

# OVERVIEW OF OPEN SOURCE LEARNING MANAGEMENT SYSTEMS

EDUCAUSE Evolving Technologies Committee

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## **Introduction:**

Learning Management Systems have emerged from an auxiliary role to a critical one in higher education. Current college students are technologically savvy and demand their faculty to use technology and Learning Management Systems. The consolidation of commercial learning management systems resulting from the acquisition of WebCT by Blackboard, and the resurgence of Angel and Desire2Learn in the same market, has been mirrored by a growth in popularity of open source learning management systems. Two major open source movements are increasing their share of the education space: Moodle and Sakai. This paper explores the latest trends in these two initiatives and discusses some of the most successful implementations to date in the United States and internationally. Judging by the large number of Blackboard employees who attended the 2005 Sakai Conference in Austin, Texas, open source learning management systems are of great interest to the companies marketing their commercial counterparts. Judging by the number of academic institutions which have recently vowed to deploy Sakai to consolidate their numerous learning management systems into one, this trend demands further analysis. Higher education institutions, particularly those with budget constraints, are very attracted to open source LMS because of their cost savings and more control.

## **Background of the Open Source Learning Management System SAKAI:**

On the About section on the Sakai Project web site at <http://www.sakaiproject.org>, we can learn that “The Sakai Project is a community source software development effort to design, build and deploy a new Collaboration and Learning Environment (CLE) for higher education.” It continues with “the Project began in January, 2004. The Sakai Project has its origins at the University of Michigan and Indiana University, where both universities independently began open source efforts to replicate and enhance the functionality of their existing CMSs. Soon after, MIT and Stanford joined in and, along with the Open Knowledge Initiative (OKI) and the uPortal consortium, and a generous grant from the Mellon Foundation, they formed the Sakai Project.”

Advanced Web Developer, Dimo Michailov leads Georgetown University Sakai pilot efforts. According to Dimo, "Sakai has shown a tremendous potential over the last few releases. From an administrator's perspective, a bare-bones Sakai system is relatively easy to install and setup. However, like many other open source projects in their early stages of development, there does not seem to be a comprehensive documentation on advanced topics (e.g. LDAP integration.) While many user groups and organizations have written HOW-TOs on various topics, the information is widely dispersed, usually hard to find, and not always accurate. Blackboard users comment that the Sakai user interface feels very much familiar. However, for a non-Blackboard user, the interface may be slightly intimidating at first. Comments from faculty who have tried Sakai for the first time indicate a level of uneasiness navigating the site. But similar concerns are inherent with any new user interface."

Numerous institutions are pilot-testing, customizing, and deploying Sakai. A great case study is the one at UC Berkeley. UC Berkeley has the doubtful distinction of using many learning management systems today including home-grown Courseweb, commercial products such as WebCT and Blackboard, and the open source learning management system Sakai. The academic and technical leaders of the institution are encouraging faculty members to switch to Sakai, known at UC Berkeley as bSpace. The Educational Technology Services department has put together an informative set of web pages discussing bSpace, including a comparative analysis of the available learning managements systems. These on-line materials are open to the public on the institution's web site at <http://ets.berkeley.edu/LearningSystems/CourseWeb/bSpace.html> The goal of the institution is to replace all the current systems with one institutional Sakai implementation.

An international implementation of interest is the one at the Universidad Politécnica de Valencia in Spain. In this implementation, they have not only customized Sakai to suit their pedagogical needs and technology requirements but they have also translated the interface to Spanish, and the local language, Valencian. Sakai is at the core of the institution's efforts to reach both traditional and distance learning students.

A small number of higher education institutions have gone beyond this initial phases into full-blown implementations. As of today, the two showcase examples are the University of Michigan and Indiana University. However, during their presentations at the 2005 Sakai Conference in Austin, Texas, representatives from both institutions candidly shared with the audience that they have "received a black eye" from some community members on account of some initial functionality or technology problems.

### **Background of the Open Source Learning Management System Moodle:**

On the home page of the Moodle web site at <http://moodle.org> , we find that "Moodle is a course management system (CMS) - a free, Open Source software package designed using sound pedagogical principles, to help educators create effective online learning communities. You can download and use it on any computer you have handy (including webhosts), yet it can scale from a single-teacher site to a 40,000-student University." It

follows with “Moodle has a large and diverse user community with over 100,000 registered users on this site alone, speaking 70 languages in 145 countries.”

Moodle has proven very popular in European and Latin American countries. For example, many of the institutions belonging to AUSJAL, the association of Jesuit universities in Latin America are heavy users of this technology. A few years back, these institutions were looking to implement a learning management system and realized that they could develop or continue to develop their own home-grown systems, or that they could take advantage of the maturity of the open source learning management system Moodle. This approach made sense for many of them because they have the professional teams and spirit to make technology work with limited resources and support.

### **What are the implementation challenges?**

The main question is “Are the open source Learning Management Systems as good as the commercial ones?” By comparing Blackboard, WebCT, and Sakai, using the EduTool Web site we explore that Sakai, as an open source LMS meets the quality of Blackboard and WebCT in majority of features.

Paradoxically, free software is not free. The total cost of ownership of open source software is hard to calculate. The lack of formal support mechanisms and the pioneering spirit of open source initiatives require highly skilled, motivated, and creative technical personnel

Embracing a new learning management system has high entry costs because there are few efficient migration tools. Faculty members and educational technology personnel who have invested heavily in one particular system find themselves having to redo much of their work to switch to another one. Academic leaders must consider learning management systems as strategic systems which should be upgraded annually but changed only every five to ten years.

The unchecked proliferation of learning management systems present some challenges. Many higher education institutions are finding themselves having to support several systems. Some of them are home-grown, others are commercially available, and some are vertical and hosted by information providers such as TWEN, The West Education Network, or LexisNexis Web Courses. Sakai and Moodle are the latest ingredients being added by institutions to this melting pot.

In these cases, there is clearly an inefficient use of resources committed to supporting a variety of systems. Most systems require one or most of the following resources: educational technology professionals, technical personnel, servers, contract management, training, support, security, and integration. When many systems are available to them, faculty members must learn to use more than one system and decide among them. Finally, students are forced to visit several sites to retrieve, work on, and deliver their course materials.

### **How are Open Source Learning Management Systems Evolving?**

Interoperability is one of the key developments for all learning management systems, particularly open source ones. To reap fully the benefits of a learning management system, institutions must integrate them with identity directories, internal and external web sites, portals, student information systems, library catalogs, multimedia and learning objects repositories, e-portfolios, email, calendar, instant messaging, wikis, blogs, web conferencing, and other collaboration tools. When Sakai and Moodle it is important to consider the technology platforms under which they run. This may influence the decision; for example, Sakai is written in Java and Moodle in PHP.

Finally, patent litigation, i.e. the case filed by Blackboard, Inc. against Desire2Learn, Inc. on July 26, 2006, flaring up in the learning management systems space, may impact the development and the survival of open source learning management systems. The abstract of Blackboard, Inc.'s U.S. Patent number 6,988,138 reads: "A system and methods for implementing education online by providing institutions with the means for allowing the creation of courses to be taken by students online, the courses including assignments, announcements, course materials, chat and whiteboard facilities, and the like, all of which are available to the students over a network such as the Internet. Various levels of functionality are provided through a three-tiered licensing program that suits the needs of the institution offering the program. In addition, an open platform system is provided such that anyone with access to the Internet can create, manage, and offer a course to anyone else with access to the Internet without the need for an affiliation with an institution, thus enabling the virtual classroom to extend worldwide."

### **Closing:**

Realistically, there will be several learning management systems in use at most higher education institutions for the foreseeable future. Perhaps it is time for current and new developers to work on better migration tools to attract more faculty members to their systems. It may also be time to work on an umbrella system that can act as a broker among systems, therefore unifying and simplifying access for faculty and students. Finally, all developers and implementers must continue to improve the interfaces of their products.

Higher education institutions and their faculty members must continue to investigate and experiment with new pedagogical approaches and the technologies to support them. Open source software movements are in tune with the collaborative nature and intellectual freedom characteristic of academic institutions worldwide. After all, learning management systems, particularly open-source ones, have a crucial role in closing the digital divide through education. At the same time, however, institutions must protect themselves with appropriate technical, legal, and organizational strategies against potential patent litigation.