Moodle and LAMS integration

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Abstract. LAMS (Learning Activity Management System) is a revolutionary new tool for designing, managing and delivering online collaborative learning activities. It provides teachers with a highly intuitive visual authoring environment for creating sequences of learning activities. Moodle is an open source course management system. LAMS and Moodle integration is about Moodle being able to call LAMS. LAMS is to be integrated with Moodle, with LAMS acting as either a course format or as an activity within Moodle.

Keywords. LAMS, Moodle, LMS, e-learning.

Introduction

LAMS (Learning Activity Management System) is a revolutionary new tool for designing, managing and delivering online collaborative learning activities. It provides teachers with a highly intuitive visual authoring environment for creating sequences of learning activities. These activities can include a range of individual tasks, small group work and whole class activities based on both content and collaboration. LAMS can be used as a stand alone system or in combination with other learning management systems (LMS) such as Moodle.

LAMS provides teachers with a visual authoring environment for creating, storing and re-using sequences of learning activities. Teachers drag and drop activities into the authoring interface and then join the activities together to produce a learning sequence. This workflow model is what principally distinguishes LAMS from other more content based LMS by providing teachers and learners with sequences of activities with a high level of interactivity and collaboration. LAMS has a wide range of tools designed to be used for a range of pedagogical approaches, by teachers and students with varying levels of technical expertise.

Moodle is an open source course management system. LAMS is to be integrated with Moodle, with LAMS acting as either a course format or as an activity within Moodle. The integration will be done using Moodle 1.8.2 and LAMS 2.0.4.

LAMS integrations

LAMS works well as a stand-alone e-learning system. It can also be integrated with other educational software such as a Learning Management System (LMS)/Virtual Learning Environment (VLE), or Student Management System (SMS).

For example, we can use LMS for general course administration and to provide a central webpage for our course. We can then add a link (URL) from this course page into LAMS for sequences of online activities. When students log in to the LMS, one of the links on the course page could read Click here for LAMS activities, and when students click on this link, they are taken into LAMS to choose the relevant activity sequence.

In this example, the simplest type of integration just requires to add a link (URL) on the course page to LAMS server. When students click on this link, they would need to log in to LAMS using their LAMS username and password. This type of integration is possible today with almost all web-based educational software.

A more sophisticated type of integration is where LAMS relies on the LMS to provide student details to it in the background so that students do not have to log in separately to LAMS. Similar integration is also possible for teachers so they do not need to log in separately to LAMS, and also to make it easier for teachers to author LAMS sequences and add them into the LMS course page directly.

Sophisticated integration requires two steps: (1) initial development of integration software

to link the two systems, and (2) configuration of this integration software with your local LAMS system. The second step would normally be conducted by your local system administrators. The first step is the subject of this paper.

The integration between LAMS and other educational software systems are either supported by or approved by the LAMS Foundation and LAMS International. Any software is useable that is able to integrate with LAMS.

The LAMS-LMS integration is quite straight forward. In all cases we have developed a small connecting module in the LMS that acts as a bridge between the LMS and LAMS. This *LMS LAMS Module* will have to be installed in the LMS if you want to integrate it with LAMS.

This LMS integration modules are mainly responsible for the following:
1. Work as liason between the LMS and LAMS.
2. Call the LAMS webservices to get information about sequences and classes.
3. Provide interface for LAMS Monitor and Authoring.
4. Provide the authentication for LAMS (using a hash generated on-the-fly).
5. Provide an interface for LAMS to get basic information about users.
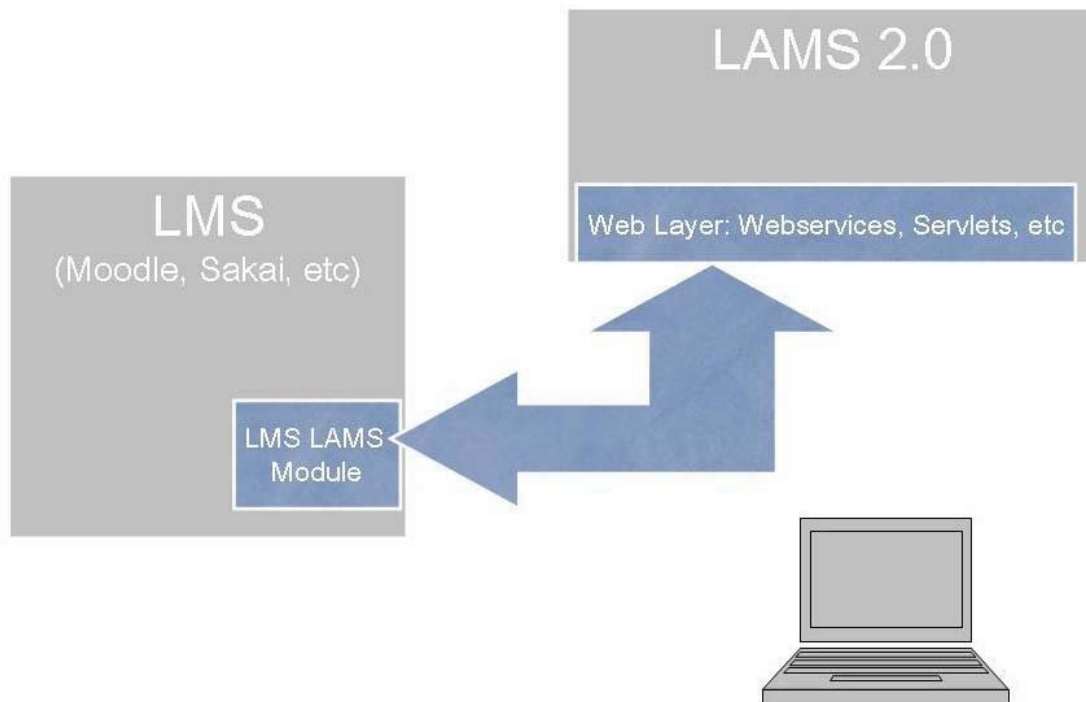6. Behaves in the LMS just like any other LMS' tool.

Figure 1. Communication bothways between LAMS and the LMS

LAMS integration with Moodle

Requirements

Moodle is an existing system, written in PHP and runs on Apache. LAMS is written in Java and requires a J2EE engine to run, including EJB support. Current LAMS runs on JBOSS 4.0.2.

JBOSS can be run with Apache, using the mod_jk2 module, so it should be possible to run Moodle and LAMS on the same server. Some more investigation may be needed here – most examples given for JBOSS use Apache2, but PHP needs a prefork MPM version of Apache 2, or Apache 1.x to run reliably.

However some institutions may wish to run with LAMS and Moodle on separate servers. Thus, an integration that is capable of working across servers would be ideal.

Getting LAMS and Moodle to communicate

LAMS and Moodle integration is about Moodle being able to call LAMS. This is the opposite approach to wrapping a third party tool up for use with LAMS.

The following areas need to be addressed by the integration:

- **User Authentication:** LAMS should not require users to log in – it should carry over the user and their privileges from Moodle. There are two aspects to this: setting up of users and session classes to support the Moodle users, and single sign-on.
- **Creation/Authoring of Sequences:** The teacher must be able to create LAMS learning designs, or sequences from within Moodle. This will require the integration of the LAMS authoring module into Moodle. A teacher must also be able to select an existing design for using in a Moodle course. This involves LAMS functionality, which is currently made available via monitoring.
- **Lesson Management:** The LAMS Moodle activity will need to trigger the automatic set up of a lesson, along with the appropriate session class, based on a design previously selected in Moodle.
- **Learner:** The integration must support a Moodle learner being able to participate in a LAMS sequence. This will involve the LAMS Moodle Activity calling the LAMS Learner module.

The integration of LAMS and Moodle will not support LAMS accessing Moodle tools. For example, if a teacher wants to run a forum within a LAMS sequence, they must use the LAMS forum, not the Moodle forum. If the teacher wishes the students to use the Moodle forum, they should put in a Noticeboard activity, which tells the students to go to the Moodle forum.

Below are the steps we need to take to get LAMS and Moodle to be integrated. In this case they are on the same server. We have LAMS 2.0.4 installed on port 8080 and Moodle 1.8.2 installed on port 80.

1. login in LAMS as a sysadmin.
2. Select the *Sys Admin* link.
3. Select *Maintain Integrated Servers*.
4. Setup the fields as appropriate. (*Figure 2.*)
    - **Id:** this is the server identification string that we will use to individually identify the LMS server that will be "talking" to LAMS.

- **Key:** this is the secret key that both systems will be used to encrypt the hash when doing authentication. Make sure you keep your server key private
- **Name:** the server name.
- **Description:** a meaningful server description.
- **Prefix:** the prefix that the usernames will have in LAMS.
- **Organisation:** Either use an existing Group within LAMS or create a new Group.
- **User Information URL:** This is the callback userinfo URL that is used by LAMS to retrieve personal information about the user from the LMS.
- **Timeout URL:** A webpage that should be displayed if the LAMS/Moodle timeout trying to talk to each other.

Figure 2. Configuration the Moodle server in LAMS

LAMS Activity Module

A LAMS Activity Module and a LAMS course format will need to be written for Moodle. They will have access to the Moodle tables, and will be responsible for meeting the requirements of a Moodle tool.

They will communicate with the LAMS server via web services. A LAMS Activity Module may be based on the sample module template available from the *Moodle.org* website or by an existing module.

A LAMS course format will also need to be written. This should be done based on the topic course format.

There will be a number of cron-based tasks that will be needed for both the activity and course module. These include

- Adding new users to a lesson, based on recent enrolments (call to a LAMS webservice, updates LAMS).
- Marking a user as left, based on recent unenrolments (call to a LAMS webservice, updates LAMS).
- Get the user's current progress in a LAMS lesson (call to a LAMS webservice). If it has changed since the last event, create a log entry for display in the recent events section.

Here are the steps how we can install the LAMS module:
1. Download the Moodle installation code from
   http://wiki.lamsfoundation.org/display/lams/Downloads#Downloads-moodle
2. Unzip the file
3. Move the *lamstwo* directory to moodle/mod/
4. Move the *lamstwo.php* file to moodle/lang/en_utf8/
5. Login as admin and go to admin. Click on the Notifications and LAMS tables will be created automatically. Go to modules and click settings for LAMS2 module and put the proper values in. (*Figure 3.*)
6. Enter the LAMS server URL, server_id, server_key and request_source.

When a teacher runs the LAMS authoring client (when adding an activity) and the teacher saves a sequence, the *Saved* message will have a button *Close and return to {request_source}*. If this button is clicked, then the LAMS authoring client will close and the list of sequences on the add activity screen will update automatically. So the *request_source* should be set to a name that your users understand e.g. *Moodle*, the add LAMS activity screen.

Figure 3. Settings for LAMS2 module

LAMS Course Format

An integrated Moodle and LAMS will behave in two distinct manners: LAMS running as course format and LAMS running as an activity in another course format.

When the teacher wishes to make heavy use of LAMS to run a number of sequences within a course, they will use the LAMS course format. In this manner, LAMS will occupy the bulk of the Moodle window and will remain in the window while the user is in the course. LAMS will probably be inserted using an IFRAME.

When using LAMS as a Course format, other Moodle activities will still be available. They will appear at the bottom of the screen. Clicking on such an activity needs to pop up a new window, with the breadcrumbs at the top altered to start with the Activity Name. That is, the entries for Moodle and the course name will need to be removed to stop the user bringing up the main course window in the popup window, as that would result in LAMS being displayed twice.

LAMS Activity

When the teacher wishes to use a few of LAMS sequences within much larger Moodle courses, they may use the activity manner. In this way, the teacher selects LAMS as they would any Moodle activity, uses an activity creation page to link across to the authoring module. Once the activity is created, the lesson is started automatically.

It will display a simple screen in the activity page, similar to the base LAMS screen. It would open a popup window for LAMS. This will allow the maximum amount of screen space for the LAMS interface. As with the standard LAMS, if the user has only one role then the appropriate interface will pop up automatically. If the user has multiple roles then the user will have to select which interface they want.

Conclusion

Moodle is a Course Management System for managing flexible communities of learners through a dynamic website. LAMS is a Learning Design system for creating and running structured sequences of collaborative learning activities. Moodle and LAMS are complementary e-learning systems.

The foundation for integration between Moodle and LAMS is Single-Sign-On, meaning that only one name and password is needed for each user across the two systems. There are two further points of integration:

1. LAMS as a Moodle Activity: this means a LAMS sequence can be added as an individual activity within a Moodle course
2. LAMS as a Moodle Course Format: this involves a new Moodle Course Format that is centred around one or more LAMS sequences

References

What is LAMS?
   http://wiki.lamsfoundation.org/display/lamsdocs/About+LAMS#AboutLAMS-whatIs
LAMS v2.0 Integration Setup Step-by-Step Guide,
   http://wiki.lamsfoundation.org/display/lams/
LAMS Administration's Guide for LAMS, 2005, LAMS International
James Dalziel, 2005: *LAMS Teacher's Guide* LAMS International
Fiona Malikoff, 2005: *Moodle Integration Report*, Version 1.2, LAMS International