



Portals@Apache

Standards and the Portals Project

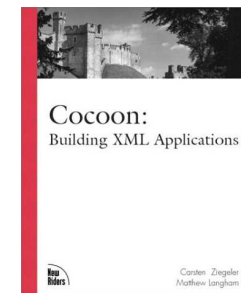
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S&N AG, Germany



About

- Member of the Apache Software Foundation
- Committer in some Apache Projects
 - Cocoon, Excalibur, Pluto, WSRP4J, Incubator
 - PMC: Incubator, Cocoon, Portals
- Chief Architect of the Competence Center Open Source, S&N AG, Germany
- Article and Book Author
- Technical Reviewer



Agenda

- Portal Basics
- JSR 168
- WSRP
- Apache Portals Project

The Past (before JSR 168 and WSRP)

- Different Portal Vendors with their own APIs
 - No interoperability between local portlets and portal servers
 - Application and Content Providers must implement different portlets for different portal servers
- Quickly locked into a particular portal solution
- No standardized way to plug-n-play content and applications into portals exists
- No standardized way of integrating remote content



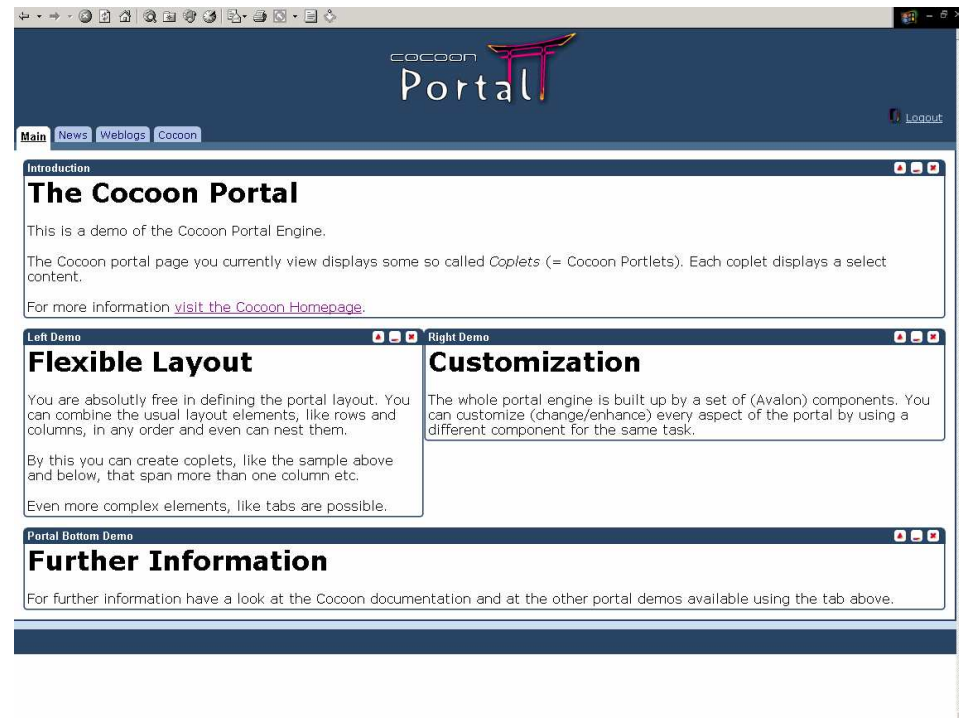
Portal Standards

Portals and the JSR 168



What is a Portal?

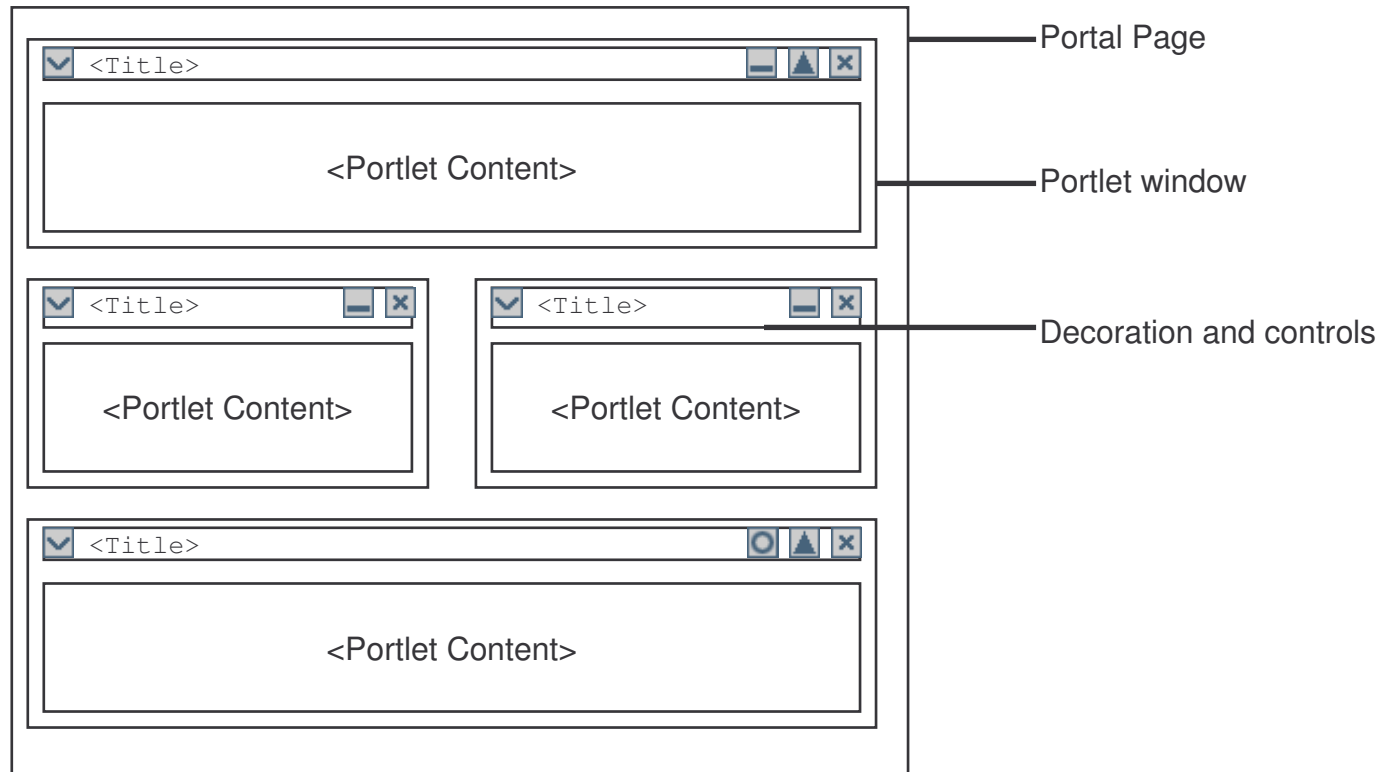
- Web Based Application
 - Personalization
 - Individualization
 - Content Aggregation
 - Using Portlets
 - Single Sign On



Common Requirements for a Portal

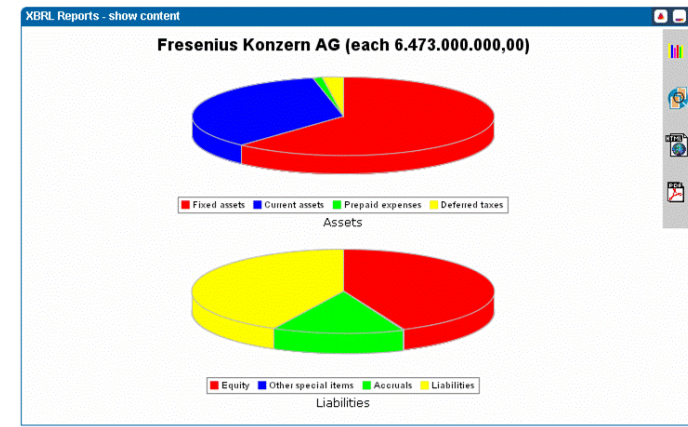
- Integration of different data sources
 - ❑ Static sources (HTML, XML, Office Documents...)
 - ❑ Dynamic sources (CMS, Archives...)
 - ❑ Databases (SQL DB, XML DB, LDAP...)
 - ❑ Complex Applications
- Multi Channel
 - ❑ PCs (HTML, XML)
 - ❑ Mobile, Organizer (WML)
 - ❑ Documents (PDF, Office Documents)
 - ❑ Email
 - ❑ Applications

A Portal Page Sample



What is a Portlet?

- Web Component
 - Generates (dynamic) Content
 - News
 - Links
 - Complete Web Application
 - ...
 - Managed by a Portlet Container



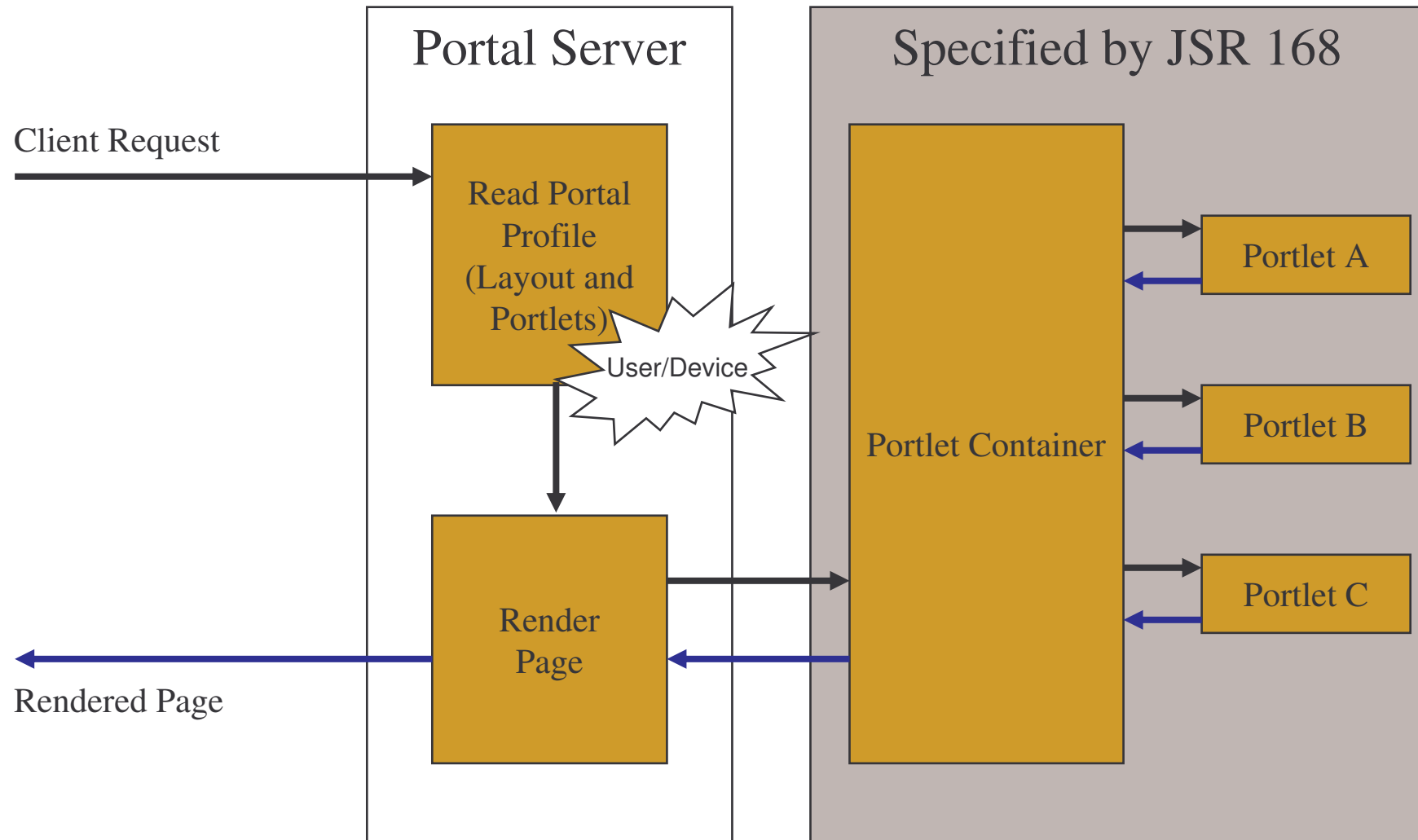
What is a Portlet Container?

- Runs portlets
- Manages portlets (life cycle)
- Persistent storage for preferences
- Not a stand-alone container

What is a Portal Server?

- Web server
- With integrated portlet container
- Runs the developed portal (application)

Overview



The JSR 168 – Portlet API

- Java API for interoperability among portlets and portals
 - Portlet Development (based on J2EE 1.3)
 - User Information and Preferences
 - Localization
 - Security
- Similar to Servlet API
 - Request-Response Cycle
 - Own Deployment Descriptor
- Portlet Container extends Servlet Container
 - Servlet Specification 2.3
 - **Not** covered in the JSR

Developing Portlets

- Write a Java class conforming to Portlet Interface
- Abstract class GenericPortlet can be used as basis
- Portlets are stateless wrt user (Singleton)
- Evaluation of portlet modes and window modes
- Generate content by writing into character stream
- Possible to use more sophisticated view layers:
 - JSP tag library is part of the specification
 - Different open source approaches
 - Bridges, JSF, Struts, Cocoon, Spring etc.

Portlet Life Cycle Methods

init(*configuration*)

- ❑ Instantiation by the container
- ❑ prepares the Portlet to serve requests

destroy()

- ❑ Destruction by the container
- ❑ cleans up the Portlet (no longer needed/shut down)

processAction(*request and response*)

- ❑ Notification of changes/actions from the user
- ❑ process user input

render(*request and response*)

- ❑ Request to render the portlet in it's current state

Developing Portlets - Sample

```
public class HelloWorldPortlet implements Portlet {  
  
    ...  
  
    public void render(RenderRequest req, RenderResponse res)  
        throws PortletException, IOException {  
        res.setContentType("text/html");  
        Writer writer = res.getWriter();  
        writer.write("<h1>Hello World</h1>\n");  
        ...  
    }  
  
    ...  
}
```

JSR 168 Elements

- Definition of valid markup fragments for
 - HTML / XHTML
 - CSS Styles
 - Namespacing
- URL Handling
- Portlet Lifecycle
- Modes and Window States
- Caching

Developing Portlets - Sample

```
public class HelloWorldPortlet implements Portlet {  
  
    ...  
  
    public void render(RenderRequest req, RenderResponse res)  
        throws PortletException, IOException {  
        res.setContentType("text/html");  
        Writer writer = res.getWriter();  
        writer.write("<div class='portlet-font'>Hello World</div>\n");  
        ...  
    }  
  
    ...  
}
```



CSS

Developing Portlets - Sample

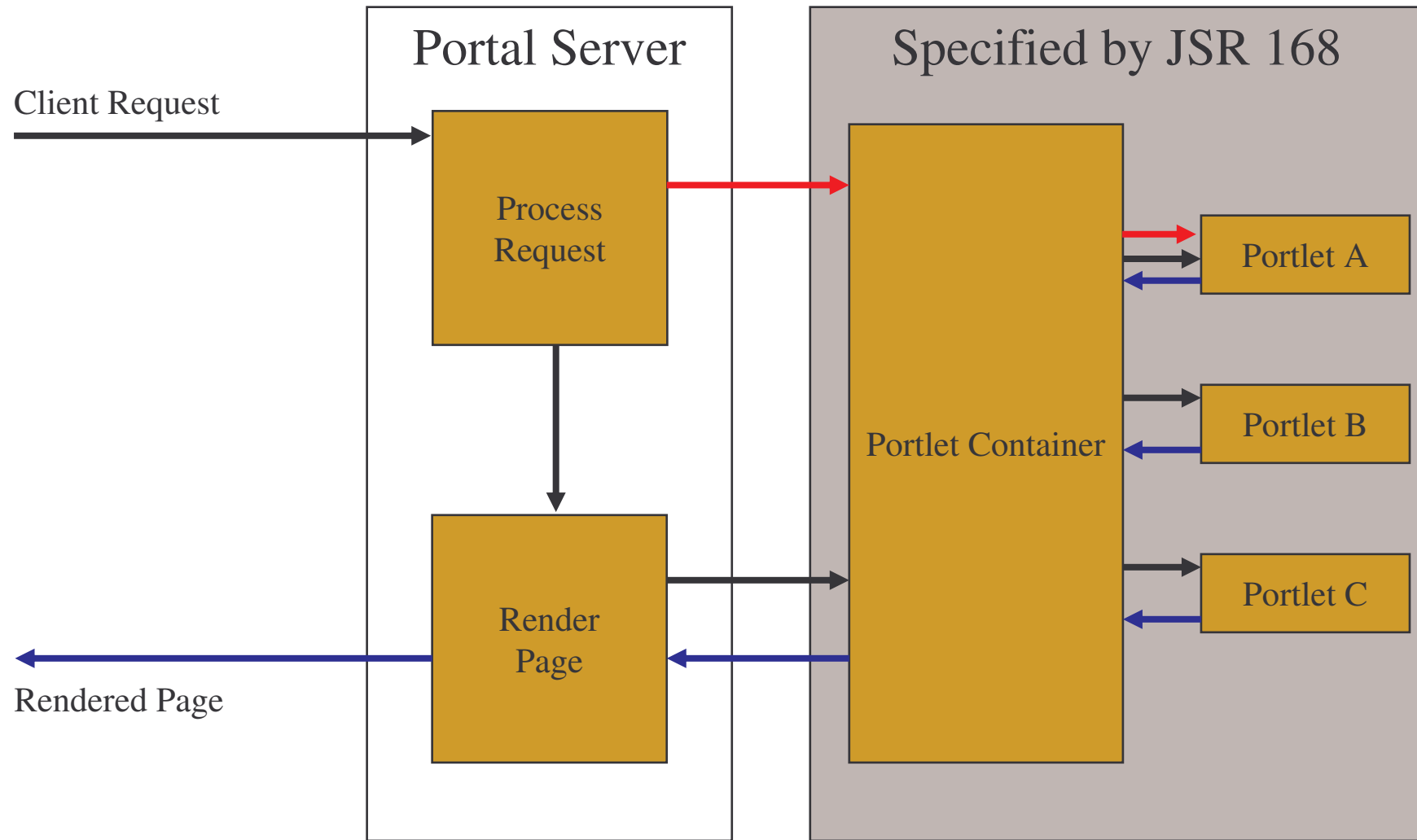
```
public class HelloWorldPortlet implements Portlet {  
  
    public void render(RenderRequest req, RenderResponse res)  
        throws PortletException, IOException {  
        ...  
        PortletURL url;  
        url = res.createRenderURL();  
        url.setPortletMode(PortletMode.EDIT);  
        writer.write("<a href='");  
        writer.write(url.toString());  
        writer.write("'>");  
        writer.write("Edit mode");  
        writer.write("</a>");  
    }  
}
```

Create
a URL

User Interaction

- with content produced by portlets
 - Links or forms in the content
- with decoration
 - Links or buttons rendered by the portal
- Request/response cycle handled by the portal
 - Actions are forwarded to the portlets
 - Portlets may change their state
 - Portal is rendered

User Interaction - Flow



Portlet Modes

- Required
 - View – generate the content
- Optional
 - Edit – editing of user preferences
 - Help – provide help for the user
- Custom
 - About, Config, Edit_defaults, Preview and Print
- Portal vendor-specific modes are possible

Portlet Window States

- Required
 - Normal (default)
 - Portlet may share the view with other portlets
 - Maximized
 - Portlet has more space than usual
 - Minimized
 - Portlet should only render minimal output or no output at all
- Portlet must handle all, but is free to generate the same content!
- Portal vendor-specific window states are possible

Portlet Preferences

- User specific data can be stored
- Service defined by the Portlet API
- Functionality provided by the Portlet container
- Access to preferences:
 - Action phase: read and write
 - Rendering phase: read only
- Default values in the deployment descriptor
- Preferences are key-value pairs
 - Key is a string
 - Value is either a string or an array of strings

Portlet Session Scope

- Portlet applications are Web applications
 - Sharing session with servlets
- Portlets can store private temporary data (Portlet Scope)
 - Put with prefixes in the session
- Portlets can share temporary data (Webapp Scope)
 - Every component of the Web application can access it
 - Sharing between: portlets, servlets, JSPs etc.

Portlet Deployment

- Portlets are deployed like a web application (war file)
 - Including resources (images, JSP etc.)
- Two deployment descriptors
 - Web application
 - Portlet application (portlets, configuration)
- Portlet container may inject information into each Portlet application during deployment
- Deployment can be
 - “internal” – not accessible from servlet container
 - “external” – as a usual web application in the servlet container

Portlet Deployment Descriptor (Extract)

```
<portlet>
  <description>TestSuiteDescription</description>
  <portlet-name>TestPortlet1</portlet-name>
  <portlet-class>HelloWorldPortlet</portlet-class>
  <init-param>
    <name>config</name>
    <value>/WEB-INF/testsuite-config.xml</value>
  </init-param>
  <supports>
    <mime-type>text/html</mime-type>
    <portlet-mode>VIEW</portlet-mode>
    <portlet-mode>EDIT</portlet-mode>
    <portlet-mode>HELP</portlet-mode>
  </supports>
  <supported-locale>en</supported-locale>
  <supported-locale>de</supported-locale>
```

...

Advantages of the Portlet Specification

- Multiple Portal products can be supported
- Reusable code and portlets possible
 - More and more (open source) portlets are available
- Common tools are possible
- Open Source solutions available
- Rules for the markup (HTML with CSS, namespacing)

Potential Problems of the Portlet Spec.

- Important areas are not covered yet
 - Inter-Portlet communication
 - Potential danger of using vendor-specific features
 - Each portal solution provides add-ons
 - communication, services, component containers etc.
- Characters based approach
 - No XML Support

The Present (with JSR 168)

- Standardized API
 - Vendor specific add-ons
 - Quickly locked into a particular portal solution
- Bridges are used for implementation
 - Cocoon, JSF, Struts, Spring etc.
- Start using JSR 168
- Migrate only if required
- Integration of “complete” webapps as a portlet
 - Use generic proxy portlets
 - Or: WSRP

The Future (JSR 286)

- Portlet Specification 2.0
 - Is in the starting phase – scheduled for end of 2006
 - (Aligns with WSRP 2.0)
- Corrections and clarifications
- Add access to Composite Capability/Preference Profiles (CC/PP) data via the JSR188 API
- Introduction of portlet filters
- Inter-portlet communication
- J2EE 1.4 support
- Enhance caching support



Portal Standards

Remote Portlet API - WSRP

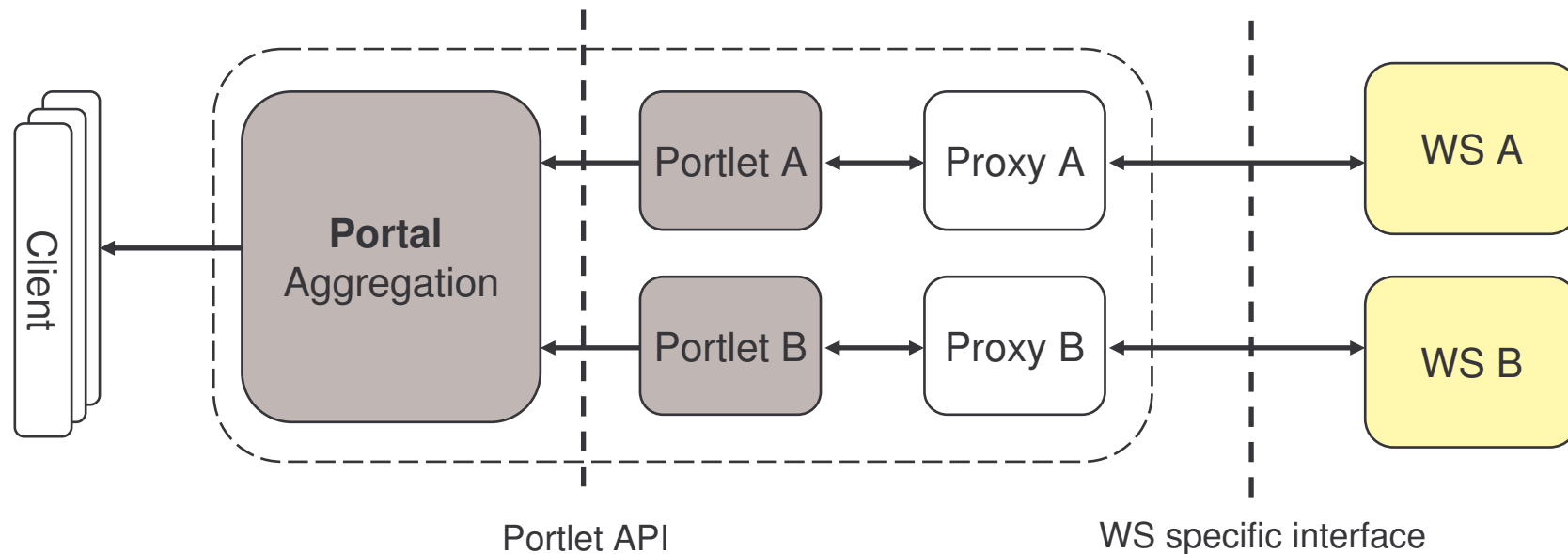


WSRP–Web Service for Remote Portlets

- A standard for interactive, presentation-oriented web services
 - not tied to a programming language
 - publishing and consuming of content
- Sharing of portlets (markup fragments) over the internet with a common interface
- JSR 168 portlets run in the Portal Server – WSRP portlets run on a different server

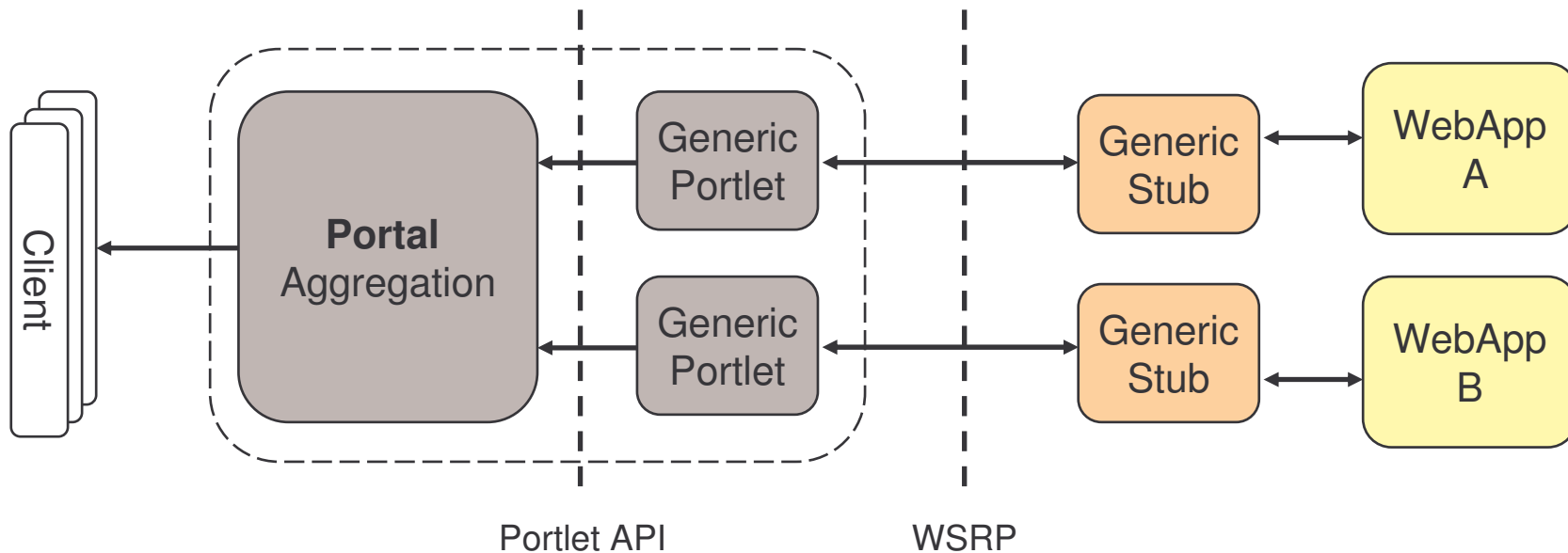
Portlets Using Web Services (Traditional)

- Different WS have different Interfaces
- Customized Proxies for each WS required
- Code/Deployment locally required

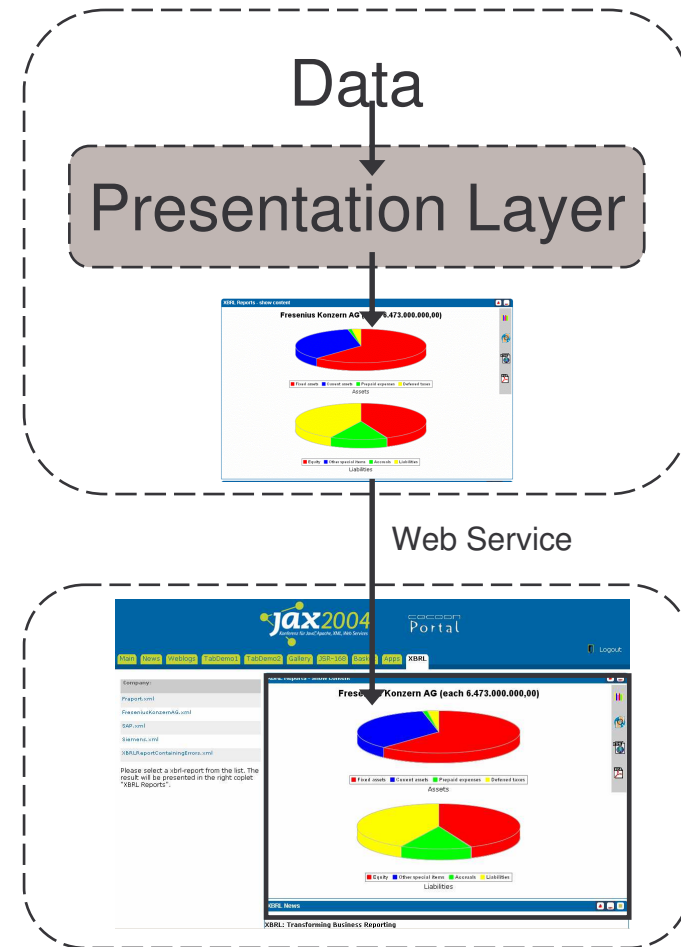
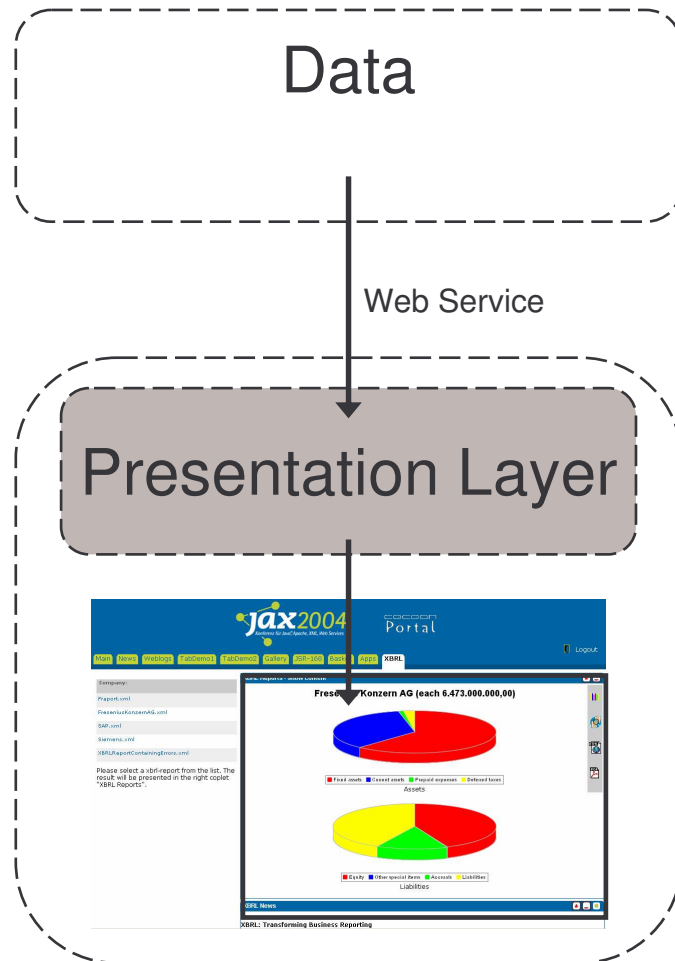


Portlets Using WSRP

- Unified API for WS
- No coding required: (available) generic code
- Presentation-oriented



Data Oriented Web Services vs. WSRP



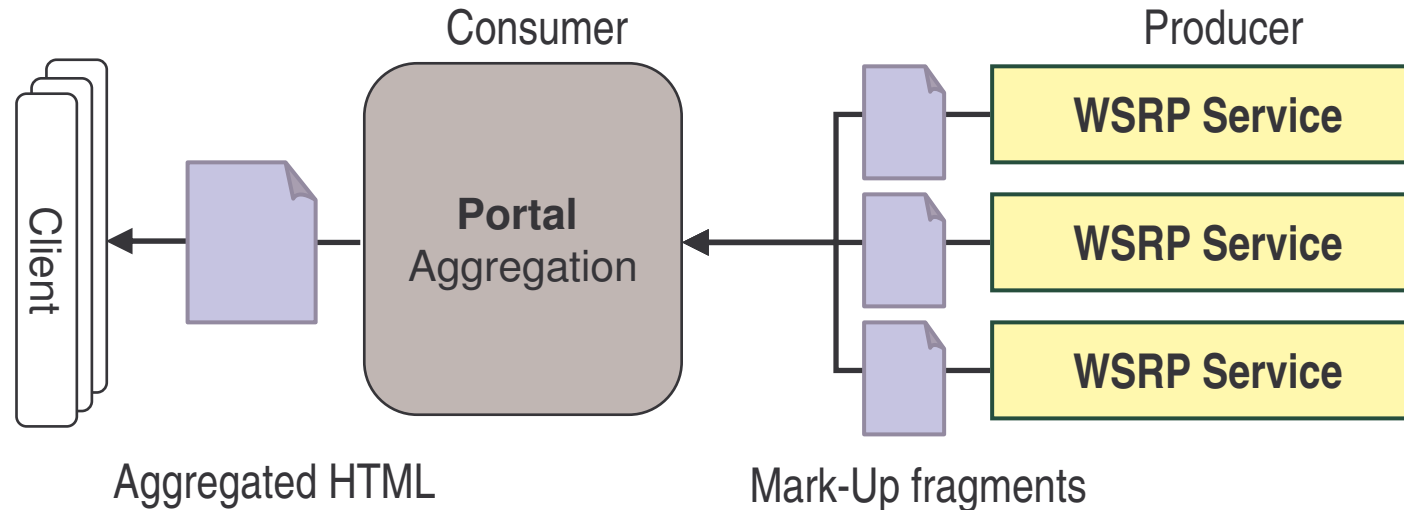
WSRP Elements

- Definition of valid markup fragments for
 - HTML / XHTML
 - CSS Styles
 - Namespacing
- URL Rewriting (Consumer and Producer)
- Session Handling
 - Context: User and device information
- Portlet Lifecycle
- Modes and Window States
 - View, edit, help, preview and normal, minimized, maximized
- Resource Proxying
- Caching

WSRP Interface (WSDL)

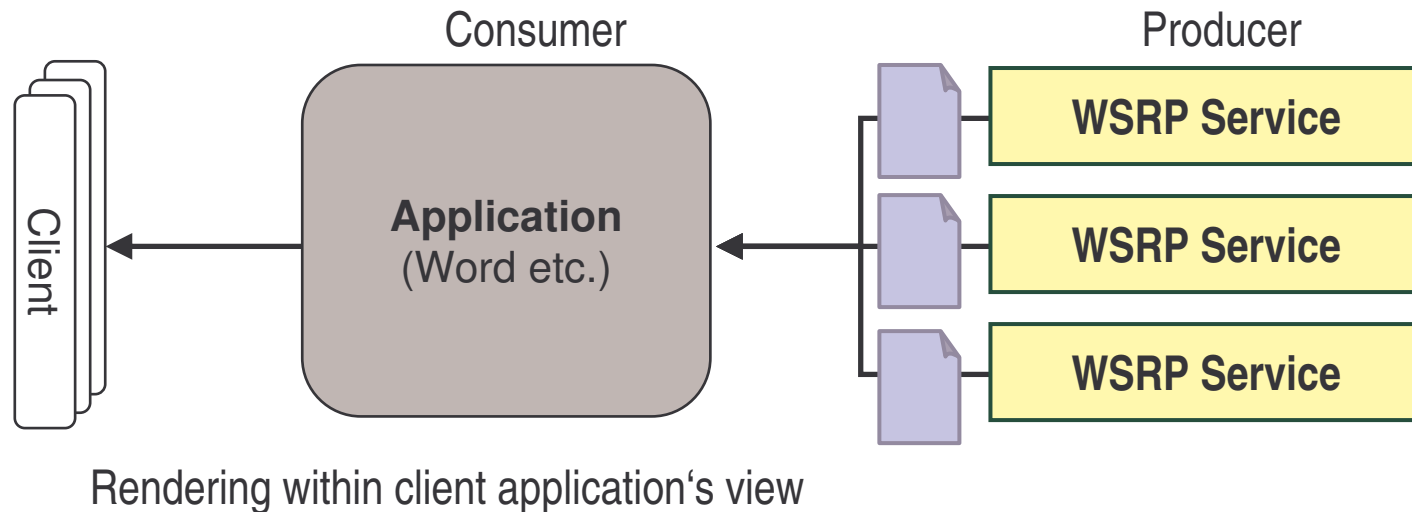
- Service Description (mandatory)
 - Consumer queries Producer
- Markup (mandatory)
 - Getting content and user interaction
- Portlet Management (optional)
 - Consumer creates own customized instances
- Registration: (optional)
 - Consumer can register with Producers

Using WSRP in a Portal



- Portals can aggregate presentation from many WSRP services
- WSRP services can be aware of portal context
 - User profile from portal
 - Desired locale and markup-type
 - Active user agent

Using WSRP in a Client Application



- Applications may embed WSRP Services through plugin mechanisms, e.g. COM Components or ActiveX Controls
- In this case, the plugin in the client application adheres to the WSRP protocol and contracts as a WSRP Consumer

WSRP – Sample Markup Fragment

...

Click here on `Action`
URL.

Create a URL

`Namespace: `

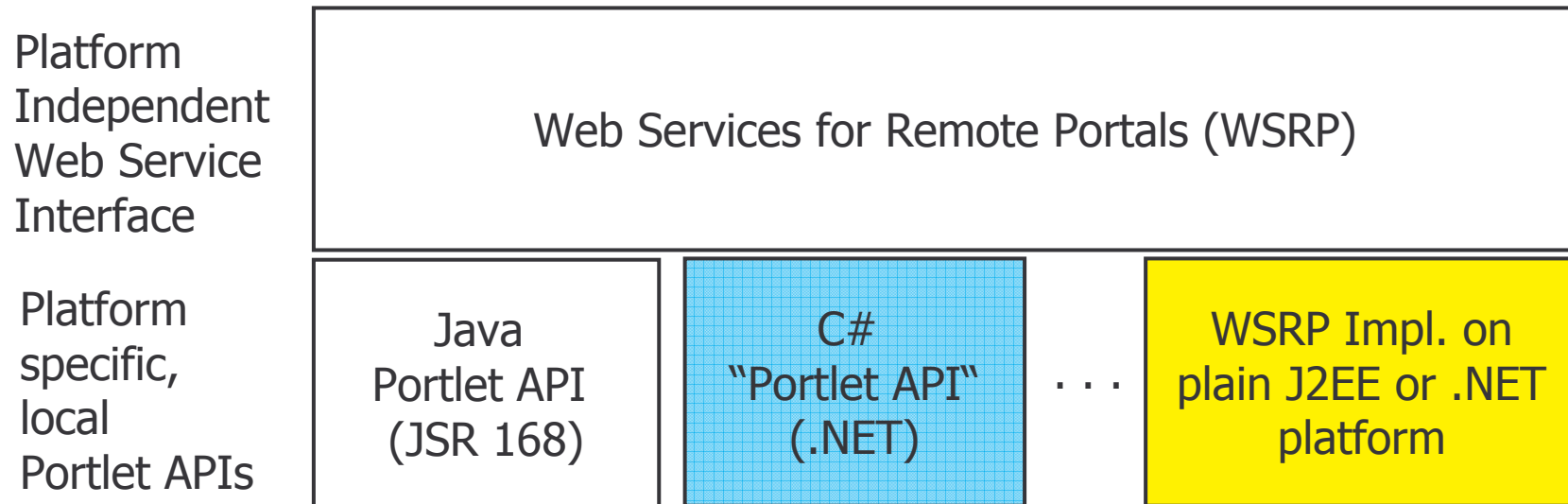
`Pluto_127.0.0.1_1100620743364_2_someFunction
Here ()`

`
`

...

Namespace

WSRP and Portlet API(s)



Portlet APIs may be defined for different programming languages; WSRP can bridge between the different platforms, leveraging platform independence of Web services

WSRP Achievements

- Plug&Play interoperability
 - between Content Providers and Portal Vendors
- Interoperable across a variety of WS stacks
- Markup retrieval, interaction processing, caching
- Separation of Concerns
 - Security relies on underlying stack (WS-security, SSL)
 - Other concerns can be added, e.g. Billing
- Alignment with JSR 168

Advantages of WSRP

- Standardized way of integrating services
 - Plug&Play – generic components
- Services are already presentation oriented
- Common tools are possible
- Open Source solutions available
- Rules for the markup (HTML with CSS, namespaces)

Potential Problems of WSRP

- Not very common (today)
- A Step back to HTML
- Availability of own solution depends (additionally) on availability of all used services

Future of WSRP – 2.0

- Event Handling
- Additional markup types (VoiceXML, WML, cHTML)
- Add access to Composite Capability/Preference Profiles (CC/PP) data
- Enhanced Caching
- Attachments

JSR 168 and WSRP

- JSR 168 aligns closely with the WSRP
 - (JSR 286 and WSRP 2.0 will, too)
- Emerged at the same time
- Released open source implementations
- Both standards strive to work well together
 - Similar modes/functionality



Portal Standards

The Apache Portals Project



The Apache Portals Projects



is a collaborative software development project dedicated to providing robust, full-featured, commercial-quality, and freely available **Portal related software** on a wide variety of platforms and programming languages. This project is managed in cooperation with various individuals worldwide (both independent and company-affiliated experts), who use the Internet to communicate, plan, and develop Portal software and related documentation.

The Apache Portals Projects



- Current Projects
 - Jetspeed 1/Jetspeed 2
 - Pluto
 - WSRP4J (Incubation)
 - Bridges
 - Graffito (Incubation)
- Related Projects
 - Apache Cocoon Portal

Apache Pluto

- Reference Implementation of the JSR 168
- Framework for building
 - A consumer (into a portal solution)
 - A provider (into a framework)
- Test harness
 - Startup Pluto and upload your portlets!

Apache WSRP4J (Incubation)

- Facilitate quick adoption of WSRP
- Framework for building
 - A consumer (into a portal solution)
 - A provider (into own application)
- Testing

Apache Portals Bridges

- Support for portlet development (JSR 168)
- Build a web app with your favorite framework
 - Struts, JSF, Velocity
- Use Portal Bridges to deploy this as a portlet
- Transparent portal integration not always possible
 - Follow the provided guidelines
- Version 1.0 is released

Apache Portals Graffito (Incubation)

- Framework to build content based applications
 - CMS, forums, blogs etc.
- Provides JSR 168 portlets
- Features
 - Taxonomy
 - content versioning, fine grained access control
 - collaborative editing, publication workflow
 - scheduling, indexing, searching and more ☺
- Support for many document types
 - like XML, HTML, PDF, MS Office, Open office, ect.

Apache Portals Jetspeed 2

- Enterprise portal solution
 - Supports portlet standard (JSR 168)
 - Supports Portals Bridges
 - Component based
- SSO
- Flexible layout (XML description)
 - Template support
- Several usable portlets
 - Administration and User
- Final Version is out!

Apache Cocoon Portal

- Enterprise Portal Solution
 - Based on Apache Cocoon
 - Supports portlet standards (JSR 168 and WSRP)
 - Supports Portals Bridges
 - Supports Cocoon Applications
 - Component based
- Flexible layout engine (XML/XSLT)
- Powerful Event Mechanism
 - Status changes
 - Portlet communication
- Portal Framework to build portals

Conclusion

- Current Portal Standards
 - Provide a good basis, but aren't covering all important parts, but will be extended
- Several Open Source Solutions
 - Apache Portals (and other open source solutions)
 - Increasing development efforts (AJAX)
 - (Open source portal solutions have a greater market-share)
- Use standards **with** additional frameworks
 - E.g. JSR 168 with JSF and Bridges



Thanks for your attention!

Download latest presentation from <http://www.osoco.org/carsten.html>

Related Sessions

MO 11 (14:00) – Embedding Apache Pluto
TU 13 (15:00) – Cocoon – One Hour Portal

