

Sakaibrary: Bridging Course Management and Digital Libraries

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Outline

- ✦ Course Management Systems
- ✦ Motivations for integration
- ✦ The Sakai project
- ✦ Sakaibrary
 - ✦ Project overview
 - ✦ Technical implementation
- ✦ Conclusion and questions

Course Management Systems (CMS)

- ★ Also known as Virtual Learning Environments (VLE) or Learning Management Systems (LMS)
- ★ Becoming principal place for faculty-student interactions outside of the classroom
- ★ Used for both traditional and online courses
- ★ Examples: Blackboard, WebCT, Angel, Moodle, Sakai

Typical Functions of a CMS

- ✦ Course calendar
- ✦ Discussion forum
- ✦ Chat
- ✦ Online tests and quizzes
- ✦ Homework turn-in
- ✦ Grade entry/dissemination
- ✦ Content management
- ✦ ...

Motivations for CMS-Library Integration

- ★ Library content and services important for teaching and learning
- ★ Represents an evolution of library's instructional support services (e.g. reserves) into the current environment
- ★ Students often unfamiliar with library sources
- ★ Needed for libraries to remain relevant to today's students and teachers

What is Sakai?

- ✦ A software framework and set of tools and services for implementing “collaboration and learning” systems (including CMS)
- ✦ An organization: the Sakai Foundation
- ✦ A community: Sakai Partners

- ✦ “Community source” model
 - ✦ Both institutional and individual contributors

What is Sakai?

“Iron Chef”
Hiroyuki Sakai



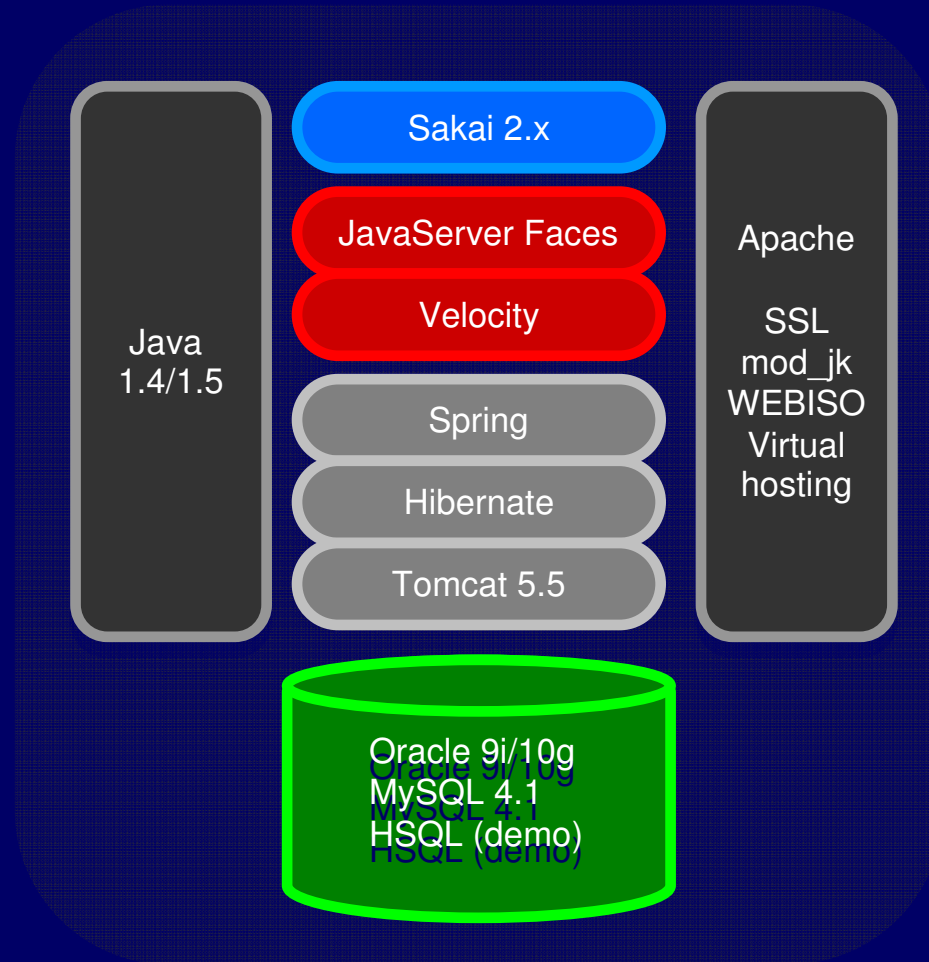
Sakai: Origins

- ★ Begun in 2003 by:
 - ★ University of Michigan
 - ★ Indiana University
 - ★ Massachusetts Institute of Technology (MIT)
 - ★ Stanford University
- ★ Grant funding from Mellon and Hewlett Foundations
- ★ Motivations
 - ★ More control over institutional CMS destiny
 - ★ Gain more value working as a group than by going alone

Sakai: Today

- ★ 105 paying partners: universities, colleges, non-profit organizations, companies
- ★ In production at 8 institutions in early 2006
- ★ 11 more scheduled to go online Fall 2006
- ★ Mainly US/UK (but not exclusively)
- ★ Twice-annual conference
 - ★ Last had over 550 attendees

Sakai Technologies



Sakaibrary Project Overview

- ★ Partnership of Indiana University (IU) and University of Michigan (UM) Libraries
- ★ Supported by Andrew W. Mellon Foundation and IU/UM
- ★ January 1, 2006 - June 30, 2008
- ★ 2.5-3 FTE per institution
- ★ Co-Project Directors:
 - ★ Jon Dunn, Indiana University
 - ★ Susan Hollar, University of Michigan

Additional Sakaibrary Project Partners

✦ Libraries at:

- ✦ Johns Hopkins University
- ✦ Northwestern University
- ✦ Stanford University
- ✦ Yale University
- ✦ University of California Berkeley

Sakaibrary Project Goals

- ✦ Build tools to provide seamless integration of content from **licensed library databases** within Sakai for instructors
- ✦ Leverage existing library technology infrastructure
- ✦ Prototype functionality for librarians to present content in Sakai and students to discover licensed content within Sakai.
- ✦ Engage librarians, students, and faculty in the design and testing

Sakaibrary Project Process

- ✦ Develop requirements and designs with feedback from partner institutions
- ✦ Develop tools in two phases
- ✦ Conduct evaluation at IU and UM
- ✦ Release tools as open source

Tasks: Instructor

- ✦ Search for articles
- ✦ Import references from RefWorks, EndNote, etc.
- ✦ Create persistent links to articles for student access
- ✦ Create customized search box or “canned searches” for students
 - ✦ Constrained to search specific databases or include specific keywords
- ✦ Obtain assistance from librarian

Tasks: Student

- ✦ Access articles found by instructor
- ✦ Search for articles
 - ✦ Possibly constrained by course subject
- ✦ Export references to bibliographic management tools such as RefWorks
- ✦ Reference articles from assignments, papers
- ✦ Obtain assistance from librarian

Tasks: Librarian

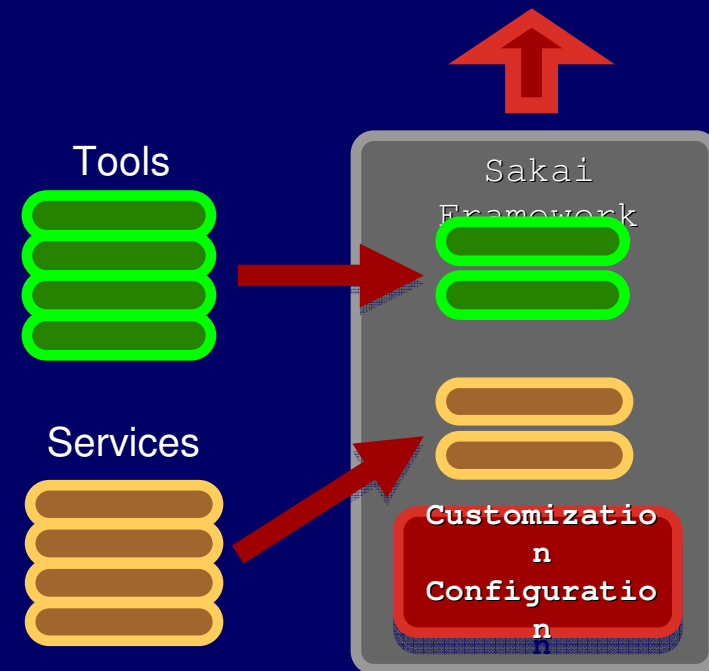
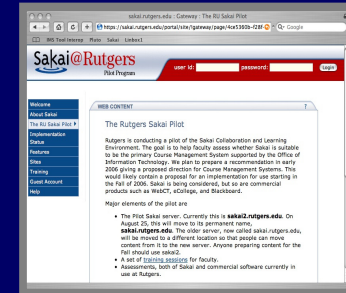
- ✦ Create links to appropriate databases
- ✦ Create customized search boxes
- ✦ Create help guides and suggestions for use of library resources
- ✦ Provide assistance to instructor and student

Where does the library fit in Sakai?

- ✦ Library databases are just one source of course content
 - ✦ Web content
 - ✦ Personal documents
 - ✦ Digital repositories
 - ✦ Electronic reserves
- ✦ Need to be able to work with all types of content in the same way

Sakai Tools and Services

- ★ Tool
 - ★ User interface
- ★ Service
 - ★ Backend functionality
 - ★ Can be used by many tools




Standard Sakai Tools

- ✦ Announcements
- ✦ Assignments
- ✦ Chat Room
- ✦ Drop Box
- ✦ Email Archive
- ✦ Gradebook
- ✦ Help
- ✦ Message Of The Day
- ✦ News/RSS
- ✦ Preferences
- ✦ Presentation
- ✦ Profile/Roster
- ✦ Resources
- ✦ Schedule
- ✦ Section Mgmt
- ✦ Syllabus
- ✦ Threaded Discussion
- ✦ Web Content
- ✦ Worksite Setup
- ✦ WebDAV

Oncourse : BL OCCL PROJ 10664 : Home

https://oncourse.iu.edu/portal/site/1114711385084-160573/page/111

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DLP Test Project

[Options](#)

Welcome to the IU Digital Library Program's test OnCourse CL worksite

Recent Announcements

[Options](#)

Papers due
(Jon W Dunn - Sep 5, 2006 11:39 am)
 Reminder: Final papers are due tomorrow!

Recent Discussion Items

[Options](#)

What's going on?
(Jon W Dunn - Sep 5, 2006 11:42 am)

Recent Chat Messages


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There are currently no messages at this location.

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<input type="checkbox"/>	Title	Actions	Access:	Created By	Modified	Size
	BL OCCL PROJ 10664 Resources	Add Revise				
<input type="checkbox"/>	 Java Object Caching Solutions	Add Revise Permissions	Entire site	Dazhi Jiao	5/26/05	
<input type="checkbox"/>	 Links	Add Revise Permissions	Entire site	Jon W Dunn	8/3/05	
<input type="checkbox"/>	 Meeting agendas	Add Revise Permissions	Entire site	Michelle D Dalmau	5/1/05	
<input type="checkbox"/>	 Meeting Agenda 2005-04-28	Duplicate Revise	Entire site	Michelle D Dalmau	6/1/05	1 KB
<input type="checkbox"/>	 Meeting Agenda 2005-05-26	Duplicate Revise	Entire site	Michelle D Dalmau	6/1/05	2 KB
<input type="checkbox"/>	 Meeting notes	Add Revise Permissions	Entire site	Jon W Dunn	4/29/05	

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Sakaibrary Project Deliverables

★ Phase 1:

- ★ Library search tool*

- ★ Citation management tool*

★ Phase 2:

- ★ Subject research guide tool*

*And associated services

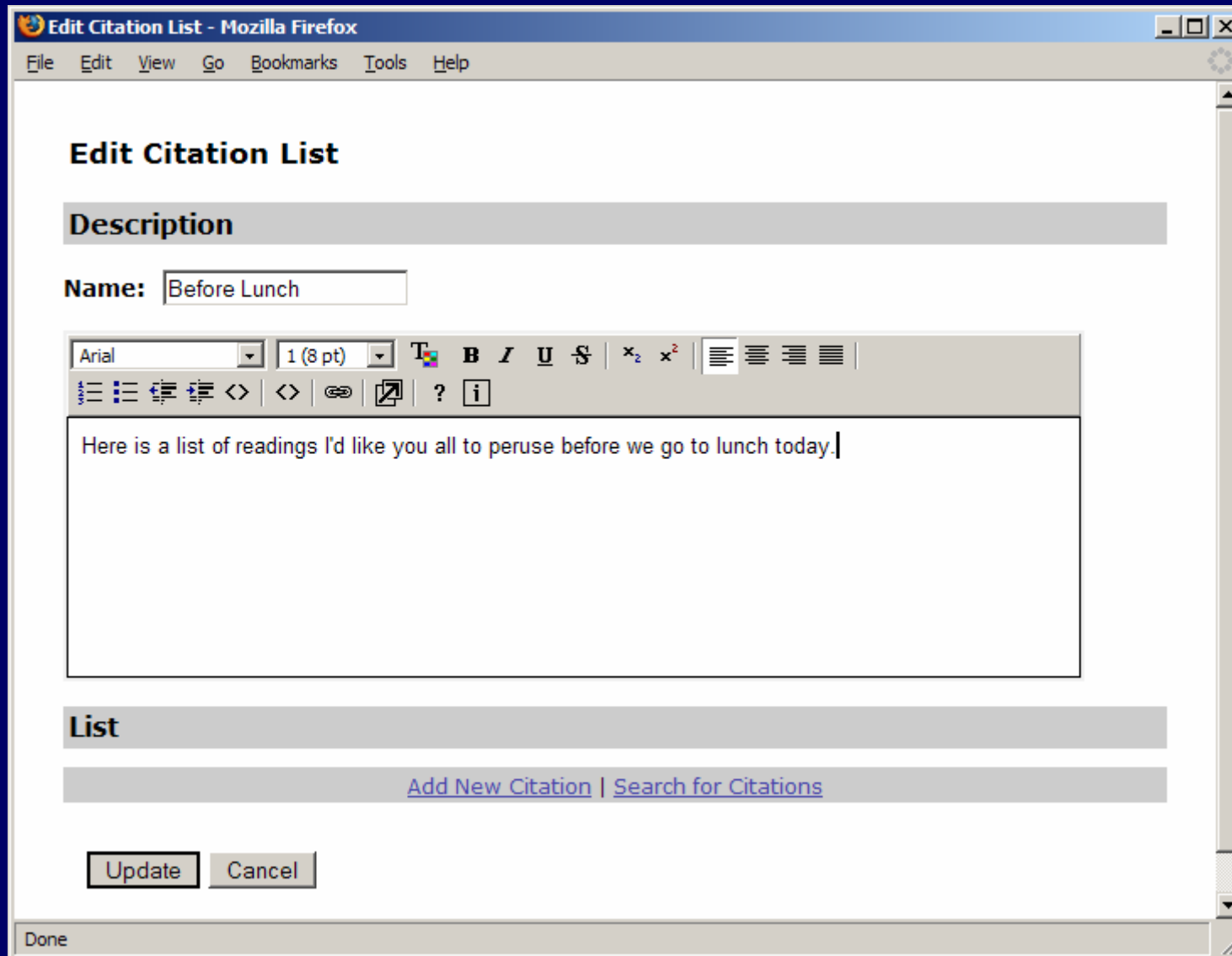
Library Search Tool

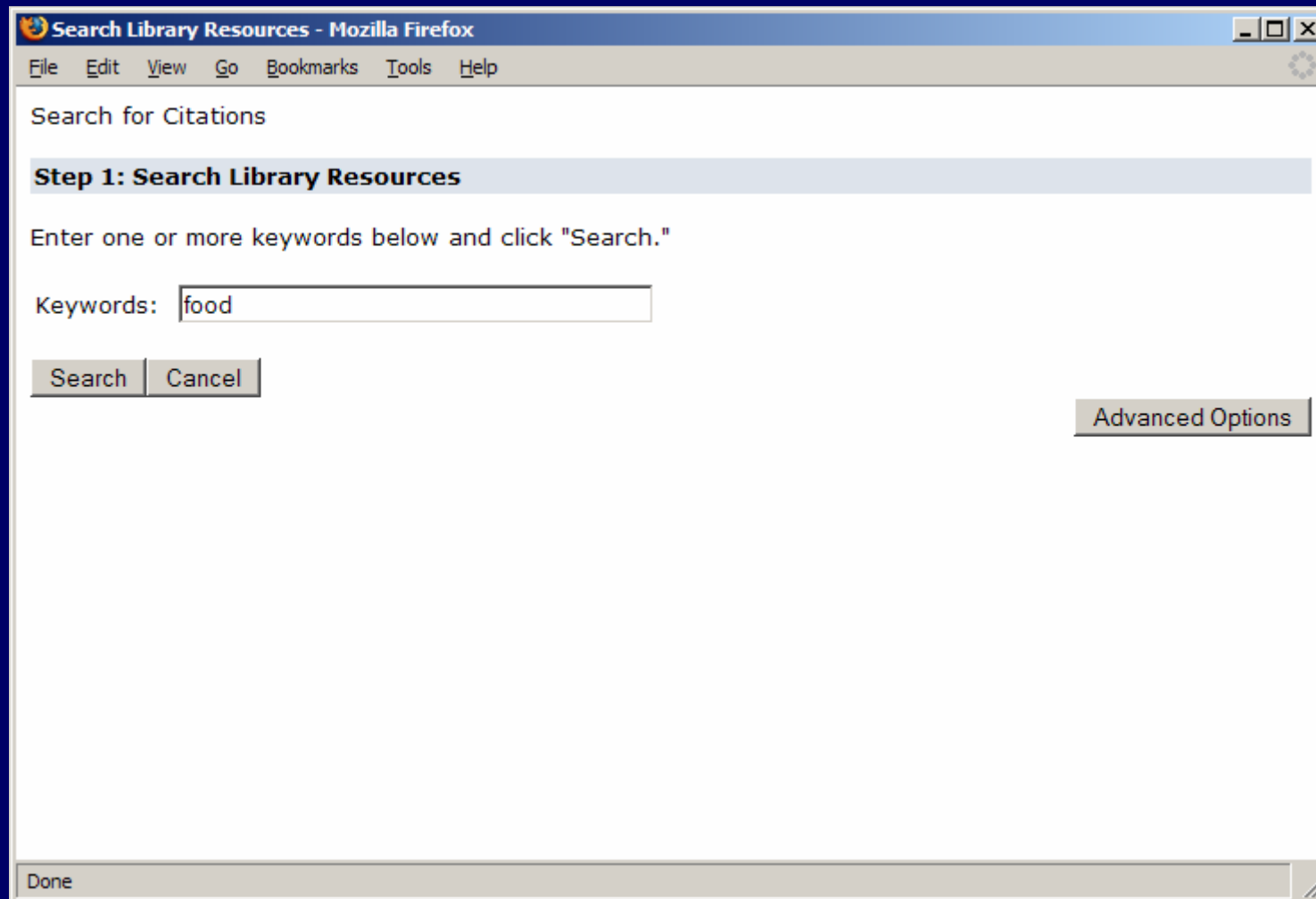
- ★ Based on existing work
 - ★ *Twin Peaks Navigator*
 - ★ OKI: Open Knowledge Initiative
- ★ Leverage existing Metasearch technology to connect to various search sources

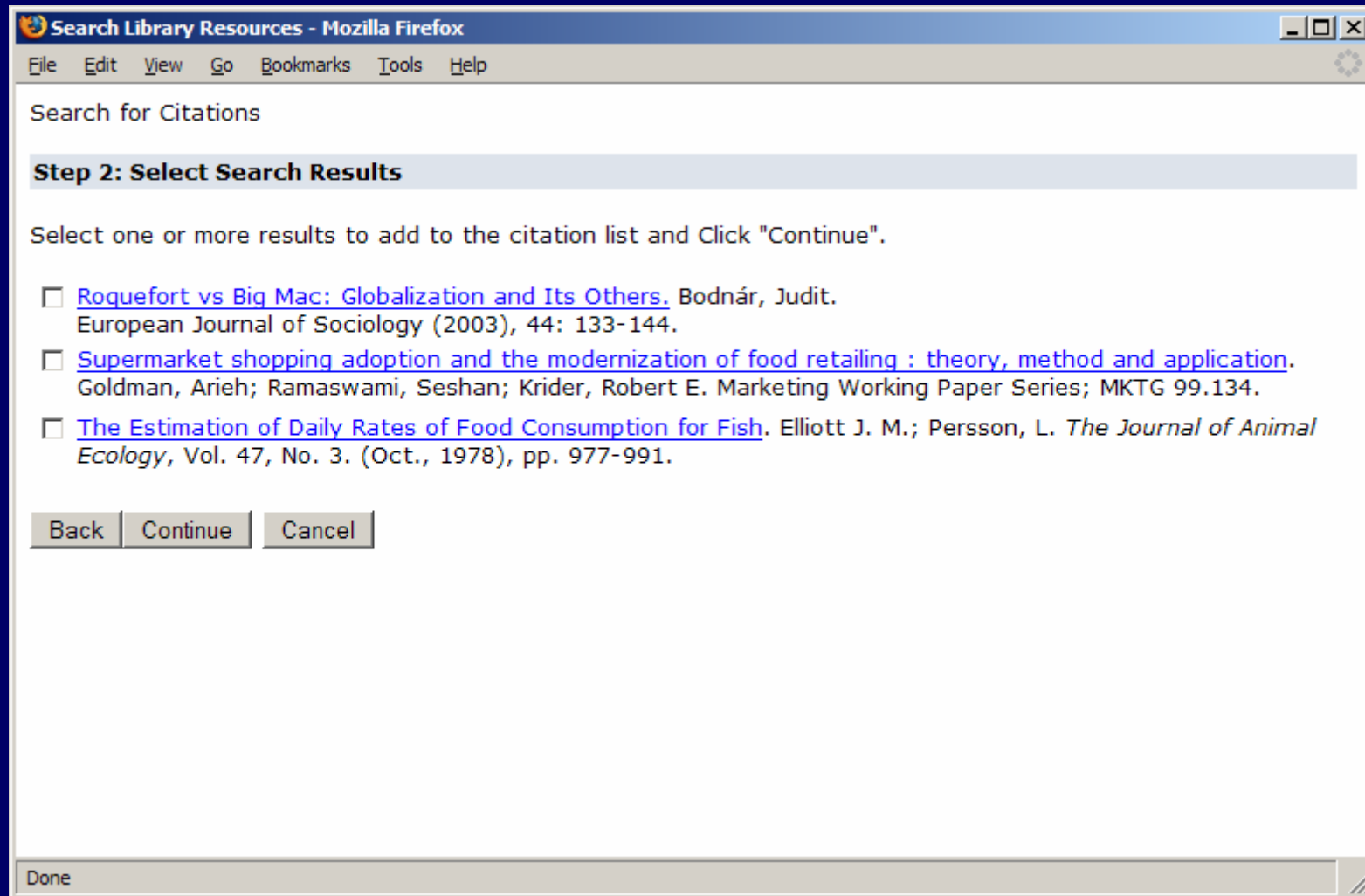
Citation Management Tool

- ✦ New capability in Sakai
- ✦ Create references from library search, import, or direct entry
- ✦ Generate persistent links using OpenURL
- ✦ Support export of citations to RIS and other relevant formats
- ✦ Use RDF triplestore for persistence

UI Prototype







Search Library Resources - Mozilla Firefox

File Edit View Go Bookmarks Tools Help

Search for Citations

Step 3: Edit Citation Properties

For each citation, select an appropriate copyright status. Then click "Finish".

Copyright status unknown [Roquefort vs Big Mac: Globalization and Its Others](#). Bodnár, Judit. *European Journal of Sociology* (2003), 44: 133-144.

Copyright status unknown [Supermarket shopping adoption and the modernization of food retailing : theory, method and application](#). Goldman, Arie; Ramaswami, Seshan; Krider, Robert E. *Marketing Working Paper Series ; MKTG 99.134*.

Copyright status unknown [The Estimation of Daily Rates of Food Consumption for Fish](#). Elliott J. M.; Persson, L. *The Journal of Animal Ecology*, Vol. 47, No. 3. (Oct., 1978), pp. 977-991.

Done

[File](#) [Edit](#) [View](#) [Go](#) [Bookmarks](#) [Tools](#) [Help](#)

Edit Citation List

Description

Name:

Arial 1 (8 pt) **B** *I* U ~~S~~ ×₂ ×² [List Icons]

Here is a list of readings I'd like you all to peruse before we go to lunch today.

List

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[A](#) | [B](#) | [C](#) | [D](#) | [E](#) | [F](#) | [G](#) | [H](#) | [I](#) | [J](#) | [K](#) | [L](#) | [M](#) | [N](#) | [O](#) | [P](#) | [Q](#) | [R](#) | [S](#) | [T](#) | [U](#) | [V](#) | [W](#) | [X](#) | [Y](#) | [Z](#)

Citations ▲	Remove?
Roquefort vs Big Mac: Globalization and Its Others . BodnÁir, Judit. <i>European Journal of Sociology</i> (2003), 44: 133-144. View Copy Remove Edit Citation	<input type="checkbox"/>
Supermarket shopping adoption and the modernization of food retailing : theory, method and application . Goldman, Arieh; Ramaswami, Seshan; Krider, Robert E. Marketing Working Paper Series; MKTG 99.134. View Copy Remove Edit Citation	<input type="checkbox"/>
The Estimation of Daily Rates of Food Consumption for Fish . Elliott J. M.; Persson, L. <i>The Journal of Animal Ecology</i> , Vol. 47, No. 3. (Oct., 1978), pp. 977-991. View Copy Remove Edit Citation	<input type="checkbox"/>

Done

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Before Lunch

Citation List

Here is a list of readings I'd like you all to peruse before we go to lunch today.

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< < Show 10 > >

A | B | C | D | E | F | G | H | I | J | K | L | M | N | **O** | P | Q | **R** | **S** | T | U | V | W | X | Y | Z

Citations

-  [Roquefort vs Big Mac: Globalization and Its Others.](#) Bodnár, Judit.
European Journal of Sociology (2003), 44: 133-144.
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-  [Supermarket shopping adoption and the modernization of food retailing : theory, method and application.](#)
Goldman, ArieH; Ramaswami, Seshan; Kridler, Robert E. Marketing Working Paper Series; MKTG 99.134.
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Done

Subject Research Guides

- ✦ Support faculty and librarian creation of:
 - ✦ Constrained searches
 - ✦ Canned searches
 - ✦ Help guides
 - ✦ Links to contact librarians: chat, e-mail, course discussion forum

Technical Implementation

Technologies in Use

Indiana:

- ✦ Sirsi Unicorn
- ✦ Sirsi SingleSearch (MuseGlobal)
- ✦ ExLibris SFX

Michigan:

- ✦ Ex Libris Aleph
- ✦ Ex Libris MetaLib
- ✦ Ex Libris SFX

- ✦ Need to abstract across technologies from different vendors

How to abstract?

- ★ Goal: Single UI, multiple backends
- ★ Solution: OKI Repository OSID
 - ★ OKI: Open Knowledge Initiative
 - ★ OSID: Open Service Interface Definition (essentially an API spec)
- ★ Developed by MIT with Mellon support
- ★ Provides standard interface to repository query and delivery functions
- ★ Already in use in Sakai

MetaLib Integration

- ✦ Work being carried out by UM
- ✦ Creating an OKI Repository OSID implementation for MetaLib
- ✦ Using X-server for access to MetaLib functions
- ✦ Using CQL as internal query representation
- ✦ Working in tandem with developer at IU implementing Sirsi SingleSearch OKI OSID

Functional Workflow

Abstract:	Client	Metasearch Service Interface	Metasearch Tool	Metasearch Output Data	Repository Components Encapsulating Metasearch Output Data																																
Sakaibrary: (w/MetaLib)	Sakai Client	Sakai Metasearch Service Implementation	MetaLib X-Services <i>green</i> : X-Service input parameter <i>red</i> : X-Service output parameter	X-Server Output Data	Sakai Metasearch Repository Components																																
Client Workflow	Setup My Metasearch Service	<p>start</p> <p>initialize</p>	<p>login - establishes a connection with the X-Server. AuthN/AuthZ is done and a <i>session_id</i> is returned.</p> <p>bor_auth - requests authorization information for a specific user. User is authorized and a <i>bor_id</i> (borrower id) is returned.</p>																																		
	Locate/Choose the Resources I want to search	getResources	<p>retrieve_quick_sets - retrieves a list of QuickSets per user profile. QuickSet <i>set_sequence</i> keys are returned.</p> <p>retrieve_resources_by_quick_sets - using <i>set_sequence</i> keys, <i>source_info</i> records for a specific QuickSet are returned.</p> <p>source_locate - using a <i>locate_command</i> (WCL=name, WRD=keyword, etc.), the X-Server returns matching <i>source_info</i> records.</p> <p>retrieve_resources_by_categories - using <i>sequence</i> keys, <i>source_info</i> records for a specific category are returned.</p> <p>retriee category - retrieves a list of categories user profile. Category <i>sequence</i> keys are returned.</p>	<p>QuickSet</p> <table border="1"> <tr><td>set_sequence</td><td>set_name</td></tr> <tr><td>set_description</td><td>no_bases</td></tr> <tr><td>no_authorized_bases</td><td>locked_set</td></tr> </table> <p>Source</p> <table border="1"> <tr><td>sourceId</td><td>title</td></tr> <tr><td>abbrevTitle</td><td>altTitles</td></tr> <tr><td>searchable</td><td>creator</td></tr> <tr><td>publisher</td><td>description</td></tr> <tr><td>eVersion (URL)</td><td>eRelated (URL)</td></tr> </table> <p>CategorySet</p> <table border="1"> <tr><td>sequence</td><td>category_name</td></tr> <tr><td>no_bases</td><td>no_authorized_bases</td></tr> </table>	set_sequence	set_name	set_description	no_bases	no_authorized_bases	locked_set	sourceId	title	abbrevTitle	altTitles	searchable	creator	publisher	description	eVersion (URL)	eRelated (URL)	sequence	category_name	no_bases	no_authorized_bases	<p>ResourceSet Asset</p> <p>ResourceSet:content (quickSet locateSet categorySet)</p> <p>Resource Record</p> <table border="1"> <tr><td>Part</td><td>Part</td><td>Part</td></tr> <tr><td>sourceId</td><td>title</td><td>altTitles</td></tr> <tr><td>Part</td><td>Part</td><td>Part</td></tr> <tr><td>creator</td><td>searchable</td><td>...</td></tr> </table>	Part	Part	Part	sourceId	title	altTitles	Part	Part	Part	creator	searchable	...
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Execute my Query on the selected Resources	<p>executeQuery</p> <p>getQueryStatus</p> <p>mergeResults</p>	<p>find - searches, using a <i>find_request_command</i> (WT=title, WAU=author, etc.), in one or more specified sources. A results <i>group_number</i> is returned [this service can be asynchronous].</p> <p>search_quick_sets - searches, using a <i>find_request_command</i>, within a specified QuickSet. A results <i>group_number</i> is returned [this service can be asynchronous].</p> <p>find_group_info - retrieves a status report of the a search process given a <i>group_number</i>. Useful for asynchronous searches.</p> <p>merge_sort - merges and sorts result sets from different sources within one <i>group_number</i>. Returns a <i>new_set_number</i> for the merged set.</p>	<p>FindQuery</p> <table border="1"> <tr><td>sources</td><td>find_command</td></tr> <tr><td>user_group</td><td>requester_ip</td></tr> <tr><td>institution</td><td></td></tr> </table>	sources	find_command	user_group	requester_ip	institution		<p>QuerySet Asset</p> <p>Query Record</p> <table border="1"> <tr><td>Part</td><td>Part</td><td>Part</td></tr> <tr><td>sources</td><td>find_command</td><td>...</td></tr> </table>	Part	Part	Part	sources	find_command	...																					
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MetaLib X-Server Benefits

- ✦ Allows us to develop our own userinterface on MetaLib engine
- ✦ Relatively simple to use
- ✦ Documentation for the X-Server API exists and is easy to access

MetaLib X-Server Limitations

- ✦ API documentation could be more robust: more detailed examples; edge cases
- ✦ Some X-Server XML encoding issues cause parsers/validators to fail:
 - ✦ Invalid XML character data
 - ✦ Repeated xml:ns references for each record returned
 - ✦ Records do not contain proper MARCXML.
- ✦ Merge command does not have an appending merge option
 - ✦ Difficult to continuously page through records retrieved asynchronously from the X-Server

SFX

- ✦ Generating OpenURLs from citation data
- ✦ Used to link to full text content

Sakaibrary Schedule

- ★ Fall 2006
 - ★ Search and citation management
 - ★ Internal testing at IU/UM
- ★ Spring 2007
 - ★ Subject research guide tool
 - ★ Testing at partners (and beyond?)
- ★ Summer/Fall 2007
 - ★ Open source release
- ★ After that
 - ★ ???

Questions As Yet Unanswered

- ★ Who will use search within the CMS?
- ★ Will metasearching ever be good enough?
- ★ Will OpenURL link resolution work consistently enough for full text access?
- ★ How will the Sakai development model work in libraries?
 - ★ Will other institutions step up to tackle other library integration issues?

Thank You

- ✦ Sakaibrary project team
- ✦ Andrew W. Mellon Foundation
- ✦ Sakai Foundation board
- ✦ IGeLU organizers

More Information

- ★ Sakai: www.sakaiproject.org
- ★ Sakaibrary:
www.dlib.indiana.edu/projects/sakai/
- ★ OKI: www.okiproject.org
- ★ Sakai Library Discussion Group:
collab.sakaiproject.org
- ★ Contact: jwd@indiana.edu

