

Sakai and Portals

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Portals and Portlets Workshop

July 2006



State of Sakai in one Slide....

- Sakai is used for Collaboration, Teaching, and Learning
- Sakai Project started January 2004 (2.5 years old)
- Non-profit Sakai Foundation October 2005
- Open Source - 100% free - Apache License
- Voluntary financial support from 90+ Higher Education, 15 companies, each paying \$10,000 / year = \$ 1M revenue
- Six Sakai Foundation paid staff members
- Over 200 installations of Sakai
- Three full-scale installations > 50,000 users
- Twenty+ installations with > 500 users (often pilot uses)
- 100+ people active in developing and testing Sakai releases



Outline

- History
 - Sakai and JSR-168
 - Sakai and WSRP
 - Sakai and JSR-168 (part 2)
- Going Forward
 - JSR-168 portlets
 - WSRP / uPortal
 - UNISA's Work
 - Sakai and RSS
 - Sakai's internal JSR-168
- This is a moving target and it has been a challenge to find dedicated resources for this portal/portlet work



History - Sakai and JSR-168

- What we hoped in 2003
 - Sakai’s presentation layer *would* be JSR-168
 - Using JSR-168 would make Sakai tools portable between JSR-168 compliant portal containers
 - Sakai tools would just “be portlets” which would work in any portal
- What happened
 - As a standard, JSR-168 was just too small and basic to support Sakai’s requirements in critical areas
 - Navigation
 - Cross-portlet context
 - Support for “services” that work across portlet
- How we reacted
 - Look into WSRP and see if we could solve the problems using two JVMs (one for the Portal and one for Sakai)



History - Sakai and WSRP 1.0

- What we hoped
 - By separating the problem into two JVMs across WSRP Sakai could provide our tools all the support we needed and just move markup back and forth.
- What happened
 - We built a tightly integrated WSRP producer in Sakai 2.1
 - WSRP provisioning is very poor - does not meet user requirements - perhaps this is just a limitation of how portal writers architect simple WSRP consumers - but it is reality
 - WSRP interoperability is poor between containers
 - Dual provisioning does not make administrators happy
- How we reacted
 - Wrote the JSR-168 Sakai proxy portlets

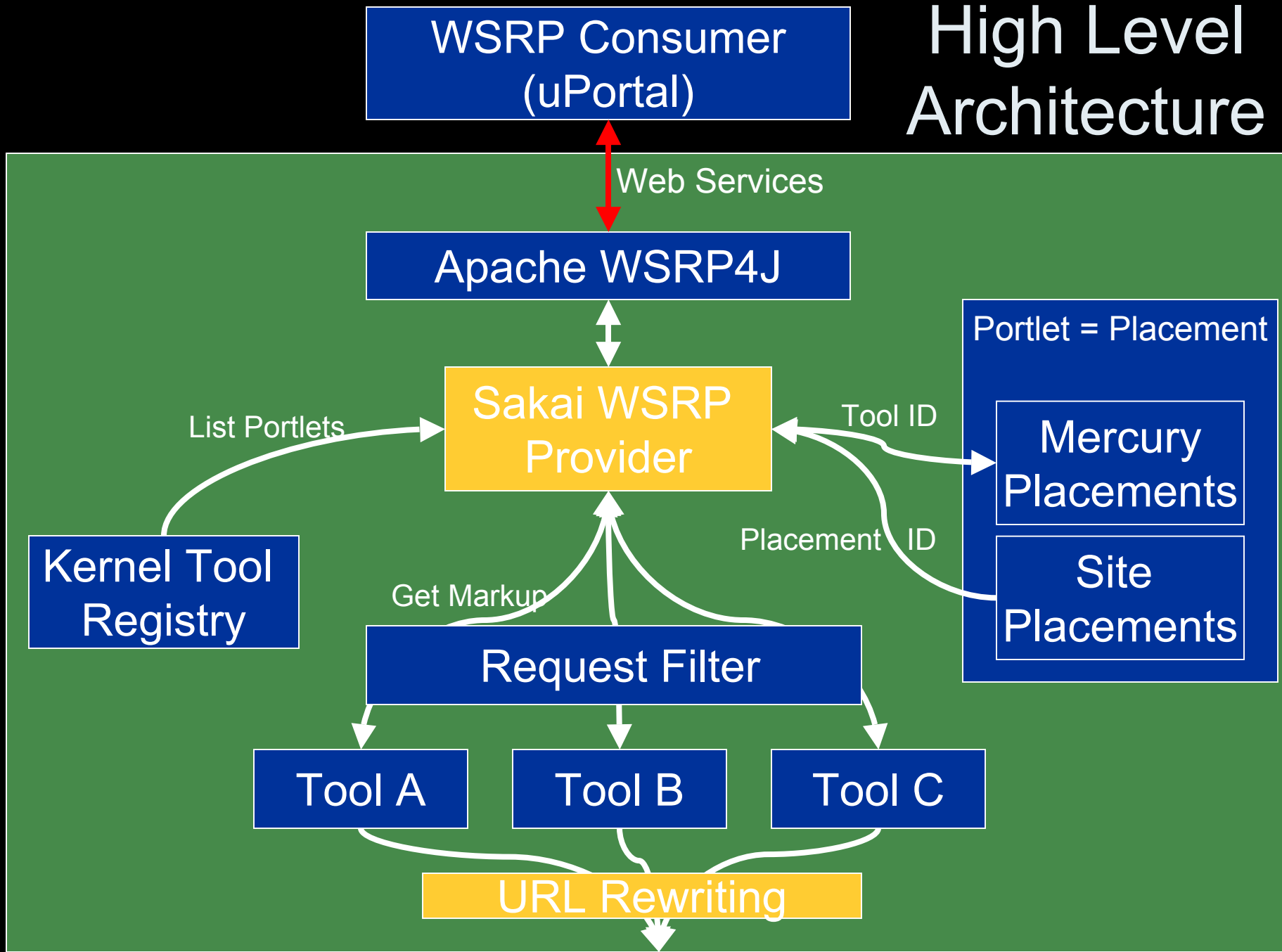


Sakai WSRP

- Alpha quality consumer from Daresbury
- Alpha quality producer from SunGard
 - Sakai has a “sakai.fragment” - indicates body only response, and delegated URLs
 - Not all tools - velocity tools work best
 - CSS is still Sakai’s CSS
 - Provisioning is weak - must look at Sakai tool placement GUIDs and construct handles



High Level Architecture



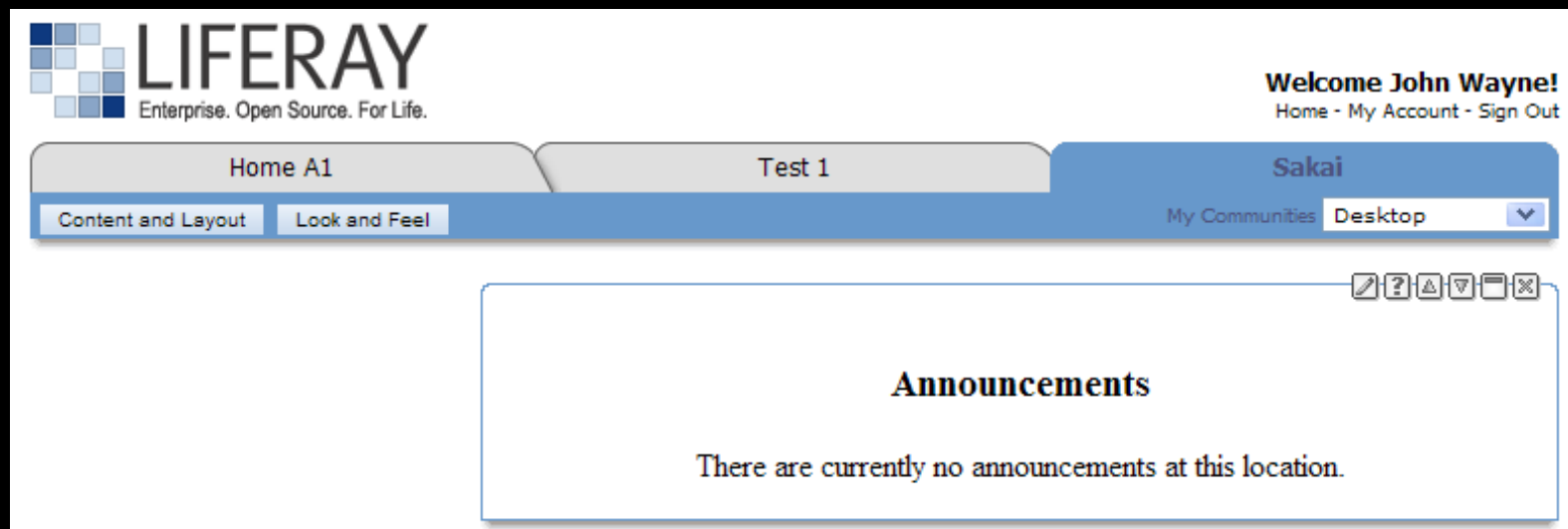
Sakai Tools in uPortal 2.4.2

The screenshot shows a web browser window titled "uPortal 2.4.2 - Microsoft Internet Explorer". The address bar contains a long URL: `http://vgnw2ksakal.sst.com:7080/uPortal/tag.d22e18b3211fb44.render.userLayoutRootNode.uPUP_sparan=modelNode=view&uP_sparan=focusedTabID&focusedTabID=59&uP_sparan=targetRestriction&targetRestriction=no%20targetRestriction%20pa`. The browser shows the uPortal logo "portal by JASIG" and a "Welcome Admin User" message. A navigation bar includes "Portlet Examples", "WSRP Channels", "Developers", "News", "Admin Tools", "CWebProxy Examples", and "ICC Demo".

The main content area is divided into two portlets:

- Sample Tools Browser:** This portlet displays technical session information and a list of items. The session details are:
session: c6103ac2-0380-4690-802c-5e24c7dd978a user id: admin user enterprise id: admin started: Apr 28, 2005 accessed: Apr 28, 2005 inactive after: -1
tool session: ae366464-1d3e-47e1-0006-bd966878d30c started: Apr 28, 2005 accessed: Apr 28, 2005 placement context: warp
The "Items" section lists:
002 002-one 002-two
001 001-one 001-two
003 003-one 003-two
Below the items is a metadata table:
tool id sakai.sample.tools.browser
title Browser
description A browser sample tool
registered b=2 a=1 test=reg-value
placement b=2 a=1 test=reg-value
config b=2 a=1 test=reg-value
- Sakai Mailbox:** This portlet has a search bar and a "Search" button. Below the search bar, it displays the message: "You are not authorized to send mail to this worksite." and "No archived email yet..."

Announcement Tool (Mercury Context) in LIFERAY Portal



The screenshot displays the LIFERAY portal interface. At the top left is the LIFERAY logo with the tagline "Enterprise. Open Source. For Life." At the top right, it says "Welcome John Wayne!" with links for "Home - My Account - Sign Out". Below this is a navigation bar with tabs for "Home A1", "Test 1", and "Sakai". Under the "Sakai" tab, there are buttons for "Content and Layout" and "Look and Feel", and a dropdown menu for "My Communities" set to "Desktop". The main content area features a box titled "Announcements" with the message "There are currently no announcements at this location." and a set of window control icons in the top right corner.

Thanks to Andrew Petro (Yale) for this Screen Shot



History - Sakai and 168 (v2)

- What we hoped
 - Provide a simple, basic capability that was totally portable for people to use as long as they accepted the shortcomings (iframes)
- What happened
 - Using web services and iframes these portlets worked very simply and pretty well and were pretty portable
 - Some uptake - but iframes still limited user satisfaction
 - Used in OGCE
- Where we are at
 - Reasonable portlets - need to be improved





Pluto Portal Driver (pluto-driver/1.0.1-rc4) deployed in Apache Tomcat/5.5.9

Login

- [Test](#)
- [Admin](#)
- [Sakai Gallery](#)
- [Sakai Tree](#)
- [Sakai Announcements](#)
- [Sakai Assignments](#)
- [Sakai Chat](#)
- [Sakai Discussion](#)
- [Sakai Gradebook](#)
- [Sakai Email](#)
- [Sakai Membership](#)
- [Sakai Message](#)
- [Sakai Preferences](#)
- [Sakai Presentation](#)
- [Sakai Profile](#)
- [Sakai Resources](#)
- [Sakai Wiki](#)
- [Sakai Assessment](#)
- [Sakai Roster](#)
- [Sakai Schedule](#)
- [Sakai Site](#)
- [Sakai Syllabus](#)

Sakai Gallery

Sakai Gallery Portlet - shows an entire Sakai site.

[edit](#) [help](#) [view](#) | [max](#) [min](#) [nor](#)

My Workspace | SMPL 001 001 W06 | [Logout](#)

- Home** ▶
- Profile ▶
- Membership ▶
- Schedule ▶
- Resources ▶
- Announcements ▶
- Worksite Setup ▶
- Preferences ▶
- Account ▶
- Help ▶

users present:

MESSAGE OF THE DAY

[Options](#)

There are currently no messages at this location.

MY WORKSPACE INFORMATION

[Options](#)

Welcome to your personal workspace.

In Sakai each user has his or her own individual worksite called My Workspace. My Workspace is a place where you can keep personal documents, create new sites, maintain a schedule, store resources, and much more.

The owner of this site can be found above.

The default information for the Sakai Administrator is the value "myworkspace.in

Sakai Gallery View



Pluto Portal Driver (pluto-driver/1.0.1-rc4) deployed in Apache Tomcat/5.5.9

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- Sakai Schedule
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- Sakai Syllabus

Sakai Tree

Sakai Portlet

edit help view | max min nor

- My Workspace
 - Home
 - Profile
 - Membership
 - Schedule
 - Resources
 - Announcements
 - Worksite Setup
 - Preferences
 - Account
- SMPL 001 001 W06
 - Home
 - Syllabus
 - Schedule
 - Announcements
 - Resources
 - Discussion
 - Assignments
 - Assignments
 - Tests & Quizzes
 - Gradebook
 - Chat Room
 - Email Archive

SCHEDULE

Add Fields Permissions

Calendar by Week

View Calendar by Week

Dec 18, 2005 - Dec 24, 2005 EDT

< Previous Week Today Next Week >

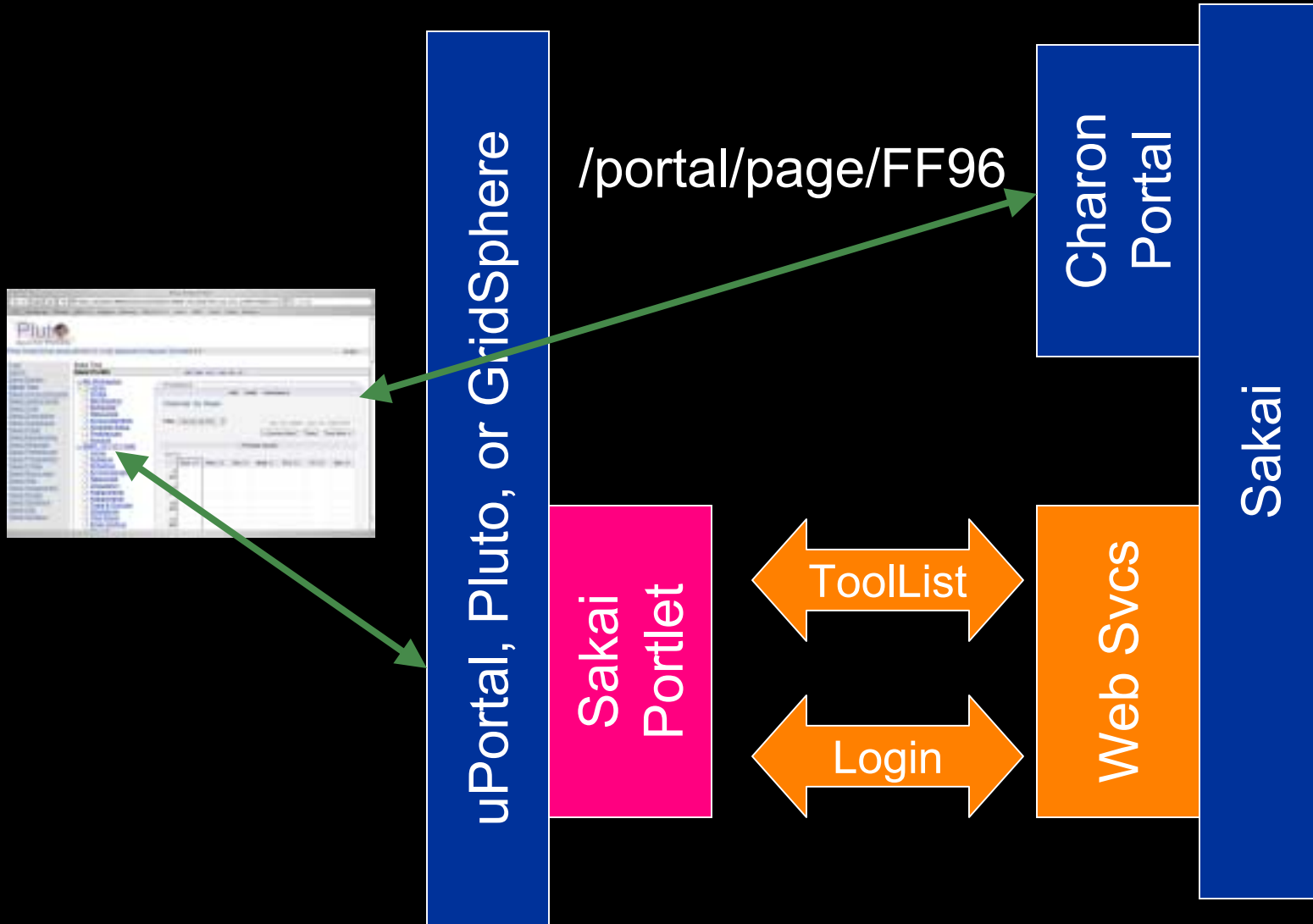
Printable Version

Earlier

	Sun 18	Mon 19	Tue 20	Wed 21	Thu 22	Fri 23	Sat 24
8 AM							
9 AM							
10 AM							
11 AM							

Sakai Tree View

How Tree View Works



SakaiSite.getToolsDom

```
<sites>
  <portal>http://localhost:8080/portal</portal>
  <server>http://localhost:8080</server>
  <gallery>http://localhost:8080/gallery</gallery>
  <site>
    <title>My Workspace</title>
    <id>~csev</id>
    <url>http://localhost:8080/portal/worksite/~csev</url>
    <pages>
      <page>
        <id>af54f077-42d8-4922-80e3-59c158af2a9a</id>
        <title>Home</title>
        <url>http://localhost:8080/portal/page/af54f077-42d8-4922-80e3-59c158af2a9a</url>
        <tools>
          <tool>
            <id>b7b19ad1-9053-4826-00f0-3a964cd20f77</id>
            <title>Message of the Day</title>
            <toolid>sakai.motd</toolid>
            <url>http://localhost:8080/portal/tool/b7b19ad1-9053-4826-00f0-3a964cd20f77</url>
          </tool>
          <tool>
            <id>85971b6b-e74e-40eb-80cb-93058368813c</id>
            <title>My Workspace Information</title>
            <toolid>sakai.iframe.myworkspace</toolid>
            <url>http://localhost:8080/portal/tool/85971b6b-e74e-40eb-80cb-93058368813c</url>
          </tool>
        </tools>
      </page>
    </pages>
  </site>
</sites>
```

New WS method is upwards compatible with
getSitesDom





Pluto Portal Driver (pluto-driver/1.0.1-rc4) deployed in Apache Tomcat/5.5.9

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- [Sakai Syllabus](#)

Sakai Schedule

Sakai Calendar Portlet - shows a Sakai calendar.

[edit](#) [help](#) [view](#) | [max](#) [min](#) [nor](#)

↑ SCHEDULE

[Add](#) [Fields](#) [Permissions](#)

Calendar by Week

View

Dec 11, 2005 - Dec 17, 2005 EDT

 >

[Printable Version](#)

Earlier

	Sun 11	Mon 12	Tue 13	Wed 14	Thu 15	Fri 16	Sat 17
8 AM							
9 AM							
10 AM							
11 AM							
12 PM							


Sakai Proxy Tool



Pluto Portal Driver

http://localhost:8080/pluto/portal/Frag.Schedule%2F_st_Frag.Schedule_row_c

Desiderata GVideo JIRA-2.1 Rutgers Mercury uPortal 2.4.3 Gmail IMSTI Pluto Sakai uPortal



Pluto Portal Driver (pluto-driver/1.0.1-rc4) deployed in Apache Tomcat/5.5.9 [Login](#)

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- [Sakai Roster](#)
- [Sakai Schedule](#)**
- [Sakai Site](#)
- [Sakai Syllabus](#)

Sakai Schedule


Sakai Calendar Portlet - shows a Sakai calendar. [edit](#) [help](#) [view](#) | [max](#) [min](#) [nor](#)

Sakai Launch Preferences

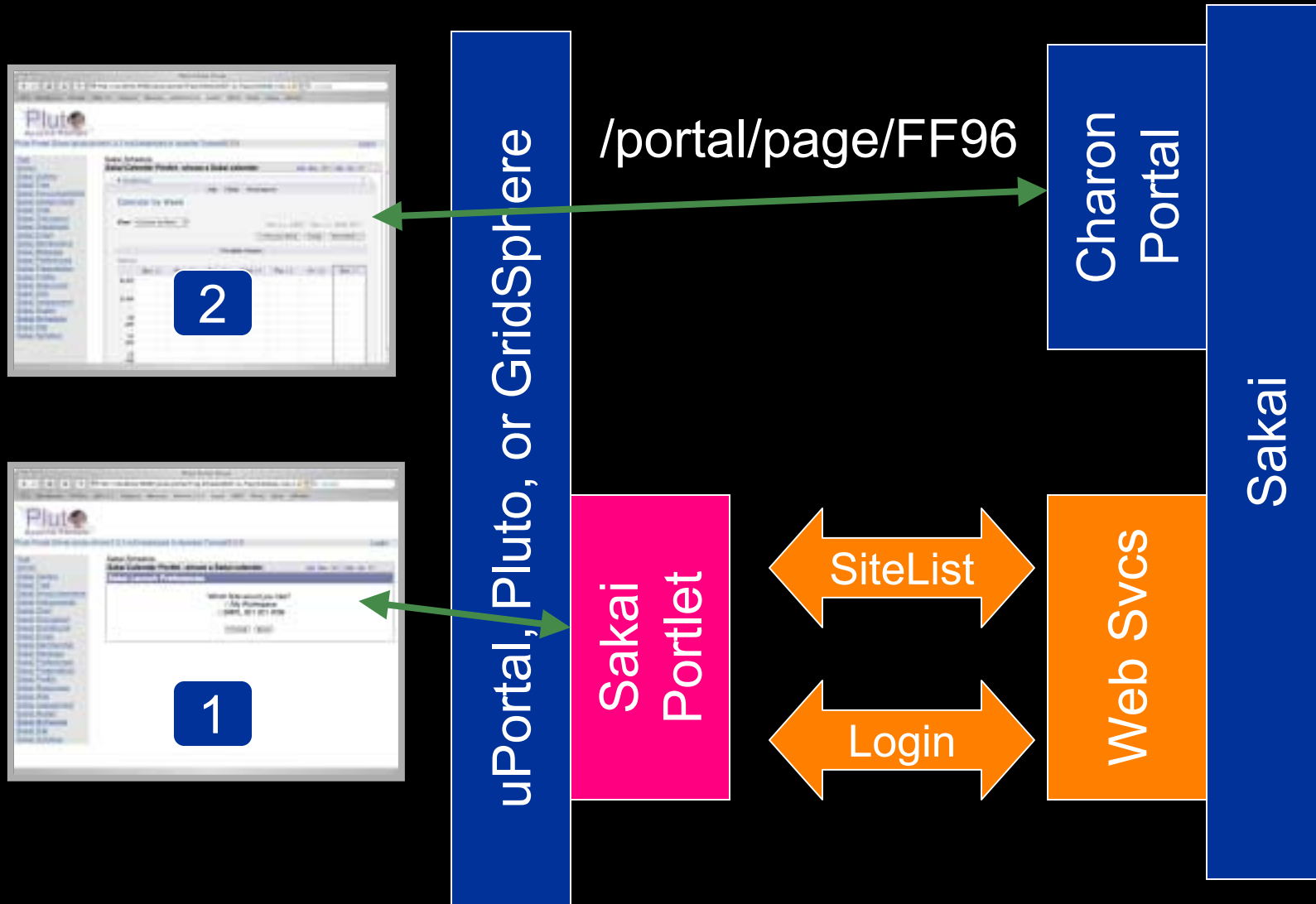
Which Site would you like?

- My Workspace
- SMPL 001 001 W06

Proxy Tool Selection



How Proxy Portlet Works



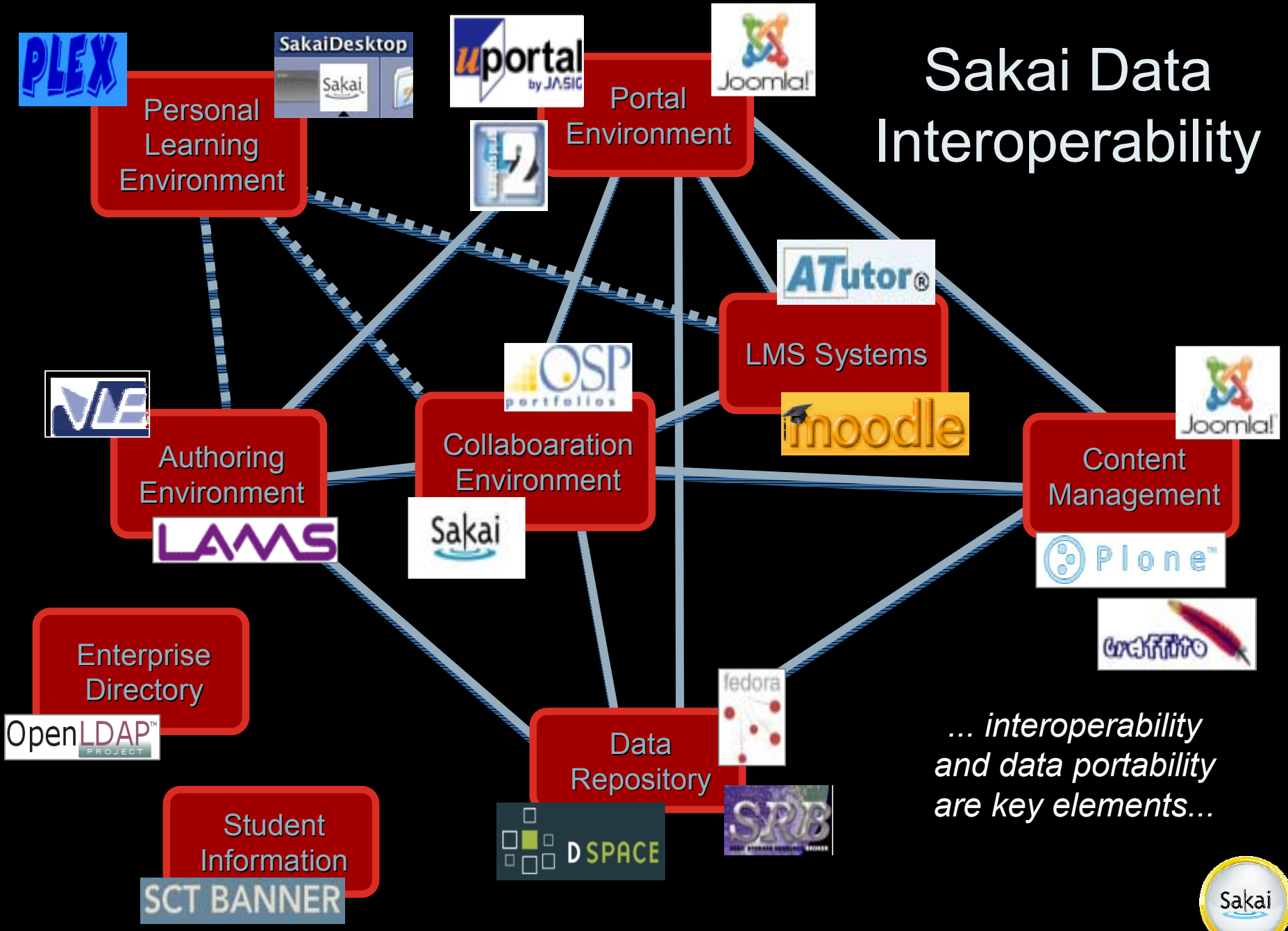
Future Plans

- Explore Sakai and RSS
- Improve JSR-168 Portlets
- Improve WSRP / uPortal
- Review UNISA Portal Integration Plans
- Support JSR-168 within Sakai

- All of this depends on volunteer resources



Sakai Data Interoperability



... interoperability and data portability are key elements...



Sakai and RSS

- Sakai will likely add a number of RSS feeds for sites, tools, etc
- User-contextualized
- This can allow Sakai to be integrated into a wide range of applications including portals, browsers and desktop apps



Future - Sakai 168 Portlets

- Improve use of iFrames so tools look as good when shown as Portlets look as good as good as when they are shown in Sakai - need auto frame resize
- Add coordinated AuthZ for proxy portlets so that Sakai “trusts” the AUTHZ in the portal - no standard for isUserInRole :(
- Allow direct placement of Sakai portlets in new contexts with AuthZ controlled by the Portal (again non-standard)
- (really tough) get rid of iFrames through a proxy layer to rewrite URLs



Future - Sakai WSRP Producer

- Build WSRP handle “/portal” that produces the Sakai portal view in WSRP markup
 - Initially use iframes for the tool area
 - Later eliminate iFrames
- Improve tool placement support - allow the separate placement and provisioning of new tools via WSRP.



Sakai WSRP - Going Forward

- Waited 1 year for community resource to step forward
- UNISA will experiment with provisioning and productionizing WSRP with a simple scope.
- Still want to do a replacement for Sakai's internal Aggregator which is available at a well-known handle "/gallery"



WSRP Challenges

- Getting CSS/Javascript right - solve by putting Sakai CSS/Javascript into the portal HEAD
- Eliminating iframes and working through issues when we do back/refresh differently
- Performance re-tuning



WSRP - UNISA Version

- UNISA will be replacing Sakai's portal with uPortal by January
- Will try to use WSRP - if this is too hard they will fall back to a web proxy mechanism.
- The basic idea
 - Provision from the SIS system into GAPS in uPortal
 - Build providers in Sakai that pull from GAPS
 - Build a WSRP handle convention that encodes the "placement" in the handle
 - Augment Sakai's WSRP producer to auto-provision sites and tools transparently when a new handle is encountered
- UNISA can constrain scope to insure on-time delivery



uPortal Sakai at UNISA

uPortal

WSRP Consumer

?site=COS101-06-Y1&page=Message+of+the+Day&tool=sakai.motd

GAPS

Authentication
& Group Access Control

WSRP

User, Site, Page, Tool
as parameters

Sakai

Tool
Produces a
Fragment

Web Services

Providers

Written specifically
for uPortal

WSRP Producer

Creates sites, pages,
tools on the fly if they
don't exist

Dispatch
Respond

API's

UNISA Effect

- Upsides
 - If all goes well - WSRP will be deployed in large-scale production with a lot of developer eyes on both the uPortal 2.5 WSRP Consumer and Sakai 2.x WSRP producer
- Weaknesses
 - UNISA's limited scope will not produce a universal solution - but it will move us to the point where iterative improvement will be possible
- Risks
 - UNISA decides WSRP is too hard so just writes their own proxy tool which uses web services and ends up with a purely point solution that is unreusable.



JSR-168 Support in Sakai

- Since Sakai's API and tool environment are a superset of JSR-168, it *should* be simple
- Pluto 1.1 was written to be “embedded” - instead of building “one portal”, make it so that many applications can support portlets



Use Cases for Sakai-168

- Prepare a Pluto-style portlet war file and drop it into Sakai as a webapp
- Sakai finds the portlets in the web app and auto-registers them as tools
- Users simply use Sakai's Site Info tool to place portlets like any other Sakai tool
- Portlets can be stealthable just like Sakai tools
- It will be possible to use any Sakai API within a JSR-168 Portlet
- Sakai will provide a JSR-168 complaint CSS so that portlets have the same look and feel as Sakai tools
- Will work with all Sakai aggregators (Charon, OSP, Mercury ...)




[Logout](#)

My Workspace

DEMO CSEV 101 DEV

Users Group

Home

Schedule

Announcements

Modules

Assignments

Tests & Quizzes

Discussion and
Private Messages

Gradebook

Site Info

users present:

Chuck Severance

SITE INFO

Revising site tools for DEMO CSEV 101 DEV...

Check boxes to add or remove tools from your site.

- | | | |
|-------------------------------------|--|--|
| <input checked="" type="checkbox"/> | Home | Description of the project, recent announcements, discussion, and chat items. |
| <input checked="" type="checkbox"/> | Announcements | For posting current, time-critical information. |
| <input checked="" type="checkbox"/> | Number Guess | A sample JSR-168 portlet which is a game to guess numbers |
| <input type="checkbox"/> | Chat Room | For real-time conversations in written form. |
| <input checked="" type="checkbox"/> | Discussion and Private Messages | Jforum-Discussion Tool, Foothill |
| <input type="checkbox"/> | TestSuite1 | JSR-168 Conformance Test Portlets |
| <input checked="" type="checkbox"/> | Gradebook | For storing and computing assessment grades from Tests & Quizzes or that are manually entered. |
| <input checked="" type="checkbox"/> | Modules | Melete - Foothill Authoring Tool |
| <input type="checkbox"/> | News | For viewing content from online sources. |
| <input type="checkbox"/> | Resources | For posting documents, URLs to other websites, etc. |

Major Components of Sakai-168

- Implementing the PortletServlet to map between the needs of the Sakai Aggregator and Portlet
- Implementing the interfaces for persistence and portlet data structures



Sakai-168 Initialization

- War preparation
 - Using Sakai specific implementation for PortletServlet in shared/lib, we plan to transparently support Pluto's war conventions.
 - Developers can use Pluto's ant target or other Pluto-provided mechanisms to prepare their war files.
- Portlet registration
 - Prefer a completely automatic auto-registration mechanism - perhaps PortletServlet can do this or perhaps some system-wide startup process
 - PortletID (test.TestSuite2) is fine as ToolID (equivalent to sakai.chat)



webapps/testsuite

```
<portlet>
  <description>TestSuiteDescription</description>
  <portlet-name>TestPortlet1</portlet-name>
  <display-name>Test Portlet #1</display-name>
  <portlet-class>
    org.apache.pluto.portallmpl.portlet.TestPortlet
  </portlet-class>
  <supports>
    <mime-type>text/html</mime-type>
    <portlet-mode>VIEW</portlet-mode>
    <portlet-mode>EDIT</portlet-mode>
    <portlet-mode>HELP</portlet-mode>
  </supports>
  <portlet-info>
    <title>Test Portlet #1</title>
    <short-title>Test #1</short-title>
    <keywords>Testing</keywords>
  </portlet-info>
</portlet>
```

```
<servlet>
  <servlet-name>TestPortlet1</servlet-name>
  <display-name>TestPortlet1Wrapper (Pluto Invoker)</display-name>
  <description>Auto Generated Portlet Invoker Servlet</description>
  <servlet-class>org.apache.pluto.core.PortletServlet</servlet-class>
  <init-param>
    <param-name>portlet-class</param-name>
    <param-value>
      org.apache.pluto.portallmpl.portlet.TestPortlet
    </param-value>
  </init-param>
  <init-param>
    <param-name>portlet-guid</param-name>
    <param-value>testsuite.TestPortlet1</param-value>
  </init-param>
</servlet>

<servlet-mapping>
  <servlet-name>TestPortlet1</servlet-name>
  <url-pattern>/TestPortlet1/*</url-pattern>
</servlet-mapping>
```

The implementation for PortletServlet is a Sakai-specific implementation and is placed in shared/lib for all portlets to use. As each servlet instance starts up, it registers the portlet as a Sakai Tool using the portlet-guid as the Sakai Tool id.

This servlet will combine the registration functionality of org.sakaiproject.util.ToolListener and the request processing functionality of org.sakaiproject.util.RequestFilter and the portlet lifecycle support functionality of the original PortletServlet.



Sakai-168 Run-Time Issues

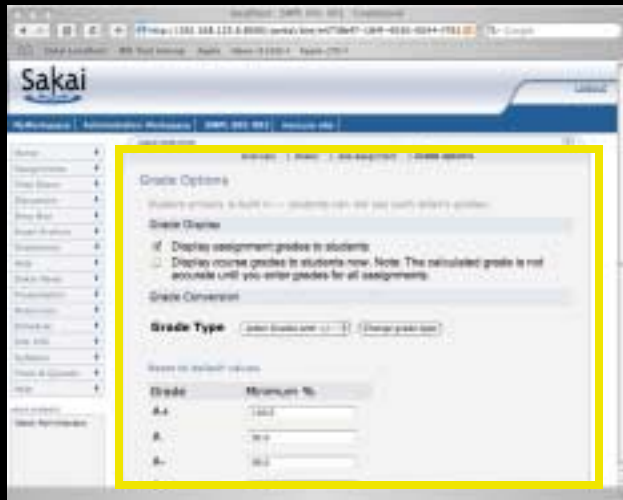
- Portlet Instance ID
 - Instance ID will be same as Sakai Tool placement ID
- Portlet Preferences
 - Scoped to Sakai Tool Placement and stored as namespaced properties as part of the Sakai tool placement
- Portlet Session
 - Must be shared with Servlets which run after portlet
- Remote User
 - Sakai Enterprise ID is already in remote user
- isUserInRole
 - Initially backed directly as a Sakai AuthZ call
 - May need some “special” ones or perhaps even add permissions
- PortletRequest.USER_INFO
 - user.name, user.name.given, user.namefamily, user.home-info.online.email, user.name.full
- EncodeUrl
 - Already used across Sakai - both for fragment style requests and full page requests



Sakai-168 Markup Cycle

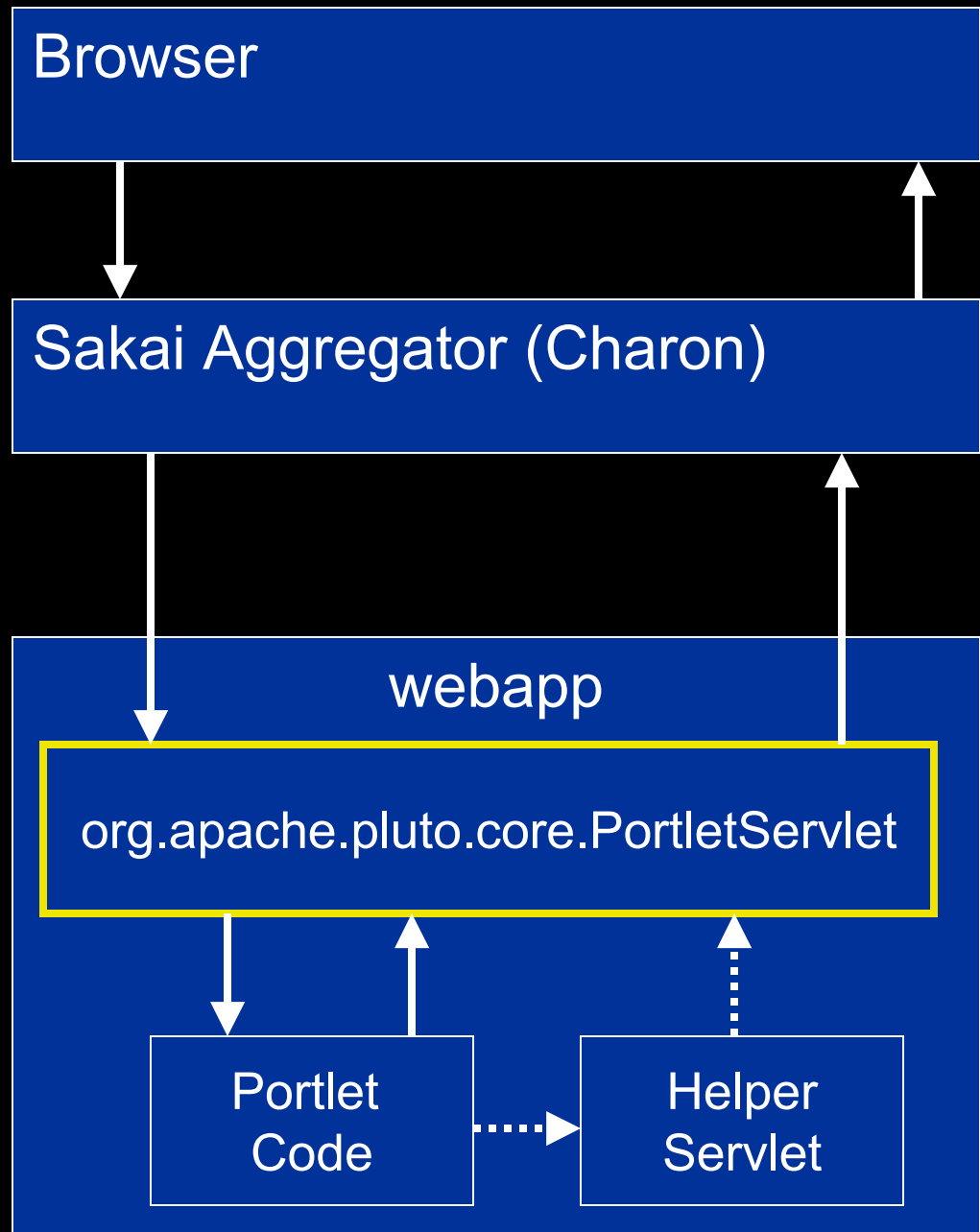
- Sakai PortletServlet dispatcher
 - Will perform the request filter functions
 - Will do redirect between action and render to support book marking
 - Will handle the request parameter values placed by Charon properly
 - Supports both fragment approaches
 - Normal markup with servlet will generating the head material
 - Fragment request to support the Sakai WSRP producer





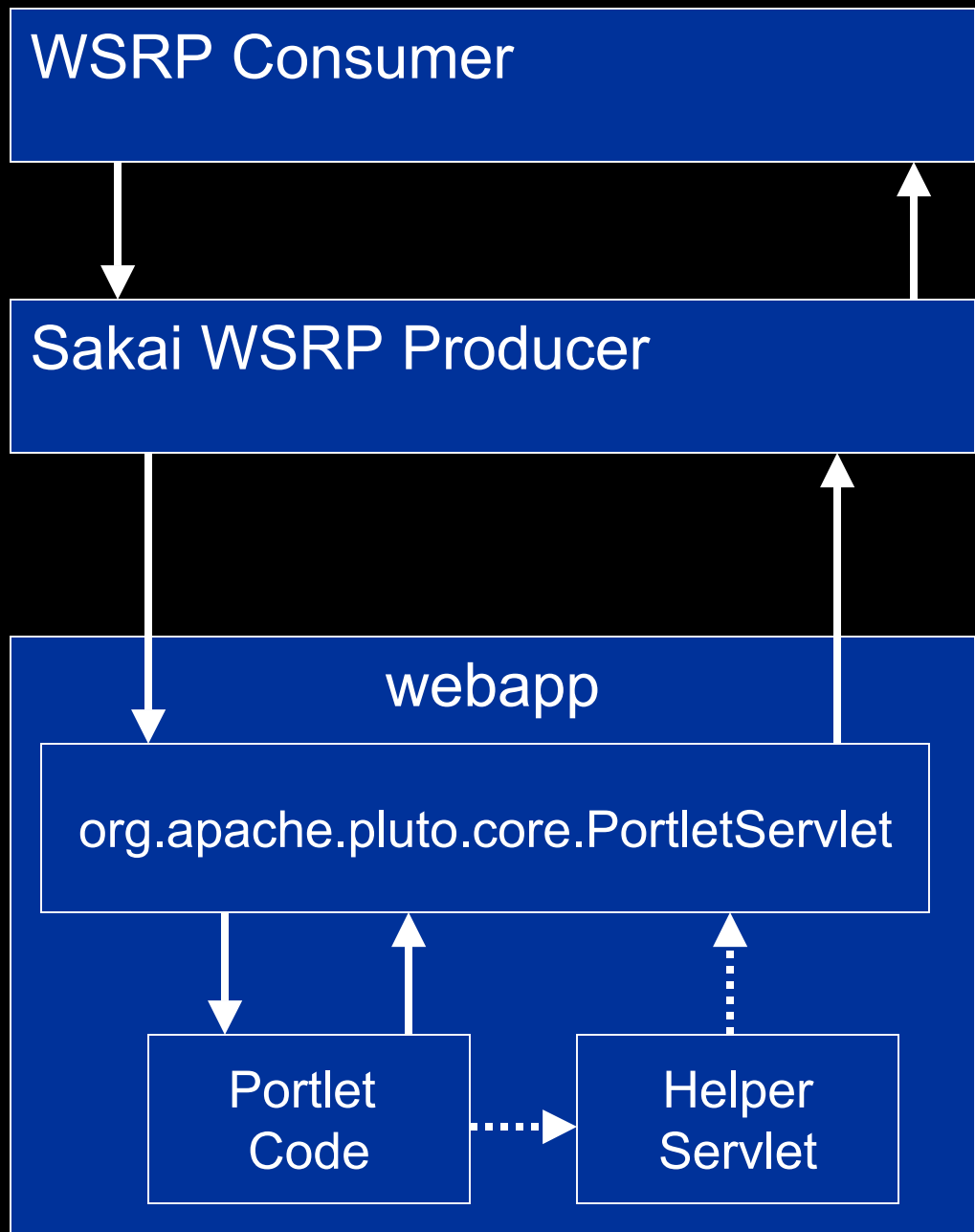
In the normal Sakai markup case, the PortletServlet will generate a full page with head, etc as directed by the Sakai Aggregator.

In this variant, PortletServlet will be a little “mini portal”.





When Sakai's WSRP Producer is making the request (indicated by sakai.fragment), the PortletServlet is operating more naturally, returning a fragment, with URLs encoded using WSRP Producer's wrapped request object's EncodeURL() method.



Sakai-168 Plans

- Working with David DeWolf who is the designer of the embedded version of Pluto 1.1 to have him do the Sakai integration
- Have had initial scoping meetings - things are moving forward



Summary

- There is no magic bullet here - Standards focus on the simplest use cases
- Sakai has moved from trying to use standards to do *everything* to finding the right uses for standards within the Sakai context
- Lets keep an open mind to HiJacking the WSRP4J project in an Apache branch - Sakai would be happy to incubate this
- JSR 286/WSRP 2.0 will not change where these standards “fit” in our architectures - they will just do a better job than JSR168/WSRP1.0

