To Study and an Evaluation of Open-Source LMS for e-Learning courses

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Abstract

Due to growth in the e-Learning area evolution is seen in the education sector e-Learning is the most effective mode of education by providing learner convince to access the study material anytime, anywhere according to their Convenient. LMS and LCMS is the backbone of any e-learning system. Learning Management System and Learning Content Management System is software tool essential to the deployment and management of e-learning courses. In e-Learning area there are various proprietary as well as Open Source LMS exists in the market. In the past few years there are numbers of open source LMS emerged as alternative to the proprietary LMS. In this paper we concentrated on the open source LMS Moodle, Sakai, eFront and Forma LMS. This will help the administrators and educators and organization in choosing of learning management system that is most suitable for their needs**.**

Keywords—LMS, Open source, Moodle.e-learning.

I. INTRODUCTION

E-Learning is the new generation's learning methodology which facilitates learner's flexibility to learn at their own pace, place & time. The e-learning, in fact is learning or training that is prepared, delivered or managed using a variety of learning technologies and which may be deployed either locally or globally.A Learning Management System (LMS) is a software system that provides tools to support a learning/teaching process. LMS provides communication tools such as video-conferencing, email, evaluation tools such as survey, quizzes, or grading tools. The use of a LMS is very interesting for any kind of learning, but in the case of distance learning, there is a wide variety of LMSs, both open-source such as Moodle, Sakai and proprietary such as Blackboard. A key point with regard to the use of a LMS is which LMS should be used for each specific case. This decision must be made taking into account objective data such as the levels of use of the hardware on which the LMS will be hosted and subjective information such as the experience and opinion of users of the system.

In this paper we will evaluate the common feature of four widely-used open-source LMSs, namely Moodle, Sakai, eFront and Forma Lms.

II. LEARNING MANAGEMENT SYSTEM

The Learning Management System or LMS is the backbone of e-learning which provides the essential components required for hosting of the e-learning contents

The Learning Management System is a software application which is used to automate the administration, tracking and reporting the education and training activities. e-Learning is now become the primary delivery mode of the education in higher education sector. The course related activity such as lecture, online assignments, discussion and quizzes are available to the students through this system. It provide common platform to both teacher and student for online learning and training. For user point of view LMS must be interoperable and integrate well with existing systems. It should be flexible and adaptable to changing pedagogical needs. It must be cost effective, scalable and sustainable.

A most general feature of any e-Learning system has

1. Centralise and automate administration
2. Uploading and publishing of course content.
3. Delivery of course content over web-based system
4. Interaction between students and teacher, such as instant messaging, email, and discussion forums.
5. Assessment and Grading

A. Types of LMS

There are basically two types of e-Learning Management System available for the users.

Open Source e-Learning System: The open source Learning Management System is a software which source code is available to public. Which allow to anyone to copy and make changes without any restriction .The Open source LMS which source code is freely available. It means that we can access the code customized according our need without and license and copy right issue. For high level of customization according to our requirements. The open source e-Learning System are Moodle, eFront, sakai etc.

Proprietary e-Learning System: Proprietary LMS software is developed and owned by a profit-generating entity that does not let users access and make adjustments to the computer code that determines the structure of the software and the activities it can execute. This system is available on payment of the license fee for the use of the system. Source code and customization is restricted to the organization which develop the system. The example of proprietary LMS is Blackboard, Courseera, Desire2Learn etc.

III. WHY USE AN OPEN SOURCE LMS

Now a day's open Source System is as much as popular as any proprietary software .For example Joomla,Drupal,Moodle is as much as popular to the proprietary software

Like Blackboard, WebCT. There are some criteria for the selection of any system is Budget, Stability , Flexibility , Usability and Adaptability to various cross platforms and hardware like mobile, internet, tablet pcs, etc

Most of the open source LMS full fill the above criteria due to cost effectiveness open source LMS can be used.

A. Benefit for open source LMS:

- Cost effective solution
- No license or copyright issue.
- Large community support
- Code is available open to the user
- Multilingual support
- Most of open source LMS are platform independent

These are the few reason that education sector prefer cost effective open source LMS for the e-Learning material design, development and publishing.

IV. REVIEW OF OPEN SOURCE LMS

In this section, we briefly review the open-source e-learning platforms considered in this work for comparison from the user and technical point of view.

A. Moodle

[3] Moodle (modular object-oriented dynamic learning environment) is a good alternative to proprietary commercial online learning solutions, and is distributed free under open source licensing. An organization has complete access to the source code and can make changes if needed. Moodle's modular design makes it easy to create new courses, adding content that will engage learners. It is free web based application available to the educator to create the online line learning courses effectively. Moodle.org is the community site where Moodle is made and discussed. There are various features available in Moodle such as Forums, Wikis, Databases and online student tracking, Grading and many more to build richly collaborative communities of learning around their subject matter, while others prefer to use Moodle as a way to deliver content to students (such as Standard SCORM packages) and assess learning using assignments or quizzes.

B. Sakai

[2] Sakai LMS is a community of academic institutions, commercial organizations and individuals who work together to develop a common collaboration and Learning environment. Sakai is also a free, community source, educational software platform distributed under the Educational Community License (a type of open source license). Sakai is used for teaching, research and collaboration. Systems of this type are also known as Course Management Systems (CMS), Learning Management Systems (LMS), or Virtual Learning Environments (VLE).The Sakai Project's software is a Java- based, service-oriented application suite that is designed to be scalable, reliable, interoperable and extensible.

C. eFront

[5] eFront has been designed to minimize the clicks to go from one point of the interface to another. The sidebar

helps as a central navigation or search point throughout the system.

The use of AJAX technology minimizes the need to transfer data between the server and the client improving the system response time and the users' experience. eFront comes with a complete set of features to create content, tests, assessments, track progress, issue certifications and dozens of add-ons to support wikis, blogs, youtube videos, picture lists F.A.Qs, external links etc. It has also been tested and improved from a wide community of users throughout the world that is very active and helpful. In all aspects,eFront is a mature system that has been built to offer a rich learning experience, to be better than open-source systems and at the same time more effective than other professional learning solutions. eFront is certified for its compliance with SCORM standard.

D. Forma Lms

[1] Forma Lms is an open-source, web-based elearning platform (Learning Management System - LMS), used to manage and deliver online training courses. Forma LMS was **awarded with best open source e-Learning Solution award.** It's based on a network of companies that support its development and it's focused on corporate training needs, rather than on academic needs as many other open-source projects forma Lms is an open-source, web- based elearning platform (Learning Management System - LMS), used to manage and deliver online training courses. It's based on a network of companies that support its development and it's focused on corporate training needs, rather than on academic needs as many other open-source projects.

V. COMPARISON OF LMS FEATURE

In this study we generally consider four open source LMS on the basis of feature to choose the right system. Apart from authoring of content other advance feature like video conferencing, Talent Management, SCORM standard support is compared in this study.

a) *System Requirement***:** To run any software we needs certain hardware components or software resources on a computer .It is termed as system requirement. For Sakai which is develop in java we Tomcat or other web server which compatible to run java application. And for Moodle,eFront, Forma lms developed in PHp so we require web server which will support php application.

b) *Multiple languages support*: Multilingual support is very crucial for any LMS. All the LMS are supported in more than one language. The highest number of language support is available in Moodle.

c) *User Authentication: Authentication* is the process which allows a *user* to login to the system. All the four LMS has this feature available.

d) *Content authoring editing tool:* It is a software package which is used to create and package e-learning content deliverable to end users.

i) Survey and Support Forum: It is most important aspect of any open source system. All the four LMS has this feature.

ii) *Searching*: Used to search the content in the system .All the four LMS has this facility.

e) *Video Conferencing*: Conducting a *conference* between two or more participants at different sites by using computer networks to transmit audio and *video* data. This is very important for virtual learning or distance learning environment .Sakai and Forma Lms has this feature.

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f) *SCORM standard***:** is an international standard for tracking E-Learning activities. Any system is SCORM compliance means that content put in one system, may be transferred without a problem into another online learning system.

g) *Talent Management System*: This system used for manage a list of all the skills, attitudes, knowledge or certifications needed in the organation. Organize company roles, manage competencies, and monitor your user's growth with built-in skill gap analysis.

A.Figures and Tables

LMS	Sakai	Moodle	eFront	Forma Lms
System Requirement	Tomcat ,Java 1.5 MySQL	Apache php MySQL	Apache Php and MySQL	Apache - PHP 5.2.x Mysql 5.0
Multiple languages support	More than 20 languages	More than 70 languages	More than 32 languages	More than 21 languages
User Authentication	Yes	Yes	Yes	Yes
Content authoring editing tool	Yes	Yes	Yes	Yes
Survey and Support Forum	Yes	Yes	Yes	Yes
Video Conferencing	Yes	no	no	Yes
Talent Management System	No	No	No	Yes
SCORM compliance	Yes	Yes	Yes	Yes
Searching	Yes	Yes	Yes	Yes
Used for	Educati on	Education	Education	corporate training and Education

Table 1

In table 1 shows the comparative analysis of the entire four open sources Learning Management System.

VI. CONCLUSION AND FUTURE WORK

From the study we concluded that all the LMS are multilingual and supported most of the feature. In this paper I concentrated on the open source LMS used for the e- Learning. This paper will be helping to decide which LMS is the most suitable for the necessities of a learning institution There is no doubt that Moodle of the widely used system but there are some feature is missing it is mostly suitable for educational institution .And also it consume more memory to run 50 Concurrent user 1GB ram is required. Among all the LMS is supported all most of the feature has good community support. It depends upon the institution need whether they want to use these LMS in classroom or training purpose. For future work we plan to do the empirical analysis of the tool and suggest the improvement in the existing system to proper utilization of the system which is useful for the learner and educators. .

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