

## Developing a medical library portal using a free and open source content management system Joomla

Dakshata A. Dukare

Junior Librarian, Bombay Hospital Trust, Mumbai, Maharashtra, India

\*Corresponding Author: Dakshata A. Dukare

Email: unde\_dakshata@rediffmail.com

### Abstract

This paper discusses on designing and developing a web portal using a free & open sources content management system (CMS) Joomla in the branch of M. P. Birla library and information Centre. It provides an overview of reference & bibliographic service & develops the general collections of the Library and their features, systems, implementation etc. in various areas of academic activities. It is an excellent source of search information and build up data collection of reference. Content management features become more important as a website grows larger.

**Keywords:** Open source software, Content management system, Joomla, Library portal.

### Introduction

When the internet was experiencing its first big boom back in the 1990s, building a website required serious technical knowledge. At a minimum, you needed to be fluent in programming languages such as HTML, CSS and Javascript just to build a simple website. These days, almost anyone can create a beautiful and fully functional website with little or no technical knowledge using a content management system (CMS). A great CMS choice for both first-timers and experienced web developers is Joomla, an award winning open-source CMS that has been in development since 2005. It currently powers over 2 million websites in 68 different languages, and is managed by a team of more than 1000 dedicated volunteers. Joomla is a stable and secure platform that is so easy to set up even the most inexperienced users can have a fully functional website up and running in less than an hour. Joomla comes with more than 10 thousand free templates and extensions, so whether you're looking to build a personal blog, a company website or an e-commerce store, it's easy to create a website tailored specifically for your needs. This guide will provide you with simple instructions for setting up your own Joomla website. It will show you how to install Joomla on a hosted web server, how to create a blog, how to make your first blog post, and how to customize your site using templates and extensions.

Medical libraries and the role of medical librarians are changing and evolving along with medicine. Medical publishing is changing, too. Roles are being transformed — and even threatened — by technology. At the same time, the 21st century avalanche of biomedical information makes medical librarians and their institutions more important than ever.

A Content Management System (CMS) is a software bundle that lets you develop a website that can be rapidly and easily updated by a non-technical person, who has little beat knowledge about HTML. These open source software are created and subsidized by a group & community of developers. It can be downloaded without any cost. Both their feature sets and their cost tags make open source software peculiarly fetching to nonprofits.

Previously Librarian or Library Professional has to depend upon IT professionals to make a Library Website or to make and manage table of the content of Library on the web. With the design of Open Source Content Management System, Library professional does not depend on IT professionals. So, this is the huge benefits of Open Source CMS for Library professionals and that's why they independently create, command, maintain and upload their own content easily and effectively with free of cost. There are numbers of Open Source CMS available in that Joomla, Word Press, Drupal, ModX and Plone are very famous now a day.

### Open source software

Open Source is a means of acquiring source code from a computer, facilitating free license to a self-enhancing diversity of production models, communication paths, and interactive communities. Source code is the code computer programmers can manipulate to change how a piece of software works. Programmers can improve the program by adding features to it or fixing parts that needs correction.

Open source software is software whose source code is available for modification or enhancement by anyone. It can be freely used, changed, and shared by anyone. Open source software is made by many people, and distributed under licenses that comply with the Open Source Definition. Open source software licenses promote collaboration and sharing because they allow other people to make modifications to source code and incorporate those changes into their own projects. Some open source licenses ensure that anyone who alters and then shares a program with others must also share that program's source code without charging a licensing fee for it.

The Open Source Initiative (OSI) is a global non-profit focused on promoting and protecting open source software, development and communities. Many people prefer open source software because they have more control over that kind of software. Users who aren't programmers also benefit from open source software, because they can use this software for any purpose they wish, not merely the way

someone else thinks they should.

### Objectives and tasks

The purpose of this paper is to design, implement and launch Medical Student website for the information. The main objective was to produce a dynamic and content rich website that would be easy to use and been built on top of secure and robust content management system. In addition, it was requested that new website should include all the previously produced content, which needed to be gathered and prepared for this implementation as well.

The tasks included in this thesis implementation were:

1. Analyzing and specifying website's functional and non-functional requirements
2. Installing and configuring the development environment and software
3. Designing website's information architecture and layout mock-ups
4. Implementing data migration into Joomla CMS
5. Building the website with Joomla CMS

### Content management software

The concept of open source software (OSS) was invented to provide software users with more rights than proprietary (or commercial) software that anyone is authorized to use, copy or distribute, without modifying or modifying, for free or with money, but always together with the source code.

Content management systems support the creation, management, publication and presentation of content information. This information, also known as content, may be in the form of text documents, images or videos. The most commonly used type of content management system is the web content management systems (WCMS) that are used to create and manage websites and content that will be published on the World Wide Web. The WCMS covers the entire life cycle of the pages of a website, from the provision of content creation tools to the publication and finally the archive.

### CMS functionality

#### Basic characteristics of the CMS

Web content management systems have the following basic characteristics:

Page layouts are stored in templates, while content is stored in a central repository. When a user requests a web page, a standard HTML page is dynamically created by inserting the content into the corresponding template. The resulting web page may include content from multiple sources. As a traditional website that consists of static HTML pages that include content and page layout.

1. **Management Component management:** Another basic feature of the CMS is the existence of a component database (also known as the content component database) in which the content is stored. Before being archived in the component database, the individual components (texts, images, videos, etc.) are enriched with additional information (metadata) that

facilitates their classification and recovery.

2. **Management Workflow management:** The third main feature of CMS is workflow management. CMS generally allow the definition and control of the workflow. These workflow features allow the coordination of web-based collaborative work, such as the creation and collaborative management of a website.

### Functionality and fundamental principles

The functionality of content management systems can be subdivided into four main areas: content creation, content management, publishing, and presentation.

1. **Content creation:** Content creation, also known as (content) authoring and content contribution, refers to the activities by which content is generated and entered manually by authors (content creators) into the content management system. CMS typically provide a Web-based, easy-to-use authoring environment, which enables authors to enter content conveniently by using a web browser and other integrated tools such as WYSIWYG editors.
2. **Content management:** After the content is created, it is stored in a central repository (e.g. XML files or a component database) along with supplementary information (metadata). This repository constitutes the core of a content management system and enables content manipulation and content management. Content management comprises a range of useful features such as content reuse, versioning of content and online administration. Apart from that, content management comprises workflow management the workflow capabilities of content management systems allow the participation of more people in the workflow.
3. **Content publishing:** Information stored in the repository is distributed or delivery to users this stage is called publishing. Web content management systems comprise so-called publishing engines which generate web pages from the content stored in the repository and publish them (by the use of style sheets and templates) to users. They are also capable of publishing the content in a variety of formats such as HTML and PDF. Finally, content management systems support personalization.
4. **Content presentation:** The functional area of presentation is concerned with the standardized appearance of a website. The published pages must meet certain standards in order to be of value to the users.
5. **CMS Integrated Modules / Applications:** Content management systems normally offer a wide range of integrated, ready-to-use applications or features which are either available directly after installation of the CMS, or can be added to the system at a later point (eg as freely available open source modules).

Some of the most common integrated applications/features are:

1. Tools for asynchronous communication: Most typical

- are email / webmail, blogs, and message boards.
2. Tools for synchronous communication: Similarly, a CMS may provide facilities for synchronous communication such as a chat- and whiteboard application.
  3. Groupware functionality: Some content management systems offer groupware (collaborative software) functionality that enables people to work together while located remotely from each other.
  4. Search engine: The CMS creates indexes for the content it manages (by using metadata), thus enabling the search.
  5. File upload and download: A CMS normally provides an integrated tool or that enables users to upload or download files, in their personal user areas.
  6. Contact management: CMS is an integrated contact management application which makes it possible for users to manage their contacts conveniently.
  7. Calendar: A built-in calendar application that allows users to plan and track events, possibly supporting multiple views.
  8. Task management: A further feature that some content management systems provide is task management.
  9. Online help: Some content management systems support users by means of context sensitive online help functionality which is built into the system.
  10. FAQ management: Most major content management systems include FAQ management capabilities.
  11. Spell checker: A number of content management systems include spell checker functionality
  12. Clipboard: The CMS may provide a built-in clipboard system that allows authors (content creators) to cut and paste content from one area of the site to another.
  13. Trash: Some content management systems support administrators and authors in recovering content that has previously been removed from the website by means of a trash system.
  14. Wiki functionality: Wiki is used to designate functionality (or an application) that allows users to add content to a system which can be edited by any other system user.
  15. Photo gallery application: The CMS might also be equipped with an integrated photo gallery application for displaying images stored in the system.
  16. Guest book: (Electronic) Guest books enable website visitors to leave their name and comments voluntarily.
  17. Newsletters: CMS users may also be offered the possibility of subscribing to email lists maintained by the system and receiving online newsletters (via email) on various topics they are interested in.
  18. Polls and surveys: CMS functionality is provided by integrated tools for conducting polls and survey.
  19. RSS: 'Really Simple Syndication' is an alternative means of accessing the vast amount of information that now exists on the World Wide Web.
  20. Support for multiple languages: The CMS may also provide support for multiple languages.
  21. Support for multiple platforms: Most content

management systems can be installed and operated on different hardware and software platforms

22. Interoperability: Due to the increasing heterogeneity of IT systems provide appropriate interfaces and mechanisms which are based on open or industry standards such as SOAP, RMI, DCOM, and CORBA are often supported.
23. Extensibility: Content management systems are written in a variety of programming or scripting languages such as C++, Java, PHP, Perl, and Python. The language a CMS is written in, can often be used to extend the existing CMS functionality by means of own source code or by modifying it.

### Three main systems of CMS

In the marketplace at present, there are literally hundreds of content management systems, all having different capabilities and strengths. Every organization has a unique set of requirements for a content management system, and there is no 'one-size-fits-all'. According to the need of the Library one can choose the best possible CMS which can fully automates the publishing of library web page.

For those who want to build powerful websites without having to worry about all the coding, and technical aspects then there are three main following options of CMS:

1. Joomla
2. WordPress
3. Drupal

All three are open-source software, widely used, each developed and maintained by a community of thousands. Not only are all three free to download and use, but the open-source format means that the platform is continuously being improved to support new Internet technologies.

As there's no one-size-fits-all solution of library; it depends on your goals, technical expertise, budget and what you need your site to do.

### Understanding Joomla

#### What is the content?

In the context of the digital environment, it includes: text, links, graphics, images, sounds, videos and data, etc. Most organizations can handle a large amount of information and text and table formation. This information can be classified into: simple pages, complex pages (graphic design and presentation), dynamic pages (database information), and brief information about the organization, online manuals, user guide, general documents and internal link between two or multiple pages of content.

#### Understand the Joomla Admin Interface;

The administrator menu is the most important part of the site. The menu at the top contains sections. Let us tell you what options each menu section has.

**System:** is the entrance to the global configuration of the website. The administrator can create configurations that can be applied to the website, which includes the configuration of the site, system, server, permissions and text filter. It is also an option for the control panel of the

administration area.

**Users:** This section will provide users of the site. The superuser can make groups of other users and assign them different levels of access to the website.

**Menus:** The options for creating and managing the website of the website reside.

The user guide for content contains the operations to create art, create categories and highlights, and manage multimedia files.

The component user finds the main functional component of the website, such as banners, contact forms, news and more.

**Extensions:** This section contains the options to use extensions to extend the website. Components, modules, add-ons, templates and languages if collectively call extensions in Joomla. To implement extensions to these things, use the options given in this section.

Go to Extensions-> select Extension Manager-> Browse the extension package file (template file) -> Upload & Install.

Joomla gives three more options to install extensions.

1. Install from web- User can directly install the extension

from JED (Joomla Extension Directory)

2. Install from directory- user can install the extension by giving the path of directory.

3. Install from URL- user can enter the URL to the extension.

We download the Joomla template from the Template Toaster's template gallery. You can always download a template at no cost from here. One more way to get a template is to create it on your own with the help of Template Toaster. You can quickly create a professional template using Template Toaster since you don't need to write the code for this.

Now, to activate the template, go to Extensions-> Template Manager. On the Template Manager screen, find the template file and set it default by clicking the star (under default column) just at the right. Hence, the template will get activated on the website. You can check the implementation of template by visiting your website.

### Screenshots of complete installation of joomla

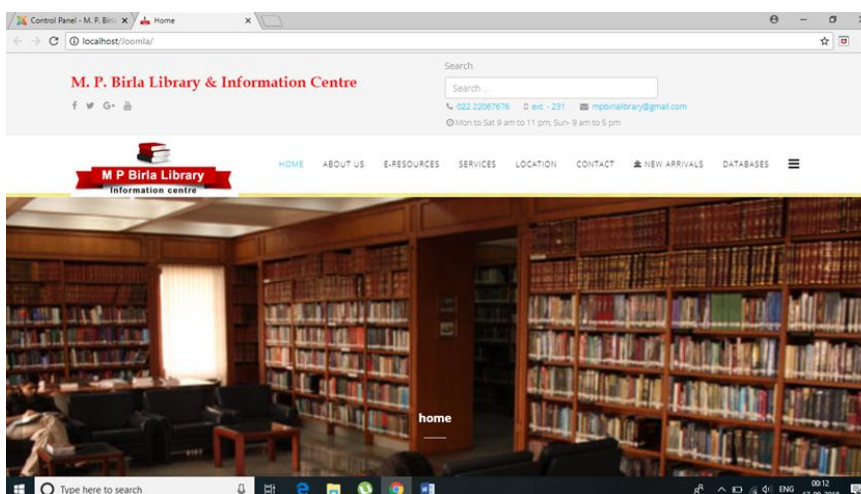


Fig. 1: M. P. Birla Library & Information Centre- home page

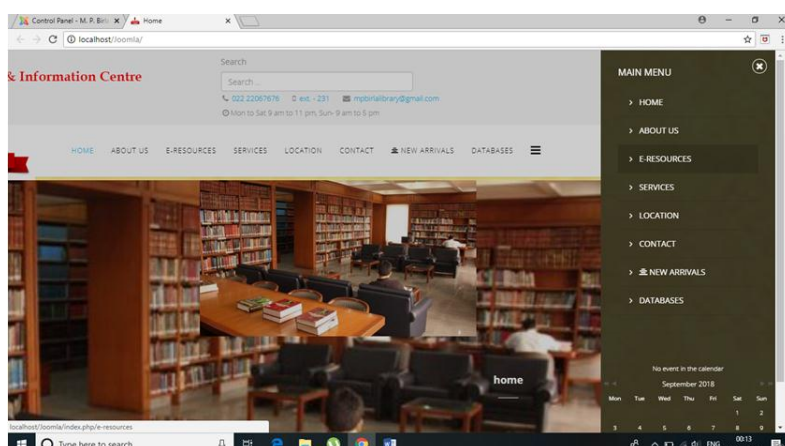


Fig. 2: M. P. Birla Library & Information Centre- Main menu page

## Conclusion

The main objectives of the Joomla website are to provide access to the online library catalogue, library rules, local and remote access to the electronic databases of the library, promote library services and provide information about news and event library.

Technical knowledge is required while using Joomla. The library professional can initially help IT people, but after that, for any change or inclusion, they can manage it themselves. The library has several sections that carry out their work such as a book section, newspaper section, electronic resources, reference section. Each section wants to update their information. Here the library can save time to update the information on the website because otherwise they have to wait for a web designer who may be busy with their work. A successful place for any organization is the library. Therefore, to convey upcoming events, updated information and news

The development status of Joomla open source content management software can be examined by numerous advantages. Joomla offers low cost, conformism with open standards, portability and support for a large number of available OS platforms. With this study, the authors discover that any library professional can build their own library website using Joomla Open Source CMS with little knowledge of the computer. The authors also examined that, to customize the advanced features of Joomla, it requires technical support in localhost migration to live on the web, includes MYSQL backups, localhost installation folder and PHP encoding. To maintain the contents of the web library, each library professional must upload the most recent content to the Joomla website.

## Source of Funding

None.

## Conflict of Interest

None.

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**How to cite this article:** Dukare DA. Developing a medical library portal using a free and open source content management system Joomla. *Indian j Libr Sci Inf Technol* 2019;4(2):111-5.