

# From Integrated Library System (ILS) to Library Service Platform (LSP): Role of Library Discovery System (LDS)

**Sheuli Hazra**

Librarian, Sarat Centenary College, Dhaniakhali, Hooghly, The University of Burdwan,  
Burdwan, West Bengal, India

---

## ***Abstract:***

***This paper shows the evolution of the web-scale resource discovery services in libraries along with different discovery software available both in commercial and open source domain. The paper discusses several discovery tools and identifies several key parameters on the basis of which can compare the usability and accessibility of different discovery software. It will be identifies tools possibilities of applications of these interactive, collaborative and participative tools in enhancing existing library services and the feasibility of introducing next generation library services. Therefore, today all world look-over the newly made association which is library discovery system. Library discovery system make a software like 'VuFind' as open source software, digital library software to distributed across the globe.***

***Keywords: OPAC, Web-OPAC, Web-Scale Discovery Services, Federated Search and Next-Generation Cataloguing services.***

---

## **I. INTRODUCTION**

Over the past few years, the Internet has become a popular tool for Information Retrieval ICT has changed the process of scholarly communication. Advances in communication and Information Technologies have revolutionized the way user Internet with computer systems and are bringing a whole new set of task need Mukhopadhyay & Hazra (2015). Presently, user prepare to have web enabled search interface to explore the information resource which are developed for a networked environment. With the growing number of repositories of digital repositories in the web, it become difficult for the users to visit individual places in search of information retrieval techniques as these systems use different software Rayward (2002).

The emergence of ICT specially Internet has brought many changes in library environment. Finding information over the Web and providing seamless 'From Integrated Library System (ILS) to Library Service Platform (LSP): Role of Library Discovery System (LDS)' and coherent access to the open access (OA) heterogeneous knowledge resources available in different form and format has become a challenging tasks to the digital library developers. During the last decade, library has changed with changing of library user, catalogue, resources, technologies etc Radfar (2005). Traditional information retrieval process has been superseded by online information retrieval system. Dissatisfaction with catalog search tools though federated search provided users with a one-stop search solution for many online resources. A new category of search system was coming onto the market. the new model harvests the contents from different distributed resources to a central searchable index available to end users.

## **II. LITERATURE REVIEW**

The role of literature review would be to establish a research in proper perspectives. It identities the gaps and overlaps in a given area of research. This study is no exception. This project aims to identify gaps in the domain of Web-scale Resource Discovery Services in Libraries: An Overview discuss in open-source software. The literature survey covers thesis, dissertations, journal papers, reports etc to cover the area in depth. The strength of these tools lay in their ability to offer numerous way in which individual scan communicate via the Internet. This chapter consult with the some on-line and off-line journals about discovery layer and search engine which are integration with open source software.

Johns-Smith in 2012 is said that the discovery tools are most frequently defined by the term 'web-scale' due to the confirmedly presented a system which is highly available, reliable formidable quantity of the study.

Teets said that in 2009, he was appreciated this involvement of the web-scale as a system which is highly available, reliable, transparent, high performance, scalable, accessible, secure, usable, and inexpensive. In the systems of discovery tools, web-scale discovery is more appropriately defined as a link between the information, user and the platform on or location at which the information resides. They providing a single search box interface to pre-indexed metadata and full-text document are available to provide users with a simple, fast, and easy search.

NFAIS, 2011 described that search experience are to be provided librarians with increased awareness and usage of their holdings and to provided content providers with an opportunity for increased usage, especially by inexperienced searchers, and with a distribution channel that can be broaden their brand awareness interface which are involve to indexed metadata searching index.

Many researchers and scholars are appreciated this involvement of integration of Web-scale Resource Discovery Services in Libraries: An Overview this domain are the integrated digital library software to distributed across the globe. Open source library discovery tools like VuFind, Library Find, Blacklight etc. has been formed a strong platform for software and service development. The existing knowledge based may be utilized for seamless integration of the components.

On the other hand, there are many different approaches to integration Open source library discovery tools with open source library management software their effects on market participants are complex. In this article would be regard the a single-window search retrieval models arranged for scholars, publishers, libraries and funding organizations and try to explain the motivations behind the actions currently taking place on the scientific publishing market.

Houser said that in 2008, web-scale resource discovery tools are also provides a single-window search discovery interface for other local resources such as a digital repository or local database which are well implemented accessible.

Marshall Breeding told that in 2005, first discussed broad based discovery tools shortly after the launch of Google Scholar. He points that federated search could not compete with the power and speed of a tool like Google Scholar. He proclaims that the need of describes “centralized search model” which is more effective in integration of discovery layer effectively Breeding (2015).

Luther & Kelly et al. shows that discovery services can be evaluated on content of scope and depth, richness of metadata, frequency of updates, search denotes simplicity of interface, quality of results etc., fit are denotes ease of imple-mentation, compatibility with existing systems, responsiveness of vendor and cost also.

Many researchers (Fagan et al. in 2012, Williams & Foster in 2011) reported that discovery tools are web-based applications that search in a unified index of metadata from article databases, library catalogs, digital repositories, digital collections, and other scholarly information resources. Web scale discovery searching has become an innovation in the field of on-line information search system that provides Google- type search box enables users maximum usage and access to resources both licensed and free available which are retrieve from multiple providers outside the library. Discovery services present a more effective alternative to both Internet search engines and federated search tools. It can easily connect researchers with the library resources locally hosted content, such as physical holdings, digital collections, and local institutional repositories. Web-scale discovery services are potential tools transforming the nature of library systems UKSG (2013). These tools are capable of indexing and searching across local content and hosted systems with advanced retrievable features.

### **III. OBJECTIVES OF THE STUDY**

The main objective of this study is to discuss different web discovery tools used by the different libraries worldwide as well as to show what types of services we can provide to our users in libraries using these tools. The basic objective behind this technology is to gather the potential open knowledge resources in one unique place and to provide global access to these resources through a single-window search retrieval system.

#### **Web Scale Discovery: Development Path**

The library services are accommodated various services. The evolutionary line are set-up to this manner like Automated library, Digital library, Library discovery system, Web-Scale Resource Discovery tools, the OPAC's & Web-OPAC's technology Chatterjee & Das (2015). There are difference between On-line Catalogue and Discovery Services are available. The paradigm shifting of information retrieval process of libraries from traditional Web-OPAC service to next-generation catalogues (Federated Search/ Meta search Engine) to discovery services Hopkinson (2006). After the happening of Google and failure of federated search engines are against to the google with web discovery services appeared at the behavior for libraries activities. The necessity of the discovery services do some single-window search interface, comprehensive search available. Now, the library are decided that the old searches are technically absolute for betterment of user purpose. Then, the new area start the new potential digital resource to build a comprehensive a single-window search retrieval system interface. Search system. In order to continuity, the due to user satisfaction the newly innovation of Web-Scale of discovery tools are provided the library environment. An easy to use comprehensive search interface for open access resources document are help to the scientist for developing the digital archives Mukhopadhyay & Barman (2015).

#### **Web Scale Discovery tools: a brief overview**

A service capable of searching across a vast range of pre-harvested and indexed content quickly and seamlessly in the library system.

*“A pre-harvested central index coupled with a richly featured discovery layer providing a single search across a library's local open-access and subscription collections”.*

*Athena Hopeppner*

According to Marshall Breeding, web-scale system the following four characteristic in 2012,

- Large-scale technology platforms.
- Applications delivered through multitenant software as a service.
- Massive aggregated approaches to data.
- Highly cooperative arrangements among participating libraries.

Here, show the real time activeness of the web-scale discovery tools. The evaluation team examined content from four leading Web-scale discovery providers regarding;

- EBSCO Discovery Service (<http://www.ebscohost.com/discovery/about>),
- ProQuest's Summon (<http://www.serialssolutions.com/en/services/summon>),
- Primo Central (<http://goo.gl/TET4W>), and
- OCLC's WorldCat (<http://www.oclc.org/worldcatlocal/overview/default.htm>) etc. all are commercial library discovery tools.

The open source discovery tools which are;

- Blacklight (<http://blacklight.betech.virginia.edu/>),
- Fac-bac-opac (<http://library.paulmiths.edu/catalog/>),
- Library Find (<http://search.librray.oregonstate.edu/record/search>),
- Scriblio (<http://librray.plymouth.edu>),
- VuFind (<http://vufind-beta.carli.illinois.edu/vf-bra>)
- SOPAC (<https://www.drupal.org/project/sopac>)
- eXtensible catalogue (<https://www.extensiblecatalog.org/>) etc.

There are so many Web Scale Discovery tools used by different libraries. Some are commercial and some are available in open source in the market. Here, for this study, only a few popular tools/ software have been discussed OCLC (2011).

For this study, some parameters have been identified to evaluate and compare the discovery software. These parameters may be helpful to the working librarians in selecting discovery software for their organization Yan & William (2014). The most common and helpful parameters are discussed below -

**Federated searching:** This searching supports integration of content not included in the central index via federated searching Alling & Rachael (2007).

**Smart searching:** This searching give "smart" search features such as auto-complete, auto-correct, auto-stemming, thesaurus matching, stop- word filtering, keyword highlighting, etc. are available.

**Advanced searching:** This searching provides advanced search options such as field searching, Boolean operators, proximity searching, nesting, wildcard / truncation searching etc.

**Relevancy ranking:** Provides useful results using an effective and locally customizable relevancy ranking algorithm sense.

**Scoped searching:** Provides discipline, format, or specific of location search options that allows searches to be limited to a set of pre-defined resources or criteria provided.

**Faceted browsing:** Allows users to browse the index by facets such as format, author, subject, region, era, etc are included here.

**Visual searching:** This searching are access visual search and browse options such as tag clouds, cluster mapping, virtual shelf browsing, geo-browsing, etc.

**Search limits:** Provides limits for refining search results according to specified criteria such as peer-review status, full-text availability, or location area.

**Recommendations/related materials:** Commonplace in e-commerce sites, the customer is shown additional items with a suggestion like "Customers who bought this item also bought . . ." "Likewise, a next-generation catalogue should recommend books for readers on transaction logs. This should take the form of "Readers who borrowed this book also borrowed the following . . ." or a link to "Recommended Readings" Yang & Wagner.

#### **IV. WHY WEB SCALE DISCOVERY TOOLS IN LIBRARIES?**

Library discovery systems are networked on-line environment which are evolved to the continue to struggle of serve users Wilson (2012). Nevertheless, the library are supported and maintained by the library to the researcher. Users wants to access the real document to a quick, easy, environment have defected, and research continues to illustrate this incorporated facts. So that, we are these research findings into a illustrative quotes to convey this challenging purpose.

i) User just want the right information with a easy to find. They doesn't care about the location of the resource documents. They do not want the poor quality and less reliable and so long as it requires little effort to find it. They need high quality and reliable. It VuFind (open source discovery tool) allows simple search, advance search, default display is relevancy-ranked. User's search multiple, local databases from Syndetic place holds are available Nagy (2009).

ii) Today, there are many alternative approach for discovery and libraries are challenged to determine the role of they should appropriately play. They don't want the irrelevant document to search the specific using locally provided tools for discovery.

iii) A seamless, easy flow to discovery delivery which is critical to end users. The delivery of discovery resource tools wants to very fast and not to be waste time.

iv) End users are expectations of data quality arise largely from their experiences of how information is organized on popular to Web sites access from the web scale resource discovery systems.

v) The librarian are very much helpful to digitization, action of resourceses, make a computerized database access from resource elements. User's need to know only set of retrieval techniques from the large scale technology platforms Inger & Gardner (2013).

Users are not satisfied with the services provided by the libraries and existing information retrieval (IR) system were found unsuitable in providing innovative services. Now, most of the libraries are maintaining different IR system (such as IR, Automated library, Digital library etc.). But, no existing information retrieval (IR) system is able to harvest resources from different system (such as IR, Automated library, Digital library etc.) used by the library. Not a single library specially in West Bengal are providing this type of service to its users. But, this Web Scale Discovery system provide can retrieve resources from different system and able to provide global access to the open knowledge resources in a one-stop search interface and users get result quickly without any kind of hesitation.

#### **Open Source and Free Discovery Tools (Web Scale Discovery of Services):**

Only a few libraries in the world are providing this service in the world. But in India no library are not provided this Open Source and Free Discovery Tools. In the below provided which University/ institutions are maintained the name open source and free discovery tools and with URL.

#### **Blacklight (the University of Virginia Library)**

1. Columbia University at <http://academiccommons.columbia.edu/>
2. Johns Hopkins University at <https://catalyst.library.jhu.edu/>
3. North Carolina University at <http://historicalstate.lib.ncsu.edu>
4. Northwestern University at <http://findingaids.library.northwestern.edu/>
5. Stanford University at <http://www-sul.stanford.edu/>
6. University Of Hull (UK) at <http://blacklight.hull.ac.uk/>
7. University of Virginia at <http://search.lib.virginia.edu/>

#### **eXtensible Catalog/XC (eXtensible Catalog Organization/CARLI/University of Rochester)**

1. Demo at <http://extensiblecatalog.org/xc/demo>
2. eXtensible Catalog Library at <http://xco-demo.carli.illinois.edu/dtmilestone3>
3. Kyushu University (Japan) at <http://catalog.lib.kyushu-u.ac.jp/en>
4. Spanish General State Authority Libraries (Spain) at <http://pcu.bage.es/>
5. Thailand Cyber University/Asia Institute of Technology (Thailand) at <http://globe.thaicyperu.go.th/>

#### **VuFind (Villanova University)**

1. Auburn University at <http://www.lib.auburn.edu/>
2. Carnegie Mellon University Libraries at <http://search.library.cmu.edu/vufind/Search/Advanced>
3. Colorado State University at <http://lib.colostate.edu/>
4. Saint Olaf College at <http://www.stolaf.edu/library/index.cfm>
5. University of Michigan at <http://mirlyn.lib.umich.edu>
6. Western Michigan University at <https://catalog.library.wmich.edu/vufind/>
7. Yale University Library at <http://yufind.library.yale.edu/yufind/>

Evaluation and Comparison of Discovery Tools: An Update: F. William Chickering & Sharon Q. Yang  
[https://ejournals.bc.edu/ojs/index.php/ital/article/viewFile/3471/pdf\\_1](https://ejournals.bc.edu/ojs/index.php/ital/article/viewFile/3471/pdf_1)

#### **Some assumption problems of the processes to make the web-scale resource discovery system:**

- Processed takes time.
- Little bit supported high qualified metadata.
- Processed takes good Internet connection.
- Minimal & misleading documentation
- Features wait for user to write them.
- Search by call no, spell check, and usage statistics are not available in VuFind (best tools of the web-scale resource tool). Still now no polished are available.

### **V. CONCLUSION**

Due to the advancement of ICT, our library are using more and more library 2.0 tools and techniques in order to provide better web based services to the user community. In this context, application of web discovery tools in libraries are becoming more popular among the masses. This paper may be helpful to those who are going to introduce new services based on these tools discussed above or have already providing innovative services in their libraries by implementing this technologies Muller (2011). Web-scale discovery systems are not complete library tools that can be replace of reference services, library instruction, and the features of subject-specific or higher level databases. User can evolved the new level of search relevant technique which are more impressive search system. Library discovery tools are speedily adding improved, increasing their customer based requirements. Dula, Jacobsen, Ferguson & Ross (2012). Now-a-day, most of the libraries have adopted technologies which are change their services and discovery tools are the occupy the next innovation.

## REFERENCES

- [1] Alling, E. & Rachael, N. (2007). Protocol Analysis of a Federated Search Tool: Designing for Users. *Internet Reference Services Quarterly*, 12 (1), 195–201.
- [2] Breeding, M. (2015). Library technology guides: key resources in the field of library automation. Retrieved September 12, 2015, from [www.librarytechnology.org](http://www.librarytechnology.org).
- [3] Breeding, M. (2008). Perceptions 2007: An international survey of library automation. *Library Technology Guides*. Retrieved September 22, 2015, from <http://www.librarytechnology.org/perceptions2007>.
- [4] Chatterjee, P. & Das, D. (2015). Web OPAC to discovery service: an overview. *E-Library Service Research Journal*. 3 (6), Retrieved April 21, 2016 from <http://www.isrj.in>
- [5] Dula, M., Jacobsen, L., Ferguson, T. & Ross, R. (2012). Implementing a new cloud computing library management service. *Computers in Libraries*, 32(1), 6-40.
- [6] Hopkinson, A. (2006). Introduction to library standards and the players in the field. *Digitalia*. Retrieved September 25, 2015, from [http://digitalia.sbn.it/upload/documenti/digitalia20062\\_HOPKINSON.pdf](http://digitalia.sbn.it/upload/documenti/digitalia20062_HOPKINSON.pdf).
- [7] UKSG (2013). Impact of library discovery technologies: A report for UKSG. Retrieved July 30, 2016, from [http://www.uksg.org/sites/uksg.org/files/UKSG\\_final\\_report\\_16\\_12\\_13\\_by\\_LISU.pdf](http://www.uksg.org/sites/uksg.org/files/UKSG_final_report_16_12_13_by_LISU.pdf).
- [8] OCLC. (2011). Winds of Change: Libraries and Cloud Computing. Goldner, Matt. Retrieved July 21, 2016, from <http://www.oclc.org/content/dam/oclc/events/2011/files/IFLA-winds-of-change-paper.pdf>.
- [9] Inger, S & Gardner, T (2013). Library technology in content discovery, evidence from a large-scale reader survey. *Insights*, 26( 2) , 120-127.
- [10] Mukhopadhyay, P. S. & Barman, D. (2015, May). Cloud Based Discovery Services for Next Generation Library cataloguing System. *Library In Next Era*, Kalyani: KULISSA, 133-141.
- [11] Mukhopadhyay, P. S. & Hazra, S. (2015, May). Library Automation In Next Era: Identifying Trends and Future. *Library In Next Era*, Kalyani: KULISSA, 277-285.
- [12] Muller, T. (2011). How to choose a free and open source integrated library system. *OCLC Systems & Services*, 27(1), 57-78. Retrieved March 12, 2016, from doi:10.1108/10650751111106573
- [13] Nagy, A. (2009). A Conversation With Karen Schneider: VuFind and Summon. Retrieved June 15, 2016, from <http://www.wils.wisc.edu/events/wworld09/sessions/anagy.pdf>.
- [14] O'Reilly, T. (2005). *What is Web 2.0 ?* Retrieved February 15, 2010, from <http://www.oreilly.com/go/web2>.
- [15] OCLC (2011). Libraries at web-scale. OCLC, Dublin. Retrieved August 2, 2016, from <http://www.oclc.com/>
- [16] Radfar, H. (2005). On library 2.0. Retrieved February 15, 2007, from <http://hoo-ville.blogspot.com>.
- [17] Rayward, W.B. (2002). A History of Computer Applications in Libraries: Prolegomena. *IEEE Annals of the History of Computing*, 4-15. Retrieved March 10, 2016.
- [18] The VuFind Implementation at Villanova Houser. *John Library High Tech*, 27(1), 93-105. Retrieved July 19, 2016, from <http://www.vufind.org>
- [19] Wilson, K. (2012). Introducing the next generation of library management systems. *Serials Review*, 38 (2), 110-123. Retrieved July24, 2016, from <http://uksg.metapress.com/content/>
- [20] Yan., Q. S. & William., F. C. (2014), Evaluation and Comparison of Discovery Tools: An Update. *Information Technology and Libraries*. Retrieved February 21, 2017, from [https://ejournals.bc.edu/ojs/index.php/ital/article/viewFile/3471/pdf\\_1](https://ejournals.bc.edu/ojs/index.php/ital/article/viewFile/3471/pdf_1)