Sakai as a Virtual Research Environment

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Outline
Overview of Sakai
Case Study: National Center for Integrated Biomedical Information
Sakai and Institutional Repositories
Sakai and Library Content / Collections
Sakai and Open Courseware
Sakai and Community Source
Conclusion / Summary

Sakai in one Slide....
Collaboration, Teaching, and Learning
FOSS - 100% free to use, modify and contribute
Sakai is 3.5 years old
Non-profit Sakai Foundation since January 2006
100+ Higher Education and 15 company members
Six paid staff members
100+ people developing and testing Sakai releases

Overview Video: http://www.dr-chuck.com/media.php?id=64

Michael Korcuska
Sakai Executive Director
Requirements Overlap
All variations on “Collaborative Activity”
Leads to building of common software which can be used as a base tool kit across collaborative activities - which can be extended to meet particular needs of a focused collaborative community.
As more communities evolve - overlap may increase and software tools can be reused well outside of their original “birthplace”.
Also the use of a common toolset allows easy exchange of materials that make up the different elements of the academic life both for faculty and for students.
Sakai is a “Collaboration and Learning Environment”.

Sakai: Product Placement

Future: Sharing Data and Functionality
Sakai Research Case Study
National Center for Integrative Biomedical Informatics
www.ncibi.org
PI: Brian D. Athey, Ph.D.
PI Institution: University of Michigan
ID: 1-U54-DA021519-01A1
NIH Program Officer (PO): Karen Skinner, Ph.D.(NIDA)

NCIBI Org Chart
Project Manager: James Cavalcoti
Portal Project Lead: Beth Kirshner (0.5 FTE)
Team Members - Work on the portal as a portion of their role within the project
Paul - Graphic Design
Yuri - Outreach / Content
Aaron - Content / Tech Support
Zach - Content / Tech Support
Barb - HCI / Usability / Requirements
Portal Requirements collected using TRAC
Portal Team Meeting - Every two weeks

NCIBI Portal Approach
Initial public facing site developed using Plone
It was a web site - not a portal - no collaborative capability
Used “all hands meeting” to discuss across-team requirements for collaboration.
Deployed Sakai as a prototype - made available to the whole team
Engaged a small group (Diabetes Models) series of meetings
On-going facilitation from HCI expert
Attended by development team
Early adopter - Feldman Lab - Group member became evangelist

Portal Goals
Communication and Dissemination (internal and external)
Tool integration and sharing
Data Exchange
Collecting, Integrating, and Sharing Tools

Integration Approaches
- Single Sign-on / Content (4 tools) / Web Services to store and retrieve data in Sakai

Pointers (10 tools)
- Tools have their own collaborative sites so tool owners can interact with their users.
- The Sakai Portfolio tool is used to create and maintain the project-wide tool registry.

Community Calendar
Main Gathering Point - Resources

Main Gathering Point - Wiki as Team FAQ

The Overarching Mailing List
Success Factors
Collaboration is part of the deliverables of the grant.
Willing community of scientists
Dedicated and talented developer resource with previous experience in building scientific collaboratories (1/2 FTE)
Science comes first - requirements come from the scientists and developers respond to requirements.
Sakai is simply a toolkit which gives a lot of basic raw material like calendar, wiki, etc. - these are only used if appropriate.
Some elements are done outside of Sakai and integrated into the portal.
Continuous feedback and improvement over the time of the grant. Leads to mutual trust and patience as new requirements are identified.

Sakai and Institutional Repositories

Long-Term Stewardship of Digital Data
"...As our systems grow more sophisticated, we will see applications that support not just links between authors and papers but relationships between users and information repositories, and users and communities. What is required is a mechanism to enable communication between these relationships that leads to information exchange, adaptation and recombination. A new generation of information-retrieval tools and applications are being designed that will support self-organizing knowledge on distributed networks driven by human interaction to support trans-disciplinary science..."

http://www.arl.org/info/events/digdatafinal.pdf
Sakai and Repositories

Sakai 2.5 will have support for optionally storing files and metadata in a JSR-170 repository.

As collaborative data is moved into JSR-170 storage in later versions of Sakai, conversion mechanisms will be provided to move data in earlier versions of Sakai into JSR-170.

Fedora and DSpace do not yet support JSR-170.

High Level View

SakaiBrary - Sakai and Library Content

Indiana University Libraries
University of Michigan Libraries

Project Partners: UC-Berkeley, Johns Hopkins, Northwestern, Stanford, Yale

Mellon Grant: 1 Jan '06 to June '08

Goal: Integrate licensed library content into Sakai
Overview

In September, students and faculty at Indiana University, the University of Michigan and other schools will start using new tools to access library resources from inside their campus Collaboration and Learning Environment. They’ll use the library’s metasearch engines and Google Scholar to find materials. They’ll save “citations” for licensed digital content — including metadata fields and stable URLs.

Improving the CLE

Academic Libraries are deeply integrated Inside Sakai

Sakaibrary Demo: Basic Search
Searching Library Resources

Ex Libris MetaLib, X-Server or Sirsi
SingleSearch Web2Bridge is doing the searching

Access the same search sources that SearchTools can

Get the same metadata as SearchTools

Technical Underpinnings

SearchTools

MetaLib

X-Server

Sakaiibrary

ProQuest, ZBC, PsycINFO, ISI Web of Science, etc.

The role of the X-Server in SearchTools and Sakaiibrary
Technical Underpinnings
Linking to Library Resources

Creating OpenURL links for SFX
Plan to integrate with SFX API

Sakaibrary: Getting More Information

Project Wiki
http://issues.sakaiproject.org/confluence/display/SLIB/Home

Project Website
http://sakaibrary.org

Citations Helper Demo (free resources)
http://sakaibrary.umd.umich.edu

Sakai and Open Courseware

PI: Joseph Hardin
PI Institution: University of Michigan
Hewlett Foundation
Program Officer: Cathy Casserly
OpenCourseWare - ocw.mit.edu

Building on work done by MIT and EduCommons
Open dissemination of knowledge and information
Open access to syllabus, lecture notes, course calendar, exams, reading lists, and even video lectures from 1550 MIT courses
Will cover all MIT courses by 2008

Approaching Open Publishing

Upstream foundational prep
Recruit faculty
Plan TEACHING version of course
Plan OCW version of course
Review existing content
Identify & resolve IP (except permissions)
Track IP by object in system

Content development
Collect existing content
Build content into LMS sections or templates
Enter metadata
Create commissioned works
Process permission requests & make IP edits

Live teaching and course administration
Update and supplement materials
Post to email, wikis, blogs, announcements, discussions, forums, IM
Assign, track, grade student work
Interact (faculty-student and student-student) through all channels above

Open publication
Perform course Quality Assurance
Obtain faculty approval
Export to OCW site

Normal teaching process
Required for open publishing

OCW needs to be cheaper, easier

MIT’s costs to produce OCW ~$20,000 per course
IP management
Tagging OCW categories
QA all materials
Will not scale
Roadblock to growing OCW
A strategy for OCW

Make OCW site creation part of teaching and learning

Authoring environment in CLE

Deal with IP issues, tagging and QA in Sakai

OCW Tool is available anytime in development or teaching

Manage category and IP metadata as new material is added

Perhaps student ‘dScribe’ has permissions to add metadata

When new document appears, dScribe tags it

Develop student incentives (e.g., better future access)

Have system flag incomplete data on objects

Direct faculty or students to items needing metadata

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dScribes and OCW tool

Building social foundations of technology applications, integrating the two into socio-technical process

Blending Open Source successes with Open Content initiatives

Mobilizing transformative processes of Web 2.0 dynamics in service of transforming the academy

While at the same time using resulting contributions from the academy to feed Learning Web 2.0 dynamics

Developing positive feedback loops that reward participatory pedagogies and drives both transformation in the academy and the growth of Learning Web 2.0

OER/OCW generation at the center of both

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Tools for dScribes

Workflow customized for dScribes and faculty, not ‘professional OCW’ staff

Build around ‘participatory pedagogical’ model

Faculty engagement gated, can be large or small (faculty can be their own dScribes)

Tools integrated with learning environment, so faculty can use knowledge from CLE tools

Create portable materials for faculty and students, and Library
Sakai / OCW Plans and Progress

Going back and thinking about a collaborative material production process
Development on a dScribe tool underway - Summer 2007
Hope to use this September 2007 with first-generation dScribe2 students leading the process, and mentoring dScribe1 students
This January 2007 plan to have first large dScribe1 class as part of SI grad/undergrad curriculum
**Sakai and Community Source**

**Why Sakai?**

**COMMUNITY**
- Academic institutions & commercial enterprises working in partnership with standards bodies & other open-source initiatives.
- Goals: Work collaboratively to develop innovative software applications designed to enhance teaching, learning, research & collaboration in higher education & beyond.
- Values: Knowledge sharing, information transparency, meritocracy, "do-ocracy."
- Praxis: 150+ production installations; 100+ volunteers active in design, development & testing of Sakai releases.

**FOUNDATION**
- Mission: Manage & protect IP; serve as a liability shield for the community; provide basic infrastructure & support for the community; oversee design, development, & distribution of software; champion open source & open standards.
- Governance: Ten board members elected by member reps to serve three-year terms; Executive Director manages day-to-day operations.
- Partners: 112 member institutions & organizations contribute $10K per year ($5K for smaller institutions).
- Budget: Underwritten by members; ~ $1M per annum funds 4-6 staffers, admin services, computing infrastructure, project coordination, conferences, Sakai Fellows Program, advocacy & outreach activities.

**Why Sakai?**
Why Sakai?

SAKAI FOUNDATION MEMBERS (n = 112)

Sakai Community Source
EDUCATIONAL COMMUNITY LICENSE (ECL)

OPEN LICENSING — Sakai’s software is made available under the terms of the ECL, a variant of the Apache license. The ECL encourages a wide range of use including the production of derivative work in the commercial space.

NO FEES OR ROYALTIES — Sakai is free to acquire, use, copy, modify, merge, publish, redistribute & sublicense for any purpose provided our copyright notice & disclaimer are included in all copies of the original or derivative work(s).

NO "COPYLEFT" RESTRICTIONS — unlike GPL redistributed derivative works are neither required to adopt the Sakai license nor publish the source code as open-source.

http://www.opensource.org/licenses/ecl1.php

Sakai Community Source
OUR APPROACH

STRUCTURE — modeled on Apache but institutionally-based; innovation predicated on active collaboration between academic institutions, commercial enterprises, other open-source initiatives & standards organizations.

LEADERSHIP — provided by recognized community leaders & Sakai Foundation staff.

PROJECTS — staffed by volunteers who work for organizations with an interest in Sakai.

SUSTAINABILITY — institutional & organizational commitments of human & financial capital power underwrite Sakai’s development model & help ensure a sustainable community.
Sakai Community Source
AN EVOLVING ECOSYSTEM

- Partner Funding
  - Higher Ed: XSU, U of Y & A Consortium
  - Commercial: B Inc.

- Tool/QA Contributors
  - C Org, working with B Inc.
  - XSU working alone
  - U of Y & Z College working together
  - A consultant, an individual

- Third Party Services
  - B Inc. provides developers to C Org
  - B Inc. provides training to A Consortium
  - Acme Hosting provides ASP services to U of Y

- Foundation Services
  - Project coordination & requirements gathering
  - Infrastructure, communications, advocacy
  - QA coordination, release management & security alerts

Sakai 2.4.0
WORKSITE TOOLS

- Announcements
- Assignments
- Calendar Summary
- Chat Room
- Discussion
- Drop Box
- Email Archive
- Forums
- Gradebook
**Sakai on the ground**

**PILOTS (n = 145*)**

- Total includes institutions piloting jointly in a shared environment.

**DEPLOYMENT HIGHLIGHTS, 2004-07**

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<tr>
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<tr>
<td>50,000+</td>
<td>Michigan</td>
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<tr>
<td>11,000 - 50,000</td>
<td>Boulder, Cape Town, Etudes Consortium, New England (AU), Valencia, Virginia Tech, Yale</td>
</tr>
<tr>
<td>1,000 - 10,000</td>
<td>Cambridge, Centra, Charles Sour, Florida, New York, Lleida, Rice, Roskilde, Rutgers, Saginaw Valley, UC Merced, Whitman, Arteveldehogeschool</td>
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<tr>
<td>130,000+</td>
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**CONSORTIA, ASSOCIATIONS & SCA**

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<th>Organization</th>
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<td>Appalachian College</td>
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<td>Smart Sakai/OSP 2.0</td>
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<td>Jacksonville College</td>
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<td>China Learning Center</td>
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<td>Total</td>
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**CTOOLS, University of Michigan**

First production Sakai deployment, 2004
Sakai: Getting More Information

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