

Guideline for Selecting the Right Content Management System (RCMS) for Web Development: A Comprehensive Approach

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Abstract: This research aims to deliver valuable insights into PHP-based content management systems (CMS) by assessing the various comparison methods, techniques and assessment studies. This research study illuminates the importance status of a robust CMS in enabling users to seamlessly integrate diverse functionalities into their websites through plugins and widgets. Emphasizing the worth of modular architecture, PHP is utilized for customizing the user interface, while a CMS efficiently manages the website's content. All the popular PHP-based digital tools such as WordPress, Joomla, and Drupal are explored within this context. Real-world case studies and examples are curated to offer practical perspectives on CMS utilization. Despite the plethora of software packages available for CMS, selecting the most suitable one can be challenging due to the disparate nature of trend and evaluation data. Through our findings, we address the advantages and disadvantages associated with WordPress, Joomla, and Drupal. WordPress stands out for its extensive array of plugins, enhancing its user-friendliness and basic functionality. However, Joomla may require additional essential capabilities despite its overall usability. On the other hand, Drupal emerges as a commendable choice for both simple and intermediate websites, boasting straightforward management capabilities. Ultimately, we advocate for business owners to leverage trend data alongside their specific requirements in selecting a CMS that aligns with their web strategy, ensuring continued support and adaptability for future endeavors.

Keywords: Content Management System; WordPress; Joomla; Drupal; Web Application Development.

1. Introduction

A tool that maintain the information on websites is the content management system (CMS), Using this software program, a website can be created that any staff member who is non-technical can maintain it simply and very quickly. Such open sources solutions which cost nothing, their development and maintenance is done by developer community. Online existence for those who are not having any profit is vital, but at same time may be development of website is difficult for them. In the world of internet de-velopment web content management systems (WCMS) are no doubt becoming extremely fundamental. Execution of a website or e-commerce is becoming easy now because of these software platforms also they are now more acclaimed because of their adaptableness and ease of use.

Creation of web page also creation and management of website, and distribution of all software which are necessary. Tools that are used for application can be bought or can download without any cost. Add-ons and theme are provided by both forms of software that engage various mechanisms such as templates. Widgets, modules, and also plunging among all others [2].

Content management system is the thing that facilitates or organizes the combined development of documents or some other sort of substance. Consumers are facilitated to contribute new content in various forms like articles or typically you may say authors of some time. These articles are normally passed in as simple text, or may be some rise to insist on that where other things should be entered like other images. The system then works to design articles while sorting out the display. After the version, which has a diversity of remunerations while struggling to get many articles to stand by to an analogous "feel and look". For publication by the structure the sections are then built-in in a larger group. Substance can be shared by CMS in E-commerce and customer relationship management (CRM) systems. Whereas it gives an ability to authors which are non-technical so that they can change their own content or publish it by the use of direct but impactful browser-based tools, you can create a reliable look and feel all over your website through this web publishing system. Interaction with some content management systems (CMS) happens with delivery tools to convey material through websites [3]. Most widely used content management system (CMS) is considered as word press because it activates to percentage of 29% of all the websites. The tool that makes it easy for creation and publishing of material which is digital called CMS. All tools which are used for developing static websites, forums, ecommerce stores, and blogs fall under this category. Drupal, Joomla, Shopify, Squarespace which are well known CMSs considerably smaller share of market. Word-Press is only the CMS which is used by 60% websites of all. Joomla has the second big market share CMS and its market share is 6.4 [7].

WUSOWYG (What You See Is What You Get) editor is a very useful editor and you can make any changes easily, the you don't need web designer service to make changes in your website. You can design and customize different types of navigation menus without touching any code of website [8] [29].

A survey conducted by W3Techs in Jan 2016, and according to that survey, Word Press is used by almost 59% of all websites those CMS can be identified. Approximately a quarter of all websites on the internet make up nearly 25% of overall online visibility. Initially Word Press developed as a very simple tool but gradually it becomes a one of the best content management system for making almost any kind of website from very basic single page website to complicated web application [9].

Statistics indicate that Joomla is the preferred choice of free and open-source CMS among developers. With approximately 20 million websites globally opting for Joomla, this number continues to grow steadily each day. Backed by one of the largest open-source software projects, Joomla benefits from a vast user base and undergoes continuous improvement thanks to the contributions of an international group of volunteers. [10].

1.1 The Goal of the Study

This research has been designed to provide a complete and systematized handbook which can be of help to businesses stand alone individuals as well as organizations that wish to pick the best Content Management System (CMS) for their website development needs. The proper choice of CMS is vital since it affects the website's profitability and performance greatly. "In the current digital era, the online presence is ever paramount, making it warranting for webmasters to have the right CMS for object achieving, user experience optimization, cost management effectiveness, and security and compliance protocols met."

1.2 Different Content Management Systems

For documents and data, conventional content management systems are applied as information "sources". These sources are frequently placed to store that content which is powered by database technology and have stable measures for security in place to set and monitor access to the material they contain. These methods contain things like:

- Role-based access involves managing permissions for tasks such as checking content in and out, modifying, producing new versions, and storing.
- (Login) User confirmation
- Auditing
- Workflow (Building, checking, publishing, approving, and commenting)

1.2.1 WordPress

WordPress, the most widely used blogging platform, has been in operation since 2003. Word Press has become the preferred platform for websites that are not blogs, making it the most extensively used content management system globally. The script was first created as a blog platform rather than a con-

ventional content management system. Several online businesses operate using the robust content management system WordPress. WordPress offers various advantages, such as simplified management and improved SEO. WordPress is a versatile platform that can be utilised for creating blogs, social networking sites like BuddyPress, e-commerce websites, web directories, and various other applications. [4].

1.2.2 Drupal

Drupal, free software with the help of it anyone may establish and bring out their own website. It has become simple to create a range of web pages, from small online communities to straightforward blogs by the use of Drupal, also it can be easily custom-built. Moreover, it gives a built-in search tool and URLs that are improved for search engines as an add-on module for conversation features. Every website with re-markably high demand and traffic should use Drupal [4]. An open-source tool for creation of reliable, easy-going websites is called Drupal. A content management system that lets consumers update their websites without the help of technical proficiency and also make sure it works with the workflow of your business. Drupal is a flexible platform that can adjust to your needs of changings. Users and administrators can right to access the website in their native tongue when it is organized in numerous languages. Drupal may be personalized to your users, content, and organization's structures to make it distinguish from the crowd [5].

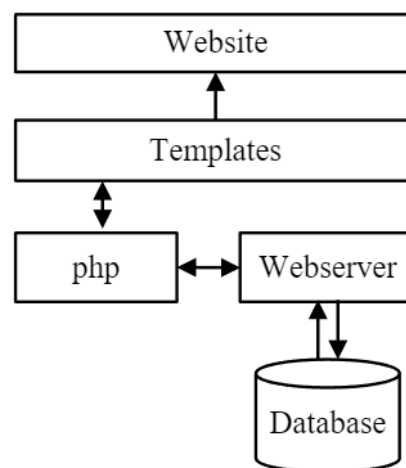


Figure 1. Drupal's architecture is structured in layers

This is because open-source tools are cheaper and for this reason many developers have used them for development. Drupal is extensively used in website development as it has a plethora of features among which the flexible content creation, user-friendly administration interface, and workflow management features are prominent [31]. Fig. 1 illustrates the Drupal's architecture is structured in layers.

1.2.3 Joomla

Joomla, a content management system, enables the creation of effective online websites and apps. Joomla's core structures, which have won awards, are extensibility and usability as it is an open-source website platform [6].

Joomla is an open-source content management system (CMS) built using the PHP scripting language with a MySQL database as its backbone. Joomla is gaining popularity among users because to its current nature, convenience of use, and extensibility, surpassing Drupal in these aspects. The primary Joomla framework can be enhanced by selecting one of the over 4500 modules and extensions currently available. Windows, Linux, and Macintosh OS all enable the installation and use of Joomla. It is distributed freely and shared under the GPL. Advanced Joomla 1.5 components utilise the Model-View-Controller (MVC) design pattern in their creation [11].

One of the factors that have attributed to the Joomla frameworks' popularity is its robustness, making seamless the design of visually appealing websites. Shown in Fig.2, Joomla forms the foundation of some open-source software parts. Flexibility of Joomla is improved through extended usage of modules, components, and plugins which are all referred to as extensions. Extensions add new features to the Joomla core. These modules are light-weight and are known for fast page rendering, and they can be used

independently as components of the page that will load the data from the components asynchronously. Whereas features are on a smaller scale they are very useful to the user interaction and they are similar, though, with mini-applications. The plugin performs user-defined code blocks on calls of specific events which thereby are built on top of and further extend the capabilities of the Joomla Framework. Where Joomla is concerned, users are given useful plugin tools which make it easy to harness the framework in an efficient way. The look of the websites is determined by templates, while interactivity with the user is conducted through the website [32-33].

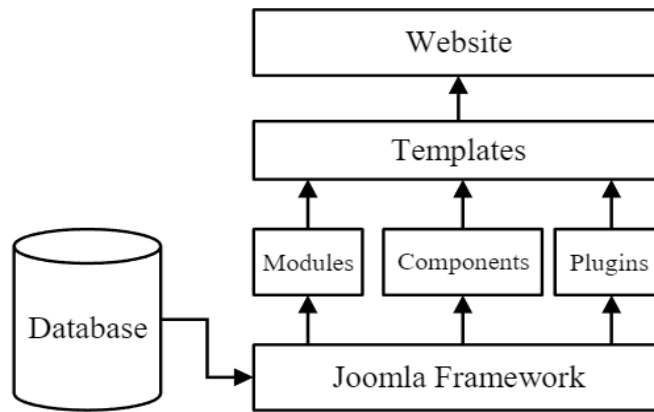


Figure 2. Architecture of Joomla

Figure 3, shows the components' architectural layers and their communication in the overall general-ized scheme. There are the six principles that ram effect consists of. A CMS architecture can be considered to have any of the operating systems as its base. Next to this there will be selection of webserver and da-tabases. Thus, the WordPress employs MySQL for the storage of records within its content management system. The programming languages lay at the bottom, followed by the frameworks, and finally the plugins, which extends the website to do extra stuff if it is required [34].

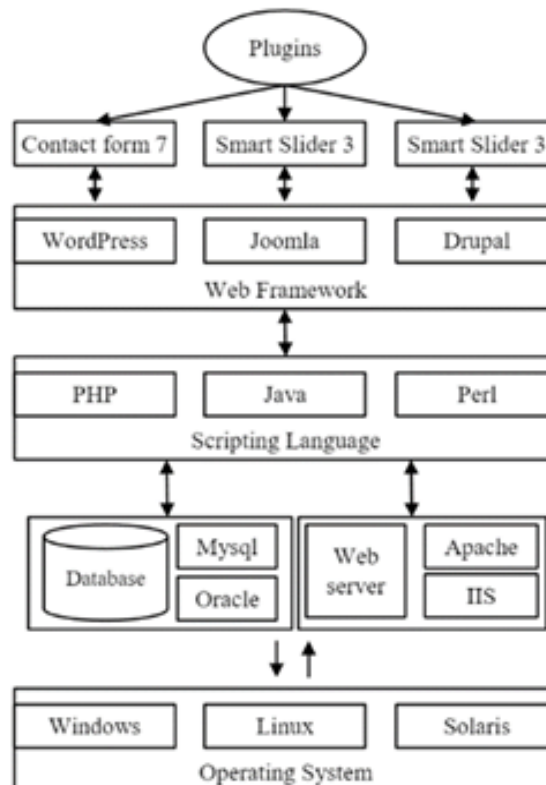


Figure 3. CMS Layered Architecture

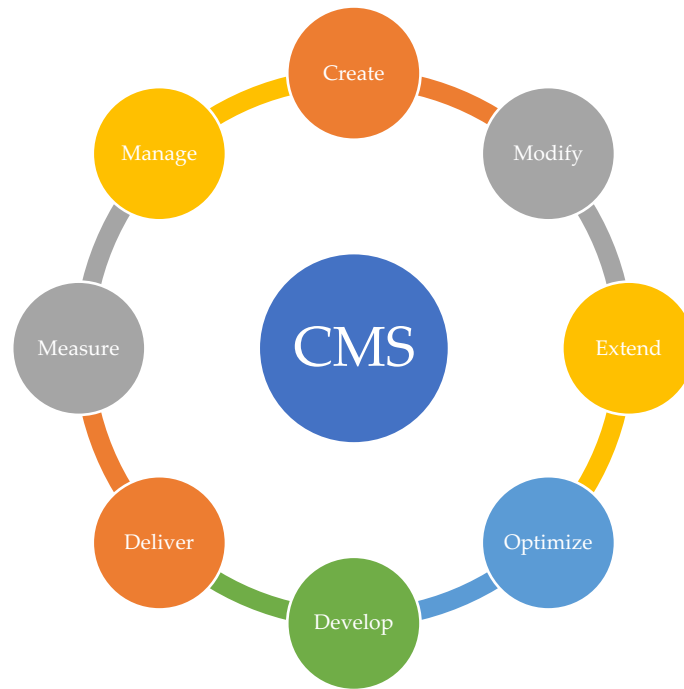


Figure 4. CMS Background

2. Literature Review

A Content Management System (CMS) software application provides the quicker and more easier website building and maintenance. Nowadays, there are multiple Content Management Systems (CMS) in use which may vary in platforms and available features. Joomla, WordPress, and Drupal are the top three CMSs [24].

All three platforms are set with the variety of the features, functionality, flexibility, and usability. They are open source and built of PHP and MySQL. This article discusses and compares the three most popular content management systems: Joomla, Drupal and WordPress. Each CMS is evaluated by the study for its usage dynamics, efficiency, layout, good integration with other systems, security and search engines visibility. This study seeks to provide individuals or organisations with the necessary guidance and information to choose the most suitable CMS for their case. On the contrary, it also addresses the way of having a suitable CMS that can enable user to facilitate different functionalities on the website via the use of plug-ins and widgets [12] [19].

WordPress, Drupal and Joomla are three different open source content management system are evaluated in this study. Usability, reliability, security, ease of installation and other features are used for evaluation [25] [28]. Website build in each CMS were used to evaluated and conducted the comparison. Different types of vulnerabilities also be invested in order to suggest the procedures and plugins to prevent them [13] [30]. Drupal is a open source and adaptable CMS for managing information on websites build in PHP. This CMS can be used to create various types of website including ecommerce website, portals and magazines [26]. A module a is collection of functions that give the system a specific capability. Drupal provides a very useful feature to activate or inactivate the installed modules. To use the installed Drupal module, it must be activated. A disable module cannot extend the functionality of Drupal CMs. Drupal modules can be divided into supplementary and essential modules [14].

A measurable number of web application developers participate in the maintenance and management of the Drupal community, which core responsibly is to support Drupal's stability and integrity [24]. The wide range of content of different sites can easily be managed by Drupal effectively. Drupal's usage begun by commercial companies, universities, forums, social media networking sites and large-scale enterprise portals to make their only presence and make it more popular in last few years. Large number of ecommerce companies also begin to use Drupal for making ecommerce stores [15][18]. There are many CMS available in market with different features. The primary goal of this research is to Assess usability, design scalability, performance, search engine visibility, security and compatibility with other CMS of each Content Management System [16] [27].

3. Method

This research offers a systematic way to assist stakeholders in selecting an appropriate Content Management System (CMS) for website requirements. The approach comprises the following essential steps:

3.1 CMS Selection Framework

Readers can use our checklist and scoring system-based framework to make systematically decision making by comparing and evaluating different options of CMS, which assures a structured and intended methodology to CMS selection [17].

3.2 Case Studies and Examples

Different tangible case studies, were accumulated to present practical and useful insights. These case studies provide a solid comprehension of how various systems operate in different scenarios [20].

3.3 Data Collection and Analysis

We have collected data of features, strengths, weaknesses, and user feedback of mentioned CMSs to make our comparison comprehensive. Collected data was analyzed to created recommendations and information comparison [22].




3.4 Expert Input



















We have gathered input from CMS professionals and web development experts. Their opinion and recommendations were merged into the guide to make it credible and practical [21]. The aim of this comprehensive approach is to provide a structured and reliable resource for content management system selection in website development field. This methodology assures that the guide is valuable, implementable and informative by integrating research and expert insights.

4. Results and Discussion

We collected and compared different characteristics and features of WordPress, Drupal and Joomla. There is a list of features for all these three CMS, that's why we consider the important factors only. We draw a table that compares the all features of three CMSs. Below is the comparison table based on features for WordPress, Drupal and Joomla.

Table 1. Comparison of WordPress, Drupal and Joomla

| Names | WordPress 6.3 | Drupal 10 | Joomla 4.34 |
|--|---|---|---|
| |  |  |  |
| Flexibility in structure | ● | ● | ● |
| Flexibility in utilization | ● | ■ | ■ |
| Flexibility in Graphical User Interface (GUI) design | ● | ● | ● |
| Installation and hosting convenience | ● | ■ | ● |
| Simplicity in setting up a website | ● | ■ | ● |
| Ease of configuration for intricate websites | ● | ■ | ● |
| User-friendly content editor | ● | ■ | ■ |
| User-friendly site administration | ● | ■ | ■ |
| Ease of access | ○ | ○ | ■ |

| | | | |
|----------------------------|--|---|--|
| Search Engine Optimization |  |  |  |
| Integration |  |  |  |
| Support |  |  |  |
| Community Cohesion |  |  |  |
| Security |  |  |  |
| | Fair  | Solid  | Excellent  |

| Comparison | WordPress | Drupal | Joomla |
|--|--|---|---|
| Date of Initial Launch | May 27, 2003 | Jan 15, 2001 | Aug 17, 2005 |
| Number of fundamental versions | 6 | 10 | 4 |
| Quantity of Plugins / Modules / Extensions | 60,000+ | 38000+ | 7900+ |
| Number of available themes | 40,000 + | 1900+ | 900+ |
| SEO | Excellent SEO | GoodSEO | Basic SEO |
| Ideal application purposes | It is utilized for developing informative websites or e-commerce stores. | Enterprise-level systems and intranet applications. | Suitable for constructing online forums and comprehensive product catalogues. |
| Downloads | 140million + | 15 million + | 30 million + |
| Percentage of market dominance | 58.8% | 4.7% | 7.1% |
| Support for Database Management Systems | MySQL | MySQL, PostgreSQL, SQLite | MySQL, PostgreSQL, SQLite, SQLServer, SQLAzure |
| Support for E-commerce functionality | Yes, in conjunction with WooCom-merce. | Yes, when integrated with Drupal Commerce. | Yes, when utilized alongside VirtueMart. |

From the comparison, it's clear that each CMS is good at some things while bad at others. WordPress differentiates itself through its robust plugin architecture and user-friendly interface which is also used by nearly 40% of all the websites on the internet. Joomla being more simple and user-friendly has a smaller market share, but it is specifically useful for online forums and product catalogues. While Drupal is good for complex enterprise systems and intranets, WordPress focuses on ease of use and personal websites.

The owners of the companies need to correlate the data which is in trend and the results they receive from the evaluation with their own unique needs to make the right decision. Since the technology is quickly developing, you should select a CMS addressing both the present and long-term needs of scalability and adaptability. In general, WordPress, Drupal, and Joomla all have their pros and cons, and the last decision should largely be related to the specific requirements of the website to be created.

5. Conclusion

There are largest number of add-ons and plugins available now a day for content management systems (CMS), which can play a very important role in delivering targeted information to those website

visitors interested in their products and services. However, choosing a suitable CMS can be a tough job because evaluation and trending data vary time to time.

As per the findings of this student, WordPress, Drupal and Joomla all these three CMS's have their own advantages and disadvantages. WordPress plug-ins architecture, user interface, and its basic good functionality makes it beneficial. Due to rapid change of technology, Joomla needs few major capabilities. Drupal is a superb choice, and it's easy to manage and making simple and intermediate website. At the end business owners can make a good decision by aligning trending, evaluations data with their needs and select the appropriate CMS that will assist their website designing strategy in long run.

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