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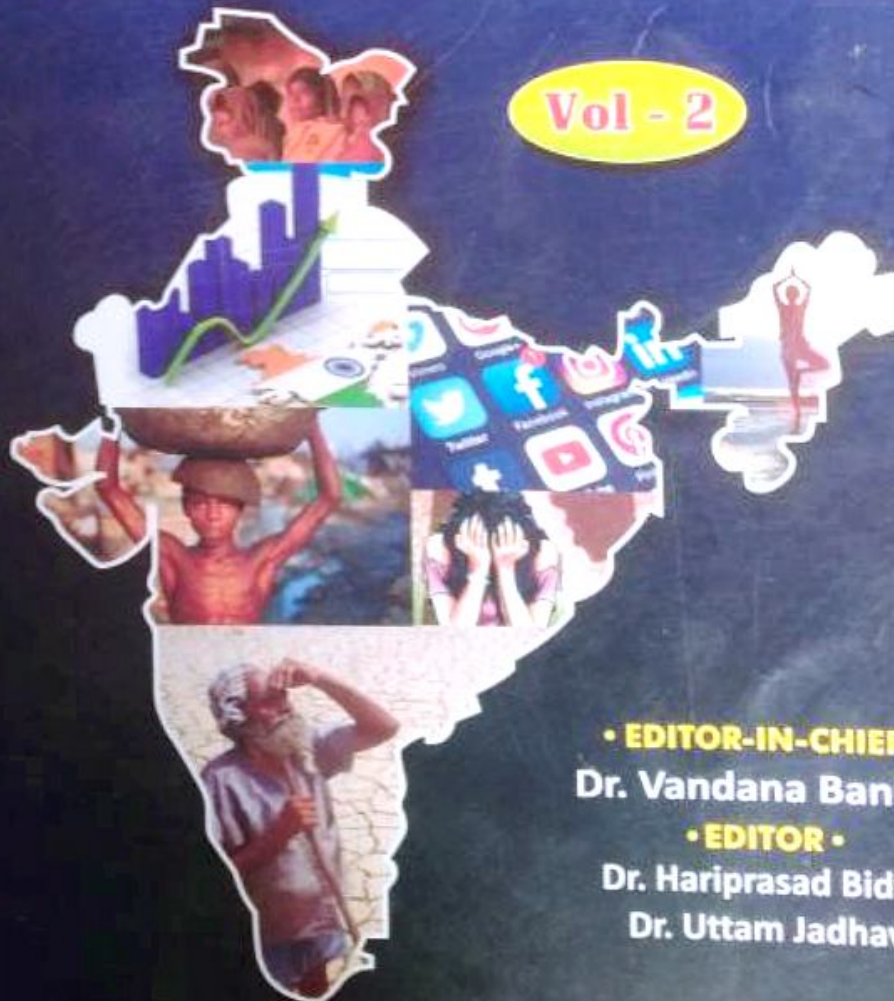
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Federated Search Engines for Libraries

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ABSTRACT

Libraries in this 'cyber age' provide access to a variety of databases in a variety of disciplines. Federated search engines have emerged in order to provide a far - reaching service to our end users viz 'unifying' and providing 'cross searching' of databases and information. This saves valuable time by bridging the gap between 'searching' and 'acquiring' relevant information in a timely fashion. The paper discusses various search engines for quick search, Definition, need to consider before purchasing search engine, nomenclature, standards and development, advantages and disadvantages of federated search.

Key words: federated, engine, library, OPA

Introduction

The searches are quick search, combined search or advanced search in a particular website, information retrieval systems, OPACs, online databases, etc. There may be many inter-related database / RDBMS for searching the keywords and getting results. It is extended to put the bibliographic record to hold up to abstract level not the full record or full text. In this method, subject wise (LISA), publisher wise (SCOUPUS - Elsevier), Google scholar for scholar articles irrespective all subjects, and then search aggregator which is meta search engine gathers results from multiple search engines simultaneously through RSS search results, Deep web, now federated search. The Library professionals develop or assembling (subject gateway) related websites into one place for easy accessing of various sites in a particular field. Federated searching technique is a hot topic that seems to be gaining traction in libraries now-a-days. There are many technologies coming up, there will be some misconceptions about what it does. The federated search engines (FSEs) made even easy for the users to search the required information at one search and get results from various websites / portals. It is aggregated the search results from several e-resources of one's preference.

Definition

According to Wikipedia, Federated search is an information retrieval technology that allows the simultaneous search of multiple searchable resources. A user makes a single query request which is distributed to the search engines participating in the federation. The federated search then aggregates the results that are received from the search engines for presentation to the user.

Federated search is the technology of simultaneously searching multiple content sources from one search form and aggregating the results into a single results page. Federated search engines sometimes perform additional functions such as removing duplicates from the results lists and ranking documents against one another.

As described by Peter Jacso in 2004, federated searching consists of (1) transforming a query and broadcasting it to a group of disparate databases or other web resources, with the appropriate syntax, (2) merging the results collected from the databases, (3) presenting them in a succinct and unified format with minimal duplication, and (4) providing a means, performed either automatically or by the portal user, to sort the merged result set.

What one needs to Consider before Purchasing a Federated Search Engine?

- Try out a system with your various in-house and vendor supplied databases, if at all possible. Determine whether authentication is possible using your 'target areas' i.e. subject areas and databases, OPAC's etc.
- Compatibility with standards such as Z39.50 and web standards previously described.
- If you only require Z39.50 compatibility then there is no need to go 'federated'.
- 100% database compatibility of the Federated Search Engine with your in-house and subscribed to databases, otherwise there is no point in going down this track.
- The ability to display full-text and true native interfaces. If 'screen scrapping' occurs and loses 'native database' functionality, it defeats the purpose of this whole exercise.
- Open URL compatibility with ALL databases.
- Access to external links via any link resolver

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- for all searchable databases.
- The ability to export any database citation to EndNote, ProCite, RefWorks etc. would definitely be an advantage for the end user.
- Parse citations for all databases eg. Sort results by date, author, title etc.
- 24x7 monitoring and updates by Federated Search vendor
- Customer/User interfaces and hosting
- Make sure it works before you buy. Have a trial of the system
- Database searching by remote and in-house 'walk-up' users
- Check references, at least ring 3 users of the vendor's system, and find out the pros and cons before signing up.
- The cost of course that depends on your budget, and who holds the purse strings. Is there a consortium that could ease some of the pain in this regard and afford better leverage? Investigate before you buy.
- Don't pay a lot of money for a federated search product, unless it sits on top of a large and well-maintained knowledge base (Webfeat, 2005).

Nomenclature Confusion

Federated search engines are different to meta-search engines that are commonly found on the Internet.

Web search engines are 'free.' Federated search engines, on the other hand, cost anywhere from US \$750 to \$200,000 or more, depending upon the seats, design, functionality and targets or databases and subject categories and thesauri, which are some of the key items that need to be contended with, and add to the cost of federated searching.

Web meta-search tools such as DogPile and MetCrawler run across multiple web search engines at once, returning sets of results grouped individually in each search source. Names such as VIVISMO and IXQUICK also spring to mind in this context.

In this context meta-search vendors are Muse Global's Muse Search, Web Feat's Prism that is used by Dynix, and Sirsi uses Muse Search, just to name a few common vendors (Wilson 2004).

In selecting a meta-search engine, one needs to bear in mind the following:

- The maximum number of resources the software can include
- The ease of setting up resource targets
- Availability of simple search options
- Speed of search results
- Limiting and refining searches

- Ranking results by relevance
- Export options i.e. print, e-mail, download
- Adequate statistics and reporting features (Wilson 2004).

Standards and Development

NISO - (US) National Information Standards Organization launched and continues to develop initiatives in order to develop and adopt standard search and retrieval protocols for meta-searching. XML - Web protocol and SOAP (Single Object Access Protocol)

Access/Vendor Issues with Federated Search

Verification, authentication and certification can be difficult for the federated search vendor. Since federated search engines don't hold the data locally i.e. the engines perform the search, and send the results back to the portal. The federated search engine must be able to access multiple password-protected databases behind the scenes, or IP validate all at the one time, and show users their results in one easy navigable interface.

The challenge for federated search vendors is to provide only licensed users access to databases, as specified for each license agreement that is in place for the organization.

Authentication

Authentication sets federated search engines apart from other expensive and highly sophisticated search software such as Verity and Autonomy. The latter usually restricts searches to internally generated information, ignoring subscription databases that enterprises have bought in-house.

All the user needs with federated searching is ID, password or IP validation along with files to be searched, and the federated search engine do the rest. (Wilson, 2004).

Advantages of Federated Searches

With federated searches, not as many results come up with a specific search related to their topic compared to the abundance of unrelated results with Google. More is not always better. In addition to filling out forms and combining documents from multiple sources, another important benefit of federated search engines is that they search content in real time. Real time data is crucial for researchers who are searching for up-to-the-minute content or for content that changes frequently. As soon as the content owner updates their source, the information is available to the searcher on the very next query.

- It is difficult for most students to choose appropriate, relevant sites from hundreds of thousands of hits. Using a federated search engine can be a huge time saver for researchers. Instead of needing to search many sources, one at a time, the federated search engine performs the

many searches on the user's behalf.

- Targeted searches are usually filtered for quality. Federated search engines show their value best in environments in which the quality of results matters, such as libraries, corporate research environments, and the federal government. In the case of the federal government, the constituents of the government benefit greatly from such applications. A major difference between a federated search engine and a standard search engine like Google is that the client who contracts for the federated search service selects the sources to search. In almost every case, the sources will be authoritative. Google, on the other hand, has very minimal criteria for source selection.

- Federated searches qualify the authenticity of the information. For example, anyone can write a report on a topic and post it on the Internet. That does not mean that information was checked for accuracy. By using this new add-on feature to the school's library's automation system, students can better ensure the information they use for their research is accurate. With a federated search engine, the information has been checked and verified by educators and professionals.

- The federated search includes books and other materials that already may exist in the school library. Thus, the federated search engine acts as a helpful librarian does, directing users to excellent quality.

Disadvantages of the federated search

- The federated search has some other issues as well. First, it cannot cover all online library resources. The goal of one-stop shopping cannot be achieved completely by any federated search. There are various reasons for this:
- Some databases do not work with any federated search at all, such as SciFinder Scholar. SciFinder Scholar does not use a web browser but rather requires its own internet client. Neither MetaLib nor WebFeat can cover SciFinder Scholar.
- If databases require a login, they will not work with the federated search.
- Some databases work with one federated search product but do not work with the other. MetaLib cannot search LexisNexis databases because LexisNexis does not allow Z39.50 or XML gateway access. WebFeat cannot search databases that do not have a search box on their front page because WebFeat counts on the search box on the native

interface to search.

- Many libraries have databases on a pay-per-search basis, and libraries normally do not want them to be searched by a federated search for budgetary reasons.
- Some databases have a limited number of concurrent users, and if these databases are included in a federated search, the limited seat(s) is/are taken immediately whenever someone logs into the federated search, and no other users can use these databases. Libraries normally do not want to include databases with a very limited number of concurrent users in the federated search.
- It may not make sense to add to a federated search menu the very specialized databases that most general users would not be interested in, or the databases that require special software. One example is Inter-university Consortium for Political and Social Research (ICPSR) that requires statistics software such as SPSS to view data.

Conclusion

Using a federated search engine can be a huge time saver for researchers. Instead of needing to search many sources, one at a time, the federated search engine performs the many searches on the user's behalf. While federated search engines specialize in finding content that requires form submissions to retrieve, it isn't the only criterion for being a federated search engine. A federated search engine also associates content from different sources. Federated search uses just one search form to cover numerous sources, and combines the results into a single results page.

Federated search engines show their value best in environments in which the quality of results matters, such as libraries, corporate research environments, and the federal government. In addition to filling out forms and combining documents from multiple sources, another important benefit of federated search engines is that they search content in real time. Real time data is crucial for researchers who are searching for up-to-the-minute content or for content that change frequently. As soon as the content owner updates their source, the information is available to the searcher on the very next query.

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