The Sakai Project

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A proposal to the Andrew W. Mellon Foundation

By

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1. Executive Summary

The University of Michigan, Indiana University, MIT, Stanford, and the uPortal consortium are joining forces to integrate and synchronize their considerable educational software into a pre-integrated collection of open source tools. This will yield three big wins for sustainable economics and innovation in higher education: 1) A framework that builds on the recently ratified JSR 168 portlet standard and the OKI open services interface definitions to create a services-based, enterprise portal for tool delivery, 2) a re-factored set of educational software tools that blends the best of features from the participants' disparate software (e.g., course management systems, assessment tools, workflow, etc.), and 3) a synchronization of the institutional clocks of these schools in developing, adopting and using a common set of open source software. The products of this project will include an Enterprise Services-based Portal, a complete Course Management System with sophisticated assessment tools, a Research Support Collaboration System, a Workflow Engine, and a Tool Portability Profile, i.e., clear standard for writing future tools that can extend this core set of educational applications. The pre-integrated work products will greatly reduce the implementation costs of one or more of these tools at any institution. The Sakai Project Core universities are committing $2 million per year to support this work. The core universities are also committed to implementing these tools at their own institutions starting in Fall 2004 through the duration of the project. The commitment of resources and adoption is purposefully set on an aggressive timeline to swiftly integrate and synchronize the educational software at the core institutions. This effort will demonstrate the compelling economics of "software code mobility" for higher education, and it will provide a clear roadmap for others to follow.

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2. Project Motivations and Contributions

Higher education will continue to invest in IT as an essential element of executing its teaching, research, and service missions in effective and economically-sustainable ways. IT, particularly software development and implementation efforts, are very expensive and challenging to align to the common and unique needs of various institutions. 'Code mobility' via open source communities holds great promise for an economically-sustainable IT investment path for higher education, yet real barriers impede the realization of this promise. The Sakai Project will bring considerable, synchronized, focused energy to overcome these barriers and accelerate a new path for code mobility in higher education in the core areas of online teaching, research and provision of campus portals.

Historical Barriers

Thus far, two main barriers have consistently defeated various efforts to pool higher education software development investments that could leverage obvious economies of scale: First, unique local technical architectures, including heterogeneous hardware, software interoperability requirements between systems, and diverse user interface requirements, have impeded great software at one institution from being moved to another even when it was available as no-fee, open source software. Second, inter-institutional timing differences of when a particular software need has mobilization, funding, and attention have impeded pooling requirements and development resources in synergistic ways, leading to fragmented efforts, competing and incomplete open source offerings, and weak interoperability.

Overcoming Barriers to Application Sharing

The technical barriers can now be overcome by distilling the accumulated architectural knowledge and programming experience gained in building these systems into a Tool Portability Profile (TPP) that provides four essential elements for code mobility.

1. **Service Interface Definitions:** The Open Knowledge Initiative Open Services Interface Definitions (OSIDs) have provided an essential first contribution to solve the technical challenge. Local implementations of the OSIDs at an institution integrate heterogeneous local architectures (e.g., an authentication system or directory service) by using common connectors that enable code mobility for OKI-based application software (e.g., a CMS, library system, collaboration tool, etc.).

2. **Standard Portal:** Advanced CMS's are based on portals that aggregate class information and services and allow the user to personalize and customize their views of these classes, services and information. At the same time, university-wide services are migrating from independent web-based interfaces that accessed siloed systems (e.g., Bursar, Library, Registrar, CMS, etc.) to enterprise-wide portals that integrate a personalized view of the full range of the university's services and information. The uPortal effort has brought forth a powerful portal environment that has commanded broad adoption, but it currently lacks the recently ratified JSR 168 portlet specification needed for tool interoperability. A standards-based portal that can be used as both the academic portal for the CMS as well as for delivering other university services via the JSR-168 portlet standard is a core building block of the TPP.

3. **Tool Interaction Framework:** Tools need a framework to provide a consistent way for invoking other tools and passing information among them. For example, a homework drop box tool developed at one university may need to invoke and pass a grade to a grade book tool

developed at another. This framework provides a common place for these tools to interact with each other in a standard way. It also provides services like notification that cross tool boundaries. The U Michigan CHEF project has developed such a portal-based framework which provides the environment for a large set of course management tools.

4. **Localized User Interface:** Institutional adoption by faculty and students often relies on user interfaces that match other familiar systems. A user interface includes colors, fonts, logos, and navigation aids that can be localized as needed without disturbing the underlying functionality of the software. The TPP will provide standard methods and description of best practices for Sakai-based tool interfaces to be customized and modified by user institutions

The maturing of the OKI OSIDS, recent demonstration of a working tool interoperability framework at U. Michigan, and industry ratification of the JSR-168 portlet specification make the timing perfect for developing a full Tool Portability Profile for higher education. But, while specifications, standards, and profiles are numerous in higher education, it is large adoptions that give a specification momentum to become a universal and wide spread standard. The TPP provides the basis for two activities that overcome barriers standing in the way of real working systems, and barriers due to timing. These are described in the next section.

Project Contributions

The Sakai Project will bring three very quick primary contributions to deliver the promise of code mobility in higher education. Primary contributions are within the control of the project participants to ensure and deliver. They are summarized here and expanded upon in detail in a later section.

Direct Contributions

- The first contribution will be the previously described Tool Portability Profile that will describe the integration of OKI's OSIDs, a user interface abstraction for localization and the new JSR-168 portlet specification. This Profile integrates the successes and lessons of Michigan's CHEF interoperability framework, and JA-SIG's uPortal, and describes a common path forward for their respective developer/user communities.

- The second contribution is that Michigan, Indiana, MIT, Stanford, and uPortal will all license their considerable intellectual property and/or experiences with large scale application software (e.g., Course Tools, Work Tools, Navigo Assessment, Oncourse, Stellar, uPortal, OneStart, Eden Workflow, CourseWork, etc.) into a re-factoring of best features. This will include an enterprise-scale course management system, distributed research collaboration tools, and an enterprise services portal (described in more detail below), and others that have been conformed to the Tool Portability Profile. All Sakai tools will be both modular and also pre-integrated to work with each other. The software will be made available to the world at the same time via an open source license.

- The third contribution overcomes the barrier of institutional timing by synchronizing the development and implementation clocks of four complex institutions: Michigan, Indiana, MIT, and Stanford. All institutions are committing to an initial implementation of the Sakai tools, as a campus-wide CMS and/or campus-wide enterprise Portal by Fall of 05 when the tools are fully released. Synchronized clocks will greatly facilitate further shared developments in the years beyond the Sakai Project.

Secondary Contributions

Secondary contributions are no less valuable and in the longer run may be more valuable to the educational community. They are described here as secondary contributions as they are premised on the actions of others who are not within the direct control of the Sakai Project Core participants.

These large scale deployments of common applications based on the TPP at four complex institutions will clearly demonstrate the real viability of open source code mobility for higher education. The synchronization and TPP also provide a common means for pulling together the considerable extended user communities of uPortal, OKI, and Michigan's CHEF Project.

The education community will benefit greatly from a Tool Portability Profile that provides an open, non-proprietary, and fully articulated specification for interoperable software. Any institution or commercial entity can build to this Profile, thus helping all institutions integrate software from multiple sources as their timing may require.

The economics of software for the education community are greatly served by a proven set of pre-integrated, modular, open source applications that any institution can adopt incrementally or as an integrated set of tools. Adopting institutions of any size or technical sophistication will be freed from annual licensing fees for Sakai Project software. Thus, money that would have been spent on licensing and integration can now be devoted to other academic priorities for an institution.

3. Project Execution

The Sakai Project is organized to achieve rapid work products on an aggressive timeline. The means to achieve this is through a large, experienced, and committed team from the Sakai Core institutions. Over the last few years a number of independent groups have been working on foundational open standards and open source software systems for educational domains. These efforts have yielded various communities of development and/or adoption around these standards and software systems. The Sakai Project combines the technical strengths, successes, and vision of six of these efforts:

- the CHEF Project at the University of Michigan,
- the OKI Project at MIT,
- the uPortal Project of JA-SIG, and
- the CMS/portal/workflow projects at Indiana University,
- the Stellar CMS project at MIT, and
- the CourseWork CMS project at Stanford.

The Sakai Project will bring together these disparate threads by focusing the core institutions' considerable human resources and existing systems via a common path forward (Figure 1). The common vision of these efforts and their experiences has created the right elements to undertake a common, synchronized development and implementation effort at the core institutions. The timing for this project is crucial, and could not be better than now as all core institutions see the opportunity for leverage of shared software development investment in a coordinated manner. Integrating these disparate efforts will also merge their associated communities of use and practice towards a critical mass to have a real economic and innovation effect for educational institutions.

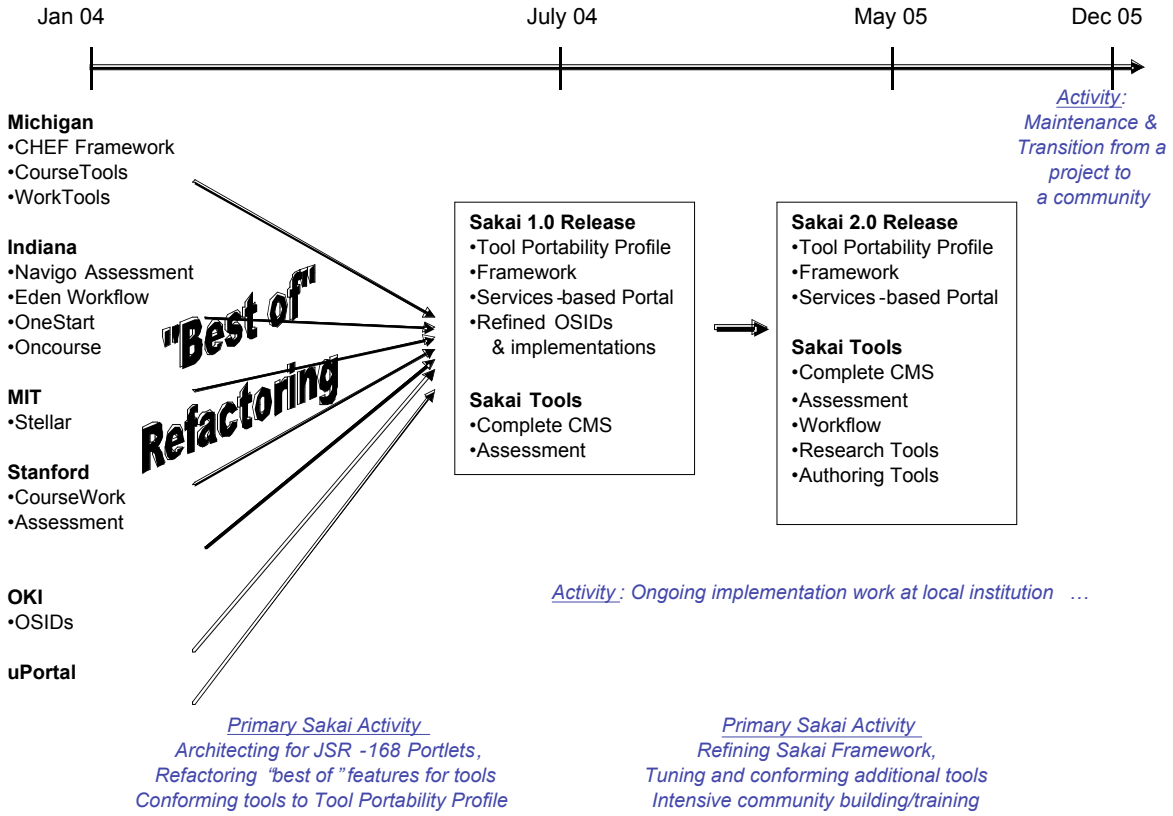


Figure 1 Sakai Project Conceptual Overview

Core Team

The core team includes four universities (Michigan, Indiana, MIT, Stanford) and two related projects/communities (OKI, uPortal/JA-SIG). The four universities have agreed by signed letter to a set of commitments to the project that includes a large matching investment (See Appendix B: Institutional Letters of Sakai Core Participation).

Institutional Commitments

1. Licensing must be open/open (open source license allowing for commercialization) for all work products under the scope of the Sakai initiative for which a member is counting matching contribution and any Mellon Sakai funding.
2. Member must make a high level, unequivocal commitment to implement the work product(s) of Sakai.
3. Member must commit their matching resources (developers, etc.) to work under the direction of the project leadership.
4. Matching resources must be at least 5 full time staff for both years of the project.
5. Active participation on the Sakai Board, which will manage the overall project.

Experiences/Org Bio

The core team members have extensive experiences in developing, deploying, and supporting educational software. These experiences and personnel are critical to achieving Sakai's deliverables and timeline.

*University of Michigan (CHEF Project, **http://chefproject.org**)*

The University of Michigan has built and released an open source, portal-based course management system built in the CHEF framework, CourseToolsNG, that embodies significant steps toward interoperable components that can be independently built and easily shared between institutions. The CHEF system is also the framework for group collaboration and advanced distributed research support tools, like those developed for the NSF National Earthquake Engineering Simulation Project. See www.neesgrid.org. The group collaboration tools have been packaged under the name UM.WorkTools, and currently support around 9,000 users. In the NG (next generation) tools, the functionalities of both have been combined to provide users with the ability to move back and forth across their coursework, research, and distributed group work easily.

*Indiana University (Oncourse, **http://oncourse.iu.edu**; OneStart, **http://onestart.iu.edu**)*

Indiana University has five years experience in developing, supporting, and enhancing its enterprise-wide CMS, Oncourse, for use on its eight campuses and distributed education programs. Oncourse is used by over 86,000 active users. OneStart is IU's services-based, enterprise portal project with built-in workflow that is used by many administrative services.

*MIT (Stellar, **http://stellar.mit.edu**)*

MIT has three years experience in developing, benchmarking, supporting and enhancing its enterprise-wide course management and administration system, Stellar. There are over 730 MIT courses on Stellar, and for the fall 2003 semester, Stellar supports over 280 courses and 4000 students. Stellar is also the core system for the Singapore-MIT Alliance(SMA) program, and supports another 180 or so students at Singapore. Stellar is informed and enriched by other strategic initiatives supported by the MIT Council on Educational Technology(MITCET), for example, MIT OpenCourseWare, DSpace, OKI, iCampus, and d'Arbeloff.

*Stanford (CourseWork, **http://coursework.stanford.edu**)*

Stanford University has just released the third version of CourseWork, an enterprise-wide course management system that is in use at all seven schools. CourseWork was developed with two primary goals, support for pedagogical innovation, and interoperability with academic resources, most notably the content available through the libraries. A common set of course management functions is augmented with tools developed specifically for diverse teaching needs including large lecture classes and language classes, allowing a customized teaching experience in a centrally maintained, supportable, scalable system. Close collaboration with faculty and iterative development have allowed refinement of CourseWork's teaching tools to optimize functionality and usability. CourseWork is available in open source and is in use at several other schools.

*OKI (**http://web.mit.edu/oki**)*

Through the Open Knowledge Initiative, and the development and promulgation of its Open Service Interface Definitions, MIT has established itself as a global leader in behavioral specifications for educational technology interoperability. The OKI team has been providing technical leadership among numerous Mellon related ed-tech initiatives as well as with national and international organizations, including the IMS Global Learning Consortium, the Joint Information Systems Committee (JISC/UK), the Center for Educational Technology Interoperability Standards (CETIS/UK), the Department of Education, Science and Training (DEST/Australia), the Advanced Learning Infrastructure Consortium

(ALIC/Japan) and Internet II, to help assure that the next generation of eLearning software will integrate seamlessly with the educational enterprise.

*uPortal Consortium (uPortal, **http://mis105.mis.udel.edu/ja-sig/uportal**)*

uPortal has built and released an open source portal for the aggregation of disparate resources that has enjoyed great success in a number of educational communities.

Organizational Structure

The Sakai Project organizational structure includes a Board of Directors, a Technology Coordinating Committee, an Architectural Lead, a Tools Lead, and members from each core institution (see Appendix C: Bios of Key Personnel).

Board

During the two years of the Sakai Project, the board will be comprised of one member from each of the six core institutions. Initial appointments are

- Joseph Hardin, Chair, University of Michigan
- Brad Wheeler, Vice Chair, Indiana University
- Amitava 'Babi' Mitra, MIT
- Lois Brooks, Stanford
- Carl Jacobson, uPortal/JA-SIG
- Jeff Merriman, OKI

The board is responsible for monitoring all Sakai development tasks and seeing they are aligned and proceed as planned for the project. Board members also serve to ensure that any local impediments or conflicts at their institution are addressed in a timely manner. The board will connect via weekly conference call and face-to-face meetings as needed, at least once every other month.

The board will also work with and administratively through the Technical Coordinating Council with its Tools and Architectural groups (Figure 2).

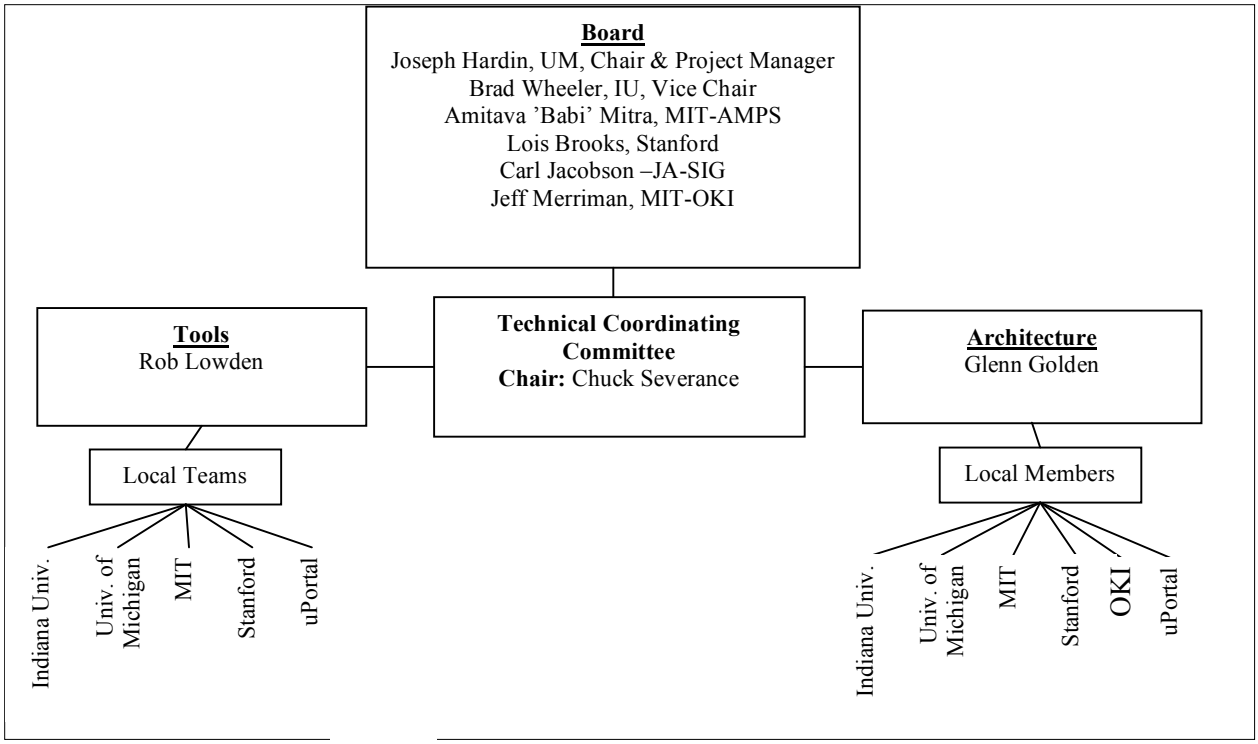


Figure 2 Organizational Structure

Technical Coordination

The core of the Sakai Project is a very large architectural design and software systems development/integration effort (see Figure 1). The Technical Coordination Committee chairman will be Dr. Charles Severance who has years of experience working on large scale software development projects and has recently led the CHEF NEESgrid effort building both framework and tools for the scientific research community, some of which will be brought directly into the Sakai effort. He has collaborated closely with the CHEF lead architect, Glenn Golden, with whom he has a strong working relationship. Chuck has already discussed the architectural strategy and goals of the Sakai project with the uPortal development team, the OKI team, and lead developers from the CMS efforts at Indiana and MIT. Dr. Severance enjoys a high level of confidence from all these Sakai technical participants. He will report directly to the Sakai Board.

Architecture

Glenn Golden, University of Michigan, will be the primary architect for the Sakai Project. He has been driving the CHEF Project's integration with the OKI OSIDs and the JSR 168 development work. The architectural work will form the basis of the Sakai Tool Portability Profile. Glenn will work with Chuck Severance to coordinate with local architects at each core institution.

Tools

Robert Lowden, Indiana University, will be the primary tools lead for the Sakai Project. Each of the core institutions is contributing specific software, designs, or experience towards refactoring a "best of" set of tools. This refactoring is based on a detailed analysis of the existing features in each institution's tools

and a wish list for new functionality (See Appendix F: Existing Functional Tool Descriptions). Each core institution has appointed a local representative for reviewing features and functionality in the Sakai Tools.

Relationships with Partners

The Sakai board has made purposeful plans for communicating with commercial vendors/partners, engaging a broad set of educational institutions, and clarifying the limitations of these relationships in the broader context of trends in higher education.

Commercial Vendors/Partners

The Sakai Board welcomes engagement with commercial partners who share the open source vision for higher education, view the Tool Portability Profile as a meaningful extension of the their commercial products, and/or wish to provide various services to adopters of Sakai tools. The Sakai Project will use meetings of the IMS Global Learning Consortium to communicate with commercial vendors since most of the educational vendors are also IMS members and IMS is an appropriate venue for these discussions.

The board has also adopted a non-exclusivity philosophy in working with commercial vendors who wish to develop for-fee services based on Sakai tools. The board will handle on a case-by-case basis any requests for commercial engagement in the Sakai Project. Requests should embrace Sakai's vision for unrestricted open source software and provide mutually beneficial opportunities to the Sakai community and the commercial partner.

Educational Partner's Program

The Sakai Project Educational Partner's Program (SEPP) is a separate, but related initiative (see Appendix E: Educational Partners Program). The SEPP will create an organization, staff, and a set of services to quickly build a broad and sustainable institutional community for Sakai Tools. The SEPP will officially launch on 1 March 2004 with the first partner training and strategy meetings in June 2004. The SEPP is critical to coordinate communication and cultivate institutional readiness while allowing the Sakai Project Core team to focus on Sakai 1.x and 2.x deliverables.

Boundaries

It is also important to make clear what the Sakai commercial relationships and the Educational Partners Program are not. The Sakai Educational Partners program is designed to provide a high level of engagement and support for developers and adopters of the Sakai Tool Portability Profile or Sakai tools. It is not staffed or funded to provide a broad forum for more general educational software interoperability activity. The SEPP staff must maintain a clear focus to succeed with their core purpose -- delivering the Sakai tools to adopting institutions.

Sustained activity around the issues of more general educational software interoperability is, however, required to assure that other open-source educational technology projects that don't lend themselves to being architected in strict accordance with the Tool Portability Profile do interoperate appropriately. Such projects include client based applications (like Tuft's VUE and Penn State's Lionshare), projects built using technologies other than Java (like Chandler or Middlebury's Segue), other enterprise applications of critical interest to educational software (Dspace, Fedora), or Java-based Web applications which, for whatever reason, don't lend themselves to the traditional "CMS" user experience (The Australian Learning Activities Management System (LAMS) might represent one of these)

For the projects listed above (except Chandler) and others, the Open Knowledge Initiative team has been providing critical leadership to help assure that their design and implementation are using appropriate

OSIDs in appropriate ways (including the use of open data specifications of IMS, OCLC, etc.) to achieve general interoperability goals. Except for some additional funding to engage with VUE, and a consulting sub-contract with Lionshare, there are currently no core resources available to sustain this activity. Now that the OKI project funding has concluded, these efforts are diminished.

Interoperability among many open source projects will be valuable to higher education in the near- and long-term. At present, efforts towards interoperability are fragmented in many different projects, organizations, and initiatives. The Sakai Board will work with future interoperability efforts as they are resourced to engage this important work. These efforts should be scoped to ensure interoperability with the overall eLearning enterprise and key frameworks like Sakai, and to help Higher Education related systems administrators and service providers build infrastructure that is supportive of such applications. These efforts by definition all reach well beyond the Sakai framework and tools, and thus, are beyond the scope of the Sakai Project or its Educational Partners Program.

It is important that interoperability efforts progress in parallel to the Sakai Project through transitional grant funding or community resources external to Sakai, and the Board will coordinate its efforts with others to achieve this. It is possible that in time, the Sakai Partners community could merge with, spin off or become a more general open source interoperability community for Higher Education with a purpose that extends well beyond the current Sakai focus. Such a course, however, should not be a near-term distraction to creating broad success around Sakai's already ambitious agenda and, most importantly, the success of the Sakai software.

Deliverables, Tasks, and Timeline

Section 2 outlined the Sakai Project's primary deliverables:

1. Tool Portability Profile (TPP) that provides architectural clarity for developing educational tools that use the OKI OSIDs, JSR-168 specification portlets, and inter-operability between tools.
2. A TPP-compliant Course Management System, Research Tools, Portal, and Assessment module for summer of 04 with additional tools and features for summer 05 (see Figure 1). These tools represent a "best of" set of functionality by refactoring the tools of the core institutions.
3. Implementations of Sakai Tools at the core institutions.

A detailed set of deliverables, tasks, and project timeline follows below with a distinction for release to the Sakai Core, Educational Partners Program, or Public.

Documents:

Sakai White Paper (Released by Dec 15, 2003, Core)

- The Sakai Architecture: How to build interoperable portable collaborative applications using the Sakai framework. This is the first generation of the Tool Portability Profile document.

Sakai Tool Portability Profile Users Guide (March 15, 2004, Core; April 30, 2004 SEPP; August 1, 2004 Public)

- How to design and build a Sakai Tool.
- How to design and build a Sakai View.
- Hot to design and build a Sakai / OKI OSID.

- How to implement a Sakai / OKI OSID.
- How to configure and install a portable Sakai application.
- How to configure a Sakai Portal Engine.
- How to plan, administer and monitor a Sakai based service.

- The Sakai Project application suite installation and usage guide.
- The Sakai CMS application suite installation and usage guide.
- The Sakai Admin application suite installation and usage guide.
- Note: Sakai Developers Workshop: Feb 15, 2004

Software Release Schedule:

Sakai Alpha Release: December 15, 2003 (Core)

- to start to play with developing Sakai applications; not ready for serious development.
- basic support for tools (JSR 168 portlet), views (jsp, velocity) and services (OSID implementations and Avalon Framework services).
- test implementations of some CHEF and OKI OSIDS.
- full featured portal support missing.

Sakai Beta Release: (Feb 15, 2004 Core; April 30, 2004 SEPP))

- to start integration of applications under development; not ready for serious deployment.
- fleshed out tool, view and service support.
- full test implementations of CHEF and OKI OSIDS, some production implementations available.
- portal engine availability, limited configurability and integration.

Sakai 1.0 release: July 1, 2004 (Public)

- to start pilot Sakai service installations.
- full support for the Sakai model for tools, views and services.
- full production implementations of CHEF and OKI OSIDS.
- fully integrated and configurable JSR 168 Portal.
- CMS, Research Tools, Assessment Tools, Calendar, Collaboration Tools

Sakai 2.0 release: May 1, 2005 (Public)

- (Note…interim development releases to Core and SEPP through 04-05 academic year)
- uPortal 3.1 - refined
- refined Tool Portability Profile with full production implementations of CHEF and OKI OSIDS.
- refined CMS, Research Tools, Assessment Tools, Calendar, Collaboration Tools, Workflow

Sakai 2.1 release: November 1, 2005 (Public)

- refinements and bug fixes

uPortal Deliverables

Historically uPortal has responded to expressed community needs and contributed functionality. The work under this proposal differs from prior work because of the coordination needed by others to achieve interoperability. The work consists of four parts. One is the use of OKI OSIDs in uPortal. Another is the

development and implementation of the JSR 168 portlet standard, which may or may not be an implementation of the Pluto reference code from the Apache Software Foundation. Some extensions of JSR 168 may be required to provide capabilities now being made available to channel (portlet) developers. Some examples are channel-level authorization, roles, device use, language preferences and a "shim" that would permit current channels to operate, without modification, as JSR 168 compliant-portlets.

The following task and deliverables apply to the first year of the grant period. During this time the uPortal developers are meeting requirements of the other project participants. The challenge is to provide quality code that meets the functional and schedule requirements. The following table shows the expected deliverables during the first year of the project. The second year will consist of implementing new services that are identified by the participants, conversion of key channel applications to the portlet standard, and potentially testing channels and portlets for compliance—a recommendation of the JSR 168 specification team—so other developers can produce JSR 168 compliant portlets. This extends to the procedures used during the transition phase to other software development consistent with the needs, priorities, and available resources.

uPortal Project Tasks and Deliverables

Task	Deliverable
Planning Phase (note this may be accomplished before the project begins)	
• Review of the Pluto documentation and code • Documentation of uPortal channel functionality not available in JSR 168 (focus on MIT Stellar navigation needs)	• Analysis Report document with recommendations • (include in the above report)
• Review of the implementation of relevant (AuthN, Auth Z, DB only) service interfaces in uPortal with those of OKI OSIDs and proposed CHEF services • Review of Common Services framework with CHEF team • Circulate draft for community comments • Coordination meeting of architects • Revise report	• (include in the above report) • Community Report of decision on JSR 168, support of uPortal capabilities, support of OSIDs and CHEF services in uPortal where appropriate and complete Common Services framework.
Design Phase	
• Prepare design document following a methodology such as Rational Unified Process	• JSR 168 Implementation Design

Task	Deliverable
• Prepare design document for changes to uPortal to support OKI OSIDs and CHEF services, and articulate with Common Services Framework.	• uPortal Services Design (note this is services required for uPortal, does not include services being developed by the University of Michigan that would be distributed with uPortal for applications)
• Prepare a design document for features in iChannel interface that are not supported in JSR 168) and that have been defined as required.	
• Circulate draft for community comments	
• Design review meeting	
• Revise designs	• Revised Design Report and Models
Construction Phase (note parallel activities to meet synchronization requirements)	
• Modify Pluto for uPortal	
• Test for JSR 168 compliance	• Code for JSR implementation
• Modify uPortal for appropriate OKI OSIDs	
• Test for compliance, interoperability	• Revised code for uPortal
• Extend JSR 168 for required additional functionality	
• Test for interoperability	• Extended code for JSR implementation
• Community code releases	
• Review meetings	• Recommendations for code elaboration
Transition Phase	
• Coordinated testing of uPortal 3.0 with Sakai 2.0	
• Coordinated testing of uPortal 3.0 by uPortal 2.x community	
• Modify designs and code to reflect interoperability needs	
• Documentation for uPortal 3.0, design	• Draft design document for developers
• Documentation for uPortal 3.0, user	• Draft user documentation
• Review meetings	• Modified development plan with tasks to revise design or code
• Documentation for uPortal 3.0 portlet developers, coordinated with, maybe the same as, Sakai 1.0 portlet development	• Draft portlet developers document
• Review meetings	• Revised documentation

Sakai 1.0 Tools Deliverables

The starting point for functionality in the Sakai 1.0 CMS will be the University of Michigan's CHEF 1.1 CourseTools.NG, which are in production use at UM this Fall with over 5,000 users (Figure 3). This constitutes the rock-bottom, guaranteed CMS feature set for Sakai 1.0, Fall 2004.

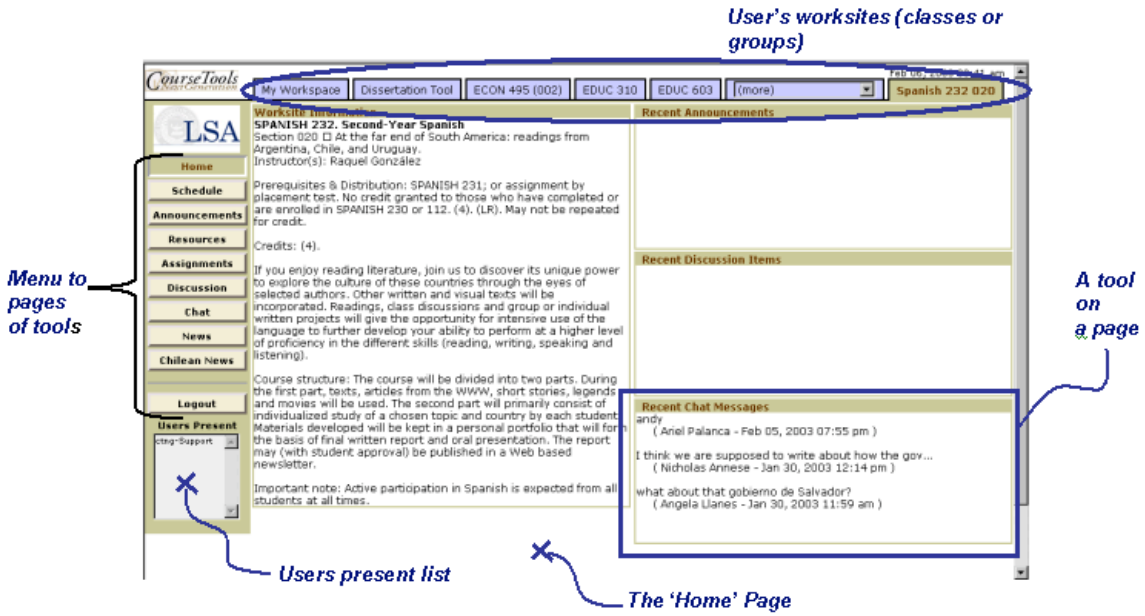


Figure 3 Michigan's CourseTools-NG

General

- 'Tear off' windows – the ability to 'undock' a tool into its own separate (browser) window, and re-dock it to the worksites portal at user's option.
- Improved UI look & feel, graphics, and usability
- Ability to import Resources from previous term CouseTools sites (via request to ctng-support)
- Multiple skins supported
- Import/export resources from existing sites into new sites

Admin

- Auto connection to UMIAC – registered students automatically become members of a class
- Ability to add outside, non UM members (use email address as unique name, using the cosign Friend mechanism)
- Ability for instructors to setup their class site, and remove/configure the tool set in worksite, add/remove members
- Ability to add an outside web page as an embedded Chef tool (iframe tool, e.g., Spanish News)
- Message of the Day – message that shows up on login page, and optionally in a worksite.
- Page layouts can be changed, reorganized, default tools on the page omitted and/or add other tools. Additional pages can be added with different tool layouts.
- Multiple permission levels – The 2 permission levels have been expanded to include several others in addition to the original organizer (instructor) and access (student) roles.
- Permission control based on role within tools. By default, instructors can post, create, and students can view. There will be some control over adjusting permissions for a role (e.g., to add the ability for students to post Discussion Topics)
- Ability to bulk add members to a site.
- Enhancements to site setup, navigation through sites, filter lists to find sites,

Users Present

- A Users Present list shows which members are active in the worksite at any time.
- In the Chat tool, a Users present in Chat list will be available, to list those specifically active in Chat.

My Workspace

- Every user (students, instructors, etc.) has their own personal, private workspace
- Resources, schedule, news tools
- Individualized, customizable per user

Home

- Each worksite (class) has a 'home' page – the page initially displayed when first entering the workspace. The worksite's home page has a Welcome message that can be configured by the worksite owner.
- The default Home page configuration includes the worksite's welcome message (editable by the instructor), and synopsis tools showing recent announcements, discussions, and chats. Alternately, any page with any content could be set to be the Home page for a given worksite.

Schedule

- Add events to a schedule, with a variety of types, using start time, duration.
- View schedule by day, week, month, year, list
- Click on event to see full details
- Ability to merge schedules from other worksites in which you are a member.
- My workspace schedule shows events from all sites in which you are a member.
- Ability to add recurring events

Announcements

- Create new announcements, revise existing announcements.
- Ability to merge announcements from other worksites in which you are a member.
- My workspace announcements shows events from all sites in which you are a member.

Resources

- Object store for a worksite. Instructors can create folders, upload files of any type, create a link to a URL, or create a simple text file.
- Supports folders within folders to any depth
- Provides a hierarchical view of the folder hierarchy (click on a folder's icon to show its content, expand all to see the entire hierarchy)
- Objects in the worksite's resources can be attached to other objects in the worksite (e.g., attaché a Resources file to an Announcement)
- Can upload up to 10 files at a time
- Ability to move/copy/link resources from one site into another (inter site resource browser/navigator).

Assignments

- Instructor can create an Assignment, with open, due, close dates.
- An assignment can allow submissions by typed in text, attachments, or both
- Assignment submissions can be graded, and grades released immediately or manually at some point in the future.

- When grading, the instructor can include comments inline with the student's submission, optionally shown in red to the student.
- Various ways to list assignments, submissions by student, submissions by assignment
- Students can view their graded assignments
- Various signals, statuses shown about where in the process a submission is (not started, in progress, submitted, graded, etc.)
- Grades can be exported to an excel file
- Ability to download all submissions to an assignment to the Instructor's local disk for offline use.
- Section awareness for UM registered students – ability to target an assignment for a particular section in sites that are for cross listed classes and/or multiple sections.

Discussion

- User defined categories as an organizational scheme
- Topics within categories
- Supports flat (reply to topic only) and thread (reply to reply) formats
- Ability to limit a particular topic to a flat only format
- Instructor can delete empty categories and topics (those that have no replies)
- Next/Previous step through messages

Email Archive

- Ability to send email to all members of a site by sending an email to the site
- Emails sent to the site are archived and can be reviewed at a later date
- Permission control over who can and cannot send emails to the site, and global control allowing members only or anyone.

Dropbox

- Optional, automatic Dropbox creation
- Private folder setup for each student
- Students can upload into their folder
- Students cannot see into other student's folders
- Instructor can read documents in all student folders

Chat

- Each worksite has a default Chat room.
- Chat log is persistent – users can scroll back to see the history of the Chat
- Users present in Chat list
- Multiple Chat rooms

News

- A tool to show any RSS news feed

Embedded Web Page Tool

- Ability to include any iframe'd webpage in a worksite skinned as though it were a CTNG 'teamlet' (e.g., have the Spanish News appear as a 'tool' in a Spanish class worksite).

Synopsis

- Synoptic teamlets for Announcements, Discussion and Chat. These show the most recent activity for the associated tools summarized in a list. The three synoptic tools typically are displayed on the worksite's Home page.

- Configuration settings on the Synopsis tools allow some control over what is displayed (e.g., n most recent announcements in the last *n* days).

Notification

- Ability to optionally send an email to the site members when certain actions have occurred (e.g., when a file is added to Resources, when an Announcement is made, etc.)
- Ability for users to 'sign up' to be notified when certain events occur (e.g., when a discussion reply is posted, when a resource is changed, etc.)

Anonymous Comment

- A tool that allows members to create comments, (optionally anonymously) and permission control on who can read the comments. Could be used in a class site to provide anonymous comments to the instructor only, or in a worksite to provide signed comments for the group's view.

Public View

- Ability to specify resources, announcements that are public, and method for non-members to browse through sites to see public content.

Webdav

- Site Resources area available via Webdav.

Search

- Search capability in each tool for searching through metadata of the objects in that tool.

Navigo Project Assessment Tool

Beyond the CMS, the Navigo Project's Assessment Tool will be conformed to the Tool Portability Profile for Summer 04. Specific functionality in this IMS QTI-compliant quizzing and testing tool includes:

- Test/Survey information page
    - Access settings (number of attempts, duration)
    - Course details
    - Test title
- Test review Page
    - Review marked
    - Review all
    - Review unanswered
- Test/Survey confirmation page
    - Submission confirmation
    - Elapsed time
    - Course details
    - Test title
- Pooling
    - Individual pool creation
    - Question assignment to pool
    - Randomization
- Question by question delivery
    - "sticky" question sets / broken connection reserved identical random test
    - intermittent response saving

- Status information
    - Question progression
    - Time remaining/time exceeded
- Feedback
    - Correct answer feedback
    - Incorrect answer feedback
- Refined test taking/submission clock
- Import/Export QTI compliant assessments
    - Successful export from Oncourse proper to Oncourse NG
- Test disabled by default
- High stakes testing
- Test restriction by username
- "Smart" test availability
- Inline images in question
- Automatic anonymity notification

Determination of Installation Requirements

The Sakai tools are meant to be installed and used by schools of widely varying sizes, from large institutions like the eight campuses of Indiana University to smaller schools of a thousand or so students. There are currently pilot projects underway through Scott Siddall at Denison University and The Longsight Group and at the Midwest Instructional Technology Center headed by Nancy Millichap to determine the feasibility of running open source systems at traditional liberal arts colleges. Stanford's CourseWork and the University of Michigan's CHEF/Coursetools.NextGeneration are both involved in these tests. The Sakai Project will track these efforts and coordinate with the sites and participants mentioned to determine what a reasonable set of installation requirements, including what the hardware, software, and personnel costs would be for such schools. To date, to get such systems up and supporting 1,000 users, the indications are that costs would include about five to ten working days for staff, for acquisition and configuration of the server including installation of Apache, Tomcat, Jetspeed, Ant, etc, "hardening" the server with a full array of security policies, building the CMS, and testing the installation; and the acquisition of a mid-sized server, in the $7000 range. Experience with CourseWork at Denison suggests that 0.1 FTE is needed for end user support (faculty and students), and that about 30-50 hrs per YEAR may be required of the sysadmin (that estimate is probably high). Integration with the local infrastructure, such as the registrar or class location data bases on the individual campuses would be additional programming effort and subsequent support, of course. An installation requirements document will be developed that specifies the base costs and provides guidance to schools interested in this approach.

4. Project Budget

Institutional Contributions

Table 1presents the project budget in the form of sources (Sakai core institutions, Mellon Foundation) and uses of project resources. Institutional contributions list only direct personnel costs and do not include many staff indirect costs. The budget is presented for year one of the two year project.

Sources																	
Institutional Contributions	*Project Personnel Resources Dedicated to Sakai (Annual Salary + Benefits only)*																
Role	**--- Indiana ---**		**-- Michigan --**		**---- MIT ----**		**-- Stanford --**		**--- uPortal ---**		**---- OKI ----**		**--- Total ---**	
	#	**$**	**#**	**$**	**#**	**$**	**#**	**$**	**#**	**$**	**#**	**$**	**#**	**$**
Design/Usability	*1*	63,000	*2*	160,000	*2*	119,600	*1*	75,000					*6*	417,600
Developer	*5*	350,000	*3*	240,000	*4*	341,000	*4*	400000					*16*	1,331,000
Architect	*1*	90,000	*1.5*	180,000	*1*								*4*	270,000
Project manager	*0.5*	45,000	*1*	100,000	*0.5*	49,600							*2*	194,600
Direct Contribution	***7.5***	**$548,000**	***7.5***	**$680,000**	***7.5***	**$510,200**	***5***	**$475,000**					***27.5***	**$2,213,200**
Mellon Foundation Grant														**$1,200,000**
Total Sources		**$548,000**		**$680,000**		**$510,200**		**$475,000**		**$0**		**$0**		**$3,413,200**
Uses														
Direct Contribution Staff		*548,000*		*680,000*		*510,200*		*475,000*		-		-		*2,213,200*
Project Management		50,000		50,000		25,000				25,000				150,000
Architecture Coordination				75,000										75,000
Software development		125,000		125,000				120,000		225,000		125,000		720,000
Meetings/Communication		35,000		40,000		35,000		25,000		30,000		15,000		180,000
Local Integration Expediting		75,000												75,000
Total Uses		**$833,000**		**$970,000**		**$570,200**		**$620,000**		**$280,000**		**$140,000**		**$3,413,200**

Table 1 Project Budget Year 1

5. Post-Project Sustainability Plan

The period of the Mellon grant for the Sakai Project is two years. During this period the Sakai Project Board will be responsible for the development and release of the Sakai 1.0 and 2.0 software. The focus of the Sakai Project Core team members must remain on the development and delivery of these software components. For the longer term, however, the Sakai Board recognizes two conditions that will be essential to the success of the Sakai open source effort:

1) Creating a community of adopters. The board must engage in efforts to build a community of adopters that will install the software at their institutions and will pass the knowledge and practices gained in doing so back into the community knowledge base. A community needs trained developers who can contribute to the open source base with fixes and extensions to existing tools or contribute new tools that use Sakai's Tool Portability Profile. Support for this effort has been proposed through the Sakai Educational Partners Program.

2) Sustaining a community of adopters. The board must plan for long term sustainability in the Sakai community and for the Sakai software itself. Without an effective method of sustained support the promise of an alternative to current software choices will be short lived, and institutions will not choose to participate in the bootstrapping necessary for the development of a long term success.

The board plans an evolution of the board itself as the core products mature and as the Educational Partners Program gains strength. Over the two years of the Sakai Project, the participation of the partners will progressively increase, as the initial Sakai software is released and the conditions for increased community participation are put in place. As this happens, the board will evolve into an institution more representative of the community by bringing selected partners onto the board. Since the SEPP is initiated as a 3 year program, the second year of the overall project is the period targeted for transition. This allows the third year to be one in which the initial SEPP funding stream can be used to complete the transition to a subscription-based, community supported effort. Detailed planning for this will take place in the later part of the first year, informed by the experience of the first round of development and the early months of the Partners Program, and will continue throughout the rest of the project.

The first year of the project is devoted to intensive development by the core institutions. This will yield the Tool Portability Profile, the Sakai 1.0 tools, and the first generation of the software installed at Core and, perhaps, some partner institutions. In this period the partners will participate in informational, training and support activities focused on the initial releases and the creation of the clearinghouse for Sakai tools/components. The second year the partners will begin to implement the maturing Sakai tools at their own institutions. This signals the right time for the partners to assume a much larger role in the contribution of code and tools to the Sakai Project and its long-term governance through seats on the Sakai board.

In this transition year, the Sakai Board must balance its focus on software development, which is best done in a small focused group, and the need to involve a larger community in that software's direction, adoption and distribution. In open source software efforts, this defines the distinction between those relatively few involved in the development of the software, and the larger community of adopters. The challenges here will be to develop a model that allows for participation by the larger community in software directions without diluting the focus of the core development effort, as well as assuring continued commitment to the financial support of the community effort. This all rests on the success of the software.

6. Conclusion

This is the right project to do:

- it integrates the uPortal and CHEF efforts, both software use and development communities; we can capture the respective communities, non-profit and commercial, for the SAKAI project
- it provides a solid platform and implementation for OKI OSIDs
- it provides a significant level of module interoperability and previously impossible code mobility
- it develops a deep set of best practices to further the above
- it unites and coordinates efforts at major development centers
- it provides a strong, concrete model for high level interaction and organizational cooperation among major institutions

This is absolutely the best team to achieve this:

- the experiences and talents of the lead architects of CHEF, uPortal, and the OKI OSIDs will be brought together in one tightly coupled project
- the experiences of the IU-led Navigo team will be fully integrated in the project's development effort
- all the development muscle of the UM CourseTools.NextGeneration, IU Oncourse/OneStart, MIT Stellar, and Stanford CourseWork efforts will be coordinated and focused on a common product
- the management team includes the actual high-level managers of each of the local projects who must deliver local results and who are national leaders in these efforts
- the lead architect is a deeply experienced designer and developer engaged in the CHEF project and closely related portal, CMS and research tool development, and enjoys the full confidence of the participating software architects at the several institutions

This is the moment in time to do this project:

- we are all poised to make major investments in 'nextgen' systems at our local institutions
- with a modest relative investment sufficient incentives will be in place to overcome local imperatives and synchronize development

- this is a major accelerator for all the deliverables described in the project
- if we don't do it now we will all spin off meeting local needs and coordination costs will skyrocket
- if we don't do this now we harm the adoption chances of OKI, by losing the chance to have an suite of full feature tools that are powerful enough to command widespread adoption
- we can reset our clocks in the next 3 months for the next 3 years; otherwise we will spend the next 3 years trying to catch up with each other and the standards

The resulting products are the right products:

- the resulting product is an extremely useful, forward-looking set of tools that can be used by a wide community of schools, large and small
- the resulting CMS and WorkTools from the prior CHEF development will help bridge research and teaching at user institutions – a definite win for busy faculty
- the resulting product from uPortal will provide a customizable enterprise portal with significantly enhanced capabilities
- enhanced functionality provided by all the team members will enhance the product, eg, workflow engine, and result in a large set of course management and collaboration tools, in addition to the large number of channels already existing

7. Appendices

- Appendix A: Core Team Institutional Descriptions
- Appendix B: Institutional Letters of Sakai Core Participation
- Appendix C: Bios of Key Personnel
- Appendix D: License
- Appendix E: Educational Partners Program
- Appendix F: Existing Functional Tool Descriptions

Appendix A: Core Team Institutional Descriptions

Indiana University

Indiana University (IU) was established in 1820 in Bloomington and now has eight campuses throughout the state. It serves 99,000 students as a major research university with an institutionalized tradition of excellent teaching. *Time Magazine* recognized IU as the 2001 "College of the Year Among Research Universities." IU has 116 academic programs ranked in the top 20 within their discipline, and the university has over 460,000 living alumni.

Under the IT leadership of Dr. Michael McRobbie, Vice President for IT & CIO, IU is in the last year of implementing a $232M IT Strategic Plan with a mission of achieving IT leadership in absolute terms. Specific action items in the plan focused on improving teaching and learning via technology, faculty training, and support. The fruits of this have yielded extremely high adoption of the university's course management system with 70% of all teaching faculty and 80% of all students from the eight campuses actively using the CMS in their courses – over 82,000 active users, Fall 2003. This has yielded considerable insight in designing, tuning, and supporting very large scale systems with compelling economics. The Indianapolis campus (IUPUI) has been the most aggressive in campus-wide acceleration of leveraging technology for purposeful improvement of the educational experience. The campus chancellor and faculty council have committed to a program of institutional change beginning with large "gateway" undergraduate courses including the creation of ePortfolio educational software in collaboration with partners.

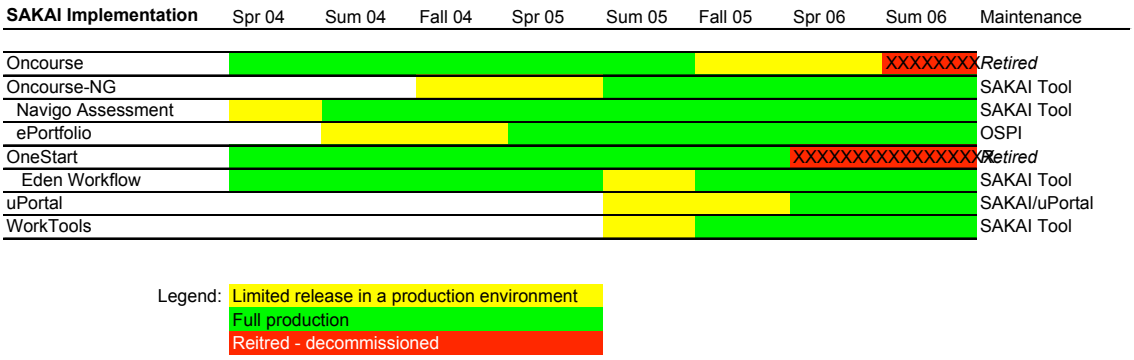
IU is keenly interested in collaborations that enhance software code mobility among like-minded institutions. We view application software sharing as an essential element in our open source strategy to meet the growing functionality needs of IU stakeholders. IU has committed to an enterprise software development strategy based on the OKI OSIDs, IMS data specs/standards, service delivery through a personalized portal, and J2EE/Oracle/Linux environment.

The current Navigo project for quizzing/testing will be the first new tool completed with the publicly-released OSIDs (December 2003 release). Our desire is to implement a CMS that is OKI-based by summer of 2004, and that can work within a cohesive framework with other open source educational software. The Sakai Project is precisely aligned with IU's strategy, and pooled university resources with Mellon Foundation support achieve a convergence point with a clear higher education direction previously viewed as unattainable.

IU currently has deployed an enterprise-wide portal, OneStart, for its eight campuses. It is a service delivery portal that is already used by administrative systems with course management and other services to be expanded during 2004. It has a workflow capability, Eden, that is used to route digital transactions among users and record various sign-off's. OneStart was designed with roles and a highly decentralized publishing/control structure. It is not currently OKI-based. There are some important features in OneStart that are essential for IU's overall services delivery strategy, and IU is deeply interested in seeing those in uPortal's JSR 168 release.

IU views the Sakai Project as an extraordinary win for the participating universities, higher ed in general, and the vision that led to the creation of OKI. IU is committing considerable staff, intellectual property, and administrative investment to the Sakai project to achieve the Sakai vision. IU will additionally contribute to ensuring that the ePortfolio and Navigo quizzing and testing software are conformed to Sakai's integrated framework.

Rather than implementing a new enterprise services portal and workflow, IU will be transitioning large scale, enterprise production systems to the Sakai products. Likewise, the CMS will run as a parallel system until it transitions to the Sakai-based "next generation" CMS. The following chart depicts IU's implementation timelines.



University of Michigan, Ann Arbor

The University of Michigan, with its size, complexity, and academic strength, the breadth of its scholarly resources and the quality of its faculty and students, is one of America's great public universities and one of the world's premiere research institutions. With 53,000 students on its three campuses pf Ann Arbor, Dearborn and Flint, the University is a community of outstanding faculty, talented students, and committed staff who learn and work in a stimulating intellectual environment enriched by diverse cultural and social opportunities. Founded in 1837, the University now has a regular faculty of 3,700, 420,000 alumni, and 600 degree programs. There are 24 libraries, 3 hospitals, and 9 museums that are part of the University.

Over the last decade, the University has made a continuing commitment to expanding education and research through the development and use of educational technology and support for distributed research communities. Coalescing in a system for online support of collaborative activities, including teaching, research and service activities, these efforts combine the work done by software designers and engineers and those, particularly at the School of Information, who have spent decades studying the adoption and use of digital methods of doing work.

The University has considerable experience in analyzing the requirements of distributed communities, and building systems to meet the current and emerging needs of such communities, having built such systems for its own faculty and student community of 35,000 users, for the NSF in support of national communities of atmospheric and space physicists, and earthquake engineers, and for the NIH in support of AIDS research teams at a number of universities.

The University has made a strong commitment to working with others in the academy who see the need for open source solutions to university core competencies, such as teaching and research. Under the leadership of Paul Courant as Provost and James Hilton as Associate Provost, the University has embarked on a multi-year, multi-million dollar, cross-department effort to develop software that can provide the functionality its large and diverse campus community needs. Recognizing that the technologies involved are rapidly evolving, the University has chosen a strategy of building on software frameworks that embody emerging standards and allow for rapid tool development by a distributed

community of developers as new needs and new capabilities emerge. Recognizing also that the skills necessary to direct the intelligent adoption of software are a key component to its success, the university has supported extensive analysis of faculty and student uses of the existing software, and constantly develops and shares new best practices out of the experiences of its community. The result is a rapidly evolving, locally useful and globally efficient, emergent approach to the next generation of open software for support of the university's mission.

The Massachusetts Institute of Technology

The mission of MIT is to advance knowledge and educate students in science, technology, and other areas of scholarship that will best serve the nation and the world in the 21st century.

The Institute is committed to generating, disseminating, and preserving knowledge, and to working with others to bring this knowledge to bear on the world's great challenges. MIT is dedicated to providing its students with an education that combines rigorous academic study and the excitement of discovery with the support and intellectual stimulation of a diverse campus community. We seek to develop in each member of the MIT community the ability and passion to work wisely, creatively, and effectively for the betterment of humankind.

The Massachusetts Institute of Technology, a coeducational, privately endowed research university is dedicated to advancing knowledge and educating students in science, technology, and other areas of scholarship that will best serve the nation and the world in the 21st century. The Institute has more than 900 faculty and 10,000 undergraduate and graduate students. It is organized into five Schools: Architecture and Planning, Engineering, Humanities, Arts, and Social Sciences, Management, and Science, and the Whitaker College of Health Sciences and Technology. Within these are twenty-seven degree-granting departments, programs, and divisions. In addition, a great deal of research and teaching takes place in interdisciplinary programs, laboratories, and centers whose work extends beyond traditional departmental boundaries. The board of trustees, known as the Corporation, consists of about 75 national and international leaders in higher education, business and industry, science, engineering and other professions. Fifty-seven alumni, faculty, researchers and staff have won Nobel Prizes.

Under the leadership of Robert A Brown as Provost and M S Vijay Kumar as Assistant Provost, MIT has launched several strategic initiatives in the area of educational technology. Supported by the MIT Council on Educational Technology, these initiatives include MIT OpenCourseWare, DSpace, OKI, iCampus, and d'Arbeloff, to name a few. Academic Media Production Services (AMPS) was created in July 2001 to deliver exemplar educational technology services to mission critical MIT initiatives and to MIT faculty, administrators and departments, in support of the Institute's strategic goals. A part of the Office of the Provost, AMPS provides an extensive array of services including:

- Planning and managing educational technology projects (including scope planning and cost analysis)
- Consulting on pedagogical approaches, design (graphic, instructional, and distance learning classroom facilities), support planning and educational assessment
- Providing digital technology services, including consulting, design, delivery, encoding and production
- Producing content in different forms, including videography, coding/programming, website building, multimedia, online formats, file compression, teleconferencing and videoconferencing, video editing, audio processing, web casting, CD-ROM and DVD authoring and duplication
- Running enterprise-scale operations including distance learning classrooms
- Design, development, deployment and support of Stellar ----- MIT's course management and administration system

- Providing help on testing and quality assurance, usability, accessibility

AMPS staff consists of web and graphic designers, educators, educational architects, pedagogical consultants, videographers, video editors, streaming media specialists, project managers, programmers, teleconferencing specialists and support personnel whose areas of expertise cover the full range of multimedia, asynchronous and synchronous technologies, and distance learning capabilities, and whose collective in-depth experience at MIT is over two hundred and fifty person years.

Stellar, MIT's course management and administration system

The first production version of Stellar was released for use in fall 2001. Academic Media Production Services(AMPS) focus since then has been on providing Stellar as a reliable and robust service that support's MIT's faculty, TAs and academic programs in their course based online teaching-learning requirements within the Institute, as well as towards supporting MIT OpenCourseWare (OCW)'s goal of publishing courses to the external community. Stellar ver 1.4, delivered in January 2003, was a benchmark for future processes, including the development of Stellar 1.5(released in August 2003).

Usage has more than quadrupled over the past year, with over 250 courses on Stellar for spring 2003 and over 315 courses for fall 2003. Courses from every School are represented in Stellar, and there are over 4000 students who are now accessing course material through Stellar. A maintenance version, Stellar 1.6 will be released for spring 2004.

The MIT-AMPS team will focus on the following key aspects of the Sakai project, , with the major focus being initial implementation of Sakai for fall 2004:

- Helping to define the product direction of Sakai through engagement with the project from an architectural, user interface and general design perspective.
- Building educational tools that conform to the "Tool Portability Profile" that will integrate into the Sakai framework as well as other products and projects that support the profile.
- Support and usability

It will engage in tool development and the development of OSID implementations for use at MIT that will also be made available as open source code under the MIT Implementation license.

The Open Knowledge Initiative (OKI)

The Open Knowledge Initiative at MIT (http://web.mit.edu/oki) is defining an open and extensible architecture for learning technology specifically targeted to the needs of the higher education community. O.K.I's Open Service Interface Definitions (OSIDs)) provides detailed specifications for interfaces among components of a learning management environment, and open source examples of how these interfaces work. The OKI architecture is intended to be used both by commercial product vendors and by higher education product developers. It provides a stable, scalable base that supports the flexibility needed by higher education as learning technology is increasingly integrated into the education process.

OKI has moved to a new phase of activity, requiring new focus, skill and community engagement. The bulk of the work over the first two year has revolved around requirements gathering and engineering design of the initial release of the Open Service Interface Definitions (OSIDs) scoped for 1.0 release. Today, and into the foreseeable future, the work must focus on engaging and growing the OSID adopter

community. The primary focus today centers around refining and expanding the OSIDs in response to key developer input, and transitioning to a community governance process.

The OKI team will work in close partnership to refine ongoing releases of the OKI service definition suite in direct support of the Sakai project. It is expected that the CHEF services implementation effort will become one of the primary projects during this period with which the OKI team will engage as part of its ongoing iteration of the specs.

OKI will also serve in its current leadership role within the global elearning community to help assure adoption of the "tool portability profile" among key vendors, government agencies and other organizations to further the reach of this work.

It will be critical to clearly articulate the role of the MIT OKI team in this effort and additionally not to confuse this with the role of the MIT/AMPS team. It is also critical that the role of MIT/AMPS be clearly described in relationship with the Sakai framework deliverable

The Open Knowledge Initiative has, through its engagement with IMS and positioning of its deliverables, achieved a high degree of vendor confidence considering that what it has achieved is potentially disruptive to the sector.

Early on the perception that OKI was producing an open source elearning platform created considerable suspicion and tension among various vendors in this space. Had this perception continued, it would have precluded the commercial sector from considering the OKI service definitions as a viable model for interoperability. The concern being that adopting these specs would help support a competitive open–source product and community among the marketplace. Significant effort was required to alleviate this issue and smooth these vendor relationships.

It would be, therefore, a major step backward for OKI to be seen as returning to this previously perceived state. The role of the OKI team will be clarified with respect to this concern in a number of ways.

- The OKI team will engage this project as one of a number intended to provide feedback and refinement of the OSID specs. Other projects include Tufts VUE, Navigo, Penn State's LionShare, the elearning infrastructure initiatives of the United Kingdom, Australia and Japan, the Microsoft funded iCampus projects at MIT, the elearning product development efforts of WebCT, Blackboard, Giunti Interactive, Sun Microsystems, and the efforts of the Microsoft/IMS intersection of projects and vendors. Other expected, related, activity includes the ongoing development of OSID documentation and test harnesses for OSID implementations.
- Under the newly articulated "Higher Ed Profiling" efforts of the IMS Global Learning Consortium, the OKI team will help facilitate the development of the "Tool Portability Profile." Primary development of this profile will naturally come from the Sakai project, as it will be the significant open effort addressing web-based "LMS" functionality in the United States. However, various components of the profile will likely come from other efforts and sectors, including those listed above.
- OKI will promote the "Tool Portability Profile" among the various vendors and other entities affiliated with the Global Learning Consortium and elsewhere to assure that there will exist external projects and products that begin to conform to the tool portability models being defined. This role is different yet related to the expected efforts of Michigan and JA-SIG in promoting the actual Sakai code-base for adoption by external projects and products.

Stanford University

The Leland Stanford Junior University (Stanford) is a private, non-denominational, not-for-profit, research university situated adjacent to Palo Alto, California. Founded in 1891, it currently enrolls over 14,000 students, of whom about 6,600 are undergraduates. The University comprises Schools of Business, Earth Sciences, Education, Engineering, Humanities and Sciences, Law and Medicine, as well as a variety of independent centers and programs.

The Stanford University Libraries and Academic Information Resources (SULAIR) is comprised of four operational units, the Stanford Libraries (15 libraries holding some 7.5 million volumes and many millions of archival, manuscript, graphic, microform and media objects), Academic Computing, the HighWire Press (an online publication support service for scholarly journal publishers) and the Stanford University Press. SULAIR serves the teaching, learning and research mission of the entire University. Michael A. Keller, University Librarian, Director of Academic Information Resources, and Publisher, HighWire Press, leads the SULAIR organization.

Academic Computing, directed by Lois Brooks, provides support for instruction and research through a wide variety of technological services and facilities for faculty and students, including:

- Consulting, documentation, and training on the use of technology in
- teaching and learning to Stanford faculty and students.
- The Academic Technology Specialists program for faculty
- CourseWork and Sakai development and support
- Media Solutions, a multimedia production and software development group
- Residentially-based computing support for Stanford's 11,000 housed students
- The Academic Technology Lab for faculty
- Language, multimedia and assistive technology facilities, instruction and support
- Technology-equipped classrooms
- Computing services in Stanford University Libraries
- Public, residential and library computer clusters and kiosks
- Network access in over 100 campus buildings.

Cumulatively, the Academic Computing functions assure Stanford's faculty and students have access to information and technology in support of their scholarship.

Appendix B: Institutional Letters of Sakai Core Participation

Signed versions of these letters are appended as PDF files. They are included here for ease of reading.

University of Michigan

THE UNIVERSITY OF MICHIGAN

MEMORANDUM

TO: Ira Fuchs, Andrew W. Mellon Foundation

FROM: Paul N. Courant, Provost and Executive Vice President for Academic Affairs
University of Michigan

DATE: November 18, 2003

RE: Memorandum of Intent for SAKAI Project Core Member

This memorandum makes clear the institutional intent of the University of Michigan (UM) to participate as a Core Member in the SAKAI Project. The project's objectives and deliverables are aligned with UM's software sourcing strategy. UM acknowledges the three principles for Core Member participation:

1. Contribution of at least 5 full-time staff as an institutional match,
2. Open licensing of SAKAI work products from the Core Members, and a
3. Commitment for local SAKAI software implementation.

UM is pleased to work as a SAKAI Project Core Member towards realizing the SAKAI Project's vision, and will appoint Professor Joseph Hardin to represent UM on the SAKAI Project Board. We recognize that the tight timeline for SAKAI deliverables can only be achieved with very strict control over project architectural and feature decisions. Therefore, UM agrees to work within the timelines and project management structure established by the SAKAI Project Core Leadership as initially outlined in the grant proposal to the Mellon Foundation.

The following outlines the participation of UM in these three principles.

Staff

UM agrees to contribute the work of the following positions to the work assignments of the SAKAI Project Core Leadership. These staff will be relieved of responsibilities on other local projects during the two-year grant project. Their daily assignments, project objectives, and performance feedback will come from the SAKAI Project Core Leadership with local HR matters, etc. handled by a local supervisor. These staff remain employees of the University and will be provided with a suitable place to work, necessary PCs, and network connectivity.

#	Title
-----	----------

3 Developers
2 Architects
1 Usability Analyst

While the number of positions contributed will not change during the two years of the project, the University of Michigan will adjust which personnel are assigned in consultation with the SAKAI Project Core Leadership and project needs. For example, the project may need more architects up front and more user interface specialists towards the end. These adjustments will consist of six month assignments with timely notice to both the employee and SAKAI.

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Intellectual Property and Licensing

UM agrees that all work products of the SAKAI Project Core – including all work done by UM under the SAKAI Project Core Leadership – is subject to the SAKAI Project's open source license. UM affirms that this open licensing approach does not restrict commercialization of SAKAI's open source work products.

UM also agrees to allow the following University-owned intellectual property to be used, modified, and/or included in the SAKAI Project without any licensing fee or restriction on its use or further distribution (see Licensing section below).

- CHEF - Comprehensive Collaboration Environment
- CT.NG Tools
- WT.NG tools

Adoption

UM acknowledges that synchronizing the IT adoptions across institutions is a primary objective of the SAKAI Project. UM has considered its needs and anticipates that it will adopt and deploy the following SAKAI products according to the following timeline:

Product	Year
CMS/WorkTools	Pilot Fall 04, Deploy Summer 05
Assessment	Pilot Fall 04, Deploy Summer 05
Portal	Pilot Fall 04, Deploy Summer 05/06 (Migration TBD)
Workflow	Pilot Fall 04, Deploy Summer 05

Licensing:

UM grants a royalty-free license to use, modify, redistribute, or incorporate the following intellectual property to the SAKAI Project under the following terms.

Software:

- ¬ CHEF Comprehensive Collaboration Environment
- ¬ CT.NG Tools
- ¬ WT.NG tools

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License Terms:

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copyright in the Software and any associated documentation will at all times remain with the copyright holders.

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The export of software employing encryption technology may require a specific license from the United States Government. It is the responsibility of any person or organization contemplating export to obtain such a license before exporting this software.

Indiana University

To: Ira Fuchs, Andrew W. Mellon Foundation

From: Michael A. McRobbie
Vice President for Information Technology & CIO
Vice President for Research

Date: 15 November 2003

Re: Memorandum of Intent for Sakai Project Core Member

This memorandum makes clear the institutional intent of Indiana University for participating as a Core Member in the Sakai Project. The project's objectives and deliverables are aligned with the IU's software sourcing strategy. IU acknowledges the three principles for Core Member participation:

4. Contribution of at least 5 full time staff as an institutional match,
5. Open licensing of Sakai work products from the Core Members, and a
6. Commitment for local Sakai software implementation.

IU is pleased to work as a Sakai Project Core Member towards realizing the Sakai Project's vision, and will appoint Dr. Brad Wheeler to represent IU on the Sakai Project Board. We recognize that the tight timeline for Sakai deliverables can only be achieved with very tight control over project architectural and feature decisions. Therefore, IU agrees to work within the timelines and project management structure established by the Sakai Project Core Leadership as initially outlined in the grant proposal to the Mellon Foundation.

The following outlines the participation of IU in these three principles.

Staff

IU agrees to contribute the work of the following positions to the work assignments of the Sakai Project Core Leadership. These staff will be relieved of responsibilities on other local projects during the two year grant project. Their daily assignments, project objectives, and performance feedback will come from the Sakai Project Core Leadership with local HR matters, etc. handled by a local supervisor. These staff

remain employees of the university and will be provided with a suitable place to work, necessary PCs, and network connectivity.

#	Title
5	*Developers*
1	*Architect*

While the number of positions contributed will not change during the two years of the project, IU will adjust which personnel are assigned in consultation with the Sakai Project Core Leadership and project needs. For example, the project may need more architects up front and more user interface specialists towards the end. These adjustments will be in six month assignments with timely notice to both employee and Sakai.

In addition, IU will provide the Functional Tools Lead per the organizational plan as outlined in the grant proposal.

Intellectual Property and Licensing

IU agrees that all work products of the Sakai Project Core – including all work done by IU under the Sakai Project Core Leadership – is subject to the Sakai Project's open source license. IU affirms that this open licensing approach does not restrict commercialization of Sakai's open source work products.

IU also agrees to allow the following university-owned intellectual property to be used, modified, and/or included in the Sakai Project without any licensing fee or restriction on its use or further distribution. IU's Advanced Research Technology Institute (ARTI) is responsible for issuing such licenses and will send a separate letter to affirm that the following IU software can be used without fee or restriction by Sakai:

- ¬ Navigo Assessment Tool
- ¬ OneStart Portal
- ¬ Eden Workflow Engine

Adoption

IU acknowledges that synchronizing the IT adoptions across institutions is a primary objective of the Sakai Project. IU has considered its needs and anticipates that it will adopt and deploy the following Sakai products according to the following plans:

Sakai Product	Year
CMS	Pilot Fall 04, Deploy Summer 05
Assessment	Pilot Fall 04, Deploy Summer 05
Portal	Pilot Fall 04, Deploy Summer 05/06 (Migration TBD)
Workflow	Pilot Fall 04, Deploy Summer 05
WorkTools	Deploy Summer 05

Stanford University

To: Ira Fuchs, Andrew W. Mellon Foundation

From: Michael Keller, Stanford University

Date: 17 November 2003

Re: Memorandum of Intent for SAKAI Project Commitment

This memorandum makes clear the institutional intent of Stanford University for participating as a Core Partner in the SAKAI Project. The project's objectives are aligned with our software sourcing strategy. We acknowledge the three principles of contributing staff, open licensing of blended IP from the Core Partners, and a commitment for local implementation. Stanford University is pleased to work as a SAKAI Project Core Member towards realizing the SAKAI Project's vision, and will appoint Lois Brooks to represent Stanford on the SAKAI Project Board. We recognize that the tight timeline for SAKAI deliverables can only be achieved with very tight control over project architectural and feature decisions. Therefore, Stanford agrees to work within the timelines and project management structure established by the SAKAI Project Core Leadership as initially outlined in the grant proposal to the Mellon Foundation.

Stanford University is pleased to contribute the following as a SAKAI Core Partner towards realizing the SAKAI Project's vision.

Staff

Stanford University agrees to contribute seven positions to the direct supervision of the SAKAI project leadership. These staff will be relieved of other responsibilities on other local projects during the two-year grant project. Their daily assignments and performance feedback will come from the SAKAI Project leadership at the University of Michigan. These will be employees of Stanford University, and we will provide compensation, space, connectivity, etc., and handle all HR matters. The nature of the positions will be determined in the near future in consultation with the other Core Partners.

Intellectual Property

Stanford University agrees that all work products of the SAKAI project, including all work done by Stanford University staff under the project leadership, is subject to the SAKAI Project licenses. We affirm this common licensing approach. and agree to enter into a common, unfettered, open source license that does not restrict use, modification, redisribution or commercialization of the code.

Stanford University also agrees to contribute to the SAKAI Project the following pre-existing University-owned intellection property without any licensing fee or on the SAKAI Project's right to reuse the code and/or create derivative works from such contributions:

- Functional design, code, and interface for the Assignment and Assessment Manager;
- Functional design, code, and interface for CourseWork, excluding the Stanford propriety Dynamic Templating Language.

Adoption

Stanford University acknowledges that synchronizing IT adoptions across institutions is a primary deliverable of the SAKAI Project. Stanford University commits to adopting and deploying the SAKAI products in prototype in Fall 2004, and in production in Fall 2005.

MIT

November 20, 2003

Ira H. Fuchs
Vice President for Research Information Technology
Andrew W. Mellon Foundation
252 Alexander Street
Princeton, NJ 08540

Subject: Memorandum of Intent for SAKAI Project Commitment

Dear Ira:

This memorandum makes clear the institutional intent of MIT for participating as a Core Partner in the SAKAI Project. The project's objectives and deliverables are precisely aligned with our software sourcing strategy. We acknowledge the four principles of contributing resources in the form of staff, placing those staff under the project's leadership, open licensing of a blended IP from the Core Partners, and a commitment for local implementation. *MIT* is pleased to contribute the following as a SAKAI Core partner towards realizing the SAKAI Project's vision. MIT's commitment and the terms for Intellectual Property are described below.

Contribution

MIT agrees to contribute the following staff positions to the SAKAI Project. We will provide a suitable place to work, necessary PCs, and network connectivity.

#	Title
3	*Developer*
1	*Architect*
2	*Web Designer and Usability Designer*
0.5	*Project Management*

Staff Work and Supervision

These staff are currently dedicated to working on Stellar, MIT's course management and administration system. Their efforts will now be focused on delivering to SAKAI's commitment during the two year grant project. Their daily assignments, project objectives, and performance feedback will come from the

SAKAI Project leadership with local HR matters handled by a local supervisor. We affirm that assignments will be allocated as needed from the SAKAI project leadership based on executing the overall project plan on time.

Intellectual Property

MIT agrees that all work products of the SAKAI Project – including all work done by *MIT* under the SAKAI Project leadership – is subject to the SAKAI Project's licenses. We affirm this open licensing approach that does not restrict commercialization of SAKAI's open source work products.

MIT also agrees to contribute the following MIT-owned intellectual property for use, modification, and/or inclusion in the SAKAI Project without any licensing fee or restriction on its use: Stellar course management and administration system.

I believe that the continued development of open-source learning management tools are in the best interest of the academic community and I am very pleased that, with Vijay Kumar's leadership, MIT is continuing to play a role in this development. Please let me know if you have any questions.

Sincerely,

RAB/cjh
Cc: Jerry Grochow
Vijay Kumar
Doreen Morris

December 4, 2003

Dr. Ira Fuchs
Vice President for Research Information Technology
Andrew W. Mellon Foundation
252 Alexander Street
Princeton, NJ 08540

Dear Ira:

I am writing this short note to clarify the importance of the SAKAI Project to MIT's plans for the evolution of our Learning Management System. We understand that synchronizing the IT adoptions across institutions is a primary objective of the SAKAI Project. MIT has considered its needs and anticipates that it will adopt and deploy SAKAI according to the following times:

- SAKAI Version 1.0: Limited release
  fall 2004

- SAKAI Version 2.0: Production release
  fall 2005

I hope this note explains our plans. We look forward to participating in this exciting project.

Sincerely,

RAB:jmo
cc: Vijay Kumar

Appendix C: Bios of Key Personnel

Sakai Board

Joseph Hardin (Principal Investigator) is the Director of the Collaborative Technologies Laboratory in the Media Union, and a Clinical Assistant Professor in the School of Information, at the University of Michigan, Ann Arbor. He is leading the CompreHensive collaborativE Framework (CHEF) project that is developing an open source framework and tools for course management systems, workgroup support, and support of online research, with support from NSF, NIH and U Michigan. Joseph has managed development of online collaboration systems for a good while, including while he was Associate Director of Software Development at the National Center for Supercomputing Applications (NCSA) at the University of Illinois-UC, from the early to the late 90's. He is a founder and board member of the International World Wide Web Conference Committee, and is preparing a graduate course on the Semantic Web for this Winter.

Dr. Bradley C. Wheeler (Co-Principal Investigator) is the Indiana University Associate Vice President for Research & Academic Computing and Dean of IT for IU-Bloomington in the Office of the Vice President for IT & CIO. He is leading IU's efforts to develop its next generation learning environment based on open source collaborations using the OKI services architecture. As an Associate Professor of Information Systems at IU's Kelley School of Business, he teaches MBA courses on Executive Leadership of IT Strategy. He has taught e-business and e-learning courses for corporate/academic audiences on six continents and in 26 countries.

Jeff Merriman (Co-Principal Investigator) has spent much of his career building and promoting various kind of technology infrastructure for higher education. As Director of Academic Computing at Stanford University he brought the notion of "Wired Campuses" into the forefront by networking all of Stanford's graduate and undergraduate residence halls, leading an aggressive effort that began in 1987. Jeff also conceived and developed the annual ResNet Symposia series. This event brings together information technologists from around the world to share implementation, support, and educational strategies pertaining to distributed, residential computing environments in higher education. In 1998 Jeff helped to form Stanford's Academic Computing program and became Director of Academic Computing Technology. In this role he began to widen his focus to include issues of software infrastructure in support of educational initiatives.
Jeff is currently Senior Strategist for Academic Computing at the Massachusetts Institute of Technology and project leader of the Open Knowledge Initiative. OKI is defining an open, service based architectural specification for educational software that targets the interoperability requirements of the higher education community. The OKI specifications are intended for use both by commercial product vendors and by higher education software developers. One of the critical challenges of the Initiative is to help make educational applications and systems that utilize these specifications accessible to the widest range of educational institutions.

Dr. Amitava 'Babi' Mitra (Co-Principal Investigator) is the Executive Director of Academic Media Production Services (AMPS) at MIT. He leads a cost-recovery organization that has been set up recently to provide educational technology services to the MIT community, in support of MIT's strategic goals. Dr. Mitra has over 17 years of leadership experience in education, including corporate e-learning, publishing and multimedia based training, higher education, and distance education. Prior to joining MIT, Dr. Mitra led NIIT,Inc's $ 24 million revenue Knowledge Solutions Business, a profitable business unit with over 600 professionals, clients in North America, Europe, Asia and Australia, and a strong process-oriented development approach(among the first in the world to receive ISO 9001 certification in 1993 for

instructional development). Dr. Mitra has also served as the Chief, Distance Learning Programs, at the Birla Institute of Technology and Science (BITS), Pilani, India, from where he earned his PhD: he was simultaneously a Visiting Engineer at the Department of Chemical Engineering, MIT, where he worked on an NIEHS sponsored research project. His other interests include social development, and he is a founder-member and on the Council of Governors, Pan Himalayan Grassroots Development Foundation, Kumaon, India.

Carl Jacobson (Co-Principal Investigator) is Director of Management Information Services at the University of Delaware, a consultant, a writer and a frequent speaker at national and regional computing conferences. Carl's areas of interest and expertise include customer outreach, the Web, e-business and open-source software development. Carl managed the "first-of-its-kind" efforts at Delaware to build secure, organized, dependable Web front ends to administrative systems. He is an outspoken advocate of re-thinking the roles of the Web and e-business, providing new opportunities to support teaching and research, revamp business practices, and improve customer service. Carl is co-founder of the Java in Administration Special Interest Group, principle investigator of a Mellon Foundation grant for the collaborative development of uPortal and received the 2001 EDUCAUSE Award for Leadership in Information Technology.

Lois Brooks (Co-Principal Investigator) is the Director of Academic Computing at Stanford University. Lois directs a complex organization of over 200 professional and student employees that provides computing services and infrastructure to Stanford's students and faculty. Academic Computing provides technology infrastructure including networks, clusters, classrooms and labs in over 100 buildings that comprise the Stanford Libraries and student residences; supports curricular technology through software development, consulting, and teaching programs; provides fee-for-service web and software development to the Stanford community. Brooks has worked at Stanford for 19 years, focusing on the effective use of technology in teaching, learning and administrative work practices.

Technical Leadership

Dr. Charles R. Severance is currently a Senior Research Programmer at the University of Michigan Media Union working on tools for online collaboration for teaching, learning, and research. He is the Author of the book High Performance Computing, Second Edition, published by O'Reilly and Associates, and has taught Computer Science courses at the University of Michigan and Michigan State University. Charles has developed several tools to assist in the production of multimedia web-based lectures. The tools are called the Sync-O-Matic 3000 and ClipBoard-2000. Charles is the co-host of a Television show called "Nothin but Net" produced by MediaOne, and was previously the co-host of a nationally televised program called Internet:TCI. Charles has a B.S., M.S., and Phd. in Computer Science from Michigan State University. His research area is the use of parallel processors for High Performance Computing and the use of the Internet to deliver educational content.

Glenn Golden is currently a Senior Systems Research Programmer at the University of Michigan School of Information. Glenn is architect, designer, and technical lead for CHEF, the open source framework for online collaboration for teaching, learning, research, and commerce. Prior to this, Glenn was architect and technical lead of the NSF funded SPARC project; a web based collaboratory for solar physics and aeronomy. Glenn has been leading the design and development of computer software products in commercial, entertainment, scientific and educational areas for over 25 years. Glenn is an expert at complex system architecture and design, Java software, and bringing software products to market. Glenn is currently working on the next set of features for the CHEF 1.1 software, and researching the new Portlet spec (JSR 168), Pluto (the reference Portlet container implementation), Service frameworks (such as Apache's Avalon), OKI OSIDS, and RDF for the upcoming CHEF II / Sakai architecture. Glenn is also a committer on the Apache Jetspeed and Pluto projects.

Robert Lowden is the Course Management Systems Manager for Indiana University and has worked for University Information Technologies for 5 years. He is responsible for the development, maintenance, support and future direction of IU's course management system, Oncourse, serving approximately 90,000 users on 8 IU campuses. He is also responsible for development of Oncourse Next Generation (NG), IUs next course management system based on the Open Knowledge Initiative (OKI) and IMS specifications. Rob has been involved in distance education programs for over a decade initially working with the US Navy and their Courses Afloat program since 1992 and most recently working with Indiana University and their online learning efforts. Rob has a B.S. in Computer Science from Purdue University with an emphasis on network technologies.

Dr. Craig Counterman is currently Head of Web Tools and Operations in Academic Media Production Services(AMPS) at MIT, and Chief Architect of Stellar, MIT's course management system. Craig started at MIT as an undergraduate and has been there ever since, except for two years in the mid-1980s when he was Director of Software Development for a startup. When he returned to MIT to complete his undergraduate degree, he started to become involved in educational computing using Project Athena, a path breaking student computing infrastructure project, and continued his involvement through the remainder of his undergraduate education, and also through his graduate education in Materials Science and Engineering at MIT. As a post-doctorate fellow in Materials Science and Engineering, he worked increasingly on educational applications of computers to support teaching introductory Materials Science, on Athena and then on the web. After a brief period as Director of Departmental Computing Resources for the Department of Materials Science and Engineering, he moved to Information Systems as a Faculty Liaison. From there he became involved in the specification and development of Stellar, MIT's centrally supported course management system, becoming its architect, and lead programmer, and he has led the technical team that released Stellar version 1.4 for spring 2003, and Stellar ver 1.5 for fall 2003.

Appendix D: License

The Sakai project will operate under the following open-source license:

Sakai Software License

The following text should accompany all copies of the Sakai Software:

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Appendix E: Educational Partners Program

The Sakai Educational Partners Program

Introduction

The Sakai Project will create a set of pre-integrated, modular, open source software that can serve important needs for educational institutions. The Sakai Project Board believes that a large number of institutions of higher education, both large and small, will be interested in participating in the Sakai Project in ways that suit their local needs and timing. These may include

- contributing to funding the project to ensure an open source option for higher education,
- participating in the discussion of strategic directions for the Sakai Project
- developing educational tools based on Sakai's Tool Portability Profile, and/or
- adopting Sakai Project software at their institution.

In order to manage the participation of many interested institutions, the board proposes the Sakai Educational Partners Program (SEPP). The SEPP will be created in concert with the Sakai Core Development Project to service the needs of partner institutions. The Sakai Board will be seeking this support from other sources. The SEPP will be the organization to sustain the Sakai work products after the initial core development effort ends.

The objectives of the Educational Partner's Program are to

- actively develop a large, self-sustaining community of institutions that share the Sakai Project's open source vision for leveraging the economics and innovation of common academic software,
- carry on a discussion of strategic directions for the Sakai Project as it emerges and evolves, focusing on the opportunities of open source, collaborative development of software in the higher education community
- provide a Sakai Project roadmap describing the timing and features for Sakai software releases so that partners can make local plans and commitments,
- provide in depth developer and adopter training,
- develop a leveraged support infrastructure for cross-institutional Sakai Project knowledge in the form of a common (or locally implemented) knowledgebase, and helpdesk
- mobilize distributed resources for development and support of Sakai tools,
- provide a marketplace for the sharing and exchange of Sakai-based tools/components (many of these may be discipline specific add-on tools, e.g., physics or foreign languages teaching tools) that will run in the Sakai framework,
- facilitate purposeful interaction with the Sakai Core development team,
- coordinate activities with other organizations, such as, IMS or country-level agencies,
- build on the experiences of the JA-SIG, CHEF, and OKI training and conferences, and to
- facilitate Sakai community sharing of best practices in development, implementation, and support.

Full-time staff is needed to ensure that the SEPP can support these critical needs in developing a vibrant community. SEPP staff can coordinate, focus, and broker many inter-institutional communications that presently do not do a good enough job sharing software and development energy. The SEPP staff would report to and be managed by the Sakai Project Board during the first two years of the Sakai Project. Its governance would transition to the SEPP community after release of the summer 2005 Sakai tools (see the Post-project Sustainability Section in the Sakai Project proposal).

The SEPP will officially launch on 1 March 2004. This timing is designed to follow the completion of the first generation of the Sakai Tool Portability Profile and developer training meetings for the Sakai Core Team. The SEPP will be pre-announced in December with January-February 2004 used to hire and train SEPP staff.

Partner Contributions and Benefits

The SEPP will be sustained through partner's annual membership fees. SEPP members will agree to contribute $10,000 annually for three years ($5,000 annually for enrollments less than 3,000 students).

The SEPP is targeted at administrators who need to know as early as possible what is coming down the road, adopters of the software who will need support in running it at their institutions, and developers who will want to contribute tools and services to the Sakai system. Partners will receive early, non-public access to information on the Sakai Project, including strategic directions, technical design and the initial tool sets for the 2004 summer release; early code releases of the Sakai framework, portal, services and tools; and an invitation to the semi-annual SEPP meetings.

The initial SEPP meetings are planned for June and September of 2004. The semi-annual SEPP meetings will have a technical track for training software developers/implementers and an administrative track for Sakai strategy and user support. Partners will be able to send two developers to each meeting for formal training in the Sakai Tool Portability Profile by the lead technical staff of the Sakai Project. The focus will be on writing tools for inter-operability and understanding the Sakai tools for local integration. The SEPP meetings will also provide an opportunity to understand the portfolio of Sakai work underway at partner institutions to aid in tool sharing and planning for local needs.

Beyond development training and software strategy, SEPP members will benefit from a knowledgebase to leverage shared economies in Sakai user support. The knowledgebase will itself be a Sakai tool conformed to the Tool Portability Profile. Its contents can be accessed remotely as part of leveraged support or installed locally at an SEPP institution.

Partners will receive exclusive access to SEPP staff and the knowledgebase. These staff members will include a

- Community Development Manager to facilitate and coordinate all partner communications for the SEPP and visit local partner sites as needed,
- Developer(s) to provide technical support for partners and liaising with the Sakai Core development team on behalf of partners , and to develop leveraged support tools of immediate and specific interest to partners, such as a shared knowledgebase,
- Documentation Writer(s) to provide technical documentation specifications for partners' needs, and an
- Administrative Support person to aid SEPP staff members.

These staff members are essential for partners to get the timely attention they need when questions arise.

Launching the Sakai Educational Partner's Program

The Sakai Board will begin immediately apprising educational institutions of the SEPP and its benefits for higher education. Preliminary inquiries – even before official Sakai Core Project funding – indicate a very strong community interest in a credible open source option. The timing of cash flows, however, is a critical issue for successfully launching the Educational Partner's Program by 1 March 2004. The SEPP needs to begin creating staff positions, moving them through university HR procedures, recruiting, hiring,

and training staff in January and February 2004 to be ready for a 1 March launch. There may be some lag in securing sufficient cash-in-the-bank to meet university financial regulations for hiring staff.

Therefore, the Sakai Board requests an initial $300,000 seed grant to begin immediately hiring critical SEPP staff positions to prepare for the 1 March 2004 launch (see budget below). This seed grant is essential for SEPP to create funded positions per university financial regulations. The SEPP is designed to be self-sustaining through membership fees after the initial launch year.

Budget

The budget below conservatively estimates growth in SEPP membership, as the value proposition will become stronger in the later years when the Sakai Project software is in production and the SEPP has been proven. It estimates 30, 70, 80, and 90 institutions in each of the first four years, respectively. As estimates, these numbers could be higher or lower and staffing plans for SEPP projects will have to adjust to revenues. The staff roles and funds uses, however, do fully specify the budget to fully realize the SEPP objectives.

Initial Seed Grant	300,000				
Partner Fees (estimate)	300,000	700,000	800,000	900,000	
Total Sources	600,000	700,000	800,000	900,000	3,000,000
Uses					
Community Dev Mgr *	90,000	92,700	95,481	98,345	
Development Projects Mgr	0	92,700	95,481	98,345	
Senior Tech Developer(s) *	110,000	220,000	226,600	233,398	
Junior Developer/Support *	75,000	77,250	79,568	81,955	
Documentation Writer(s)	75,000	150,000	154,500	159,135	
Administrative	60,000	61,800	63,654	65,564	
Workstations/Equipment	30,000	10,000	11,000	12,000	
Workshops/Events	75,000	75,000	75,000	75,000	
Total Uses	515,000	779,450	801,284	823,742	2,919,476
Annual Growth Rate	3%			*Reserve*	80,524
**=Jan/Feb 2004 hire*					

Appendix F: Existing Functional Tool Descriptions

IP Contributions from Schools for Tool Refactoring

Indiana Oncourse

IU's Oncourse Classic Current Features Fall 2003

Note: The following is a click by click list of every feature in the current application. Features intended for release in the Next Generation (NG) version of the application are not listed.

Profile Area
☑ **My Courses**
○ Edit Course listing – Edit Course Listing allows users to select which course appear in the default profile.
○ Fall 2002 (current semester)
♣ Registrar populated course one
♣ Registrar populated course two
♣ Manually populated course one
☑ **My Contact Information** – specify personal information including home page, phone number, etc.
○ Contact Information Editor
♣ Public Information
• First Name
• Last Name
• Position
• Department
• School
• Room
♣ Protected Information
• Picture URL
• E-mail
• Home Page
• Work Phone
• Home Phone
• Other Information
• Viewable By
○ Faculty
○ Students
○ Guest
☑ **My Tools**
○ Oncourse Tools – Oncourse Tools is a list of general tools available for all Oncourse users to select.
♣ insite
○ Edit Tools List – Edit Tools List is a list of campus specific utilities provided by campus representatives. Selections made here appear at the bottom of the My Tools section of the profile page
♣ IUPUI Resources
• Campus Map
• Weather
• Student Technology
○ My Filemanager (also accessible via http://portfolio.iu.edu)
♣ Login
• Upon successful authentication, users are taken to their public

directory. The following information are viewable while working in the public directory:
○ Current directory listing
○ Available disk space
○ Filename
○ Size
○ Last modified
♣ Go to Private Directory
• Takes user to private directory where uploaded files are not given WWW access through publicly available URL. The following are viewable while working in the private directory:
○ Current directory listing
○ Available disk space
○ Filename
○ Size
○ Last modified
♣ Upload a File
• Browse
• Add to Upload List
○ File upload list
♣ Individual local paths listed
• Upload Now
○ Publicly accessible URL presented upon successful upload
○ Return to Filemanager
• Cancel Upload
♣ New Folder
• Prompted for folder name
• OK
• Cancel
♣ Rename
• User must select (check) desired file(s) to be renamed
• Old filename (provided)
• New filename
• Rename Now
• Clear New Names
• Cancel Rename
♣ Help
• Opens new window to content specific Oncourse online help
♣ Delete
• User must select (check) desired file(s) to be deleted
♣ Move
• User must select (check) desired file(s) to be moved
• Select desired destination folder (Public/Private[1] folder automatically listed)
• Move Now
• Cancel
♣ Oncourse Profile
• Returns user to Oncourse profile
♣ Exit
○ Logs user out of Filemanager
○ My Calendar

[1] If user is working in Public folder, the option to move the file to the Private folder is always available and vice versa.

- My Bookmarks
- My Notebook
- Profile Search
- Authoring Tools
- Administrator Tools

Course Features

☑ **Course Announcement** – The Course Announcement area provides a way for an author to deliver information to students upon login (altered from In Touch tab).

☑ **Welcome** – The Welcome area provides direct link to course mail for easy retrieval of new mail messages.

☑ **Syllabus** - The Syllabus area provides a place to pose the official outline for a course.

- Create/Edit Syllabus
  - ♣ New Item
    - Syllabus Item Editor
      - General Settings
        - ♣ Title
        - ♣ Format
          - Plain Text
          - HTML
        - ♣ Content
        - ♣ Attachment
        - ♣ Viewable By
          - General Public
          - Class Members
          - Groups
      - Advanced Settings
        - ♣ Style
          - Default Style
          - (Style 1) Section Heading
          - (Style 2) Heading
          - (Style 3) Sub-Heading
          - (Style 4) Item
          - Add Style
            - Enter the new style name
  - ♣ Delete Selected Items
  - ♣ Rearrange Items

☑ **Schedule** - The Oncourse Schedule, along with the Syllabus, is an area where instructors can place outlines, documents, links to resources, and other material relevant to their courses.

- View Schedule Calendar - Ordinarily, the class schedule is displayed as a list of items, but you can also choose to see dated items in a calendar view.
- Create/Edit Schedule
  - ♣ New Item / Edit Existing Item
    - Schedule Item Editor
      - General Settings
        - ♣ Category
        - ♣ Due Date
        - ♣ Title
        - ♣ Format
          - Plain Text
          - HTML
        - ♣ Content
        - ♣ Attachment
        - ♣ Viewable By
          - General Public

- ALL Class Members
- Restrict to These Groups
  - Group one
  - Group two
- Advanced Settings
  - ♣ Starting Date
  - ♣ Ending Date
  - ♣ URL
  - ♣ Attributes
- ♣ Delete Selected Items
- ♣ Rearrange Items

☑ **Class -** The **Class** section contains your class roster, which is the list of people in your class.

- Create/Edit Roster – Using Create/Edit Roster, authors can add or remove users from a course.
  - ♣ New Roster Item
    - Roster Item Editor
      - General Settings
        - ♣ User ID
        - ♣ Role
        - ♣ First Name
        - ♣ Last Name
      - Advanced Settings
        - ♣ Picture
        - ♣ E-mail
        - ♣ Author
        - ♣ Hidden
        - ♣ Disabled
        - ♣ Locked
  - ♣ Delete Selected Items
- Create/Edit Groups - Authors can put students into working groups and provide communications specific to that group (chat rooms, discussion forums, course mail and group spaces).
  - ♣ New Group
    - General Settings
      - Group Name
      - Group members
  - ♣ Delete Selected Groups
- Show Pictures – This feature allows the user to view pictures in class members' profile.
- Show Groups – This reorganizes the class roster into designated groups rather than the default view separating Faculty and Students.
- Show Roster – Selecting this will revert to the standard view separating Faculty from Students.

☑ **In Touch -** the **In Touch** selections offer various ways for class members to communicate with each other. Most of these options can be made accessible to the entire class, to groups within the class, or, in some cases, to the general public.

- In Touch Editors
  - ♣ Set Course Mail Options - Instructors can choose to activate Course Mail, with which you can send internal messages to class members.
    - Course Mail Editor
      - Activate/Deactivate Course Mail
        - ♣ Active
      - Activate/Deactivate Inactivity Notification
        - ♣ Notify Authors

- ♣ Days Before Notifying Authors
- ♣ Create/Edit Course Announcements - Instructors can use this page to post quick updates, reminders, or any other brief material for everyone to read.
  - New Item / Edit Existing Item
    - Course Announcement Item Editor
      - ♣ General Settings
        - Format
          - Plain Text
          - HTML
        - Notice
        - Viewable By
          - General Public
          - Class Members
      - Advanced Settings
        - ♣ Starting Date
        - ♣ Ending Date
  - Delete Selected Items
  - Rearrange
- ♣ Create/Edit Student of the Week
  - Student of the Week Editor
    - General Settings
      - ♣ Student Name
      - ♣ Picture URL
    - Advanced Settings
      - ♣ Image Width
      - ♣ Image Height
- ♣ Create/Edit Discussion Forums
  - New Item / Edit Existing Item
    - Discussion Forum Editor
      - ♣ Title
      - ♣ Description
      - ♣ Viewable By
        - General Public
        - ALL Class Members
        - Restrict to These Groups
- ♣ Create/Edit Chat Rooms
  - New Item / Edit Existing Item
    - Chat Room Editor
      - ♣ General Settings
        - Title
        - Description
        - Viewable By
          - General Public
          - ALL Class Members
          - Restrict to These Groups
      - ♣ Advanced Settings
        - Archive
  - Delete Selected Items
  - Rearrange Items
- ♣ Create/Edit Drop Boxes
  - New Item / Edit Existing Item
    - Drop Box Editor
      - ♣ General Settings
        - Title

• Folder
• Description
• Opening Date
• Closing Date
• Drop Box for Use By
o ALL Class Members
o Restrict to These Groups
♣ Advanced Settings
• Upload File Size Limit
• Total Space Limit
• Students May Update Files
• Delete Selected Items
• Rearrange Items
♣ Create/Edit Group Spaces
• New Items / Edit Existing Items
o General Settings
♣ Title
♣ Folder
♣ Description
♣ Space for Use By
• ALL Class Members
• Restrict to These Groups
o Advanced Settings
♣ Upload File Size Limit
♣ Total Space Limit
• Delete Selected Items
• Rearrange Items
♣ Create/Edit In Touch Links
• New Item / Edit Existing Item
o In Touch Link Editor
♣ General Settings
• Category
• Title
• URL
• Description
• Viewable By
o General Public
o ALL Class Members
o Restrict to These Groups
♣ Advanced Settings
• Attributes
• Help URL
• Icon URL
• Author Only
• Delete Selected Item
• Rearrange Items
o Course Mail – Course mail is an area where users can use it to send messages to the entire class, to groups defined in your class roster, or to individual participants.
♣ Send New Mail
♣ Search
♣ Folders
• Inbox
• Sent
• Deleted Items

- ♣ Create/Edit Folder
  - Add, Delete, Rename Mail Folder
    - Add Folder
      - ♣ Type in the new folder name
- ♣ Change Preference - Anyone in a course with active Course Mail can arrange for Oncourse to send a daily e-mail notice about new Course Mail.
  - Send notification to this internet address:

- Discussion Forms - Discussion forums are online bulletin boards where class members can post messages, organized by topics or "threads".
  - ♣ Viewing Postings
    - Expand All
    - Collapse All
    - Previous Next
  - ♣ Set Internet Mail Notification
  - ♣ Search All Forums
    - Search for Text
    - Search for Forums
  - ♣ Display All Forum Messages
  - ♣ Post a New Message
    - Subject
    - Message
    - Add attachment
- Chat Rooms - Chat rooms allow instructors to create common places for live, real-time conversations on the Web.
  - ♣ Message
  - ♣ Refresh
  - ♣ Rooms
  - ♣ Users
  - ♣ Filters
- Drop Boxes - A drop box is a folder created by an instructor where class members can upload files. Students commonly use drop boxes to hand in assignments.
  - ♣ Upload a File
  - ♣ Delete
- Group Spaces - A group space is a folder where class members can upload files to share.
  - ♣ Group Space Name
    - Upload a File
    - New Folder
    - Rename
    - Delete
    - Move
- Other In Touch Tools
  - ♣ Announcements – Displays all current course announcements.
  - ♣ Course Statistics – Provides detailed data for students available only to course authors.
    - Course Logins – Course Logins shows each student and the number of times they have logged in/out, the last login and total minutes of that session.
    - Mail Messages – Mail Messages displays the number of course mail messages sent and read for each user.
    - Chat Postings – Chat Postings shows the number of private and public postings for each user who has participated in a class chat.
    - Forum Postings – Forum Postings shows the number of messages posted to and read from discussion forums in the class for each user

who has participated in a discussion forum.
♣ Student Statistics – Student Statistics displays much of the same information available within course statistics, but is group by user so all information on one user can be viewed simultaneously.
• Student Summary
• Course Logins
• Mail Messages
• Chat Postings
• Forum Postings
• Grades
• Back to Student List
☑ **Tools**
○ Create/Edit Tools
♣ New Item / Edit Existing Item
• General Settings
○ Category
○ Title
○ URL
○ Description
○ Viewable By
♣ General Public
♣ ALL Class Members
♣ Restrict to These Groups
• Advanced Settings
○ Attributes
○ Author Only
♣ Delete Selected Item
♣ Rearrange Items
○ Authoring Tools
♣ Online Gradebook
• Create / Edit Gradebook
○ Add / Remove Gradebook
♣ Create New Gradebook / Edit Existing Gradebook
• Title
• Description
• Viewable By
○ Author Only
○ Make available to individual students
○ Restrict to These Groups
♣ Delete Selected Item
♣ Oncourse Test and Survey Tool
• Main Menu
○ Class Tests and Surveys
♣ Settings Menu - Select this menu to change settings such as test title, attempts allowed, and who, when and from where this test or survey may be taken.
• General Settings
○ Author
○ Section
○ Title
○ Attempts
○ Time Limit
○ Auto-Submit When Time Limit

Expires
○ Scramble Test Questions
○ Allow Other Authors to Copy Questions
• Feedback Settings
○ The Questions Text
○ The Student's Response
○ The Correct Answers
○ The Default and Custom Comments
○ The Student's Score
○ A Custom Message
♣ Message
○ Finish URL
• WWW Page Settings
○ HTML Head
○ Body Tag Attributes
○ Page Headers
○ Page Footer
○ SUBMIT Button Text
○ RESET Button Text
○ LOGIN Button Text
○ CANCEL Button Text
• Access Control Settings
○ Disable Student Access to Test
○ Disable Student Access to Test Results
○ Deny Student Access Before (date)
○ Deny Student Access After (date)
○ IP Settings
♣ No IP Address Validation
♣ Allow Only Listed IP Addresses
♣ Do Not Allow Listed IP Addresses
○ Restrict to These Groups
• Gradebook Settings
○ Multiple Responses
○ Gradebook and Assignment
♣ Select Gradebook
♣ Select Assignment
• Import Settings
○ Choose existing test
♣ Questions Menu - Select this menu to add, edit or delete questions from this test or survey. Use the Question Editor to easily maintain your questions.
• Question Editor - Use the question editor to add, edit or delete questions from this test or survey.
○ First Question
○ Previous Question
○ Next Question
○ Last Question

○ Edit Question
♣ Question
♣ Answer
♣ Comments
♣ Skill
♣ Points
♣ Category
♣ Topic
○ Delete Question
○ Move Question Up (order)
○ Move Question Down (order)
○ Add Question
♣ Inline Text
♣ Section Break
♣ Test: Multiple Choice
♣ Test: Multiple Correct Answer
♣ Test: True-False
♣ Test: Fill-in-the-Blank
♣ Test: Short Answer
♣ Test: Essay
♣ Survey: Text Box Field
♣ Survey: Text Area Field
♣ Survey: Checkbox Field
♣ Survey: Multiple Selection
♣ Survey: Single Selection
♣ Survey: Rating
• Update Point Values for . . . - Use this utility to quickly change the point values of all questions of a particular type in this test or survey to a new value.
○ Type of Question
♣ Multiple Choice
♣ Multiple Correct Answer
♣ True-False
♣ Fill-in-the-Blank
♣ Short Answer
♣ Essay
○ Point Value
• Import Questions from . . .
○ Once of your existing Oncourse tests
♣ Select course
○ A test exported to a file on your workstation
♣ Browse to file
• Preview Questions - Select this link to preview the questions and answers in this test or survey to easily check for accuracy.
• Delete All Questions - Use this link when you want to delete the questions but maintain the settings for the test or survey.
♣ Response Menu - Select this menu to review, grade or delete students' responses to this test or survey.

• Grade All Ungraded Items - Select this menu to easily grade all ungraded essay and short answer questions for this test.
• View All Responses
o View Response
o Grade Response
o Delete Response
• View Responses Where . . .
o Select Field
♣ Username
♣ Password
♣ IP Address
o Contains
♣ Text
• Delete All Responses - Select this link to delete all responses to this test or survey.
♣ Report Menu - Select this menu to get a grade report or analyze responses to this test or survey.
• User Reports
o Response Detail - Select a response from the list to see a detailed review of the response.
o Section Activity
♣ View Item
♣ Grade Item
♣ Delete Item
• Test Reports
o Grade Report - Select this link to see a grade report showing the grade and additional information for each student's submission
o Points Analysis - Select this link to see a summary of points earned out of points possible for each test question.
• Survey Reports
o Response Menu - Select this link to see a list of all of the questions on this test or survey.
o Rating Results - Select this link to see a summary of responses to the rating items on this survey.
♣ Export Menu - Select this menu to export results of this test or survey to tab delimited files for advanced analysis in other software packages.
• Test Grades
o Multiple Responses
♣ Use the highest score
♣ Use an average score
o Export to Text File
o Export to Gradebook
♣ Select a Gradebook
♣ Select an Assignment
• Points Earned - Select this link to export a

listing of points earned per question for each student response.
• Text Responses - Select this link to export a list of responses for each student including text responses.
• Numeric Responses - Select this link to export a list of responses in numeric format for each student.
• Export Question to File - Select this link to export the questions from this test or survey to a text file.
♣ Preview Test - Select this link to see a preview of the test or survey that is in a printable format suitable for use as a traditional paper-based test or survey.
♣ Delete Test - Select this link to delete this test or survey and any responses to it.
o New Test or Survey
♣ Title
♣ Theme
♣ Start with this test disabled.
♣ Scramble the order of test questions for each copy of the test.
♣ Allow students to take this item as many times as they want.
♣ I do not wish to know the identity of the students.
o Class Logs – The Class Logs show detailed information about specific users and the attempts made to take the test or survey including any error message and that date/time.
o Tool Wizards
♣ Available Tool Libraries – The Available Tool Libraries are a list of useful resources maintained by departments and campus libraries.
• Departmental Tool Wizards
• Library Tool Wizard
• Medical Library Tool Wizard
• Resource Tool Wizard
o Switch to Student Mode – Switch to Student Mode allows the author to view the class as it appears to a student.
o Authoring Tools
♣ General Course Settings
• Redirect
• Combine Roster
• Hide Course
• Disable Course
♣ Export Course Settings – Export Course Settings saves course information to a file to archive or import into another course.
♣ Import Course Settings – Import Course Settings copies course information from an export file into this course.
♣ Advanced Course Property Editor
• New Item
o Key
o Value
• Delete Selected Items
♣ Tab URL Editor

• Syllabus
o Alt URL
• Schedule
o Alt URL
• Class
o Alt URL
• In Touch
o Alt URL
• Tools
o Alt URL
♣ Enter a Course – Enter a Course allows access any of the user's courses, including disabled ones
♣ Select a Different Course – Select a Different Course allows a user to select a different course's settings to edit.
o Oncourse Tools
♣ Insite
♣ Oncourse Tests and Surveys (Student) – This allows a course author to take or review a test or survey as a student would.

MIT Stellar™ 1.5

Stellar™ is MIT's online course management and administration system that supports teaching and learning across the Institute. Developed by Academic Media Production Services (AMPS) in response to faculty and Institute needs, Stellar™ is a software system that provides an easy way for faculty and teaching assistants (TAs) to organize class materials for students, handle homework assignments, and engage students in discussion using the web.

Feature List for Stellar 1.5

Class Information

- Class homepage
  - class description
  - homepage image
  - meeting times
- Class List
  - Class Photos
    - *available to class staff only*
  - Email Class
  - Registrar populated student list
  - Student privacy protection
    - *students choose whether to be listed*
- Class Staff
- Editable Nav bar
  - add links to the nav bar
  - edit default labels
  - rearrange navbar

- remove links to unused tools

Class Content

- Class Materials
  - topics
  - page intro text
  - freestyle web pages wrapped in class template
  - copyright items
  - staff only items
- Schedule
  - add/edit events
- Homework
  - add/ edit assignments
  - comment on assignments (or return with comments)
  - student dropbox
  - find submissions
  - solution posting
  - due dates
  - levels of privacy (option to allow students to view each others work)
- Discussion
- Announcements
- Search

Site Management

- Access control
  - edit access groups
  - site level settings (world readable/MIT only/ class list only)
- Import tool
  - import documents from class websites which you have write access to.
- Create Sections
- Class metadata

CHEF CourseTools

(See above, Section 3 - Sakai 1.0 Tools Deliverables, page 14)

Stanford CourseWork

Type
Server-based web application

Course Features

Class management
- Home page
  - Public or Secure Home Page
  - Include Image, links to material
  - List Sections, Instructors, Hours, Locations, Personal Web Pages
- Syllabus
  - Public or Secure Syllabus
  - Can include any documents or use web-form entry to upload Syllabus
- Announcements
  - To Full Class or to Sections
- Schedule/Calendar
  - Can attach documents to Events
  - Weekly events schedule
- Assignments
- Section sign-up, section management
- Group sign-up for special events
- Class email list
  - Course email archive
- Class roster
  - Can upload student lists, download roster from Registrar, or add/drop individual students from course I
- Student/Faculty profiles
  - Role Manager

Content management
- File sharing through discussion forum and course materials module
- Bookmarkable URLs lead directly to individual modules
- Content categorization and sorting
- Controlled Content Delivery: times release of assignments and course materials
- Digital asset management for a variety of mime types

Communication & collaboration
- Email (1-way, instructors to students)
- Discussion through 3rd party tool: anonymous posting, threaded, autopopulate forum with user data; posts include attachments, URLs
- Peer review: through 3rd party discussion tool

Assessment (CourseWork v.3.0)
- Question types
  - Audio response
  - Essay
  - Short answer
  - Multiple choice (includes T/F)
  - Multiple choice w/ rationale
- Timed quizzes
- Automated testing and scoring: (MC and displays instructor-created feedback; more robust functionality with AAM)
- A variety of customized features for large lecture classes, including most frequently missed questions, imbedded response functions, high/low analysis
- Online grade book

Help
- Online context-sensitive help
- Documentation (online and offline)

System administration

Course level
- Course Registration
- Authentication & authorization

Course archiving
Course snapshots
Import/export materials
Reuse materials

System level
Mutliple DB write
Batch processes
User creation
Role management
Course creation
Concurrent courses
System use statistics

Integrated services (APIs to University systems)
Class roster from registrar
Student records
Library systems
eReserves
Copyright management

Interface

Navigation
Ease of use
Customization

Site Customization
Customizable Skins (School, Department, etc.) under development
Feature activation controlled by instructor

Standards

Section 508
Instructional Standards Compliance

Stanford ASSIGNMENT AND ASSESSMENT MANAGER FEATURES

- Design of an assessment is flexible:
  - Multimedia questions, student responses, and feedback (text, HTML, images, video, audio).
  - Multiple question types: multiple choice, short answer, true false, cloze questions for foreign language instruction.
  - During a quiz, questions can be accessed randomly or can be restricted to a fixed sequence with no return to earlier questions.
  - Instructor can allow students to bookmark questions and return to them during quiz.
  - Web pages can be configured to contain a single question, a set of questions, or the full assessment.
  - Number of submissions by each student can be fixed or unlimited.
- Templates give flexibility in evaluation procedures:
  - Instructor can select type of assessment evaluation: by comments (at part, question, or assessment level), or by scores.
  - Scoring can be done with numeric, alphabetical, check/minus values.
  - Anonymous scoring is optional (for surveys or blind scoring).
  - Evaluation can be limited by role (e.g., section scorer, peer review).

    - Multiple options for handling late submissions (allowed-tagged, disallowed, allowed-no penalty).
- Student access to assessments, scores, and feedback is flexible:
    - Release of assessment to students can be immediate, time-based, or contingent upon completion of a previous assessment.
    - Retraction of assessment can be by date or upon completion of assessment.
    - Release to students of feedback can be immediate or by date.
    - Release date, retraction date, feedback release date, score release date, and due date can be set independently.
    - Assessment can be released to specific groups in class (e.g., sections).
    - Assessment duration can be set to specific number of minutes.
    - Instructor can give student(s) additional attempt to complete assessment (overrides all other rules)
- Special access features for high stakes assessments:
    - Access to assessment can be restricted by ip address.
    - Access to assessment can be restricted to those with special, test-session password.
- Instructional technologists and advanced users can develop assessment-authoring templates that hide complexity from instructors.
- Question pools allow instructors to save, download, and share questions.
    - Searches of pools with easy linkage to assessments
    - Assessments can randomly draw questions from pools for each student's version of an assessment