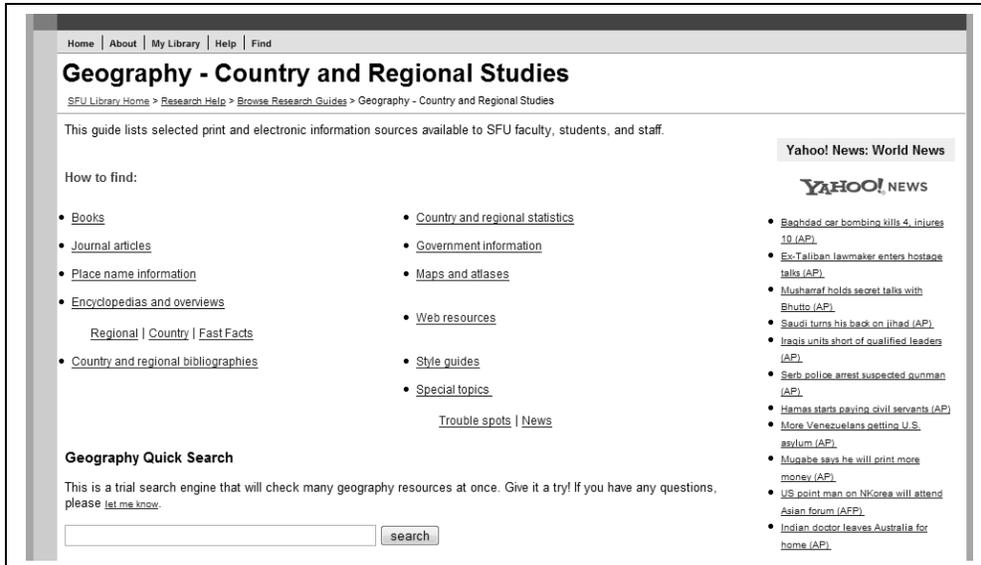


Figure 21: Embedded dbWiz Search

dbWiz provides another example of libraries collaborating to enhance their technology. Like the current CUFTS ERM developments mentioned earlier, dbWiz was also funded by a group of academic libraries (Concordia University College, Malaspina University College, Royal Roads University, Simon Fraser University, the University College of the Fraser Valley, the University of Northern British Columbia, the University of Regina, the University of Victoria, and the University of Winnipeg), all interested in providing federated searching for their clients, but unwilling to undermine their budgets to do so. Instead, by pooling their resources, an open source alternative was created.

The *reSearcher* Community

A map of libraries using *reSearcher* reveals that the majority are still located in western Canada, where the project began. However, in the past two years, new

partners have emerged from a wide variety of locations, including Denmark, India, the Netherlands, Russia, Singapore, Tanzania, and the United States. Most *reSearcher* installations continue to be hosted and supported by SFU Library, but others have begun to download, install, modify, and use the software independently. The emergence of an international *reSearcher* community has significantly increased the opportunities for library collaboration, and the benefits that result from it. Community members are able to enhance the project by: examining the *reSearcher* source code (providing the “peer-review” of open source development), contributing programming customizations; creating new dbWiz search plugins; testing the software in a wide range of server environments; reporting on the results of usability studies or experiences; participating on the online support forum; creating and maintaining title lists; telling others about the software in meetings, conferences, or in articles and other publications; and sharing any documentation and their general experiences with the software.

By participating in the *reSearcher* project, community members receive the latest in library technologies, and better services for their users. They are able to achieve this at a significantly lower cost than would be possible with a commercial provider or by developing the software independently. Community members also become part of a global alternative to the high cost and closed nature of commercial software. This alternative benefits libraries both in the developed and developing world, and helps to ensure that more libraries are able to provide leading edge technologies and services to their users. Finally, participation in the *reSearcher* project demonstrates to administrators and other stakeholders that their libraries are innovative and taking leadership positions in the critical area of information technology.

Conclusion

A growing community of libraries around the world is working together to create a secure, stable, fully-functional technological infrastructure for electronic resource

management, link resolving, personal citation management, and federated searching through the *reSearcher* open source software project. The success of the project is a demonstration of the value of open source software. Through the use of mature tools like PERL, PostgreSQL, Apache, EZproxy, and Linux, *reSearcher* has become a robust package of open source software alternatives for libraries. Perhaps even more importantly, though, is the power of library collaboration that this project represents. From its earliest days, *reSearcher* and its predecessors relied upon the cooperative spirit of libraries, their innovation and leadership, and their willingness to pool their limited resources, both in terms of staff and money, to create better technologies and services for their clients. The collaborative spirit of *reSearcher* continues today, with the ongoing support provided by the two major library consortia, COPPUL and BCELN, and the willingness of individual libraries to provide startup funding for new initiatives that will enhance the project and ultimately benefit the wider library community. *reSearcher* is an important example of the value of both open source and library collaboration.

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