

Issues and Opportunities Associated with Federated Searching

Grace Baysinger (graceb@stanford.edu)

Head Librarian & Bibliographer

Swain Chemistry & Chemical Engineering Library

Stanford University Libraries and Academic Information Resources (SULAIR)

Transformation of Library Services in the Digital Age, CINF Symposium at Spring 2008 ACS National Meeting, New Orleans, LA, on April 6, 2008.

Abstract

Library catalogs and databases contain a wealth of information that is not available to Internet search engines such as Google. It can be difficult for users to identify which research tools to use and time-consuming for them to search each resource one at a time. Federated search tools make it possible to search multiple resources with one query. Several strategies have been developed to provide "one-stop shopping" but those dealing with multiple search interfaces face the biggest challenges. This talk will describe a project underway to develop federated searching prototypes on campus and will cover the viability of providing federated search services as well as the interest level by students and faculty in using them.

RaPIDS: Rapid Prototyping of Intuitive Discovery at Stanford

- In May of 2007, SULAIR launched a *skunkworks* effort to push the envelope of the Libraries' information discovery tools, services and environments. This effort is known as RaPIDS, for Rapid Prototyping of Intuitive Discovery at Stanford.
- The primary objectives of the RaPIDS effort are to:
 - Illustrate the features and functions of a cybrary, and
 - Increase access to library resources.
- This will be accomplished by:
 - Rapidly deploying prototypes and gathering feedback, generating demonstrable results and tangible benefits, quickly,
 - Focusing on delivering systems that meet patrons' needs, and
 - Helping catalyze the development of new library services.

RaPIDS: Team Members

- The effort will be led by representatives from each of the major units of SULAIR: Collections & Services, Technical Services and Academic Computing/Digital Library Systems & Services.
 - Grace Baysinger, Head Librarian & Bibliographer, Swain Chemistry & Chemical Engineering Library
 - Tom Cramer, Associate Director, Digital Library Systems and Services
 - Adan Griego, Curator for Latin American & Chicana/o Studies
 - Philip Scheur, Head, Cataloging and Metadata Services
- This core team will enlist colleagues throughout SULAIR for their expertise, ideas, content, technical know-how, and reviews.

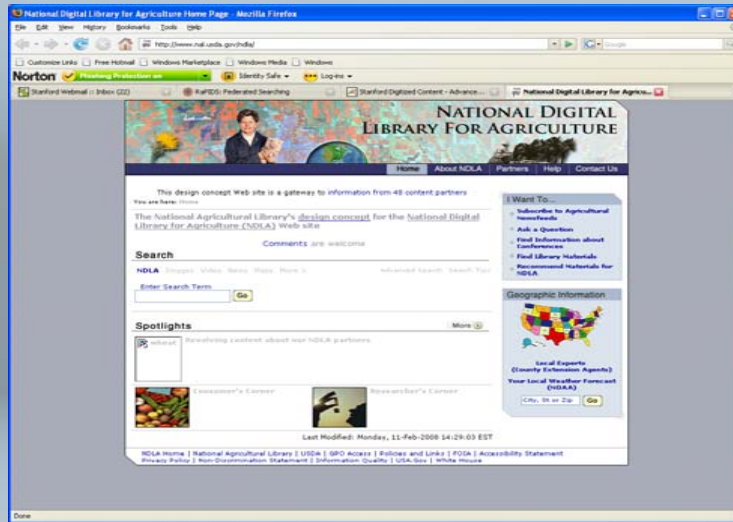
RaPIDS Initial Projects

- Engaged in a sustained process of experimentation and progress, rather than the implementation of any single product.
- Examples of initiatives planned and underway:
 - Federated search
 - Associative searching
 - Taxonomic browsing
- RaPIDS page on Federated Search
<http://library.stanford.edu/rapids/fedsearch.html>

Federated Search

- Ability to simultaneously search multiple resources in real time and pool results in one merged relevancy ranked list.
- Gives scholars a broad view of disparate resources held across many different, isolated systems.
- SULAIR is collaborating with Deep Web Technologies. DWT's Explorit Research Accelerator federated search engine is used in a number of science, technology and government search portals.

Other Portals Using Explorit



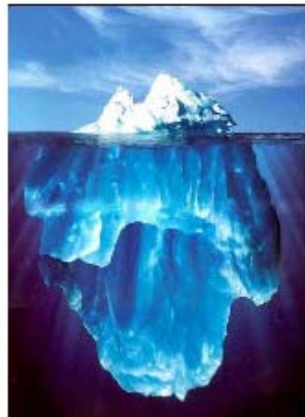
Why Use Federated Tools?

- Users don't need to have prior knowledge about resources
- Help cope with lack of standardization in interfaces and search protocols for similar tasks
- Eliminates need to repeat same search multiple times
- Reduces time needed to find information
- Way to help users discovery high quality resources acquired by the library and to increase use of them

Three Demonstrations of Federated Search within Stanford Environment

Combined Search Engines Prototypes

Because Google is Just the Tip of the Iceberg, Explore the Depths



“Top 10” Databases

Discover Treasures in the Stacks



All Library Catalogs at Stanford

Encounter the Unexpected



Locally Digitized Collections

“Top 10” Databases

<https://deepweb.stanford.edu/su/>

All Library Catalogs at Stanford University

<http://deepweb.stanford.edu/catalogs/search.html>

Locally Digitized Collections


<http://deepweb.stanford.edu/digcolls/search.html>

Photo Credits

chrisxh's photos – Iceberg <http://www.flickr.com/photos/chrisxh/page3/>
terrerschuller's photostream – Diver <http://www.flickr.com/photos/8734539@N03/534281229/>
docman – Jelly-fish <http://www.flickr.com/photos/docman/499217467/>

"Top 10" Databases

SOCRATES (SU CATALOG) | E-JOURNALS | SITE SEARCH | ASK US | TEXT-ONLY | SULAIR HOME | SU HOME

Stanford University  LIBRARIES & ACADEMIC INFORMATION RESOURCES

Databases & Articles
Hours & Locations

Catalogs & Search Tools | Research Help | **Libraries & Collections** | Services | How to . . . | About SULAIR

| RaPIDS Federated Search Prototype | Combined Search of All Library Catalogs at Stanford | Combined Search of Stanford Digitized Content |

RaPIDS Federated Search Prototype - Top 10 Databases

[About RaPIDS](#) [Help](#) [Feedback](#)


i Keyword:

Title:


i Author:

Match: All Field(s)

Date Range: From To

Powered by 

- Select All
- ABI/Inform Global
- Annual Reviews
- BIOSIS
- Dissertations & Theses - A & I
- Engineering Village
- Expanded Academic ASAP
- Lexis Nexis Academic (News)
- Periodicals Archive Online
- PsycINFO
- Web of Science

 © Stanford University. Stanford, CA 94305. (650) 723-2300. [Terms of Use](#) | [Copyright Complaints](#)

All Library Catalogs at Stanford

SOCRATES (SU CATALOG) | E-JOURNALS | SITE SEARCH | ASK US | TEXT-ONLY | SULAIR HOME | SU HOME

Stanford University
LIBRARIES & ACADEMIC INFORMATION RESOURCES

Databases & Articles
Hours & Locations

Catalogs & Search Tools | Research Help | **Libraries & Collections** | Services | How to . . . | About SULAIR

| RaPIDS Federated Search Prototype | Combined Search of Top 10 Databases | Combined Search of Stanford Digitized Content |

Combined Search of All Library Catalogs at Stanford

[About RaPIDS](#) [Help](#) [Feedback](#)

i Keyword:

Title:

i Author:

Match: All Field(s)

Date Range: From To

Select All

- Socrates (Stanford's Online Catalog)**
- Lane Medical Library Catalog**
- Jackson Business Library Catalog**
- SLAC Research Library Catalog**
- Health Library Catalog (Stanford Hospital and Clinics)**

© Stanford University. Stanford, CA 94305. (650) 723-2300. [Terms of Use](#) | [Copyright Complaints](#)

Stanford Digitized Content

SOCRATES (SU CATALOG) | E-JOURNALS | SITE SEARCH | ASK US | TEXT-ONLY | SULAIR HOME | SU HOME

Stanford University
LIBRARIES & ACADEMIC INFORMATION RESOURCES

Databases & Articles
Hours & Locations

Catalogs & Search Tools | Research Help | **Libraries & Collections** | Services | How to . . . | About SULAIR

| RaPIDS Federated Search Prototype | Combined Search of All Library Catalogs at Stanford | Combined Search of Top 10 Databases |

Combined Search of Stanford Digitized Content

[About RaPIDS](#) [Help](#) [Feedback](#)

i Keyword:

Title:


i Author:

Match: All Field(s)

Date Range: From To

Powered by **explorit**

- Select All**
- California Legislative Journal Appendices
- Copyright Renewal Database
- Corporation of Foreign Bondholders
- Dime Novels Full Text
- Documents to the People
- GATT Digital Library
- Immigration Commission Report and Report on Women and Child Wage Earners
- Joint Committee on Atomic Energy
- Medieval and Modern Thought Text Digitization Project
- R. Buckminster Fuller Collection
- Stanford University Publications
- SULAIR Books in the Public Domain
- Survey of Race Relations

 © Stanford University. Stanford, CA 94305. (650) 723-2300. [Terms of Use](#) | [Copyright Complaints](#)

Rapid Retrieval, View Some Results While Search is Running

RaPIDS Federated Search Prototype - Top 10 Databases

Search finished - more results available

There are 359 more results available.

Don't show this again.

[View More Results](#) [Continue](#)

Your search: **Title: brain AND music**

Results **1 - 19 of 19** 359 - more results available [View More Results](#)

Rank	Rating	Title	Author	Source	Link
<input type="checkbox"/> 1	★★★★	MUSIC AND THE BRAIN	Podolsky, Edward, MD; 1962-02-01	Music Journal Periodicals Archive Online	Permanent Link
<input type="checkbox"/> 2	★★★★	Music and the brain	Weinberger, Norman M. (Department of Neurobiology, University of California)	Engineering Village	Permanent Link
<input type="checkbox"/> 3	★★★★	Music and the Brain: A Symposium	1992-01-01	Music Perception Periodicals Archive Online	Permanent Link
<input type="checkbox"/> 4	★★★★	Music and Brain Information Center	1993-01-01	Music Perception Periodicals Archive Online	Permanent Link
<input type="checkbox"/> 5	★★★★	Music, Mind, and Brain: The Neuropsychology of Music (Book Review)			Permanent Link

Sort Results – Rank, Source, Date, Title, Author

The screenshot shows the RaPIDS Federated Search Prototype interface in a Mozilla Firefox browser. The search query is "Title: brain AND music". The results are sorted by Rank, as indicated by the dropdown menu in the "View Results by:" section. The search results list four items, each with a checkbox, a star rating, a title, and a description. The first item is "Music on the brain" by Michael D Lemonick, published in 2000. The second item is "MUSIC AND THE BRAIN" by Podolsky, Edward, MD, published in 1962. The third item is "Music and the brain" by Zatorre, Robert J., published in 2003. The fourth item is "Brain-damage music" by Schwindt, Heidi, published in 1997. The interface also includes a search bar, a search button, and a "View Results by:" dropdown menu with options: Rank, Source, Date, Title, and Author. The "Rank" option is currently selected and circled in red.

RaPIDS Federated Search Prototype - Result List - Mozilla Firefox

File Edit View History Bookmarks Tools Help

https://deepweb.stanford.edu/su/resultList.html?ssid=2acf0447:1190fb334e1:-61e8&startPosition=0&refresh=true

Norton Phishing Protection on Identity Safe Log-ins

Stanford University LIBRARIES & ACADEMIC INFORMATION RESOURCES

SOCRATES (SU CATALOG) | E-JOURNALS | SITE SEARCH | ASK US | TEXT-ONLY | SULAIR HOME | SU HOME

Databases & Articles Go

Hours & Locations Go

Catalogs & Search Tools | Research Help | Libraries & Collections | Services | How to ... | About SULAIR

RaPIDS Federated Search Prototype | Combined Search of All Library Catalogs at Stanford | Combined Search of Stanford Digitized Content |

RaPIDS Federated Search Prototype - Top 10 Databases

About RaPIDS Help Feedback

Powered by **explorit**

Search Advanced Search Preferences ?

Your search: **Title: brain AND music** 10 of 10 sources complete.

Page: << 1 2 3 4 5 6 7 8 9 10 11 - 17 >> Results 1 - 25 of 411

List Marks Clear Marks

View Results by: Rank

- Rank
- Source
- Date
- Title
- Author

Permanent Link

1 ★★★★★ **Music on the brain**
Michael D Lemonick. ; 2000-01-01
Time. New York: Jun 5, 2000. Vol. 155, Iss. 23; p. 74 (2 pages)
ABI/Inform Global

2 ★★★★★ **MUSIC AND THE BRAIN**
Podolsky, Edward, MD; 1962-02-01
Music Journal
Periodicals Archive Online

3 ★★★★★ **Music and the brain.**
Zatorre, Robert J. Meeting Information: Conference on the Neurosciences and Music: Mutual Interactions and Implications on
Developmental Functions Venice, Italy; 2003-01-01
The neurosciences and music Pages: 4-14
BIOSIS

4 ★★★★★ **Brain-damage music**
Schwindt, Heidi. ; 1997-01-01
Euromoney. London: Jan 1997. p. 7 (1 page)
ABI/Inform Global

Done deepweb.stanford.edu

Ability to Select A Source

RaPIDS Federated Search Prototype - Result List - Mozilla Firefox

https://deepweb.stanford.edu/su/resultList.html?ssid=2acf0447:1190fb334e1:-61e8&collectionId=&displayMode=COLL

Stanford University LIBRARIES & ACADEMIC INFORMATION RESOURCES

SOCRATES (SU CATALOG) | E-JOURNALS | SITE SEARCH | ASK US | TEXT-ONLY | SULAIR HOME | SU HOME

Databases & Articles Go
Hours & Locations Go

Catalogs & Search Tools | Research Help | Libraries & Collections | Services | How to ... | About SULAIR

RaPIDS Federated Search Prototype | Combined Search of All Library Catalogs at Stanford | Combined Search of Stanford Digitized Content |

RaPIDS Federated Search Prototype - Top 10 Databases

About RaPIDS Help Feedback

Powered by **explorit**

Search Advanced Search Preferences ?

Your search: **Title: brain AND music** 10 of 10 sources complete.

Page: << 1 2 3 4 >>

List Marks Clear Marks Jump to: -- Select a Source -- View Results by: Source

Documents from **Annual Reviews** 1 Results Retrieved

1 ★★★★★ **Brain Organization for Music Processing** Permanent Link
Isabelle Peretz, Robert J. Zatorre; Research on how the brain processes emotion, and performance. Results
Annual Review of Psychology, Volu
Annual Reviews

Documents from **Web of Science** 100 Results Retrieved **More** **i**

1 ★★★★★ **Music and the brain** Permanent Link
Weinberger NM; 2004-11-01
SCIENTIFIC AMERICAN Volume: 291 Issue: 5 Pages: 88-95
Web of Science

2 ★★★★★ **Music and the brain** Permanent Link
Zatorre RJ; 2003-01-01
NEUROSCIENCE AND MUSIC, V.1

Done deepweb.stanford.edu

Full Display in Frame Navigation

The screenshot shows a Mozilla Firefox browser window titled "RaPIDS Federated Search Prototype - Result Navigation". The address bar contains the URL: <https://deepweb.stanford.edu/su/resultNavFrameset.html?ssid=2acf0447%3A1190fb334e1%3A61e88requestType=t>. The browser has several tabs open, including "Stanford Webmail :: Inbox (22)", "RaPIDS: Federated Searching", and "RaPIDS Federated Search Prot...". A red oval highlights the navigation buttons: "< Previous", "Back to Federated Search Results", and "Next >".

The main content area displays the "ANNUAL REVIEWS" logo and a navigation menu with options: Home, Order, Browse, Search, Profile, Help, and Contact Us. The article title is "Annual Review of Psychology" (Vol. 56: 89-114, February 2005). Below the title, it lists the authors: "Isabelle Peretz and Robert J. Zatorre" and their affiliations. The abstract text discusses research on how the brain processes music, mentioning perception, memory, emotion, and performance. The text is highlighted in yellow and cyan.

On the right side, there are links for "Series Home", "Table of Contents", "Abstract", "Prev. Article", "Next Article", "Full-text HTML", "View/Print PDF (143.8 KB)", "Add to Favorites", and "Email link to a friend". Below these is a "Quick Links" section with a list of options: RSS (Series Update Alert), Chain of Reviews, PubMed Citation, ISI Citation, Citing Papers via ISI Web of Science (42 or more), Citing Papers via CrossRef, Alert me when: New articles cite this article, RSS (Citation Alert), Download to citation manager, and Related articles found in: Annual Reviews, PubMed, ISI Web of Science, and View Most Downloaded Reviews.

At the bottom of the article, there are links for "Full Text" and "PDF". The browser status bar at the bottom shows "Done".

Help for "Top 10" Databases

HELP for Combined Search of "Top 10" Databases Beta

<https://deepweb.stanford.edu/su>



Enter Search Terms			
Want to Search	Description	Example	Search Results Will Include
Case sensitive	Terms are not case sensitive, can type them in upper or lower case letters	RAIN rain	[search results will be identical]
Wildcard *	Asterisk is used zero or more characters, including numbers, letters, and punctuation. Can be used at beginning or end of terms.	Author search on zare r*	Zare R OR Zare RN OR Zare Richard OR Zare Richard N
Wildcard ?	Question mark is used for exactly one character.	DO?	DOE or DOI or DOT or DOG
Exact Phrase	Use double quotation marks around terms	"vitamin a"	[this exact phrase]
Multiple terms	If you only enter terms and no Boolean operator, AND is assumed (all terms must be present)	global warming	global financial market is warming up
Boolean Operators	Use AND, OR, or NOT (AND=all terms must be present, OR=either term present, NOT=without term present)	global warming AND alaska	climate is warmer in Alaska due to global changes in the environment
Parentheses	Use to group terms when using OR, as well as AND, NOT	(earthquake* or seism*) AND (predict* or model*)	earthquake prediction ; seismologists use deep earthquakes to form new models

Performing Search and Viewing Results

Search Press "Search" button to search all databases at one time.

View More Results You can view some results while search is still running. To finish search press "View more Results" button.

★★★★ Results are ranked by relevance. The more stars next to an item, the higher the rank.

Sorted by: [Relevance] [Date] [Title] [Author]
 Ranked by relevance is default. To view results in different order, use this pull-down menu. Source allows you to view items from a specific database. Use "Jump to" menu to go to a source. Date is reverse chronological order or most recent items are displayed first. Title order arranges results alphabetically by title. Author order arranges results alphabetically by author.

Full-Text Access Click on title to full full record in database and to click on link to full text. Due to design of individual databases, sometimes you have to click on permanent link to right of citation to get to full record and full-text.

Session Preferences



After doing an initial search, you may set session "Preferences" on how many results you want view per page.

Maximum Number of Records Retrieved From Each Database

Due to licensing restrictions, up to 100 records are retrieved from each database. If you need to do a more comprehensive search, then search individual databases instead.

Help "Top 10" Databases

Combined Search of "Top 10" Databases Beta - Description of Databases

<https://deepweb.stanford.edu/su>

ABI/Inform Global (1923-)

ABI/Inform provides broad coverage of business and management, including global business, company histories, competitive intelligence, and new product development. Over 2,690 publications, including full-text for 1,700 titles plus full-text for The Wall Street Journal, Eastern Edition; EIU ViewsWire; Going Global Career Guides; Author Profiles; and 14,000 ProQuest business dissertations. Size: 2.8 million records as of Jan 2006. Updated: Daily

Annual Reviews (1932-)

Annual Reviews publishes authoritative, analytic reviews in 33 focused disciplines within the Biomedical, Physical, and Social Sciences. Annual Reviews publications are among the most highly cited in scientific literature. Size: 27,578 as of October 15, 2007. Site is updated monthly, articles for some series are published online as soon as they are copy-edited and typeset.

Biosis (1926-)

Biosis is the major English-language service providing comprehensive worldwide coverage of research in the biological and biomedical sciences. It includes accounts of original research from nearly 5,000 primary journals plus meeting abstracts, reviews, books, book chapters, notes, letters, and selected reports. U.S. patents are included for 1926-1968, 1986-1989, and 1994 to present. Size: 18 million records as of Oct 2007. Updated: Weekly.

Dissertations & Theses (Abstracts & Indexes 1861- ; Stanford Full-Text 1989-)

Includes citations to virtually every American dissertation accepted at an accredited institution since 1861. Selected Masters Theses have been included since 1962 and these from foreign countries since 1988. Also includes full-text access for Stanford theses from 1989 to present. Size: 2.02 million records as of Jan 2006. Updated: Monthly.

Engineering Village (1884-)

The most important resource in Engineering Village is Compendex, the online version of Engineering Index. Compendex is the most comprehensive bibliographic database of engineering research available today, covering more than 5,000 engineering journals, conferences and technical reports. Size: over 9.7 million records as of Feb 2007. Updated: Weekly.

Expanded Academic ASAP (1980-)

Balanced coverage is available through a variety of sources, including: social science journals, humanities journals, science and technology journals, national news periodicals, general interest magazines, and The New York Times (indexed only). Contains more than 3,500 indexed and full-text titles, of which 2,100 are peer-reviewed. Size: 15,810,599 articles as of March 2008. Updated daily.

Lexis-Nexis Academic (Dates Covered Vary)

This service provides full-text documents from over 5,600 news, business, legal, medical, and reference publications with a variety of flexible search options. Resources include: National and regional newspapers, wire services, broadcast transcripts, international news, and non-English language sources; U.S. Federal and state case law, codes, regulations, legal news, law reviews, and international legal information; Shepard's Citations for all U.S. Supreme Court cases back to 1789; and Business news journals, company financial information, SEC filings and reports, and industry and market news.

Periodicals Archive Online (1665-1995)

An online archive of digitized, full-image journal articles in the humanities and social sciences, this resource provides access to international, scholarly literature in the humanities and social sciences disciplines from 1665 to 1995. Currently contains 1.9 million articles from over 500 journals with links to JSTOR and Project Muse articles. About 20% of the journals are in non-English languages. Size: 1.9 million articles as of March 2008. Updated quarterly.

PsycINFO (1887-)

The Psychological Abstracts database provides access to the international literature in psychology and related behavioral and social sciences, including psychiatry, sociology, anthropology, education, pharmacology, and linguistics. PsycINFO contains citations and abstracts for journal articles, books, book chapters, reports, and dissertations. Journal material represents substantive articles selected on the basis of relevance to psychology from over 1,700 journals published throughout the world in over 25 languages. Size: 2.42 Million as of July 2007. Updated: Weekly.

Web of Science (Science 1900-, Social Science 1973-, Arts & Humanities 1975-)

Use Web of Science to find current and retrospective science, social sciences, and arts and humanities information from nearly 9,300 of the most prestigious, high impact research journals in the world. Web of Science also provides a unique search method, cited reference searching. A cited reference search enables you to find articles that cite a previously published work. In addition to cited reference searching, you can search these databases by topic, author, source title, and address. Size: Over 38 million records as of Oct 2006. Updated: Weekly.

Database Descriptions + Tags for "Top 10" Databases

Federated Search Prototype for the "Top 10" Databases Database Descriptions Plus Subject Tags

ABI/Inform Global (1923-)

ABI/Inform provides broad coverage of business and management, including global business, company histories, competitive intelligence, and new product development. Over 2,690 publications, including full-text for 1,700 titles plus full-text for The Wall Street Journal, Eastern Edition; EIU ViewsWire; Going Global Career Guides; Author Profiles; and 14,000 ProQuest business dissertations. Size: 2.8 million records as of Jan 2006. Updated: Daily.

Tags: Accounting, Banking, Computers, Economics, Engineering Management, Communications, Finance, Health Care, Human Resources, Insurance, International Trends, Law, Management/Management Science, Marketing, Public Administration, Real Estate, Taxation, Telecommunications, Transportation.

Annual Reviews (1932-)

Annual Reviews publishes authoritative, analytic reviews in 33 focused disciplines within the Biomedical, Physical, and Social Sciences. Annual Reviews publications are among the most highly cited in scientific literature. Size: 27,578 as of October 15, 2007. Site is updated monthly; articles for some series are published online as soon as they are copy-edited and typeset.

Tags: Anthropology, Astronomy and Astrophysics, Biochemistry, Biomedical Engineering, Biophysics, Cell and Developmental Biology, Clinical Psychology, Computer Science, Earth and Planetary Sciences, Ecology, Evolution, and Systematics, Entomology, Environment and Resources, Fluid Mechanics, Genetics, Genomics and Human Genetics, Immunology, Law and Social Science, Materials Research, Medicine, Microbiology, Neuroscience, Nuclear and Particle Science, Nutrition, Pathology, Mechanisms of Disease, Pharmacology and Toxicology, Physical Chemistry, Physiology, Phytopathology, Plant Biology, Political Science, Psychology, Public Health, Sociology.

Biosis (1926-)

Biosis is the major English-language service providing comprehensive worldwide coverage of research in the biological and biomedical sciences. It includes accounts of original research from nearly 5,000 primary journals plus meeting abstracts, reviews, books, book chapters, notes, letters, and selected reports. U.S. patents are included for 1926-1968, 1986-1989, and 1994 to the present. Size: 18 million records as of Oct 2007. Updated: Weekly.

Tags: Aerospace Biology, Agriculture, Anatomy, Bacteriology, Behavioral Sciences, Biochemistry, Bioengineering, Biophysics, Biotechnology, Botany, Cell Biology, Clinical Medicine, Environmental Biology, Experimental Medicine, Genetics, Immunology, Microbiology, Nutrition, Occupational Health, Parasitology, Pathology, Pharmacology, Physiology, Public Health, Radiation Biology, Systematic Biology, Toxicology, Veterinary Science, Virology

Dissertations & Theses (Abstracts & Indexes 1861 - ; Stanford Full-Text 1989-)

Includes citations to virtually every American dissertation accepted at an accredited institution since 1861. Selected Masters Theses have been included since 1962 and these from foreign countries since 1988. Also includes full-text access for Stanford theses from 1989 to present. Size: 2.02 million records as of Jan 2006. Updated: Monthly.

Tags: Agriculture, Astronomy, Biological and Environmental Sciences, Business and Economics, Chemistry, Education, Engineering, Fine Arts and Music, Geography and Regional Planning, Geology, Health Sciences, History and Political Science, Language and Literature, Library and Information Science, Mathematics and Statistics, Philosophy and Religion, Physics, Psychology and Sociology.

Summary Description & Features

- Single search to heterogeneous set of resources
- Federated search is a discovery tool, not for comprehensive searching
- Results in real time from resources, not snapshots
- Fast retrieval and display of some results while search is still being completed
- One ranked list after merging results
 - Up to 100 records per resource
 - Ability to sort several ways, including source
- Link to full record from resource
 - "Permanent Link" is cache of full display
- Change preferences after doing an initial search

Technical Challenges in Using Federated Search Tools

- Speed and performance of other federated search engines
- Rapidly growing number of digital resources
- Type of searchable information in resources varies
- Resources w/ limited numbers of simultaneous users or require individual login before use
- Nearly constant change in interfaces, some changes in URLs
- Names of search fields and formatting of data in them are not standardized
- Sorting order varies for default display of results
- Number of records that can be displayed w/o violating license agreement or slowing search engine too much
- Need to retain "state of session"
- Clearing cache between sessions

Preliminary Feedback

- Almost all students really liked using federated search prototypes and found results to be relevant.
- Librarians want more precision for author searches, made suggestions for improving the interface. Much discussion of choice of “top 10” files. Mixed value of results from library catalogs prototype.
- Strategically, federated search is one of the directions that we want to pursue.

Future Plans

- Offer more resources via federated search
 - eBook & other full-text resources
 - Abstract & Indexing Databases
 - Special Collections Finding Aids
 - Reference resources & web sites
- Implement new interface offered by DWT
 - More search fields
 - Faceted search results
 - Exporting tagged results
 - SFX linking
 - Alerts

Acknowledgements

- Stanford: RaPIDS Members - Tom Cramer, Phil Schreur, Adan Griego; other staff who helped implement the prototypes; plus the many staff and students at Stanford who tested and provided feedback.
- Deep Web Technologies: Abe Lederman, Sol Lederman, Brian Desplain, and other members of the DWT team.