Sakai: eLearning and More

Jim Farmer
Sakai Community Liaison
EUNIS 2005
University of Manchester
21 June 2005 • Manchester UK
Sakai is ...

- **Code** – open source education software
- **Cooperation** – with others using an open standards, interoperable architecture
  
  Possible only with the appropriate architecture:
  
  A framework and “tools”

- **Community** – people working collectively with a common purpose; a self-organized effort

Brad Wheeler, “Introduction to Sakai” at the JA-SIG Summer Conference, July 13, 2005
“The University of Michigan, Indiana University, MIT, Stanford, and the uPortal consortium joined forces to integrate and synchronize their considerable educational software into a pre-integrated collection of open source tools.”
Sakai Software
Sakai products

• The Tool Portability Profile: a roadmap for writing portable software

• Software: Pooled intellectual property ... best of portal, course and research collaboration tools, quizzing and assessment ... modular and pre-integrated

• Synchronized adoptions at Michigan, Indiana, MIT, Stanford with open-open licensing
Sakai software - Sakai 2.0

Due summer 2005 will add:

- assessment tool,
- course authoring capability (Melete from Foothill College)
- improved resources tool capabilities,
- improved support for groups, roles, and security,
- tool compliance to the Sakai Style Guide, and
- continued improvement of the existing Sakai tools
Learning Management System

Courses and Projects

Tools

Activities and Content

Message of the Day:
Attention Spring 2005 Instructors
To migrate course materials from a Coursetools site into CTools, please:
1. create a new site in CTools
2. contact ctools@umich.edu and provide the URLs for both the old and the new site, along with any special instructions
We'll transfer your material and notify you when your new sites are ready.
(Support dp - Mar 22, 2005 12:16 pm)

Welcome to your personal workspace!
CTools provides each user their own individual worksite called My Workspace. Your My Workspace is a place where you can keep personal documents, and check to see what has been going on in the class and project sites you belong to. For this version, you have

Worksite Setup: Used to create worksites and revise existing sites.
Membership: Used to join sites which have been designated by the site creator as joinable
Schedule: Shows events from all class and project site schedules in which you are a member
Resources: An area where you can store personal files
Announcements: Shows recent announcements from all class and project sites in which you are a member
Web Content: A page that displays a Web page of your choice
News: A page used to display RSS news feeds of your choice
My Profile: Shows your Name and email settings in CTools
Sakai Architecture

- Sakai Application Framework – a “core” activity
- Tool Portability “Profile” – a specification for “practical” interoperability
What is an Architecture?

• Very abstract
• The part that doesn’t change
• Defines common terminology
• Usually not heavily debated
• Is not the implementation detail at all

Mark Norton, June 13, 2005
The Sakai Framework consists of three essential parts: JSF to manage presentation and implement the Style Guide, Common Services to provide essential service support, and the kernel to provide a basic web application environment.
Sakai 2.0 Tools

Chat  Discussion  Testing  Presentation

Resource  Email  Gradebook  Web Content

Announce  Syllabus  Melete  Drop Box

News  Schedule

Mark Norton, June 13, 2005
The Sakai Common Services

- Authorization
- Agent / Group
- Repository
- SuperStructure
- Type
- Uuid
- Authentication

Mark Norton, June 13, 2005
## Comparative architecture

<table>
<thead>
<tr>
<th></th>
<th>Sakai</th>
<th>JISC</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Level</strong></td>
<td>Learning Environment</td>
<td>Enterprise</td>
</tr>
<tr>
<td><strong>Component</strong></td>
<td>Sakai APIs, services</td>
<td>Web Services</td>
</tr>
<tr>
<td><strong>Integration</strong></td>
<td>Java APIs</td>
<td>XML Message</td>
</tr>
<tr>
<td><strong>Messaging</strong></td>
<td></td>
<td>SOAP</td>
</tr>
<tr>
<td><strong>Services</strong></td>
<td>Sakai version of OKI</td>
<td>JISC version of OKI</td>
</tr>
</tbody>
</table>
The Sakai Education Partners Program

Funded by the William and Flora Hewlett Foundation and the partners
Sakai 2004-2005

Tools Team

Developers

Sakai Partners

Sakai Project
An observation

- For 40 years we have used computers for teaching and learning and research.
- Information technology is the basis for education technology.
- After years of slowly increasing use, education technology has become critical—"core"—for colleges and universities; improving the quality of teaching and learning and research and reducing unit costs.
Sakai Project core universities

- Commitments
- 5+ developers per institution under project leadership
- $4.4M in institutional staff (27 FTE)
- $2.4M Mellon Foundation funding
- Additional investment through partners
Purpose

• To create a sustainable community for open source eLearning software.
• To advance teaching and learning and research through education technology.
• And work toward interoperability of software and content through open standards
Sakai Education Partners Program

• Facilitates Discussion and Work Groups developing “best practices,” and supporting community development of software “tools” and integration with other projects.
• Supports Sakai software.
• Develops and supports a community advancing eLearning in higher education.
• Based on expressed interests of the community
• Partners contribute funds and staff time to community projects.
Sakai Partners may

- By making “best practices” and the implementing software widely available, improve instruction and research.

- Through improved processes and software implementation, advance interoperability of content, course and student management, and inter-institutional data exchanges.

- Facilitate long-term collaboration among colleges and universities leading to future improved outcomes and lower unit costs.
Sakai depends

- Upon the motivation and contributions of Partner faculty and staff,
- having reasonable time, reasonable expectations, reasonable demands,
- with continued support of the Partner colleges and universities, and
- the goodwill of all of the participants, sponsors, and users.
### Recognition of open source products

<table>
<thead>
<tr>
<th>All Respondents</th>
<th>Most Knowledgeable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sakai</td>
<td>4.4</td>
</tr>
<tr>
<td>uPortal</td>
<td>3.3</td>
</tr>
<tr>
<td>Moodle</td>
<td>1.6</td>
</tr>
<tr>
<td>OSP</td>
<td>1.6</td>
</tr>
<tr>
<td>Kuali</td>
<td>1.1</td>
</tr>
<tr>
<td>OKI</td>
<td>0.6</td>
</tr>
<tr>
<td>LionShare</td>
<td>0.3</td>
</tr>
</tbody>
</table>

Methods of Instruction and Systems

![Graph showing the percent of student time spent on methods of instruction.](image-url)

- **Mood**: 100%
- **Presentation**: 75%
- **Collaboration**: 50%
- **Sakai 2005**: 25%
- **Other**: 0%

**Method of Instruction**

- **Percent of Student Time**
Learning environment and library

My Permeable Portal

Threaded Discussion

Dictionary

Google

LibSearch

Ian Dolphin, University of Hull at the Sakai Educational Partners Conference, 10 December 2004
Jon Allen’s view: Sakai-uPortal Integration

The lunch room will be open from 10AM-2PM this Thursday. It will be closed after 2PM for a staff wide OSHA training course.

Jon Allen, instructional media + magic, inc, June 12, 2005
Some Contributed Sakai “Tools”
“More” from the Sakai Partners
The Berkeley Grade Book

An example of collaboration

- University of California, Berkeley funded development of an on-line grade book
- Develop the grade book in collaboration with MIT
- Deploy and test the grade book integrated with local student systems
- Re-factor the grade book to Sakai “Tool Portability Profile” to support interoperability
Berkeley Grade Book Pilot

UC Berkeley gradebook is now in pilot on the Berkeley campus as a stand alone tool. This Fall, in preparation for a Sakai integration, the user interface is being redone to match the style guide, the specifications fleshed out for a few additional requirements, and several framework requirements are being implemented. Over the winter and spring, the gradebook will be refactored for integration into the Sakai framework and with SAMigo [assessment].
Berkeley Grade Book

This image shows a screenshot of the Berkeley Grade Book, which is a web-based tool used for managing and viewing grades in a university setting. The screenshot displays a page where instructors can view and manage grades for their students. The page includes options for viewing grades and managing sections, with a focus on special topics in film. The table shows a list of students with their grades, including columns for individual grades and overall course grade. The interface includes various tools for sorting and filtering student data, with options for exporting data in Excel or CSV format.
The Etudes Project

An example of collaboration

- Hewlett Foundation funded deployment of Sakai Collaborative Learning Environment at Foothill-De Anza Community College District
- Develop an authoring tool, primarily for faculty
- Deploy and test Sakai as an information service (ASP: Application Service Provider) for 48+ community college districts
- Develop open standards sharable learning materials
Melete is an online lesson authoring environment. It offers instructors the ability to author online learning modules using built-in templates and an editor, or import (or link to) existing learning assets, like PowerPoint or Flash. Instructors can author modules that have multiple continuation content sections; the system implements user-friendly layout and navigation automatically. Originally developed to meet online course delivery and course management needs, Melete features extra controls to assist online teachers/learners, such as the ability to set prerequisites and the pacing of material.
Melete – Online Lesson Authoring Tool
The Twin Peaks Project

An example of collaboration

- Sun Microsystems, Inc. funded deployment of a citation/link authoring tool by Indiana University.
- Transfer a citation and link from a Web search or browser display into a document.
- Integrate into a JSR 168 portlet with an open source on-line WYSIWYG editor.
The **Twin Peaks** project is an experiment in providing a search and one click selection of library electronic resources from within the Sakai authoring tool. We'll be demonstrating the currently developed interim tool that provides searching of either EBSCO Academic Preimer, ERIC, or the IU Libraries SFX enhanced online catalog's electronic holdings.
Twin Peaks Library Search Tool
The CREE Project

An example of collaboration

- UK JISC-funded project led by the University of Hull, a Sakai partner
- Redevelop search applications as Sakai JSR 168 portlets
- Improve the user interface; explore alternative presentations (by role, experience, disabilities)
- Includes Z39.50 (Jafer), Web Services-based SRW/SRU, Open URL (BALSA), portal environment (HEIRPORT), and Google
- Tested, documented, and made available as open source
The Open Source Portfolio Initiative is a community of individuals and organizations collaborating on the development of the leading non-proprietary, open source electronic portfolio software available. The Open Source Portfolio software is individual centric enabling users to gather work products and other artifacts to be stored and shared with others but more importantly to be used for personal growth and development. The ePortfolio toolset is being developed on the Sakai infrastructure providing a stand alone application as well as an integration of rich portfolio tools in the full suite of Sakai applications.
### OSPI ePortfolio

#### Principles of Undergraduate Learning Matrix

<table>
<thead>
<tr>
<th>PULs</th>
<th>Introductory</th>
<th>Intermediate</th>
<th>Advanced</th>
<th>Experiential</th>
</tr>
</thead>
<tbody>
<tr>
<td>Core Skills: Written Communication</td>
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<tr>
<td>Core Skills: Comprehend, Interpret, and Analyze Text</td>
<td></td>
<td>Intro video.mp4</td>
<td></td>
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<tr>
<td>Core Skills: Oral Communication</td>
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<tr>
<td>Core Skills: Analytical Reasoning</td>
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<tr>
<td>Core Skills: Information and Technological Literacy</td>
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<td></td>
</tr>
<tr>
<td>Critical Thinking</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intellectual Depth, Breadth, and Adeptiveness</td>
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</tr>
<tr>
<td>Integration and Application of Knowledge</td>
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<tr>
<td>Understanding Society and Culture</td>
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<tr>
<td>Values and Ethics</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>
In summary

- Sakai is making “open standards” software available to colleges and universities as open source.

- Sakai is cooperating with the efforts to make “open content” interoperable and available.

- Sakai is coordinating its development with other projects, especially library projects, to extend the advantages of interoperability.
The end
Publisher’s Note

- uPortal is a project of the JA-SIG Collaborative led by Carl Jacobson at the University of Delaware and funded, in part, from the Sakai Project.

- im+m has contributed to uPortal, and the University of Hull’s CREE project referenced in these presentations.

- The author is Chairman of the Board of im+m and Sigma Systems Inc., contracted by the University of Michigan as Sakai Community Liaison for the Sakai Educational Partners Program, part-time researcher for the U.S. Department of Education and volunteers as uPortal Project Administrator.
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Sakai founding partners

University of Colorado at Boulder
Cambridge University
Carnegie Mellon University
Columbia University
Cornell University
Foothill College
Harvard University
Johns Hopkins University
Northwestern University
Princeton University
Tufts University

University of California Berkeley
University of California, Davis
University of California, Los Angeles
University of California, Merced
University of California, Santa Cruz
University of Hawaii
University of Oklahoma
University of Virginia
University of Washington
University of Wisconsin, Madison
Yale University
Additional Sakai partners

Arizona State University
Boston University, School of Management
Brown University
Carleton College
Carnegie Foundation for the Advancement of Teaching
Coastline Community College
Dartmouth College
Edgenics

Florida Community College Jacksonville
Franklin University
Georgetown University
Hosei University IT Research Center
Luebeck University of Applied Sciences
Maricopa Community College District
Additional Sakai partners

Monash University
Nagoya University
New York University
Northeastern University
North-West University (ZA)
Ohio State University
Portland State University
Roskilde University (DK)
Rutgers University
Simon Fraser University

State University of New York
Stockholm University (SE)
SURF/University of Amsterdam
Syracuse University
Texas State University, San Marcost
Universidad Politecnica de Valencia (ES)
Universitat de Lleida (ES)
Additional Sakai partners

University of Arizona
University of California, Santa Barbara
University of Cape Town (ZA)
University of Delaware
University of Hull
University of Illinois at Urbana-Champaign
University of Lancaster

University of Minnesota
University of Missouri
University of Nebraska
University of Texas at Austin
Virginia Polytechnic Institute and State University
Whitman College

March 5, 2005
Sakai organization

Sakai Board
Joseph Hardin, Chair, University of Michigan
Bradley C. Wheeler, Indiana University
Lois Brooks, Stanford University
Mara Hancock, University of California, Berkeley
Carl Jacobson, University of Delaware
Amitava ‘Babi’ Mitra, Massachusetts Institute of Technology
Jeff Merriman, Open Knowledge Initiative
Vivian Sinou, Foothill DeAnza Community College District
Ian Dolphin, University of Hull

Sakai Project
Sakai Partners
Sakai 2005

- Sakai Project – CLE and SAMigo
- Sakai components
  - Foothill College Melete authoring tool
  - University of California Berkeley grade book
- Sakai-related projects
  - Open Source Portfolio Initiative
  - CREE Project: JISC Library access portlets
Sakai: So What's New?

- New approach to Portal Technology: Application Development Platform
- New Approach to web application development: Code to work on desktop (someday)
- New approach to Learning Management Systems: Not just for classes any more – research, collaboration
- And, most importantly today:
  - New form of development: “Community Source”

Chuck Severance, February 2005
E-Learning objectives

• Improve learning effectiveness
  • Scope of the academic program
  • Student access (percentage of qualified students or percentage of target population)
  • Completion rates
  • Efficiency (cost per program completer)
Sakai Discussion Groups

Pedagogy → Practice → Tool Design
Models for e-Learning implementation

<table>
<thead>
<tr>
<th>Model</th>
<th>Capabilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tutorials, seminars, research</td>
<td>Collaborative learning environment, digital repositories, library access</td>
</tr>
<tr>
<td>Supported classroom</td>
<td>Multimedia course content, on-line assessment, course management, collaboration tools</td>
</tr>
<tr>
<td>Individual on-line learning</td>
<td>Sequenced presentation of lessons, on-line assessment, course management, communication with instructor</td>
</tr>
<tr>
<td>Group on-line learning</td>
<td>Learning activity management, managed presentation, on-line assessments, communication with instructor</td>
</tr>
</tbody>
</table>
## Role for instructional design

<table>
<thead>
<tr>
<th>Model</th>
<th>Presentation Structure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tutorials, seminars, research</td>
<td>Primarily by student</td>
</tr>
<tr>
<td>Supported classroom</td>
<td>Provided by faculty, modified by student</td>
</tr>
<tr>
<td>Individual on-line learning</td>
<td>By designer; possibly adapted for student</td>
</tr>
<tr>
<td>Group on-line learning</td>
<td>By designer; possibly adapted for student</td>
</tr>
</tbody>
</table>
Use of student time

Student Time with Faculty and Online Learning

- Faculty Contact
- Online Delivery
- Research

Hours per week (3 unit course)

- Tutorial, seminar
- Supported classroom
- Individual on-line
- Group on-line
The Sakai view of a portal

Composability & the future portal

- Chuck’s presentation yesterday ...
- “Tiny units of composability”
  - Composability within learning domain
  - Composability between domains
  - Libraries, repositories, admin systems etc
- People don’t learn, conduct research or work in the same way ... personalised environments
E-Learning in the U.S.

Method of Delivery
Distance Learning 1999-2000

- Live TV or audio: 37% (Undergraduate), 43% (Graduate and First-Professional)
- Recorded TV or audio: 39% (Undergraduate), 28% (Graduate and First-Professional)
- Internet: 60% (Undergraduate), 67% (Graduate and First-Professional)

A Profile of Participation in Distance Education: 1999-2000, National Center for Education Statistics, November 2000
Cost for course delivery

Cost per Course Delivery

Estimated US Dollars per Course (3-units, one-semester)

Based on Digest of Education Statistics 2001, National Center for Education Statistics, Tables 349 and 351.
In the Context of eLearning
e-Learning defined

“e-Learning is the effective learning process created by combining digitally delivered content with (learning) support and services.”

Open and Distance Learning Quality Council (UK)
From www.odlqc.org.uk/odlqc/n19-e.htm, 28 December 2004
## Types of e-Learning

<table>
<thead>
<tr>
<th>Portion of Content Delivered Online</th>
<th>Type of Course</th>
<th>Typical Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0%</td>
<td>Traditional</td>
<td>Course with no online technology used - content is delivered in writing or orally.</td>
</tr>
<tr>
<td>1 to 29%</td>
<td>Web Facilitated</td>
<td>Course which uses web-based technology to facilitate what is essentially a face-to-face course. Uses a course management system (CMS) or web pages to post the syllabus and assignments, for example.</td>
</tr>
<tr>
<td>30-69%</td>
<td>Blended./Hybrid</td>
<td>Course that blends online and face-to-face delivery. Substantial proportion of the content is delivered online, typically uses online discussions, typically has some face-to-face meetings.</td>
</tr>
<tr>
<td>80+%</td>
<td>Online</td>
<td>A course where most of the content is delivered online. Typically has no face-to-face meetings.</td>
</tr>
</tbody>
</table>

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Use of eLearning

• “We did not hear that colleges looked to distance learning as a common strategy to help accommodate students and minimize loss of access. We do want to point out that one college that serves a large portion of its students through distance learning did find it economical to increase this portion. ... with the infrastructures already in place, they could accommodate additional students in these programs more easily than in classrooms.”

Ensuring Access with Quality to California’s Community Colleges, May 2004
Use of student time

Student Time with Faculty and On-line Learning

Hours per week (3 unit course)

- Tutorial, seminar
- Supported classroom
- Individual on-line
- Group on-line

- Faculty Contact
- Online Delivery
- Research
Sakai is:

- A collaborative development effort
- A standards-based architecture
- A community

"Best of Breed" software, synchronized development

Tool Portability Profile provides a roadmap for other developers

>70 partner schools
Emerging relationships with related efforts
Learning Management System
This is the Sakai Entry Page

Welcome to the updated collab.sakaiproject.org! We are running the newly released Sakai 1.5.0 software. Details on the release are available within the Sakai site.

Note: Please use your EMAIL address as your USER ID when creating your account here! Thanks.

The Sakai, Sakai Development, and Sakai User sites are joinable - use the Membership item in your My Workspace to join these sites.

( Glenn R. Golden - Mar 11, 2005 9:35 am )

Welcome to your very own site, My Workspace.

At the present time, this site is not configurable. You cannot create new sites on this server yet, but you can use the Membership tool to join sites that have been designated by the owner as Joinable, and you can change your display name using the My Profile (Account) tool.
Here the user can select to which sites s/he want access...

<table>
<thead>
<tr>
<th>Worksite</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEF</td>
<td>The main information site for CHEF. Participants will get email notification of the latest CHEF news and releases. CHEF source and documentation is available from this site.</td>
</tr>
<tr>
<td>Sakai</td>
<td>This is an area for folks interested in using the Sakai Presentation tool. This presentation tool allows users to give a presentation with many</td>
</tr>
<tr>
<td>Sakai User</td>
<td>For collaboration among Sakai Users. A place where the Sakai user community can exchange Best Practices, share ideas, pose and answer questions, communicate about Sakai user experiences. A set of discussion categories have been created to guide discussion. You may create new topics within these categories to establish discussion threads.</td>
</tr>
<tr>
<td>Community</td>
<td>A Site for folks using CHEF in their software product or service.</td>
</tr>
<tr>
<td>Playground</td>
<td>Come here to play around! Try out the different CHEF tools.</td>
</tr>
</tbody>
</table>
The user's schedule (calendar)...

<table>
<thead>
<tr>
<th>Sun</th>
<th>Mon</th>
<th>Tue</th>
<th>Wed</th>
<th>Thu</th>
<th>Fri</th>
<th>Sat</th>
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<tbody>
<tr>
<td>27</td>
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<td>30</td>
</tr>
</tbody>
</table>

Legend
- Academic Calendar
- Activity
- Cancelled
- Class Section - Discussion
- Class Section - Lab
- Class Section - Lecture
A WYSIWYG editor for schedule entries
The Resource Manager, where files can be created, stored and accessed (here or from elsewhere in Sakai)
Announcements page...
Tools can be added or removed from the user's site.
A variety of collaboration and communication tools are available: Chat, Email, Discussion Groups, Presentations