

## Library Portal Designing & Web Resource Management

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This study mainly covers the scope of digital library interface or library portal. Some similar or more or less similar terminologies are described here. The detail steps are not enumerated here for designing library portal. But some key points are pointed out here to keep in mind during portal designing.

**Keywords:** Library portals; Digital library interface; Digital library framework; Digital object; Handle system.

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### Introduction

Many of the big well known sites are considered portals. They are gateways into the internet for many users. A Portal attracts a broad (horizontal) range of users. The term "portal" describes a variety of web based interfaces, everything from a relatively static homepage with general product and contact information to a dynamic one-stop homepage where users can customize the content to meet their needs. For many portal is the epicenter of the web experience, a place to return to when you get lost, a place to keep your information, a place from which to communicate with others. The Joint Information Systems Committee defines a portal as "a network service that brings together content from diverse distributed resources using technologies such as cross searching, harvesting and altering, and collates this in to an amalgamated form for presentation via a web browser to the user". A library portal is a single access point combining the library catalogues, subscription databases, subject gateways, electronic journals etc. Library portal meets the individual needs of users, which either the system itself

can tailor the delivery and presentation of information content or the users themselves can customize the type and format of information displayed. Library portal is now the standard interface to generate library resources and services through a single access and management point for users. In actual sense the Digital Library Interface is basically a library portal.

### Some terminologies

#### *Portal*

Many of the big well known sites are considered as portals. They are gateways into the internet for many users. A Portal attracts a broad (horizontal) range of users. Sites like Altavista, Yahoo, CNN and MSN are considered portals and are gateways into the Internet. There are many portals that are known nationally and internationally. General portals are known as horizontal portal or hortal. This Portal development may include adding several features or components that are not normally found on a typical site. For example, you may need a discussion forum so that your visitors can share ideas or experiences. Creating this forum requires deciding which forum software to use and then installing it on the server. There are many other components or modules you may wish to add to your Portal. While creating portal sites we will have to decide the classification of information to be collected. Next is the

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collection of information of the divisions. The first step of this is to make a directory. Now, information like news, climate, e-mail, stock market and maps are all seen in portals. There is no specific rule to create a portal. When more people visit a portal, the portal becomes a success.

#### *Vortal*

Vortals focus on a group of people with a specific passion or interest. Portals meant for specific purpose are vertical portals or vortals. They are sometimes called 'online communities' or 'vertical portals.' If you are interested in horses, for example, go to [horsenet.com](http://horsenet.com). Here you can chat with others interested in horses. You can also buy horse-related products and books and find information about horses.

#### *Portal and website*

The term 'portal' is used to describe a website that acts as an entry point or gateway to an array of services or resources. Obviously all websites can do this to some degree, but typically a portal will have a wide range of resources, usually including a search facility, directory of other sites, news, e-mail etc. portals can be general (eg Yahoo) or be specific to a particular industry, occupation or field of interest.

#### *Gateway*

Gateway is a phrase used by webmasters and search engine optimizers to describe a webpage designed to attract visitors and search engines to a particular website. A typical gateway page is small, simple and highly optimized. Its primary goal is to attract visitors searching for relevant key words or phrases, and provide hyperlinks to pages within the website.

#### *Library Portal/ Digital library Interface*

Library portal or Digital Library Interface is now the standard interface to generate

library resources and services through a single access and management point for users.

#### *Need for Library Portal or Digital Library Interface*

Librarians have become increasingly aware that the multiplication of electronic resources is a problem for end-users. Users find it difficult to locate the most appropriate database or resource to search for information relevant to their need. Even if they locate the right resources, since each service tends to have its own unique interface, they may struggle to search it effectively. If information is difficult to find using library tools and services, users are looking for alternative sources. This new reality translates into the need for making library web environments effective and useful. This trend is especially challenging for librarians, who were and continue to see themselves as the traditional keepers of knowledge, which until very recently was housed in many millions of books and journals that are rapidly becoming digitized. Portals are transformational environments that address the problem of information glut by customizing information content to meet specific end-user needs.

Library portal is growing in its importance as the preferred way of organizing and using information. Web portals are seen as positive potential frameworks for achieving order out of chaos. As portals become a primary means for transacting information and commerce, libraries of all types are becoming involved in thinking, planning and building various frameworks and services. Library portal reduce the barrier of users having to remember multiple logons. The portal gives the library a tool to channel users towards preferred resources. It increases the ability of the library to ensure that costly electronic journals and databases are used, by offering a simple way to browse the available resources. It supports searching by carrying users through from bibliographic searches to full text options.

### Digital library framework

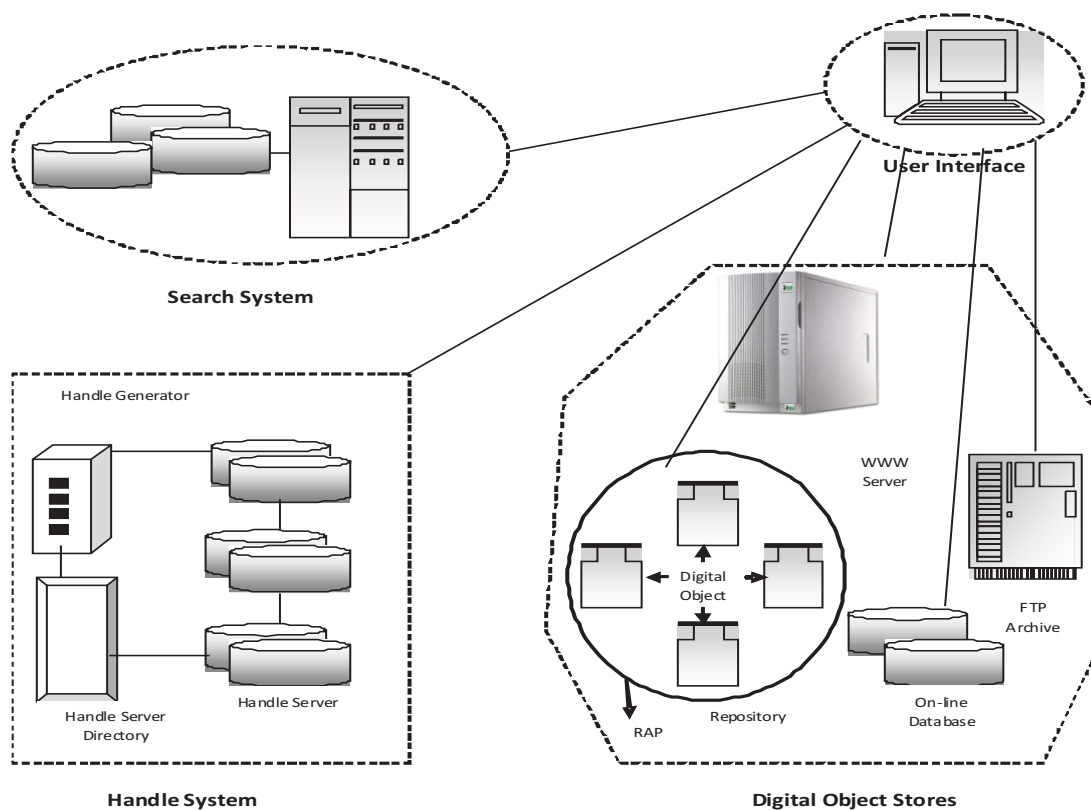
Digital library system in true sense is actually the co-existence of many individual digital libraries or digital information system that may be:

- ftp archive
- World Wide Web server
- On-line database
- A repository /IDR

### User interfaces/Library portal

The interface through which any user can have their required digital information from digital stores is called user interface. There are two user interfaces: one for the users of the library, the other for the librarians and system administrators who manage the digital collections. Each user interface is working in two parts:

**Figure 1: Digital library framework**



### Components of digital library framework

The architectural components of library portal/digital libraries are of mainly four types namely user interface, repository, handle system and search system. The key components are shown in the figure 1. They run on a variety of computer systems connected by a computer network, such as the Internet.

### Browser

A standard Internet browser like Netscape Navigator, Microsoft's Internet Explorer, Mozilla Firefox etc is used for the actual interactions with the user.

### Client services

It provides intermediary functions between the browser and the other parts of the system. The client services allow the user to decide

where to search and what to retrieve; they interpret information structured as digital objects; they negotiate terms and conditions, manage relationships between digital objects, remember the state of the interaction, and convert among the protocols used by the various parts of the system.

#### *Digital object stores*

Information in the digital library can be stored in many types of store, are enumerated below:

##### *FTP archive*

The archive where different digital files are stored and File Transfer Protocol is used for uploading and downloading the files over the internet. FTP works in the same way as HTTP for transferring Web pages from a server to a user's browser and SMTP for transferring electronic mail across the Internet in that, like these technologies, FTP uses the Internet's TCP/IP protocols to enable data transfer.

##### *World Wide Web server*

A WWW server is a program that runs 24hrs/day delivering files to requestors. Each WWW server on the Internet has its own name. The names often follow the *www.organization.domain* convention. Where organization is substituted by the organization's name or initials, and domain is determined by the type of organization (edu, com, org, net, etc...). Sub-units within the organization can add an extra item between the *www.* and the organization's name. Examples include *www.sfsu.edu*, *www.journalism.sfsu.edu*. The WWW Server program needs to be told where the documents to be served are located. Different web documents are stored in different WWW server. Each document has URL. User can access these documents using this URL through web browser.

#### *On-Line database*

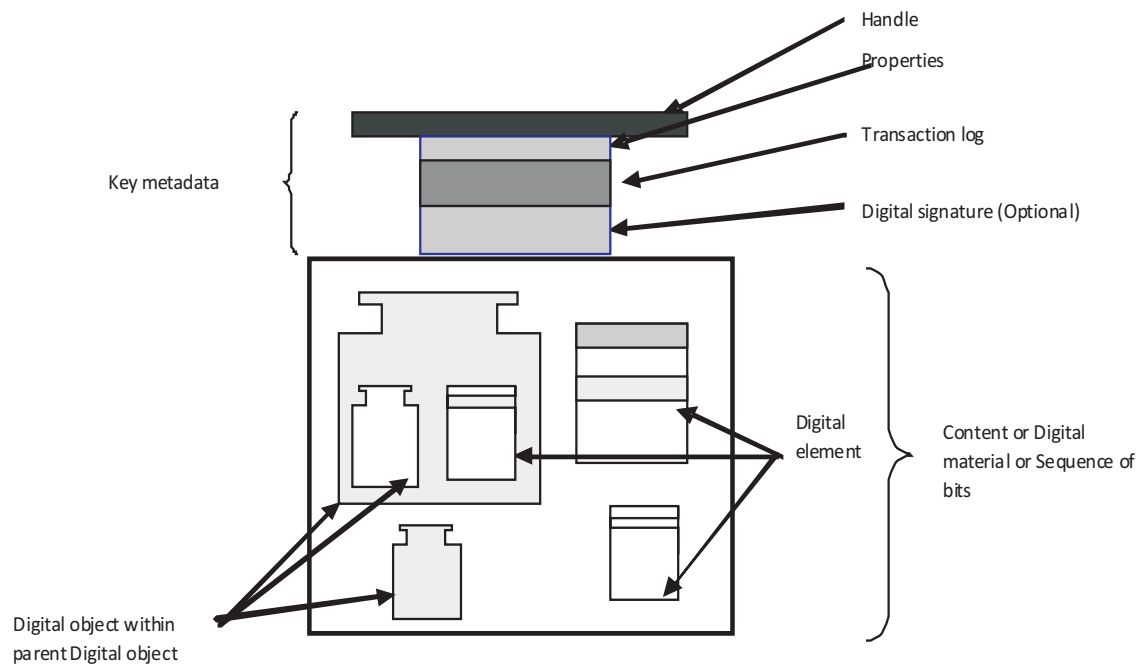
An online database is a database accessible via a network, now generally the internet. It differs from a local database, held in an individual computer or its attached storage, such as a CD. Using the desktop computer, one can travel along the Internet to the server, and access the information (articles, pictures, etc.) stored in the database server. The information travels back to you, and is displayed on your computer monitor. You can usually save the information, ("download it to disk", or print it out), but the information is actually owned by the database producer, or "vendor". Service provider of online database connects the database of the database produces to the users through search system. The popular service providers are DIALOG, COMPUSERVE etc.

#### *Repository/IDR*

The Repository addresses the need for uniformity by treating all forms of content as opaque, uniquely identified structures known as Digital Objects. By opaque, we mean that neither the internal structure nor the semantics of Digital Objects are exposed. Essentially, from the Repository perspective, Digital Objects are atomic units, identifiable only by their unique names called handles. Repositories store and manage digital objects and other information associated with these objects. The interface to this repository is called the repository access protocol (RAP). The RAP is responsible for the regulation of rights and permissions that need to be satisfied before a client can access a digital object within the repository. Repository is used mainly for storing valuable digital objects.

#### *Digital Object*

A digital object is a fundamental unit of the digital library architecture. Digital object has five major components as per a network environment is concerned. These are key

**Figure 2: Components of digital object**

metadata and content (bits). The key metadata are of four types namely handle, properties, transaction log, and signature (Figure-2).

#### *Handle system*

Handles are general purpose identifiers that can be used to identify Internet resources, such as digital objects, over long periods of time and to manage materials stored in any repository or database. Handle system is comprising of three components:

#### *Handle generator*

Handle generator is responsible to create globally unique and unambiguous handles for digital objects before submitting these objects to the digital stores.

#### *Handle server*

It stores the handles of the digital objects and the information associated with the location of the repository or store. During client's request, it interprets the handles to its corresponding locations and returns this information to the users.

#### *Handle server directory*

It holds and manages the list of handle servers.

#### *Search system*

This is basically the database of indexes of digital objects having handles with different search options. The design of the digital library system assumes that there will be many indexes and catalogs that can be searched to discover digital information before retrieving it from a repository or store. These indexes must be compatible with Z 39.50 like standards to attain the interoperability with wide range of systems.

#### *Characteristics of Library Portal or Digital Library Interface*

The library portals are changing rapidly, but some of the major elements to be considered while designing the library portal are as follows:

### *Ease-of Use*

The foremost feature to be considered is the ease-of-use, which can be determined by the effectively organized home page. The ease with which the users find information depends upon the multiple paths provided to find information, at the same time, keeping the number of clicks to a minimum in finding pertinent information. The user should perceive ease-of-use with the accessibility and usability of library portal, so as to interact with the system quite often. Text should be kept terse and lucid, so that user can scan and locate the needed information quickly and sometimes, obscured information they seek.

### *Search and Navigation*

In addition to consistent and logical navigation framework, effective search functionality and site maps are mandatory in the homepage. Direct access to the commonly used services needs to be supported by the library portal, as the users expect to have the capability to complete tasks online. Search boxes are preferable to search buttons and need to be placed in a prominent location.

### *Resource Linking*

Resource linking allows a library to seamlessly tie electronic resources together. For example, an index or abstract can be linked to a full-text database or a bibliographic record can be linked to a review or to an e-book. Users may like to have more than one path to find the same information, cross linking ensures that the users would find the information they are looking for.

### *Personalization*

Each individual user or a community and/or group of users can have settings for each of the portal functions that they use. A portal provides a framework for users to store the settings and tailor the content that they are interested in seeing. A portal can be personalized using user-profile to deliver personalized content. Each user can gain a

view that is tailored to his or her access privileges. User has to sign on with a username and Personal Identification Number on entry to the library portal to access personal profile information and tailor the design based on customization feature. Or else, a portal may give users the ability to create their personalized pages by selecting what they want to see whenever they get access to the library portal. This personal page may keep track of resources for a user, his library account, queries kept until the session ends, request and reserves and also renewals.

### *User Authentication*

User authentication also known as patrons' authentication determines whether patrons are eligible for service by checking patrons against a library database. This authentication is usually done with a proxy server to limit access to resources the patron is authorized to use. For example a library may allow anyone to access its catalog, its community information file and other locally created files on its web server, or it may limit access to subscription databases to only registered borrowers.

### *Interactive Services*

Although most portals can support interactive services, only a few academic libraries have incorporated interactive services in to their portal. Typical of such services are e-mail, chat rooms and forums. Library portal should facilitate knowledge sharing online by providing collaborative space for interactive tools. However, in order to assist the users in the fair use of tools and services offered, library portal should facilitate web based information literacy programs.

Besides the above characteristics the following specific point need to be in mind during desiging library portal

- Searching would be far easier for the user if the library could present resources in a consistent, organized gateway. This

- should be customized for different user groups.
- Users would learn to search more effectively if there is one fully functional library maintained search interface available for any database they wanted to use.
  - It would often be convenient to search multiple databases from one search box. This implies the ability, in a single search, to interrogate databases that use different metadata standards, especially in different curatorial domains.
  - Specifically the system should be able to search databases of images and a proliferating array of multimedia types, and ideally show thumbnails or previews in search results.
  - The search results from spread searches need to be presented in an intelligible way to the user, ideally with de-duplication and sorting of results.
  - The system must understand licenses, such that it only offers options to users that are available to them, based on their access rights and the license, although it can help create awareness and drive demand for protected resources through alerting, personalization and customization functions.
  - Link resolution services should be supported. That is rather than pointing at specific static URLs for content, web requests should pass through an intermediary service where a final URL is calculated for any resource at the time of the user accessing it. This offers a scalable way to manage constantly changing URLs and the opportunity to develop further middleware support services.
  - The user should be able to save hits or a search, including for reuse on databases other than the one it was first created for.
  - Another central requirement is that there should be a single point of authentication. The user must not be constantly challenged for a password, in fact cross searching of

multiple access controlled datasets is impractical without some sort of single sign on or caching of credentials or trust between servers.

- The system must provide central management tools for handling a variety of http based query syntaxes, since standards are developing rapidly to meet the needs of specific domains.

#### *Role of Librarian*

As educators who organize and evaluate information resources, academic librarians bring unique perspectives and skills to the development of portals in their colleges and universities to campus portal planning and implementation, they bring their expertise with content, their knowledge of copyright, their commitment to customer service, and their experience in creating customized web-based information delivery systems.

#### *Content*

Academic librarians provide credible content that has been selected for a specific learning community. Their library's homepages and collections have what every web site wants: brand and content. Libraries have the brand name of the academic institution they serve and content that has been customized to meet the needs of their users. To students who may have difficulty determining what is valuable and what is useless on the web, the library offers a safe harbor in a flood of information. Increasingly the content of libraries is in digital form and is composed of databases. Click on any library homepage and you will find an array of databases selected to support the academic programs offered by the institution. These databases are made available both on and off campus through licenses arranged through the library.

#### *Copyright*

Librarian's knowledge of current copyright policy is being called upon now more than

ever in setting up electronic reserves and online information for learning portals created using blackboard and other web-based course management systems. Faculty and students may assume that if educational material is on the web, no copyright restrictions apply. However, this is true only if the copyright for the work has expired, its author has allowed the work to go into the public domain, or the work was authored by the federal government. Since there is a mix of works in the public domain and under copyright on the internet and some works under copyright are posted without authorization, it is not always clear which are in the public domain. Librarians provide guidance in determining which web-based materials are under copyright and seek permission for use of these works with the Copyright Clearance Center and other agencies. Librarians inform faculty about the fair use guidelines.

#### *Customer Service*

As libraries make more digital resources available on the Web, research is increasingly conducted outside of the physical library. However, remote users want interactive assistance from a qualified human being and not just a help button to click on. Librarians have developed a number of ways to extend person-to-person reference service in a digital environment that are applicable in supporting portal use on campus. Digital Reference Services (DRS) offer quality service at any time to users outside the library. DRS refer to all internet-based, human-mediated information services, including those based in library settings and other types of organizations. Such services range from e-mail reference which libraries have offered for years, to online reference chat which many librarians are now implementing.

#### **Conclusion**

Most library patrons want information regardless of where they find it. They don't want to limit themselves to their library's

collection. A portal offers them one-stop shopping that takes them from the initial need for information through its delivery without having to use several different tools. If well designed, a portal also provides effective navigation of complex, multiple collections. Over the past decade, academic librarians have been evaluators, selectors, and organizers of information on the web. Our experience and expertise make us valuable players in a team approach in planning and implementing library portals. An interactive service such as "Ask a Librarian" can make requesting assistance simple and convenient by connecting web users with librarians.

#### **References**

1. Arms William Y. *An Architecture for Information in Digital Libraries*. <http://www.dlib.org/dlib/february97/cnri/02arms1.html>. (1997). (Visited on: Feb 11, 2008)
2. Baeza-Yates R, Ribeiro-Neto B. *Digital libraries*. Pearson Education; London. 2005; 513.
3. Blanchi Christophe, Petrone Jason. *An Architecture for Digital Object Typing*. <http://www.cnri.reston.va.us/software/repository/repo-whitepaper.pdf>. (2002). (Visited on: Feb 4, 2008)
4. Jana Sibsankar, Bhattacharya Udayan. Towards understanding the digital object. *IASLIC Bulletin* 2009; 54(3): 147-156.
5. Kahn Robert, Wilensky Robert. *A Framework for Distributed Digital Object Services*. <http://www.cnri.reston.va.us/home/cstr/arch/k-w.html>. (1995). (Visited on: Feb 14, 2008)
6. Payette Sandra. Interoperability for Digital Objects and Repositories. *D-Lib Magazine*. 5, 5; 1999, May. <http://www.dlib.org/dlib/may99/payette/05payette.html> (Visited on: Feb 12, 2008)
7. Saikia Mukesh, Sarma Dipak. Digital libraries in India: Trends and future. *Proceedings of the National Conference on information management in digital libraries (NCIMDiL)*. Central library, IIT, Kharagpur, 2-4 August, 2006; 217-222.