Comparative Study: Open source CMS

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Abstract: This paper explores various features of content management system. This includes a comparison of various open source CMS based on their features. Depending on the features one can find out the suitable open source CMS for their application. Here 13 open source CMS with their 10 main features has been studied like System Requirements, support, security, commerce etc.

Index Terms: Content Management tools, features, Content.

I.   INTRODUCTION

A study of 13 different open source CMS and their features are covered in the paper. It becomes easier to find out the best content management system from a user and developer's point of view. Today, an increasing number of open source solutions available in the market and become valid alternatives to closed solutions. Many companies have already been forced to either remove or release as open source code borrowed by developers without properly complying with licenses.

II.   THE ROLE OF OPEN SOURCE SOFTWARE

Open source software plays an important role in applications by allowing its basic software elements - virtual machine images and appliances to be created from easily accessible components. This has an amplifying effect:

- Developers, for example, can create a database appliance by layering MySQL software onto an instance of the Open Solaris Operating System and performing customizations. Appliances such as these enable applications to be created, deployed, and dynamically scaled on demand.
- Open Source Survey: In this paper we compared 13 open source CMS. These CMS has been compared based on the following 10 main features: System Requirements, Security, Support, Ease of Use, Performance, Management, Interoperability, Flexibility, built-in application, Commence. We have rated each feature depending on the features it is supporting. The rating has been taken out of 5.
- We recorded totally 10 main features for a CMS and compared those features in these 13 CMS and generated a small report which feature can be taken from which CMS.
- Alfresco, TYPO3, eZ Publish, WebGUI, DotNetNuke, Drupal, Xaraya, XOOPS, WordPress, Cyclone3, Daisy, Bricolage, b2evolution.

Following Table Represents ratings of 13 CMS.

[1] Alfresco, [2] TYPO3,[3] eZ Publish, [4] WebGUI, [5] DotNetNuke,[6] Drupal, [7] Xaraya,[8] XOOPS, [9] WordPress,[10] Cyclone3,[11] Daisy, [12] Bricolage, [13] b2evolution

III.   FEATURES AVAILABILITY

- **System requirement:** Maximum features based on the following requirement such as application Server, Approximate Cost, Database, License, Operating System, Programming Language, Root Access, Shell Access, Web Server are supported by the **TYPO3 [2]** cms.
- **Security :** Most of the security features such as Audit Trail, Captcha, Content Approval, Email Verification, Granular Privileges , Kerberos Authentication, LDAP Authentication , Login History, NIS Authentication, NTLM Authentication, Pluggable Authentication, Problem Notification, Sandbox, Session Management, SMB Authentication, SSL Compatible, SSL Logins, SSL Pages, Versioning etc. are provides by **Alfresco [1]**.
- **Support:** Support for the following features Certification Program, Code Skeletons, Commercial Manuals, Commercial Support, Commercial Training, Developer Community, Online Help, Pluggable AP, Professional Hosting, Professional Services, Public Forum, Public Mailing List, Test Framework, Third-Party Developers, Users Conference are equally provided by **Alfresco [1],eZPublish [3] and DotNetNuke [5].**
- **Ease of Use:** Ease of use features such as Drag-N-Drop Content, Email To Discussion, Friendly URLs, Image Resizing, Macro Language, Mass Upload, Prototyping, Server Page Language, Site Setup Wizard, Spell Checker, Style Wizard, Subscriptions, Template Language, UI Levels, Undo, WYSIWYG Editor, Zip Archives. The best product for these features is **Alfresco [1], WebGUI [4]**.
- **Performance:** The best performance based on the below features Advanced Caching, Database Replication, Load Balancing, Page Caching, Static Content Export are supported by **Alfresco [1] ,eZPublish [3] WebGUI [4].**
- **Management:** The following managing features such as Advertising Management, Asset Management, Clipboard, Content Scheduling, Content Staging, Inline Administration, Online Administration, Package Deployment, Sub-sites / Roots, Trash, Web

COMPARATIVE STUDY OF CONTENT MANAGEMENT TOOLS

FEATURE	Tool1 Alfresco	Tool9 TYPO3	Tool8 eZ	Tool10 WebGUI	Tool6 DotNetNu	Drupal	Tool7 Xaraya	Tool12 XOOPS	Tool13 WordPres	Tool11 Cyclone3	Tool4 Daisy	Tool5 Bricolage	Tool3 b2evoluti	Tool2
System	3.44	4	3.88	3.33	3.67	3.56	3.55	3.4	3.72	2.7	3.3	2.8	3.5	
Security	4.5	3.71	4.1	4.15	3.86	3.55	3.67	3.4	3.41	3.4	3.3	3.2	4.	
Support	4.5	4.3	4.5	4.3	4.5	4.32	4	3.9	3.5	3.5	3.5	4.		
Ease of	4.5	4.42	3.9	4.5	4.11	3.75	3.07	3.11	3.73	2.8	2.9	2.7	2.5	1.6
Performa	4.5	4.42	4.5	4.5	4	3.7	3.5	3	3.12	3.5	3.6	2.5	1.6	
Managem	4.4	4.35	4.31	4.38	4.39	3.86	3.92	4.04	2.94	3.1	3.1	3.5	3.	
Interoper	4.4	4.05	3.79	3.78	3.79	3.69	3.28	2.85	3.8	2.7	3.2	2.3		
Flexibility	4.5	4.48	4.5	4.22	4.18	4.31	4.5	3.57	3.34	3.9	3.9	4.1	2.2	
Built-in	4.3	4.23	3.87	3.76	3.8	3.9	3.5	4.07	3.58	2.9	2.5	2.2	2.1	
Commerc	4.5	3.53	3.64	3.11	2.67	4.04	2.98	4.06	2	2.8	2	2.		
	4.35	4.15	4.1	4	3.89	3.87	3.6	3.55	3.32	3.13	3.08	3.01	2.52	

Table I

Statistics, Web-based Style/Template, Management, Web-based Translation Management, Workflow Engine have been considered. The best available product for these features is **Alfresco [1]**. Alfresco is lagging in Advertising Management. Amongst the considered open source content management tools, no tool is satisfying the entire feature. A credit for Alfresco is 4.4.

- **Interoperability:** It supports following features Content Syndication (RSS), FTP Support, iCal, UTF-8 Support, WAI Compliant, WebDAV Support, and XHTML Compliant under interoperability. The best product which supports maximum interoperability features **Alfresco [1]**.

- **Flexibility:** Flexibility in terms of CGI-mode Support, Content Reuse, Extensible User Profiles, Interface Localization, Metadata, Multi-lingual Content, Multi-lingual Content Integration, Multi-Site Deployment, URL Rewriting. The maximum flexibility provided by the **Alfresco [1], TYPO3 [2], eZPublish [3], Xaraya [7].**

- **Built-in Applications:** Following built-in applications has been considered Blog, Chat, Classifieds, Contact Management, Data Entry, Database Reports, Discussion / Forum, Document Management, Events Calendar, Events Management, Expense Reports, FAQ Management, File Distribution, Graphs and Charts, Groupware, Guest Book, Help Desk / Bug Reporting, HTTP Proxy, Weather, Web Services Front End, Wiki, User Contributions, Time Tracking etc. The best product which supports the maximum features **Alfresco [1], TYPO3 [2]**.

- **Commerce:** The most affecting economic features with respect to business are Affiliate Tracking, Inventory Management, Pluggable Payments, Pluggable Shipping, Pluggable Tax, Shopping Cart, Subscriptions, Wish Lists.The best product which support the maximum features **Alfresco [1],XOOPS [8]**.

IV. FEATURE STUDY

Following table will displaying the features of each content management tool.

- Different system requirement feature has been mention here to compare the distinct tools. Based on that, is easy to choose the content management tool based on the application's requirement.
- Security issues has been compared here of all those considered tools
- Some of the support features such as Code Skeletons, Commercial Manuals, Commercial Support, Commercial Training, Developer Community, Online Help, Pluggable AP, Professional Hosting, Professional Services, Public Forum has been compared
- Ease of use with respect to customer's point of view has been compared.
- Different performance criteria such as Database Replication, Load Balancing, Page Caching etc. Are compared.

- Most important feature such as management is being compared.
- Interoperability issues are considered.
- Commerce is compared.

Table I displays the rating of all the considered open source content management tools. From the table it can be clearly conclude that Alfresco is the highest rating product amongst all.

Table II and Table III shows the features supported by the open source content management tools.

Following Table Represents availability of various features in the 13 CMS.

Table II

FEATURES	8. XOOPS System	9. WordPr Syste	10. Cyclo Syste	11. Daisy Syste	12. Bricolag System	13. b2evol Syste
System	**System**	**Syste**	**Syste**	**Syste**	**System**	**Syste**
Application	PHP 4	Apache	mod_f	built-in	mod_perl	
Approximate	Free	Free			Open-	Free
Database	MySQL	MySQL	MySQ	MySQ	PostgreS	MySQL
License	GNU	GNU	GNU	Apach	BSD(Mod	GNU
System	Any	OS	FreeB	Any	(Linux,	Any
Programming	PHP	PHP	Perl,	Java	Perl 5.8+	PHP
Root Access	Yes	No	Yes	No	Yes	No
Shell Access	Yes	No	Yes	No	Yes	No
Web Server	Apache,	Apache	Apach	Any	Apache	Apache
Security	**Securit**	**Securit**	**Secur**	**Secur**	**Security**	**Securit**
Audit Trail	Limited	Limite	Yes	Yes	Yes	No
Captcha	Free	No	Yes	No	No	No
Content	Yes	Free	Yes	Yes	No	No
Email	Yes	Yes	Yes	Yes	No	No
Granular	Yes	Yes	Yes	Yes	Yes	Yes
Kerberos	No	No	No	No	No	No
LDAP	Yes	No	No	Yes	Yes	Limited
Login History	Free	Free	Yes	No	No	Yes
NIS	No	No	No	No	No	No
NTLM	No	No	No	No	No	No
Pluggable	No	Yes	No	Yes	No	No
Problem	Limited	Free	Yes	No	No	No
Sandbox	Yes	Limited	Yes	Yes	Yes	No
Session	Limited	Free	Yes	No	No	No
SMB	No	No	No	No	No	No
SSL	Yes	Yes	Yes	Yes	Yes	Yes
SSL Logins	Yes	Free	Yes	Yes	Yes	No
SSL Pages	Yes	Limited	Yes	Yes	Yes	No
Versioning	Yes	Free	Yes	Yes	Yes	No
Support	**Suppor**	**Suppor**	**Supp**	**Supp**	**Support**	**Suppo**
Certification	Yes	No	No	No	No	No
Code	No	No	No	No	No	No
Commercial	Yes	No	No	No	No	No
Commercial	Yes	No	Yes	Yes	No	No
Commercial	No	No	Yes	Yes	Yes	No
Developer	Yes	Yes	Yes	Yes	Yes	No
Online Help	Limited	Yes	Yes	No	Yes	No
Pluggable API	Yes	Yes	No	Yes	Yes	No
Professional	Yes	Yes	No	Yes	Yes	No
Professional	Yes	No	No	Yes	Yes	No
Public Forum	Yes	Yes	No	No	Yes	No
Public Mailing	Yes	Yes	Yes	Yes	Yes	No
Test	No	Yes	Yes	Yes	Yes	No
Third-Party	Yes	Yes	Yes	Yes	Yes	No
Users	Yes	Yes	No	Yes	Yes	No
Ease of Use	**Ease of**	**Ease**	**Ease**	**Ease**	**Ease of**	**Ease**
Drag-N-Drop	Free	Yes	No	No	No	No
Email To	No	No	Limited	No	No	No
Friendly URLs	Free	Yes	Yes	Yes	Yes	Yes
Image	Free	Limited	Yes	Yes	Yes	Yes
Macro	Limited	Free	No	Yes	Yes	Yes
Mass Upload	Free	Free	No	Costs	No	No
Prototyping	No	No	No	No	No	No
Server Page	Yes	Yes	No	Yes	Yes	No
Site Setup	No					
Spell Checker	No	Free	No	No	Free Add	Yes
Style Wizard	No	No	No	No	No	No
Subscriptions	Yes	Yes	Yes	Yes	Yes	No
Template	Yes	No	No		Yes	No
UI Levels		No	Yes		No	No
Undo	Limited	Free	Yes	Yes	Yes	No
WYSIWYG	Free	Free	Yes	No	Free Add	No
Zip Archives	No	Free	No	No	No	No
Performance	**Perfor**	**Perfor**	**Perfo**	**Perfor**	**Performa**	**Perfor**
Advanced	No	Free	Yes	Yes	No	No
Database	No	No	No	No	No	No
Load	No	No	No	No	No	No
Page Caching	Yes	Free	Yes	Yes	No	Yes
Static Content	No	Limited	No	No	Costs	No
Management	**Manage**	**Manag**	**Mana**	**Mana**	**Manage**	**Manag**
Advertising	Yes	Limited	No	Yes	No	No
Asset	Yes	No	No	No	No	No
Clipboard	Yes	No	No	Yes	No	No
Content	Yes	Free	Yes	No	No	Yes
Content	Limited	No	No	Yes	No	No
Inline	Yes	No	No	Yes	No	No
Online	Yes	Yes	No	Yes	Yes	Yes
Package	Yes	No	No	Yes	Yes	No
Sub-sites /	Free	No	Yes	Yes	Yes	No
Themes /	Yes	No	Yes	No	No	Yes
Trash	No	No	Yes	No	No	Yes
Web	Free	Free	Yes	No	No	Yes
Web-based	Yes	Yes	No	No	No	No
Web-based	Free	Limited	No	Yes	No	No
Workflow	No	No	No	No	Yes	No
Interoperabili	**Interop**	**Interop**	**Intero**	**Intero**	**Interoper**	**Interop**
Content	No	No	No	No	No	No
FTP Support	No	Yes	Yes	Yes	Yes	No
iCal	No					No
UTF-8	Limited	Yes	No	No	No	No
WAI	No	Limited	No	No	No	No
WebDAV	No	No	No	No	No	No
XHTML	No	Yes	Yes	Yes	Yes	No
Flexibility	**Flexibili**	**Flexibil**	**Flexi**	**Flexib**	**Flexibilit**	**Flexibi**
CGI-mode	No	No	Yes	No	No	No
Content	Free	No	No	No	Yes	No
Extensible	No	No	No	No	No	Yes
Interface	Yes	Yes	Yes	Yes	Yes	Yes
Metadata	Free	Yes	No	Yes	Yes	No
Multi-lingual	Free	Free	Yes	Yes	Yes	No
Multi-lingual	Free	Free	Yes	Yes	Yes	No
Multi-Site	No	No	Yes	Yes	Yes	No
URL	Yes	Yes	Yes	Yes	Yes	No
Built-in	**Built-in**	**Built-in**	**Built-**	**Built-**	**Built-in**	**Built-**
Blog	Free	Free	No	Costs	No	Yes
Chat	Free	Free	Free	No	No	No
Classifieds	Free	No	No	No	No	No
Contact	Yes	No	No	Costs	No	No
Data Entry	Free	No	Yes	Costs	No	No
Database	Free	No	No	Costs	No	No
Discussion /	Yes	Free	No	Costs	No	No
Document	Free	No	No	No	Yes	No
Events	Free	Free	No	Costs	No	Free
Events	Free	No	No	No	No	No
Expense	No	No	No	No	No	No
FAQ	Yes	No	No	Costs	No	No
File	Free	Free	Yes	No	No	No
Graphs and	No	No	No	No	No	No
Groupware	No	No	No	No	No	No
Guest Book	Free	Free	No	Costs	No	No
Help Desk /	Free	No	Yes	No	Yes	No
HTTP Proxy	Yes	No	No	No	No	No
In/Out Board	No	No	No	No	No	No
Job Postings	Free	Free	No	No	No	No
Link	Yes	Yes	Yes	Yes	No	No
Mail Form	Free	No	Yes	No	No	No
Matrix	No	No	No	No	No	No
My Page /	Yes	Yes	No	No	No	No
Newsletter	Free	Free	No	No	No	No
Photo Gallery	Free	Free	Yes	No	No	No
Polls	Yes	Free	No	Costs	No	No
Product	Free	No	No	No	No	No
Project	Free	No	No	No	No	No
Search	Yes	Yes	No	No	No	No
Site Map	Free	Free	Yes	Costs	No	No
Stock Quotes	Free	No	No	Costs	No	No
Surveys	Free	Free	Yes	Costs	No	No
Syndicated	Yes	Yes	Yes	Yes	No	No
Tests /	Free	Free	No	Costs	No	No
Time	Free	Free	No	No	No	No
User	Yes	Yes	No	Yes	No	No
Weather	Free	Free	No	No	No	No
Web Services	Free	No	Yes	Costs	No	No
Wiki	Free	Free	No	Yes	No	Free
Commerce	**Comme**	**Comm**	**Com**	**Com**	**Commer**	**Comm**
Affiliate	Yes	No	Yes	No	No	No
Inventory	Free	No	No	No	No	No
Pluggable	Free	No	No	No	No	No
Pluggable	Free	No	No	No	No	No
Point of Sale	No	No	No	No	No	No
Shopping Cart	Free	Yes	Yes	No	No	No
Subscriptions	Free	No	Yes	No	No	No
Wish Lists	Free	No	No	No	No	No

Table III

V. SURVEY

From the open source survey conducted it was clear that alfresco was clearly ahead in terms of technologies it was built on and the features that it supported. [14]Alfresco is a platform for Enterprise Content Management (ECM). ECM describes many content based technologies like:

- Document Management (DM): Capturing, organizing, and sharing binary files. These files are typically produced from office productivity software, but the scope of the files being managed is unlimited.
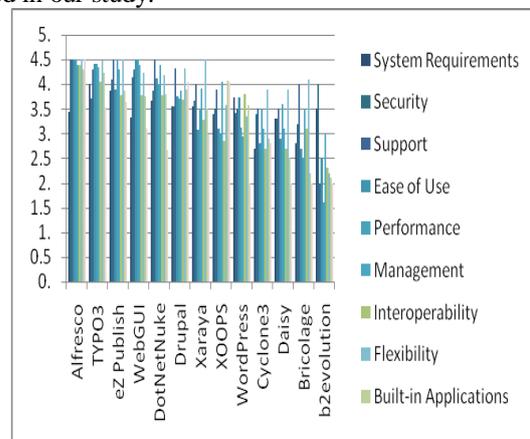
- Web Content Management (WCM): Managing files and content specifically intended to be delivered to the Web. The main purpose of WCM is to enable non technical users to be able to easily publish their own web content.

- Digital Asset Management (DAM): Managing graphics, video, and audio. Functionality specific to the needs of working with rich media such as thumbnailing, transcoding, and editing can be easily handled.

- Records Management (RM): Managing content as a legal record. Like DAM, RM starts with DM and adds functionality specific to the world of RM such as retention policies, records plans, and audit trails.

- Imaging: This includes capturing, tagging, and routing images of documents from scanners.

Alfresco is built on state-of-the-art open source components such as Spring, Hibernate, Lucene, JSF – often the components of choice website developers today. It offers one repository for the whole team. This repository is a modern platform for Web Content Management 2.0.

This new open source WCM platform delivers significant benefits in the areas of:
Time – Weeks to hours for change sets to be   deployed
Cost – One Virtualization Server
Quality – One repository and one virtualization preview
Compliance – Common Governance Framework. One virtualization server for past, present and future Service Oriented Auditing, Migration – Simple file based migration

VI. RESULT
This graph denotes the availability vs features. From the availability of various features we can clearly identify an optimum Content management system. These features have been identified by studying and comparing all 13 CMS listed in our study.

V. CONCLUSION
It can be clearly observed that Alfresco is most suitable open source CMS which fulfill the maximum features. Alfresco is the best available open source CMS.

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