WSRP Investigation – A Deep Look at WSRP/WSRP4J

Xiaobo Yang and Rob Allan

CCLRC e-Science Centre
Daresbury Laboratory

Portals and Portlets 2006, Edinburgh, UK, 17th July 2006

Overview

- Portal federation and WSRP
- WSRP support test
- Some issues in WSRP4J
- Further discussions
- Conclusion remarks

Portal Federation and WSRP

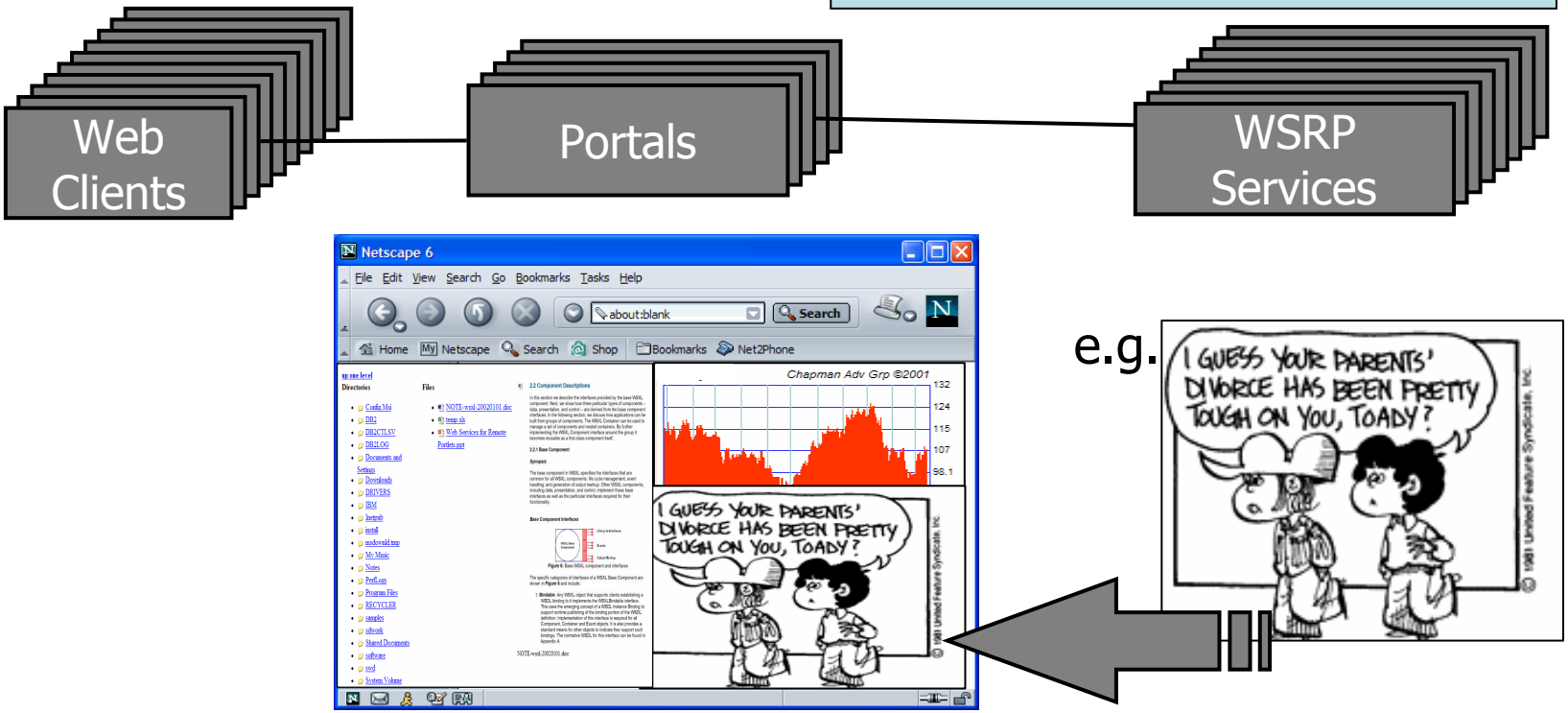
- Portal federation
  - Portals are not isolated islands
  - “Deploy service once, reuse anywhere” requires communications among portals
  - Ideally portals are complementary to each other
  - Solution: WSRP
- WSRP
  - Web Service for Remote Portlets 1.0, approved by OASIS
  - Defines presentation-oriented web services
  - Markup fragments rather than arbitrary data are transferred in SOAP messages from producer (web service) to consumer (web service client)

Solution: WSRP!

Portal Federation and WSRP

- WSRP (Web Services for Remote Portlets)
  - Plug-in remote portlet

I borrowed this picture several times



Portal Federation and WSRP

```
<?xml version="1.0" encoding="UTF-8"?>
<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:xsd="http://www.w3.org/2001/XMLSchema" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
  <soapenv:Body>
    <getMarkup xmlns="urn:oasis:names:tc:wsrp:v1:types">
      <registrationContext>
        <registrationHandle>193.62.113.16_1152698903409_8</registrationHandle>
      </registrationContext>
      <portletContext>
        <portletHandle>ngsportlets-helloworld.HelloWorldPortlet</portletHandle>
      </portletContext>
      <runtimeContext>
        <userAuthentication>wsrp:none</userAuthentication>
      </runtimeContext>
      <userContext xsi:nil="true"/>
      <markupParams>
        <secureClientCommunication>false</secureClientCommunication>
        <locales>en</locales>
        <locales xsi:nil="true"/>
        <mimeTypes>text/html</mimeTypes>
        <mode>wsrp:view</mode>
        <windowState>wsrp:normal</windowState>
        <clientData>
          <userAgent>MyWSRPConsumer</userAgent>
        </clientData>
        <markupCharacterSets>UTF-8</markupCharacterSets>
        <validNewModes>wsrp:view</validNewModes>
        ……
        <validNewWindowStates>wsrp:normal</validNewWindowStates>
        ……
      </markupParams>
    </getMarkup>
  </soapenv:Body>
</soapenv:Envelope>
```

Consumer requires markup of a portlet from producer

Portal Federation and WSRP

- <?xml version="1.0" encoding="utf-8"?>
- <soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/" xmlns:xsd="http://www.w3.org/2001/XMLSchema" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
- <soapenv:Body>
- <**getMarkupResponse** xmlns="urn:oasis:names:tc:wsrp:v1:types">
- <markupContext>
- <mimeType>text/html; charset=UTF-8</mimeType>
- <**markupString**>***<!-- Xiaobo Yang, CCLRC e-Science Centre, UK, 22 February 2006 -->***

- ***<!--***
- ***<center>HelloWorld Portlet in view Mode</center>***
- ***<center>The current window state is normal</center>***
- ***-->***
- ***<center>***

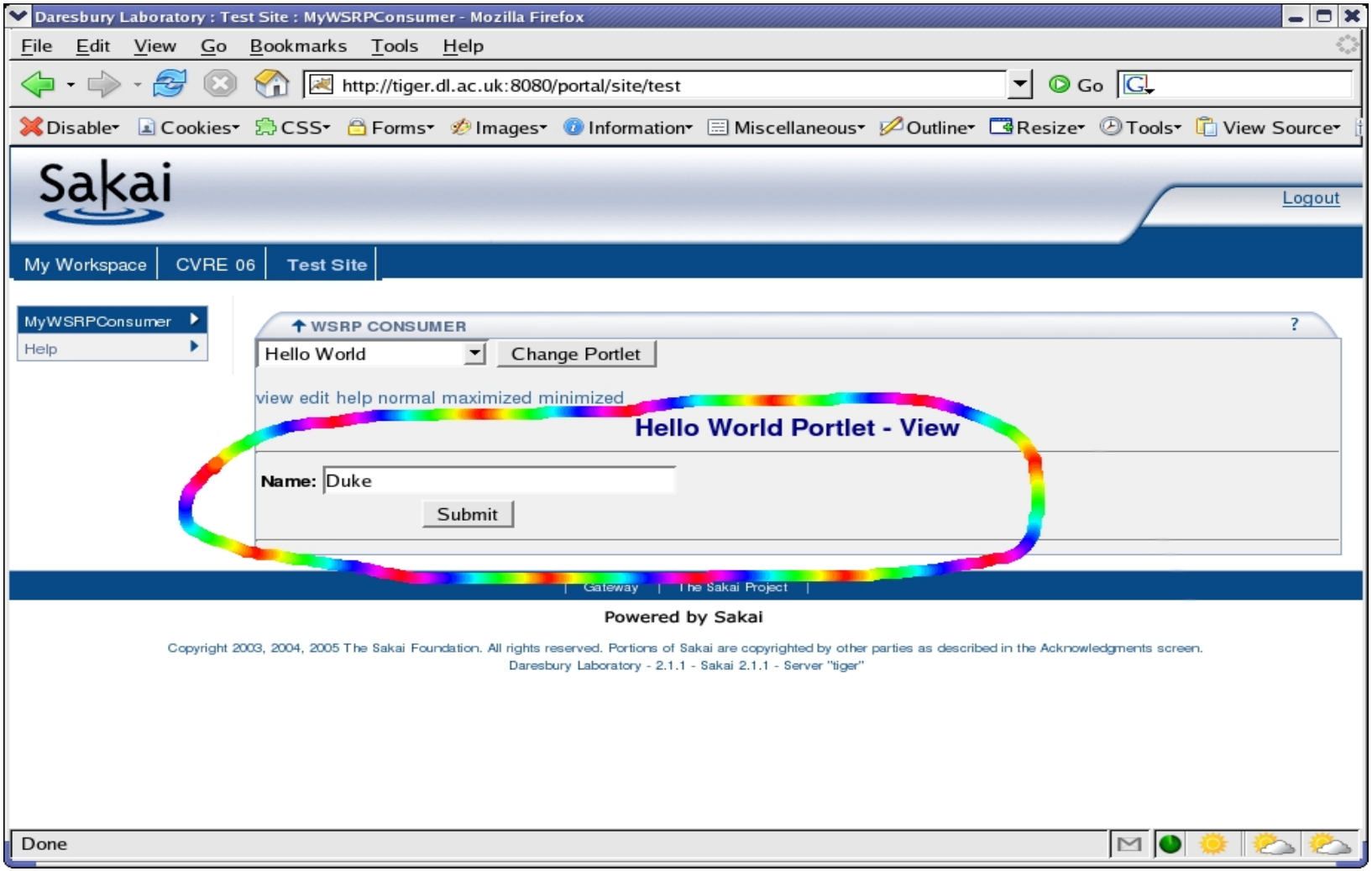
- ***Hello World Portlet - View***

- ***</center>***

- ***<hr/>***
- ***……***
- </markupString>
- <locale>en</locale>
- <requiresUrlRewriting>true</requiresUrlRewriting>
- </markupContext>
- </getMarkupResponse>
- </soapenv:Body>
- </soapenv:Envelope>

Producer returns markup fragments to consumer

Portal Federation and WSRP

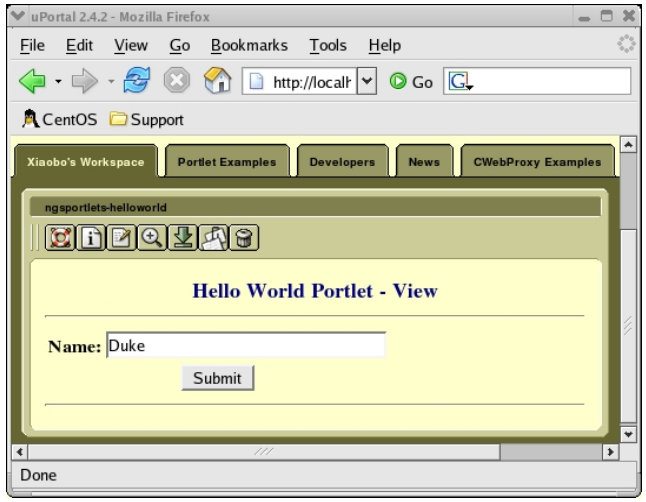


- Consumer makes use of markup fragments for constructing portal page

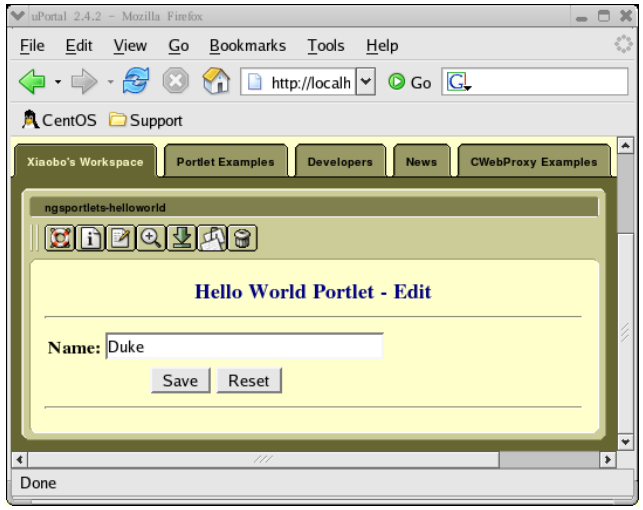
WSRP Support Test

- Many portal frameworks support WSRP
  - We want to know how mature they are
  - We want to enable Sakai to consume JSR 168 portlets
- Several open-source portal frameworks are selected
  - eXo platform 1.0, Liferay 3.6.1, StringBeans 3.0, uPortal 2.4.2
  - WSRP4J, not a portal framework but a reference implementation of the WSRP 1.0 specification from Apache
- Two JSR 168 portlets used for test
  - HelloWorld Portlet, for testing different modes, window state, user input, etc.
  - LdapBrowser Portlet, for testing portal URLs
    - Deployed in the UK NGS Portal

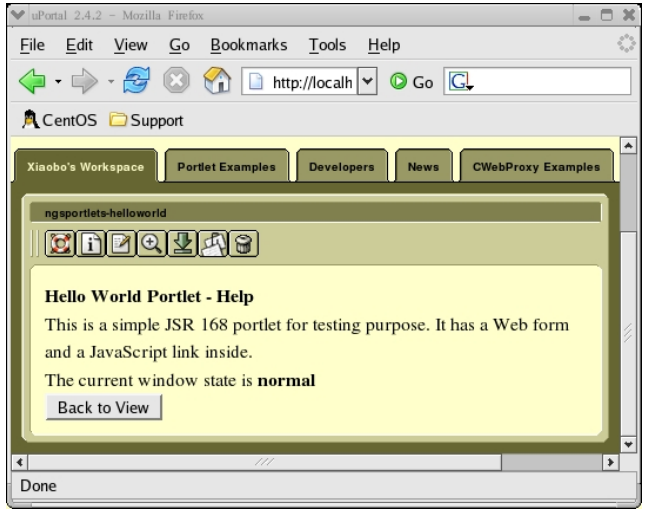
HelloWorld Portlet



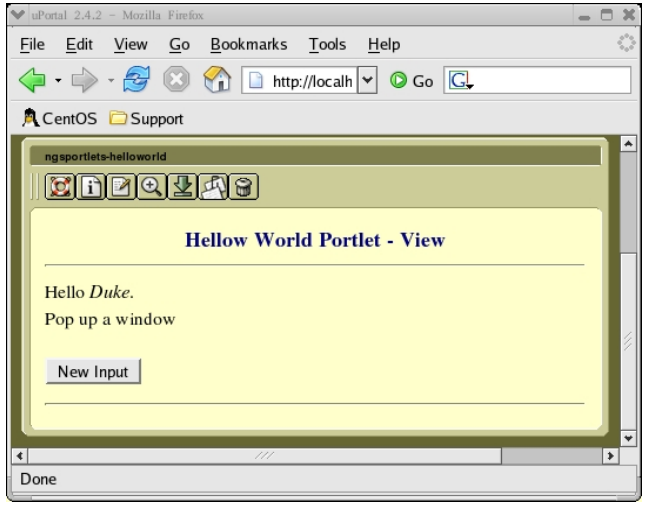
view mode



edit mode

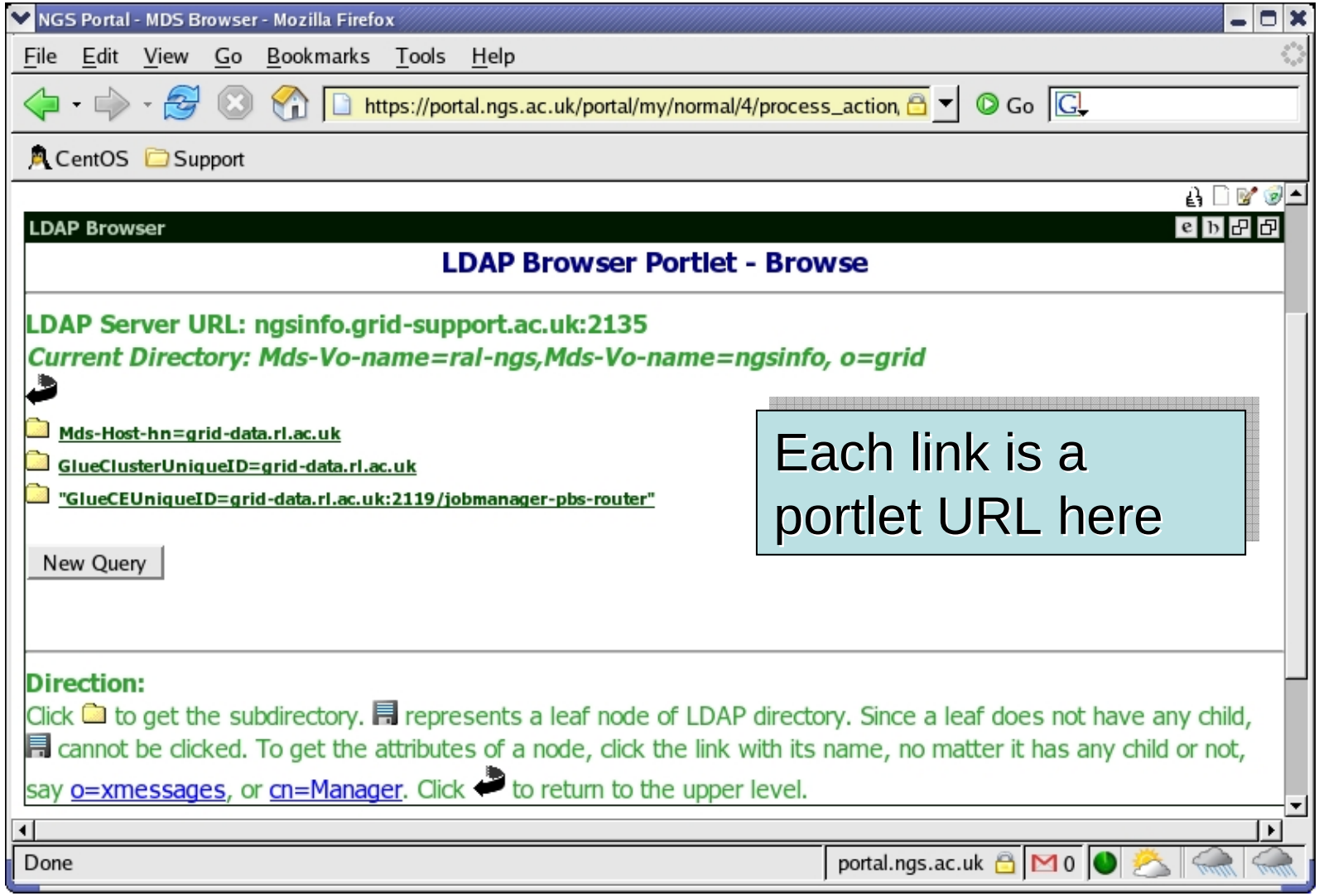


help mode



button “Submit” clicked

LdapBrowser Portlet



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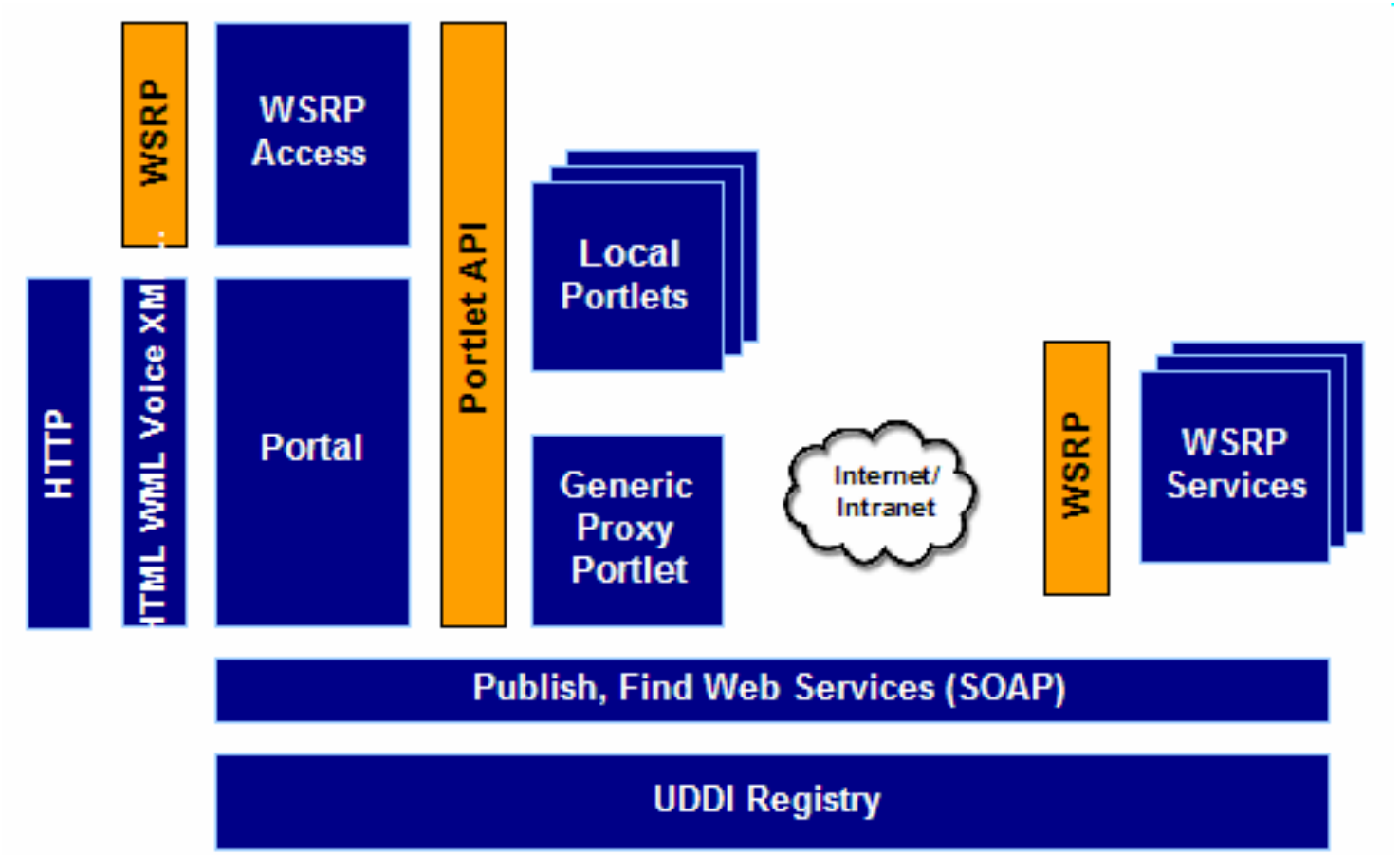
Test Results

- None of the producers and consumers are fully functional
- But producer and consumer from the same vendor performs the best
  - There are a lot of interoperability issues to be solved
- We want to have a look what the problems are
  - WSRP4J has been selected
    - Mainly because uPortal uses ProxyPortlet (a WSRP consumer from WSRP4J) and uPortal is now gaining more and more attention for building up campus portals
    - WSRP4J is relatively simple since it does not have its own JSR 168 implementation (WSRP4J makes use of Pluto, a JSR 168 reference implementation from Apache)

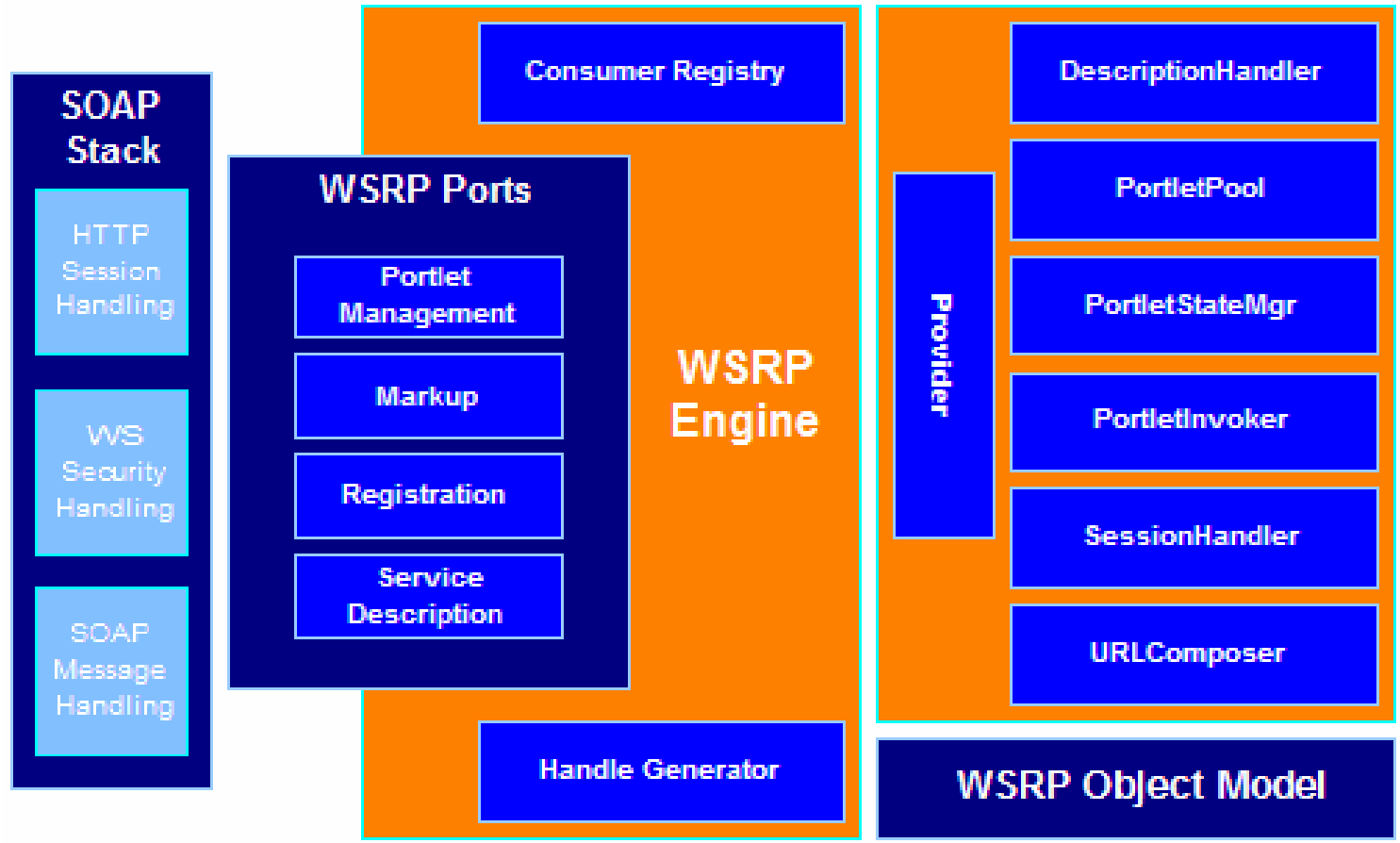
WSRP4J Architecture

- WSRP4J provides both producer and consumer
  - http://portals.apache.org/wsrp4j/arch/index.html



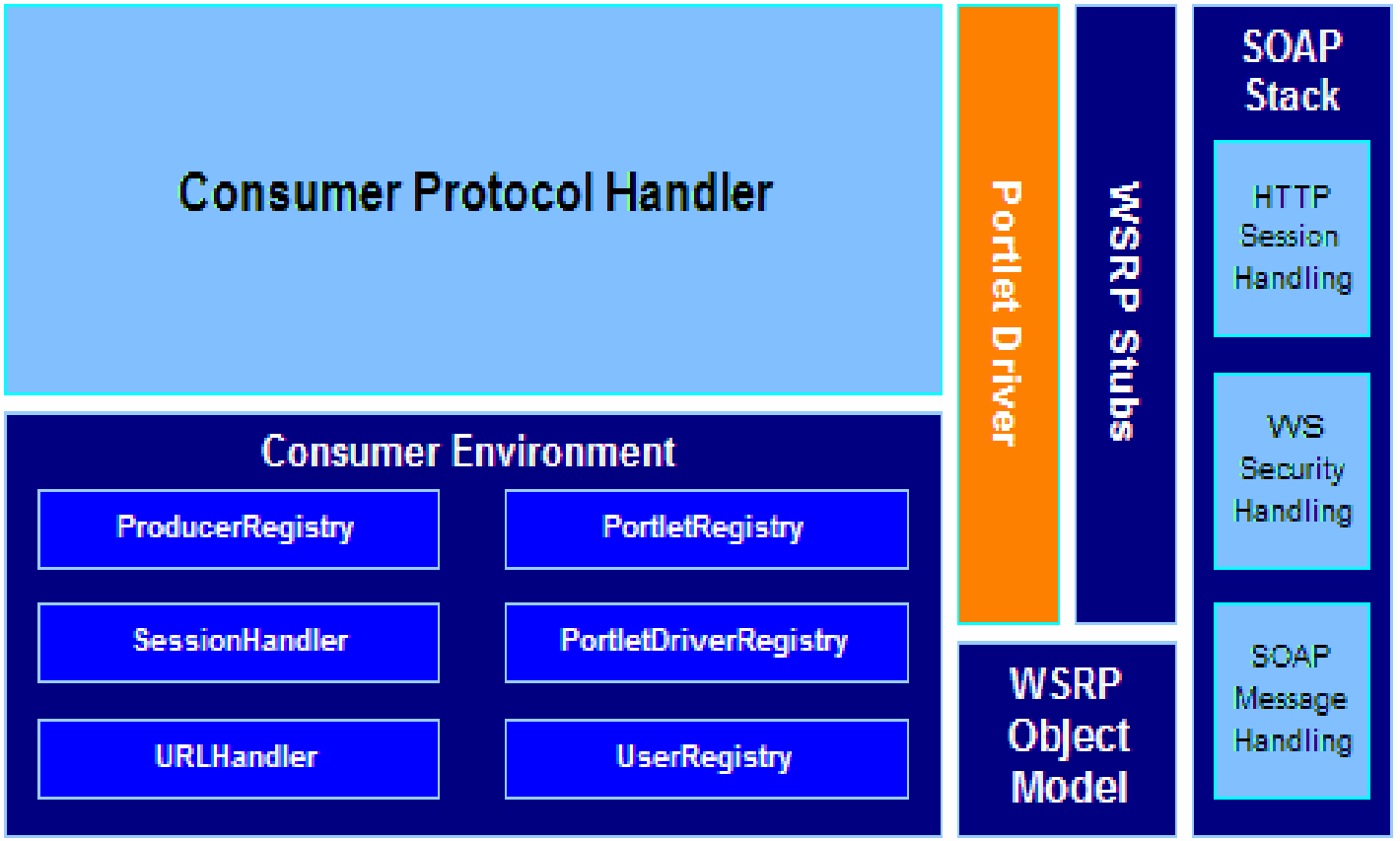
WSRP Producer Architecture

- WSRP4J producer implements all four WSRP protocol specific interfaces
  - http://portals.apache.org/wsrp4j/arch/producer.html



WSRP Consumer Architecture

- WSRP consumer is a broker sitting between producer and client
  - http://portals.apache.org/wsrp4j/arch/consumer.html



WSRP4J TODO List

- WSRP 1.0 was approved as an OASIS standard in August 2003
- WSRP4J is still an incubated subproject under the Apache Web Services project
  - The mailing list is not active
  - Only few developers
  - WSRP 2.0 is to be approved soon
- WSRP4J TODO list
  - http://wiki.apache.org/portals/WSRP4J/TodoList
  - We want to have a look at some of the issues
    - Templates support plus templatesStoredInSession
    - Mode/WindowState change support
    - File upload support

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Templates support

- Templates give a more flexible approach for consumer to communicate with producer
  - Consumer can provide templates to provider so that it can use these templates to process markups (there may be negotiation between producer and consumer). Thus there is no need for consumer to re-write URLs.
  - With templatesStoredInSession support, consumer only need to provide templates once, which reduces network traffic.
  - The only missing bit in WSRP4J for templates support in its producer is resourceTemplate. We have implemented this missing bit and tested successfully.
  - Namespace support is similar to templates but is also missing in WSRP4J.

Mode/WindowState Change Support

- WSRP4J producer does not support Mode/WindowState change in portlets
  - Mode change: *view* -> *edit*
  - WindowState change: *normal* -> *maximized*
  - We have implemented this function in WSRP4J producer

File Upload Support

- File upload support is sometimes very useful
  - But it is not clearly specified in the WSRP 1.0 specification
  - A practical approach is that consumer extract data first then transfer to producer via SOAP. But there are performance worries.
    - We have tested encoding data within SOAP messages. It works fine for small amounts of data.
    - Other approaches must be considered, for example to transfer only some metadata without the real data if it is large. An external database may be used for completing this action.

Further Discussions

- Other interesting issues
  - Customisation
    - A very important function of portlets, but careful consideration is required to realise this because of the “stateless” characteristic of web services
  - Redirect and file download
  - AJAX support
  - Security concerns
    - Credential delegation is required sometime for accessing remote services/resources
  - Producer/portlet publish and discovery
  - …

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Conclusion Remarks

- WSRP makes it possible for building up federated portals
- WSRP4J is functional but there are some bits missing
- A deep look inside WSRP4J producer has been performed including Templates, Mode/WindowState change and File upload support
- Some functions involve both producer and consumer
- Further discussions reveal that more aspects to be considered for providing a full functional WSRP producer
- More investigations are required to fulfil a full functional WSRP producer (and consumer) such as customisation and security

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Questions?

Thank you!