Development of Java™ Portlets using Java Portlet 2.0 API, Java Server Faces (JSF 1.2 & 2.0) and Ajax

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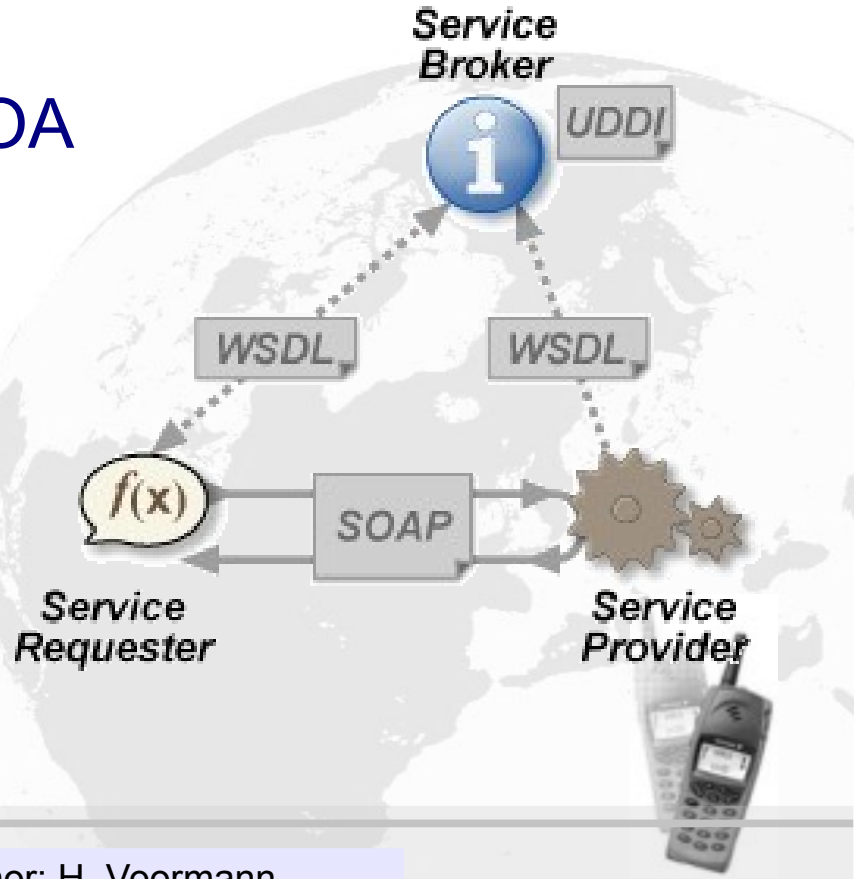
Web Services

Web Services are:

- components for building distributed applications in SOA
- communicate using open protocols
- are self-descriptive and self-content
- can be searched and found using UDDI or ebXML registries



Source: http://en.wikipedia.org/wiki/File:Webservices.png, Author: H. Voormann
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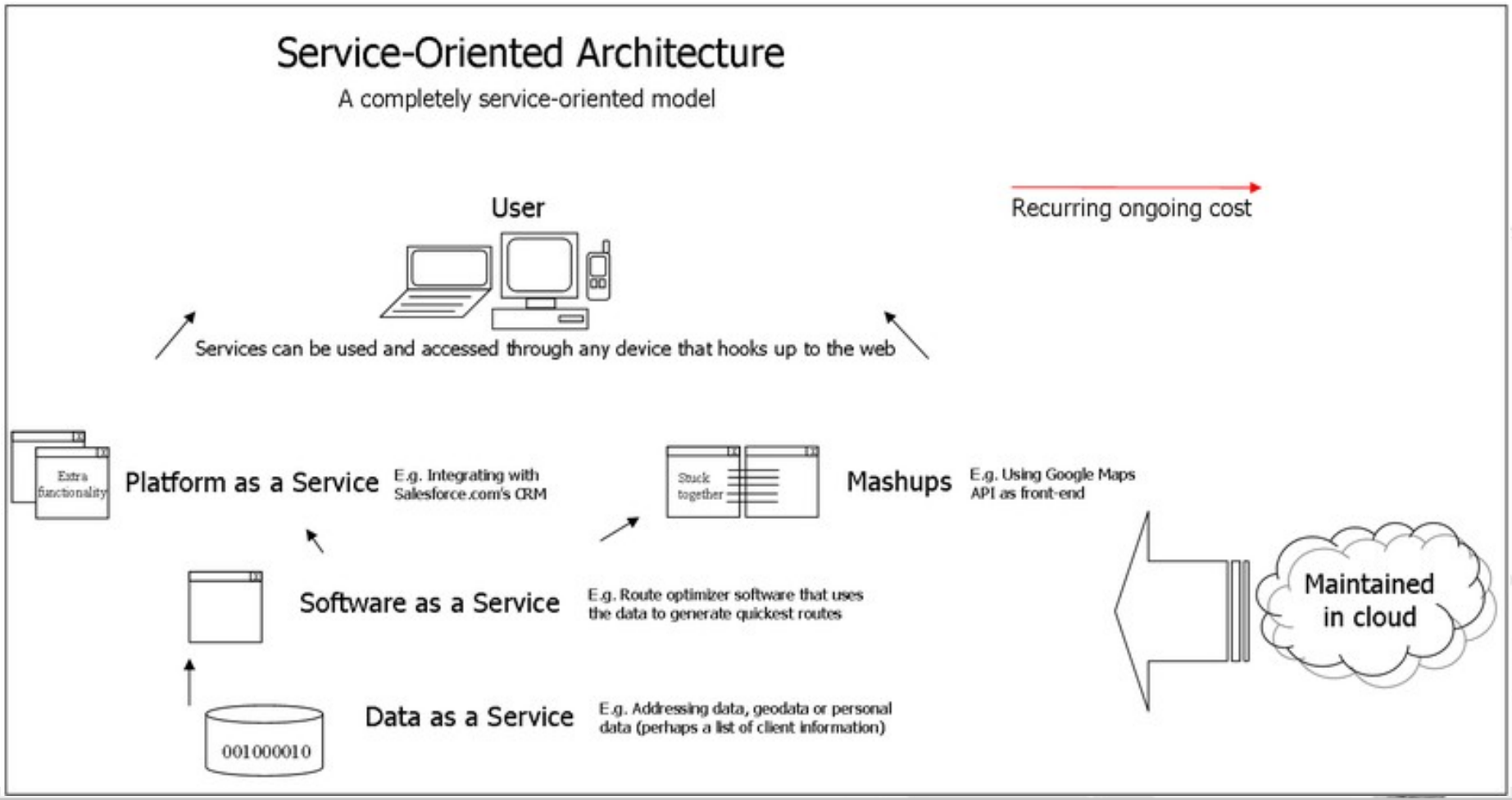
Service Oriented Architecture (SOA)



Source: http://en.wikipedia.org/wiki/File:SOA_Detailed_Diagram.png,
Author: JamesLWilliams2010, License: Creative Commons Attribution 3.0 Unported

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Java™ EE 6 / Java™ SE Standards APIs

According to Java™ EE Specification:

- Web Services
  - Java API for XML Web Services (JAX-WS)
  - Java Architecture for XML Binding (JAXB)
  - SOAP with Attachments API for Java (SAAJ)
  - Java API for XML Registries (JAXR)
  - ~~Java API for XML-based RPC (JAX-RPC)~~
- RESTful Web Services
  - Jersey – RESTful Web Services - JAX-RS

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Web Services Support

- XML -based web services:
  - Simple Object Access Protocol (SOAP)
    - XML-based envelope
    - XML-based encoding rules
    - XML-based request and response convention
  - Web Services Description Language (WSDL)
  - Universal Description, Discovery and Integration (UDDI) and ebXML Registries integration

SOAP Example (1)

- SOAP Request

```
<?xml version="1.0" encoding="UTF-8"?>
<S:Envelope xmlns:S="http://schemas.xmlsoap.org/soap/envelope/">
   <S:Header/>
   <S:Body>
      <ns2:add xmlns:ns2="http://calculator.me.org/">
         <i>5</i>
         <j>12</j>
      </ns2:add>
   </S:Body>
</S:Envelope>
```

SOAP Example (2)

- SOAP Response

```
<?xml version="1.0" encoding="UTF-8"?>
<S:Envelope xmlns:S="http://schemas.xmlsoap.org/soap/envelope/">
   <S:Body>
      <ns2:addResponse xmlns:ns2="http://calculator.me.org/">
         <return>17</return>
      </ns2:addResponse>
   </S:Body>
</S:Envelope>
```

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Representational State Transfer (REST)

- REpresentational State Transfer (REST) is a distributed hypermedia access web-service architecture.
- The resources are identified by URIs and are manipulated using an HHTP interface
- Information is exchanged using representations of these resources
- Lightweight alternative to SOAP+WSDL -> HTTP

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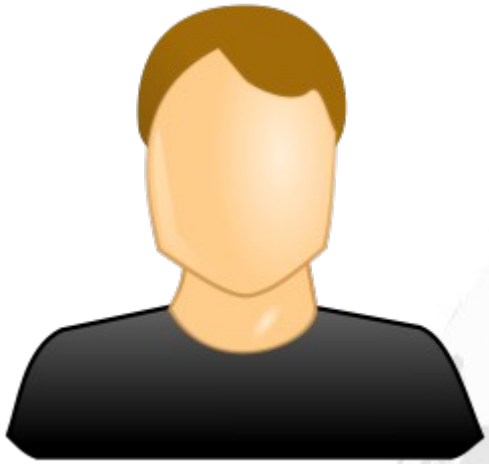
Question

What is missing from the SOA picture so far?

Answer



THE User

Only server side technologies are not enough ...

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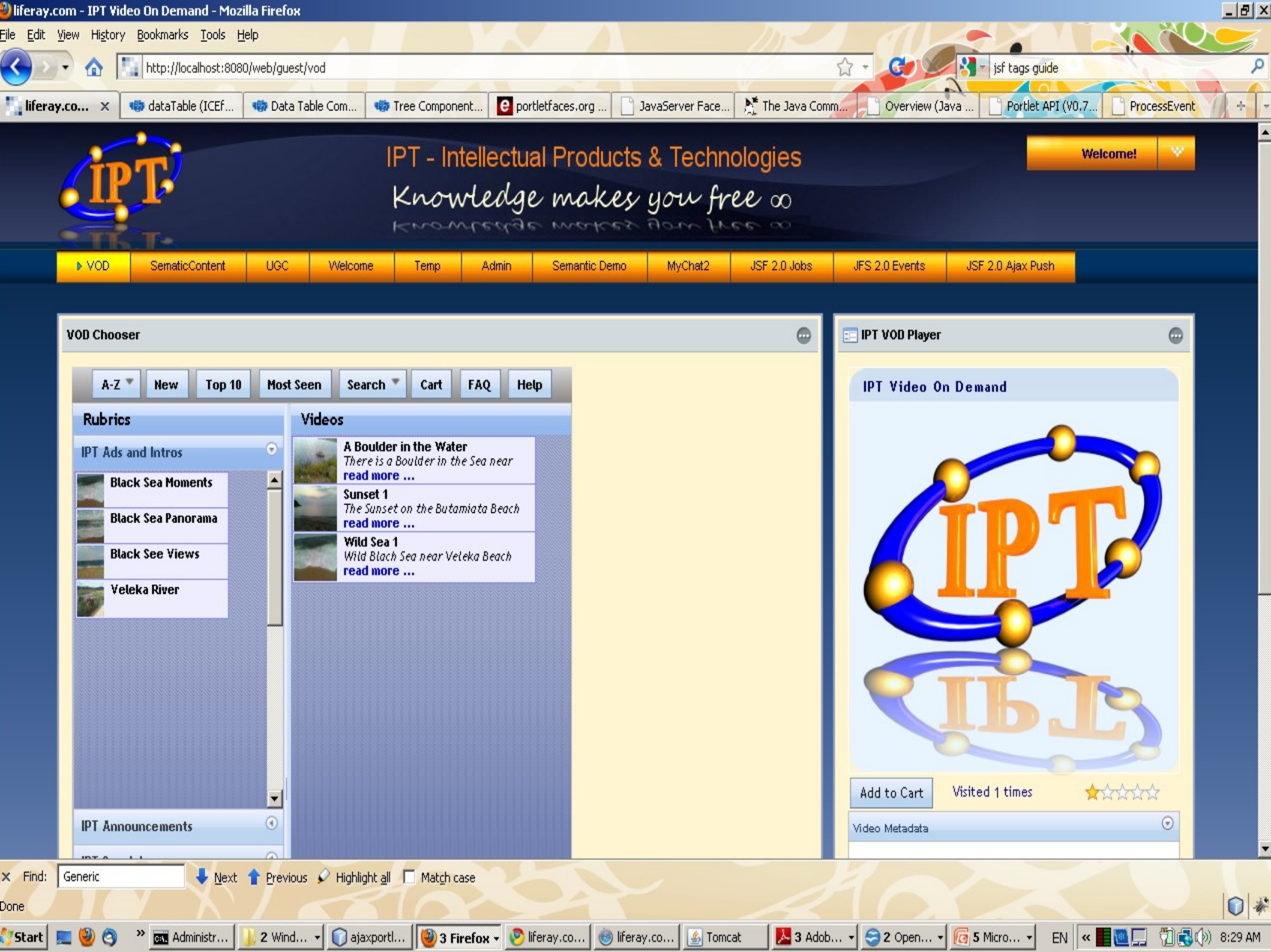
What are Portlets for?

- In 2002 the Java™ community started a pioneering effort for standardization of the web-based presentation services as well
- Can be easily combined and integrated into enterprise portals based on a common standard defining their interaction – JSR 186: Java Portlet Specification
- In 2005 it was followed by another more advanced specification – JSR 286: Portlet Specification 2.0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JFS 2.0 Events
JSF 2.0 Ajax Push
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Most Seen
Search
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Black Sea Panorama
Black See Views
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Sunset 1
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read more ...
Wild Sea 1
Wild Blach Sea near Veleka Beach
read more ...
IPT VOD Player
IPT Video On Demand
Add to Cart
Visited 1 times
Video Metadata
Find: Generic
Next
Previous
Highlight all
Match case
Done
Start
Administr...
2 Wind...
ajaxportl...
3 Firefox
liferay.co...
liferay.co...
Tomcat
3 Adob...
2 Open...
5 Micro...
EN
8:29 AM

Why to Use Portals? (1)

- Portals offer many advantages over other software applications (http://portals.apache.org/):
  - provide a single access point for all employees, partners, and customers
  - provide access to business functionality transparently from any device in virtually any location
  - portals are highly flexible - they can exist in the form of B2E intra-nets, B2B extra-nets, or B2C inter-nets

Why to Use Portals? (2)

- Portals offer many advantages over other software applications (http://portals.apache.org/):
  - portals can be combined to form a portal network that can span a company's ecosystem
  - because portals provide front end for different web services they can easily integrate existing heterogeneous software systems and are future-proof

Evolution of Portals (1)

- Portlets became popular – allowing easily to share and combine web applications developed by different organizations and individuals in a personalized enterprise portal
- A new "portlet-based" style of web application development has emerged. Portlet Apps (PA) are more distributed, flexible and agile, compared to older style, monolithic web applications we know for years.

Evolution of Portals (2)

- PA can use asynchronous data requests and can be dynamically updated in response (and sometime in anticipation) to user's needs.
- According to latest Portlet Specification 2.0:
  - PA are typically consisting from several different portlets
  - Different Portlets can communicate using shared parameters or publish/subscribe events and can query server resources dynamically (AJAX)

Future: Web Services for Remote Portlets (WSRP)

- WSRP v1 as an OASIS standard in September, 2003
- WSRP v2 was approved by OASIS on April 1st, 2008
- WSRP v2 supports Web 2.0 technologies, such as AJAX and REST
- Allows the portlets to be accessed remotely and combined easily by third party portals and consumers
- Supported by all of the portal market's major players, including Oracle®, IBM®, Microsoft®
- The ultimate goal of WSRP is to bring the benefits of Service-Oriented Architecture to the end-user…

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JSR 286: Java™ Portlet 2.0 API Details

- init() - called after the portlet is instantiated by the container
- destroy() - called before the container destroys the portlet
- processAction() - called when user changes the portlet state
- render() - called on each re-drawing of the protlet by the portlet window
- doView() - called by render() when in View portlet mode
- doEdit() - called by render() when in Edit portlet mode
- doHelp() - called by render() when in Help portlet mode
- Portlet window states: MINIMIZED, NORMAL, MAXIMIZED

JSR 314: JavaServer Faces 2.0 (1)

- In order portlet technology to become even more successful are needed developer frameworks and tools that support rapid portlet application development and reuse of components
- As part of Java™ Enterprise Edition standardization process and as a recommended technology for web based presentation in the latest version of Java™ EE 6, Java Server Faces (JSF) Model-View-Controller (MVC) framework became most promising candidate for such an enabling technology.

JSR 314: JavaServer Faces 2.0 (2)

Among the advantages of JSF are:

- easy construction of UI from a set of reusable components;
- clear separation between data and presentation using MVC design pattern;
- easy to use model for wiring client-generated events to server-side application code;
- UI components state managed automatically across client requests;
- separation of concerns between corporate developers and system programmers.

JSR 314: JavaServer Faces 2.0 (3)

The latest version of JSF 2.0 provides additional advantages:

- more flexible and standard based presentation components using facelets;
- easy to use view/page templating;
- easy to create custom components without Java programming by composing existing components;
- seamless and unified integration with all different types of beans (ManagedBeans, POJO, EJB) using dependency injection annotations;

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JSR 314: JavaServer Faces 2.0 (4)

The latest version of JSF 2.0 provides additional advantages:

- new scopes (e.g. conversation scope, custom scopes);
- bookmarkable application states using view parameters;
- better ajax support using standard tags – no need to manually write JavaScript code;
- partial view processing and rendering during ajax requests;
- easier configuration, navigation and resource loading.

```
   alt="jsf-sun"
   url="/images/jsf-sun.gif">
</h:graphicImage>
```

```
src="/jsf-example/images/jsf-sun.gif"
 alt="jsf-sun" />
```

UIInput

inputText

```
<h:inputText id="address"
  value="#{jsfexample.address}" />
```

```
<input type="text" name="jsftags:_idl"
  value="123 JSF Ave" />
```

inputSecret

```
<h:inputSecret redisplay="false"
  value="#{jsfexample.password}" />
```

```
<input id="jsftags:password"
   type="password"
   name="jsftags:password"
   value="secret" />
```

inputHidden

```
<h:inputHidden id="hidden"
   value="userPreference" />
```

No Renderer

```
<input id="jsftags:hidden"
   type="hidden"
   name="jsftags:hidden"
   value="userPreference" />
```

inputTextArea

```
<h:inputTextarea id="textArea"
   rows="4" cols="7"
   value="Text goes here.. "/>
```


```
<textarea id="jsftags:textArea"
   name="jsftags:textArea"
   cols="5" rows="3">
   Text goes here
```

JSR 329: Portlet 2.0 Bridge for JavaServer™ Faces 1.2 Specification (1)

- JSF technology provides many nice capabilities simplifying the development process, but there are some problems using JSF directly for portlet development
- The most important one is the difference in lifecycles of portlets and JSF components – portlets separate action, event, resource and render requests, while standard JSF servlet handles them in a common request processing lifecycle.
- That is why a bridge between two technologies is needed in order to combine their advantages: JSR 301: Portlet 1.0 Bridge for JavaServerTM Faces 1.2, and JSR 329: Portlet 2.0 Bridge for JavaServerTM Faces 1.2 Specification.

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JSR 329: Portlet 2.0 Bridge for JavaServer™ Faces 1.2 Specification (2)

- Now we are going to illustrate the details of Java™ portlets development using JSF 1.2 technology (including JSR 301 and JSR 329 open source implementations)
- And provide insight into ongoing initiatives for development of Portlet 2.0 to JSF 2.0 bridge (no specification available yet)
- Examples using open source technologies are demonstrated illustrating the practical value of the technologies ...

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Welcome to portletfaces.org

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The portletfaces.org site hosts open source projects related to portlets and JavaServer™ Faces (JSF) technology and sponsored by **Mimacom** for support in Europe and **Triton** for support in North America.

portletfaces tools™

The portletfaces tools project makes it easier to develop JSF portlets that run within Liferay Portal. Read more...

portletfaces™ TOOLS

JSF tools for Liferay portlet developers

portletfaces bridge™

The portletfaces bridge project enables JSF 2.0 and ICEfaces 2.0 portlets to run in Portlet 2.0 compliant portlet containers like Liferay 5.x/6.x -- Read more...

portletfaces™ BRIDGE

JSF 2.0 + Portlet 2.0

Home Projects Community Support

Done

Start Inbox - tiliev@i... Write: Re: BGO... C:\CourseJEE6 D:\ JSF_Portlets_Ili... Course_JavaEE... portletfaces.o... EN 6:22 PM

Resources (1)

- SOAP Version 1.2 Part 0: Primer (Second Edition) W3C Recommendation - http://www.w3.org/TR/soap12-part0/
- Web Services Description Language (WSDL) Version 2.0 Part 0: Primer - http://www.w3.org/TR/2007/REC-wsdl20-primer-20070626/
- Apache portals - http://portals.apache.org/
- OASIS Web Services for Remote Portlets (WSRP) - http://www.oasis-open.org/committees/wsrp/
- JSR 286: Java™ Portlet 2.0 API - http://jcp.org/en/jsr/detail?id=286

Resources (2)

- JSR 314: JavaServer Faces 2.0 - http://www.jcp.org/en/jsr/detail?id=314
- JSR 329: Portlet 2.0 Bridge for JavaServerTM Faces 1.2 Specification - http://jcp.org/en/jsr/detail?id=329

Thanks for Your Attention!

Questions?