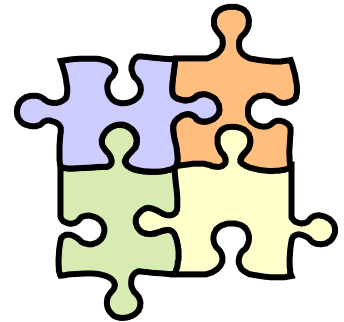


Developing Interoperable Learning Tools

George Kroner, Developer Relations Engineer



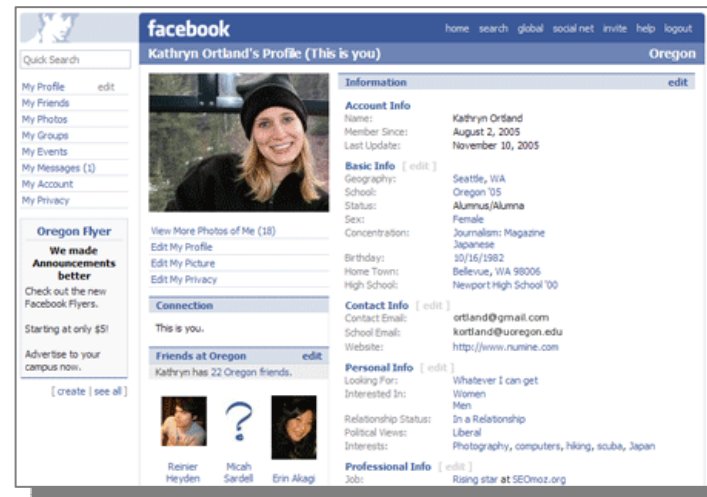
Famous Moments in Developer History

- “Developers! Developers! Developers!” (Microsoft)
- “The coolest thing to do with your data will be thought of by someone else” (JISC CRIG)
- April 30, 2007 (iGoogle Gadgets API)
- May 24, 2007 (Facebook Platform API)
- June 11, 2007 (Apple iPhone API)
- “Innovate. Integrate. Extend.” (Blackboard)

Developers make the success of a platform possible – success is not possible without providing developers with the capabilities they need to extend the platform to meet specific and varying user needs

Platforms Today

- Lots of successful platforms out there
- The most successful platforms offer developer capabilities
- Not necessarily open source, but still open systems
- Many different ideas of what open means



Plugins and App Frameworks

- **Portability**
 - Ability to reuse/repurpose across many platforms
- **Architecture**
 - Where does the app run?
 - Plugged-in vs linked-together
- Security, scalability, reliability
- Advantages and disadvantages
- Other implications



Container/Runtime

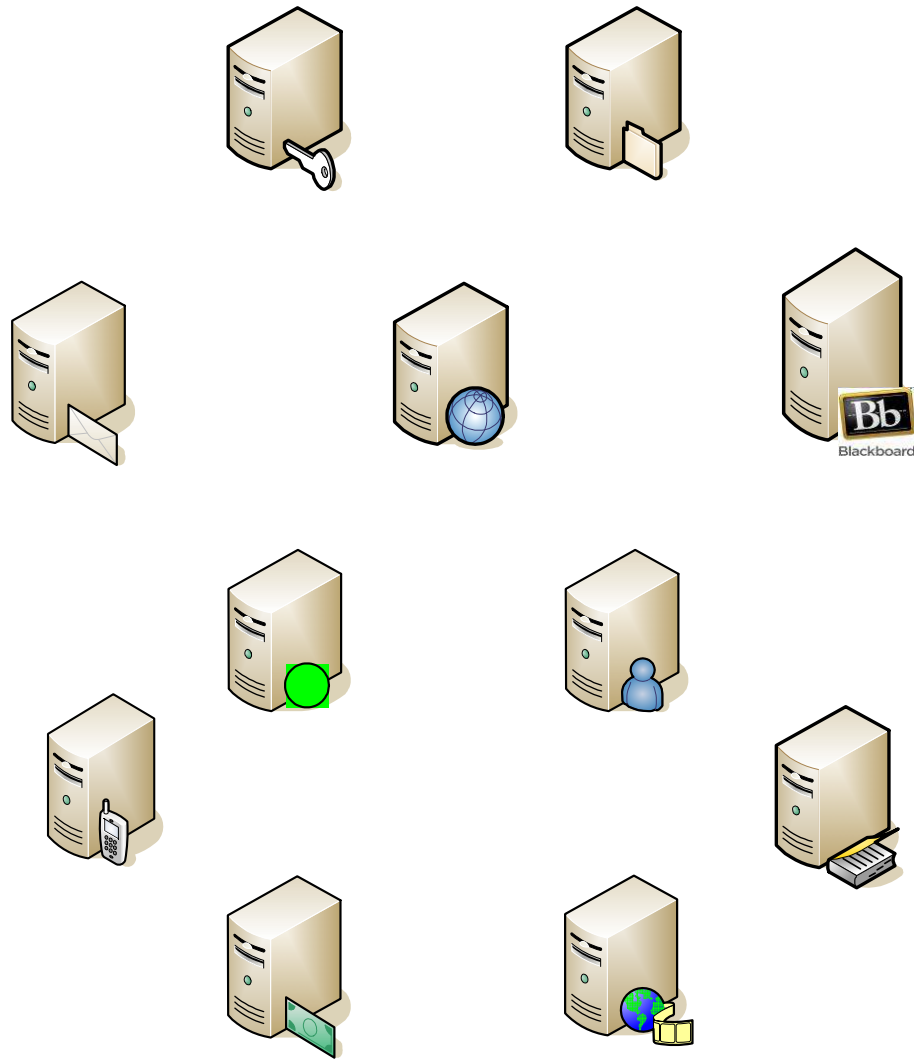
		Local	Remote
Portability	Easy	Java Webapps JSR-168/286 Portlets W3 Standard Widgets	Google iGadgets IMS LTI Apps
	Difficult	Blackboard Building Blocks Moodle Plugins Sakai Tools Apple iPhone Apps WordPress Plugins Drupal Modules Confluence Plugins	Facebook Apps

IE: Your iPhone app won't work on your Blackberry...but your JSR-168 Portlet should work on any compliant portal platform (WebSphere, BEA, uPortal, Jetspeed, Pluto)

IMS Learning Tools Interoperability

- Write your learning app once, run it anywhere (perfect world)
- Choose the application technology of your choice
(Java, .NET, PHP, The Cloud)
- Single tool can be connected to multiple VLEs
- Reduced development costs
- Reduced support costs
- Protection from poorly written plugins

Institutional Architecture



Learning Environment

Authentication

Content/media

Learning application

Mobile access/alerts

Portal

E-mail/webmail

Registration

Bursar/payment

Library

Wouldn't it be nice if everything could work together?

Common Development Scenarios

- Connect to another existing system (integration)
 - Integration and interoperability
- Streamline authentication (authentication)
 - Central authentication / Single Sign-On
- Add/extend functionality to a product (plugin)
 - Improve/enhance existing functionality
- Improve the user experience (module)
 - Portal modules or role-based information
- Automate a task (background)

Case Scenario: Blackboard Plugin Technologies

Building Blocks

- Essentially a Java webapp
- Custom code runs inside Blackboard Learn JRE
- Inherits look & feel of core application
- Supports multiple defined touch points plus additional application level definitions and portal module definitions
- Interacts with system data through all current direct access methods (APIs)
- Stores data on file system

Proxy Tools

- Based on the IMS LTI spec
- Custom code runs outside Blackboard Learn JRE
- Supports touch points at the course, system, user, and content levels.
- Interacts with system data through exposed Web Services
- Stores tool data externally

Demo time! (example GUI hooks)

The screenshot displays a user interface for a university's Learning Management System (LMS). At the top, there is a navigation bar with links for "My Places", "Home", "Help", and "Logout". Below this is a header for "Your Institution UNIVERSITY" with a logo. A secondary navigation bar includes "My Institution", "Courses", "Community", "Services", and "System Admin". The main content area is titled "My Institution" and "Notifications Dashboard". A yellow bar at the top of the main area contains an "Add Module" button and a "Personalize Page" button. The dashboard is organized into several widgets:

- Tools:** A list of links including Announcements, Tasks, View Grades, Send Email, User Directory, Address Book, Personal Information, Calendar, and Custom User Tool.
- Hot Links:** A section with the text "No items available."
- Hot Spots:** A section with the text "No items available."
- My Announcements:** A widget showing "No Institution Announcements have been posted in the last 7 days." and "No course announcements have been posted in the last 7 days." with a "more....." link.
- My Calendar:** A widget showing "No calendar events have been posted for the next 7 days." with a "more..." link.
- My Outcomes Evaluations:** A widget showing "Submissions that are pending evaluation are listed below. Click on the name of the instrument to view the instrument, or click **Evaluate** to view and evaluate the submissions." Below this are tabs for "Artifacts (0)" and "Portfolios (0)", and a message "No submissions pending evaluation."
- My Courses:** A widget titled "Courses you are teaching:" with two links: "COURSE" and "COURSE2".
- My Tasks:** A widget showing "No tasks due." with a "more....." link.
- My Organizations:** A widget showing "You are not currently participating in any organizations."

Tools and Utilities

- > [Announcements](#)
- > [Messages](#)
- > [Calendar](#)
- > [Email](#)
- > [Spell Check](#)
- > [Text Editor](#)
- > [Language Packs](#)
- > [System Reporting](#)
- > [System Configuration](#)
- > [Logs](#)
- > [Tools](#)
- > [Chalk Titles](#)
- > [Avatars](#)
- > [Notifications](#)
- > [Blackboard Scholar®](#)
- > [Custom System Tool](#)

Group Tools

- > [Collaboration](#)
- > [Custom Group Tool](#)
- > [File Exchange](#)
- > [Group Blog](#)
- > [Group Discussion Board](#)
- > [Group Journal](#)
- > [Group Tasks](#)
- > [My Scholar Home](#)
- > [Scholar Course Home](#)
- > [Send Email](#)

COURSE MANAGEMENT

Control Panel

Course Tools

- Announcements
- Blackboard Scholar®
- Blogs
- Collaboration
- Contacts
- Course Calendar
- Custom Course Tool
- Discussion Board
- Glossary
- Journals
- Messages
- SafeAssign
- Self and Peer Assessment
- Send Email
- Tasks
- Tests, Surveys, and Pools

Course Objectives

View the measurable criteria used to assess performance.

Hide Link

Custom Tool

Use Custom Tool

Hide Link

Discussion Board

Hide Link

COURSE Content
Edit Mode: ON

- +
- » COURSE
- Home Page
- Information
- Content
- Discussions
- Groups
- Tools
- Help

Content

Create Item
Build
Evaluate
Collaborate
More

- Item 1
- Item 2

- > Add Timeline
- > Add Podcast
- > Add Custom Course Content

My Places Home ? Help Logout

Your Institution UNIVERSITY

My Institution Courses Community Services System Admin

COURSE Home Page Edit Mode: ON

Home Page

Add Course Module Customize Page

Custom Course Module This is a sample course module.

My Calendar No calendar events have been posted for the next 7 days. more...

My Announcements

Content Collection: Course Content

My Institution Home ? Help Logout

Your Institution UNIVERSITY

My Institution Courses Community Services System Admin

My Institution Notifications Dashboard Personalize Page

Add Module

Tools

- Announcements
- Tasks
- View Grades
- Send Email
- User Directory
- Address Book
- Personal Information
- Calendar
- Custom User Tool

Hot Links No items available.

Hot Spots No items available.

Custom Portal Module This is a sample portal module.

My Announcements No Institution Announcements have been posted in the last 7 days. No course announcements have been posted in the last 7 days. more...

My Calendar No calendar events have been posted for the next 7 days. more...

My Outcomes Evaluations Submissions that are pending evaluation are listed below. Click on the name of the instrument to view the instrument, or click **Evaluate** to view and evaluate the submissions. Artifacts (0) Portfolios (0) No submissions pending evaluation.

My Courses Courses you are teaching: COURSE COURSE2

My Tasks No tasks due. more...

My Organizations You are not currently participating in any organizations.

Can this be of use to you?

- The Blackboard VLE is likely one of the most-used systems at your institution
- Deeper integration with your tools will give them more exposure to end-users
 - More integrated & streamlined user experience = happier users
 - More traffic to your apps ~ = more funding & resources
- Grow your reputation & gain recognition in another developer community
- Learn a new standards-based technology in the process!
- Enterprise clients get a developer license for free
- Demo accounts available:

<http://www.blackboard.com/release9/>

Blackboard...developers...say what???

- APIs & plugin framework since 2001
- Commercial VLE implementation of the IMS LTI spec
- Large community of ~2000 developers
- 300+ member Open Source Community for Educational Learning Objects & Tools
 - ~70 open source projects, many plug into Blackboard or WebCT VLEs

A graphic for OSCELOT recruitment. It features a hand in a blue suit pointing directly at the viewer through a hole in a white surface. The background is filled with faint, light blue code snippets. The word "OSCELOT" is written in large, bold, dark blue letters at the top. Below the hand, the words "WANTS YOU" are written in the same large, bold, dark blue font. Underneath that, the text "to write open source software for education!" is written in a smaller, bold, dark blue font. At the bottom, there are two website URLs: "www.oscelot.org" and "projects.oscelot.org", both in dark blue. A small red logo with the word "PROJECTS" is also visible near the bottom center.

OSCELOT

WANTS YOU

to write open source software for education!

OSCELOT

www.oscelot.org projects.oscelot.org

www.oscelot.org

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Visit: **<http://www.edugarage.com>**

