IBM WebSphere
Portal Server V1.1.1

Development and Internals

Bill Clerico
Consulting I/T Specialist
Worldwide WebSphere Sales
Technology Support

The difference
is WebSphere.

Special Thanks!

- **Worldwide Sales/Technical Support:**

  - ► **Bob Billman**
  - ► **Peter Blinstrubas**
  - ► **Lincoln Roach**
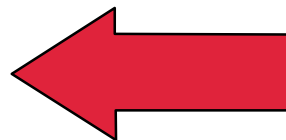
Agenda

- **WPS Overview Review**

- **Unfinished Business**

- **WPS Internals**

- **WPS "Branding"**

- **Portlet Development**

- **v1.2 Considerations**

IBM WebSphere Portal Server

- **Provides a horizontal open framework for creating many kinds of vertical portals**

- **Provides sample portlets including news, weather, stocks, file access, and search**

- **Accepts many standard content sources and makes it easy to customize for other sources**

- **Removes much of the overhead of developing user interfaces for multiple browsers or mobile devices**
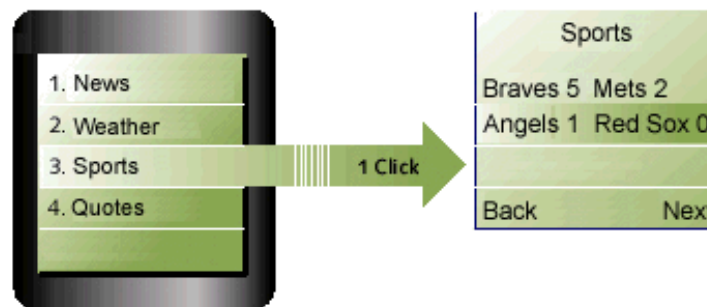
WPS Motivation

- **Why is a portal framework needed?**
- **The framework simplifies many of the tasks involved in building complex web sites**
  - ► e.g. overall page structure only needs to be defined once
  - ► portlets are defined independently
  - ► visual design changes can be implemented without changing the portlets
  - ► targeting multiple devices becomes much easier because only certain portlets need to be retargeted
  - ► help leverage and reuse existing web assets
- **The framework is based on Java and XML**
  - ► portlets use XML and XSL
  - ► or JSP with Java beans
  - ► or Java
  - ► or several other web templating technologies
  - ► or just plain HTML

What is a Portlet?

- **Typically portlets are thought of as separate, rectangular boxes with a title bar and a content region**
- **They produce markup fragments that can be embedded into portal pages**
  - ► **e.g. WML fragments for WAP phones, VoiceXML fragments for voice browsers, or HTML fragments for PCs**
- **The appearance of portlets depends on the device**
  - ► **e.g. several lines of text on a phone**
  - ► **a sequence of sentences over a voice channel**

Typical Portlets

Portal Engine Architecture

The Home Page

- **Each portal defines its own custom home page**
- **The page structure uses a JSP template for the overall layout**
  - ► Can have headers, footers, navigation bars, etc.
  - ► Allows for easy re-branding
  - ► WPS provides several themes and skins
- **Additional JSP templates are used for rendering rows, columns, and decorations**
- **Finally each portlet renders its own views**
  - ► may use JSP or XSLT
  - ► portlets have normal, minimized, maximized, and edit views

Application Integration

- **Portlets use the WebSphere Programming Model**
- **J2EE**
  - ►**Java 2 SDK, Servlet 2.2, EJB 1.1, JSP 1.1, JDBC**
  - ►**JNDI, JavaMail, JAF, RMI/IIOP, JTA, JMS**
- **XML support**
  - ►**XML parser, XSLT**
  - ►**SAX API**
  - ►**SOAP and UDDI**
- **Middleware Connectors**
  - ►**CICS ECI/EPI Connector**
  - ►**Encina DE-Light Connector**
  - ►**IMS ITOC Connector**
  - ►**MQSeries Connector**
  - ►**HOD (Host-on-Demand) Connector**
  - ►**SAP R/3 Connector**

Agenda

- **WPS Overview Review**

- **Unfinished Business**

- **WPS Internals**

- **WPS "Branding"**

- **Portlet Development**

- **v1.2 Considerations**

Unfinished Business

■ **Sizing and Performance Metrics**

  ►**Available when v1.2 is Generally Available**
  ►**Documentation of various scenarios from which we can estimate/extrapolate**

■ **Portlets (serial or parallel?)**

■ **Customer References**
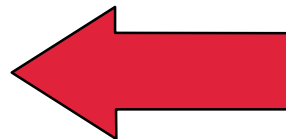
Agenda

- **WPS Overview Review**

- **Unfinished Business**

- **WPS Internals**

- **WPS "Branding"**

- **Portlet Development**

- **v1.2 Considerations**
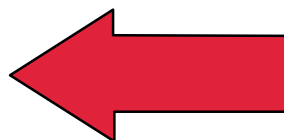
Portal Architecture and Components
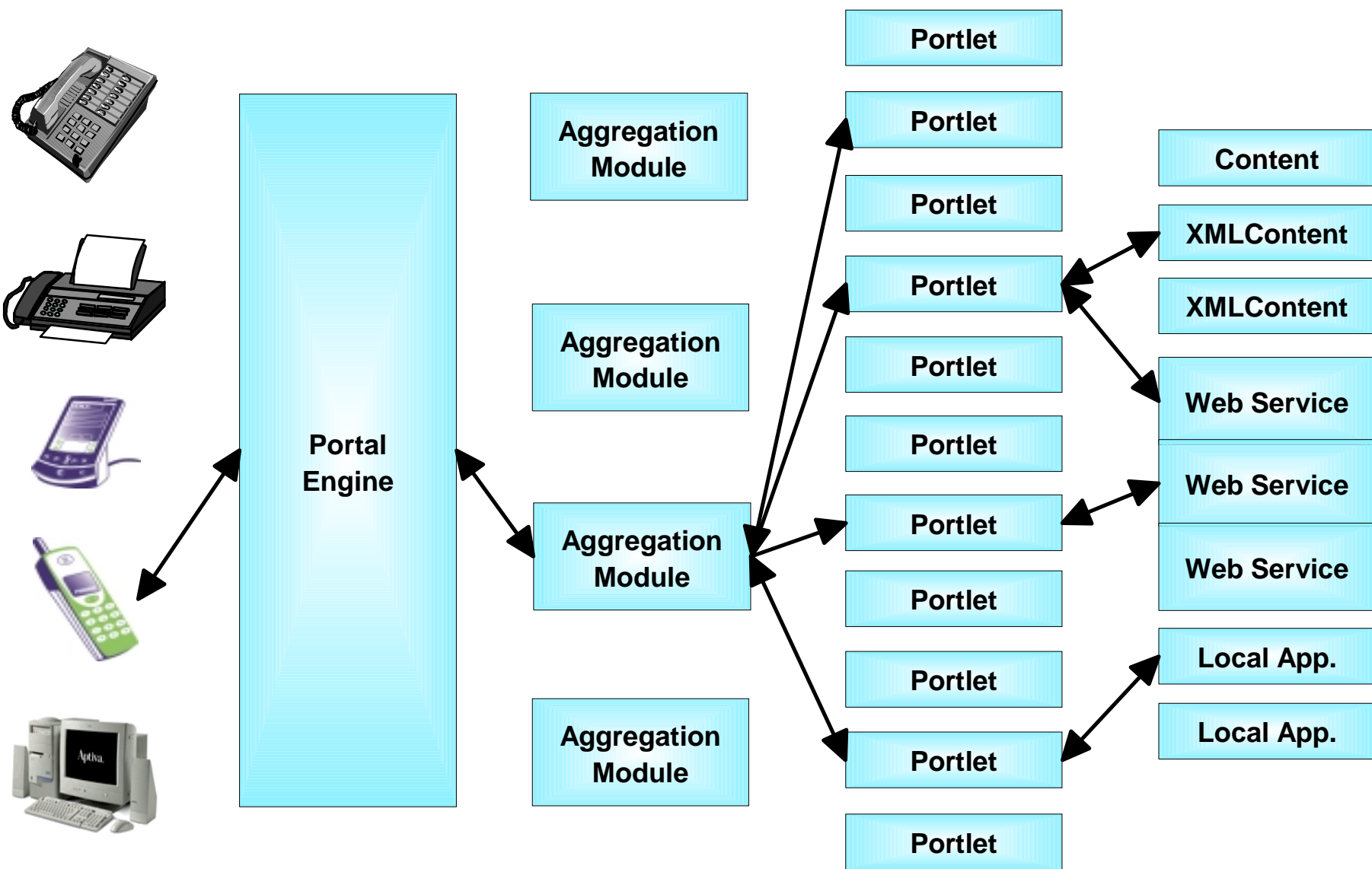
Portal Engine

Aggregation Module

Aggregation Module

Aggregation Module

Aggregation Module

Portlet

Portlet

Portlet

Portlet

Portlet

Portlet

Portlet

Portlet

Portlet

Portlet

Portlet

Portlet

Portlet

Content

XMLContent

XMLContent

Web Service

Web Service

Web Service

Local App.

Local App.

WPS and WAS
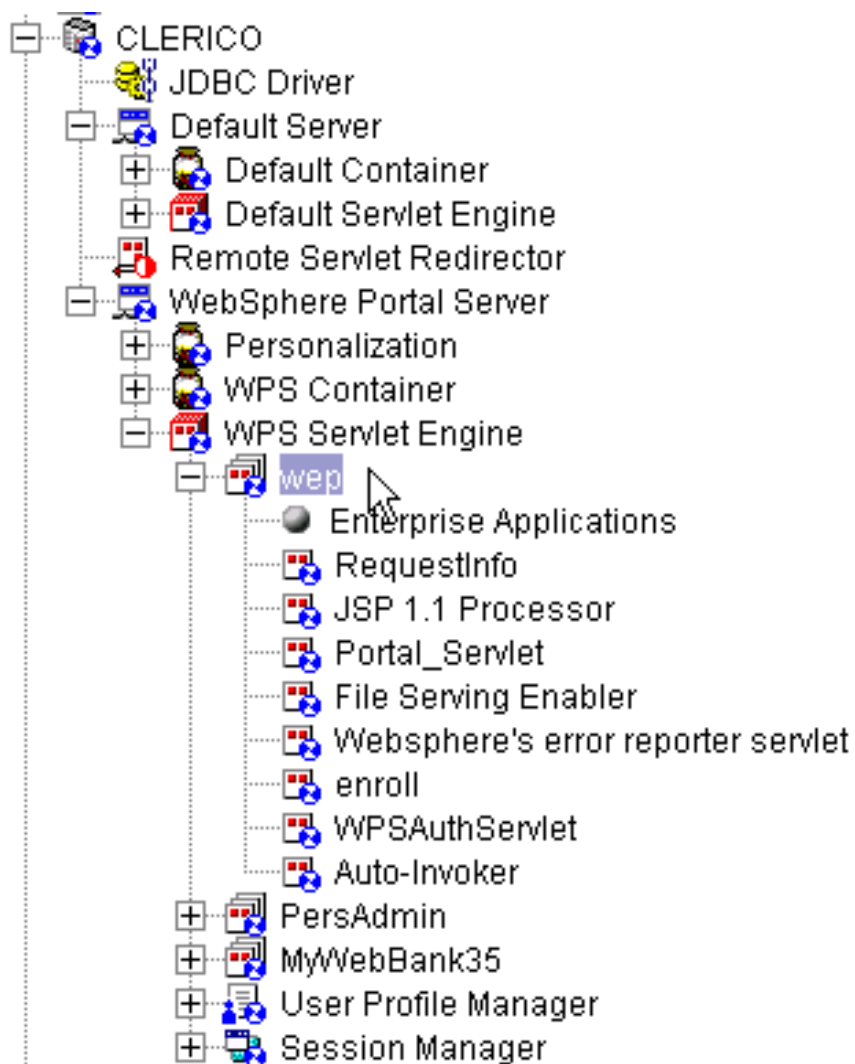
WPS Directory Structure (1 of 2)
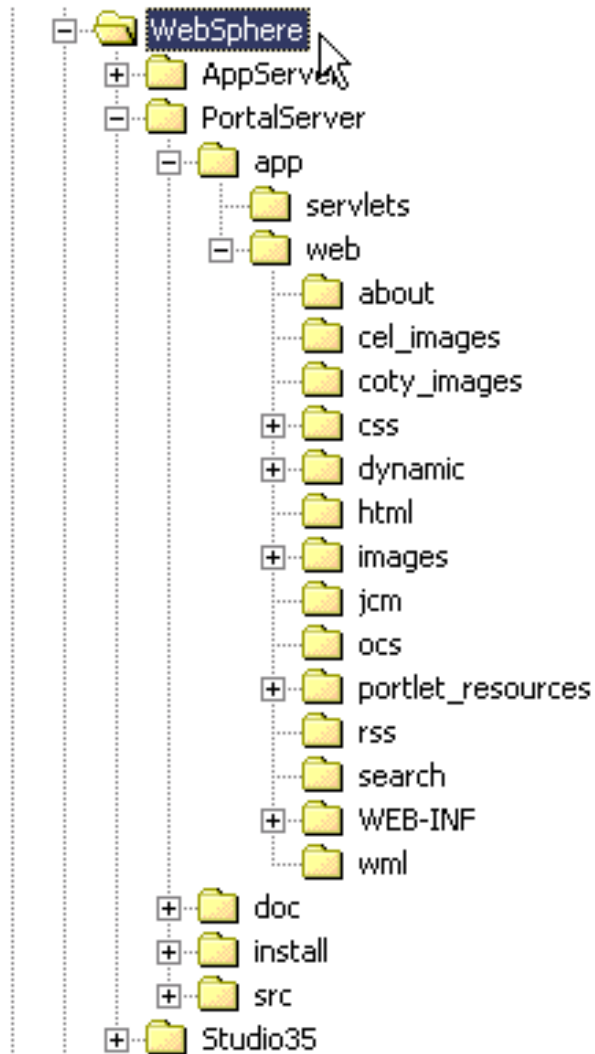
WPS Directory Structure (2 of 2)
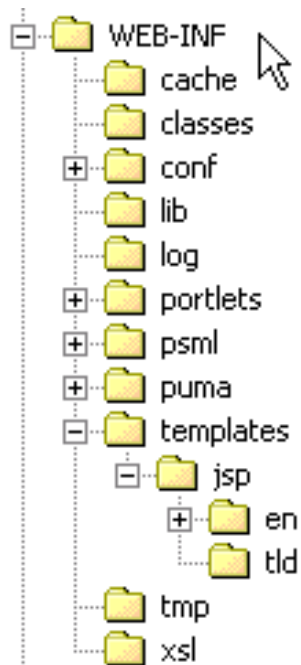
WPS Configuration Files

- **WPS configuration files are stored in:**
  .../WEB-INF/conf

  - ►**JetspeedConfig.jcfg**
  - ►**JetspeedResources.properties**
  - ►**ldap.properties**
  - ►**Resources.properties**
  - ►**TurbineResources.properties**

  - ►**Cocoon.properties**
  - ►**CustomizerBundle.properties**
  - ►**JetspeedBundle.properties**
  - ►**WEPResources.properties**
  - ►**...others...**

JetspeedConfig.jcfg

- **This is the portlet registry. All portlets used in the portal are listed here.**

- **Syntax must be exact.**

- **Syntax errors in the file may cause the portal to be unusable.**

- **Backup this file before you modify it.**

- **Use comments to show where you have made modifications. <!-- I changed next line -->**

JetspeedConfig.jcfg - example

```
<portlet-entry application="false" type="instance"
                name="HelloWorldPortlet" hidden="false">

    <classname>com.ibm.test1.MyFirstPortlet</classname>

    <meta-info>
        <title>MFP_title</title>
        <description>MFP_desc</description>
    </meta-info>

</portlet-entry>
```

JetspeedResources.properties

- **Contains settings for WPS:**
  - ►**temp directories**
  - ►**cache settings**
  - ►**content feed settings**
  - ►**database settings**

- **Some settings are not used in WPS, but remain for compatibility with Jetspeed.**

ldap.properties

- **Contains LDAP settings for WPS:**

  **url=ldap://MYHOST
  user=cn=wpsadmin
  password=wpsadmin
  uidTemplate=uid={0},cn=users,dc=stl,
  　　　　　dc=ibm,dc=com
  inherit=top,inetOrgPerson
  defaultDomain=IBM**

Resources.properties

- **This file contains name-value pairs for use with the *create account* and *edit account* functions.**

- **Changing these values will change the text displayed on the *create account* pages and the *edit account* pages.**

TurbineResources.properties

- **Turbine is a library that is used internally by WPS.**

- **Database settings will be found here (connections, wait time, etc.)**

- **Some settings are not used in WPS, but remain for compatibility with Jetspeed.**

- **More information about Turbine can be found at: http://jakarta.apache.org/turbine.**

TurbineResources.properties - example

```
# ---------------------------------------------------------------
#
#  J S P   S E R V I C E
#
# ---------------------------------------------------------------
# Path to the JSP templates and the dafault JSP layout
# ---------------------------------------------------------------

services.JspService.templates=/WEB-INF/templates/jsp

# WJC made changes
# services.JspService.default.layout=/default.jsp
services.JspService.default.layout=/MWB_default.jsp
# services.JspService.default.layout=/COTY_default.jsp
# services.JspService.default.layout=/CEL_default.jsp
# services.JspService.default.layout=/VG_default.jsp

services.JspService.buffer.size=8000
```

Agenda

- **WPS Overview Review**

- **Unfinished Business**

- **WPS Internals**

- **WPS "Branding"**

- **Portlet Development**

- **v1.2 Considerations**
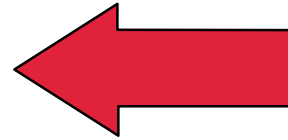
WPS "Branding"

Customize the overall "look and feel" of the portal

- **Cascading Style Sheets**

- **JSP Templates**
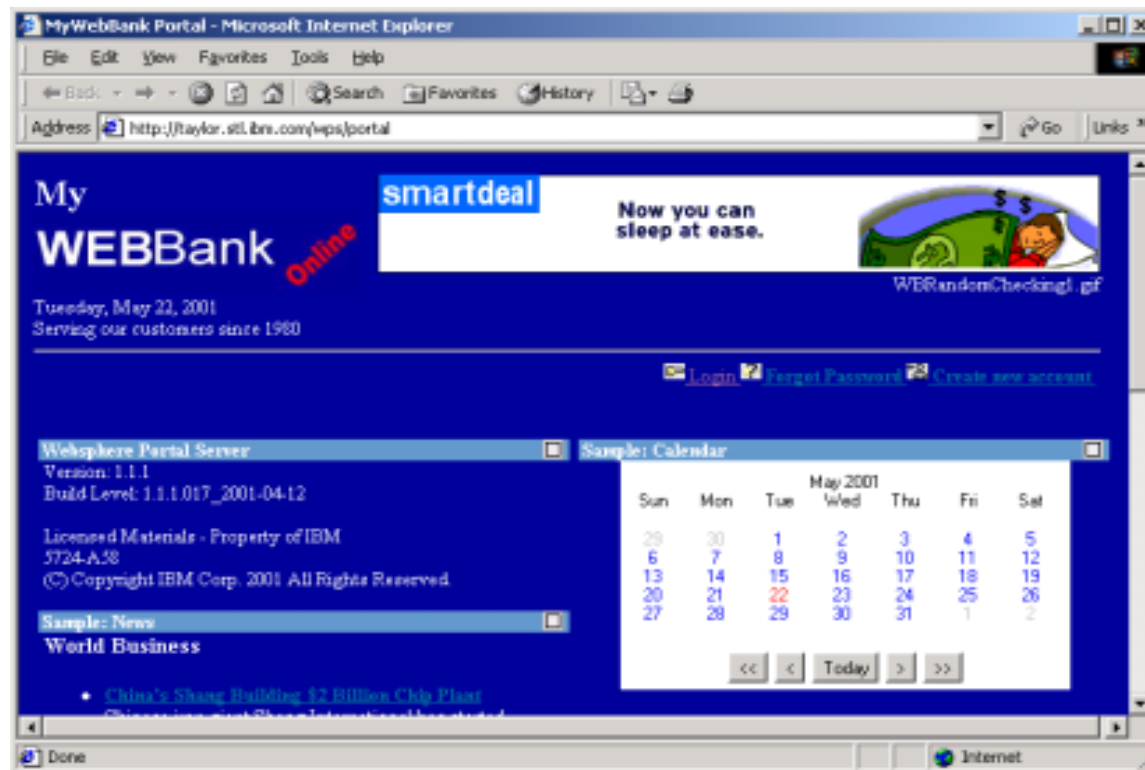
Cascading Style Sheets

■ **WPS Cascading Style Sheets are stored in:**

C:\WebSphere\PortalServer\app\web\css\<lang>

```
.
.
.

.PortletConfigurationTitle {
    BACKGROUND-COLOR: #639ace; COLOR: white;
                        FONT-WEIGHT: bold; PADDING-LEFT: 2px
}
.Masthead {
    BACKGROUND-COLOR: #000098; PADDING-RIGHT: 6px
}
.BlueTableField {
    background-color : #000098;
}


.
.
.
```

JSP Templates

- **JSP Templates are stored in:**
  ...\WEB-INF\templates\<lang>

layouts\html	overall site layout
navigations\html	page components
screens\html	specific screens

layouts\html\MWB_default.jsp

```jsp
<%@ page contentType= "text/html; charset=ISO-8859-1" %>
<%@ taglib uri='/WEB-INF/templates/jsp/tld/template.tld' prefix='jetspeed' %>

<% String screenJsp = (String)request.getAttribute("screenJsp"); %>

<html>

<head>
  <TITLE>MyWebBank Portal</TITLE>
  <base href="<jetspeed:uriLookup type="BaseURL" />">
  <link href="<jetspeed:contentUri href="css/en/MWB_portlets.css"/>"
               type="text/css" rel="stylesheet">
</head>

<body class="BodyClass">

 <jetspeed:jetspeedNavigation  defaultTemplate="html/MWB_top_default.jsp"
                                loggedInTemplate="html/MWB_top_loggedIn.jsp" />

 <jsp:include page="<%= screenJsp %>" flush="true" />

 <jetspeed:jetspeedNavigation  defaultTemplate="html/MWB_bottom.jsp" />

</body>

</html>
```

navigations\html\MWB_top_default.jsp

```
<%@ page contentType= "text/html; charset=ISO-8859-1" %>
<%@ taglib uri="/WEB-INF/templates/jsp/tld/template.tld" prefix="jetspeed" %>

<jsp:useBean class="MyWebBank35.actions.CheckingRandomAction"
         id="checkingRandomAction">
         <% checkingRandomAction.setRequest(request); %></jsp:useBean>

<table class="Masthead" width="100%" border="0"
         cellpadding="0" cellspacing="0">

  <tr>

      <TD colspan="3" align="left"><B><FONT size="+2">My</FONT></B><BR>
        <IMG src="<jetspeed:contentUri href="images/WEBBANKLogo.jpg"/>"
          border="0" width="217" height="56">

      </TD>
.
.
.
.

  </tr>
.
.
.
.
```

screens\html\login.jsp

```
..........
<%@ page import = "org.apache.turbine.util.*" %>
<%@ page import = "org.apache.turbine.services.resources.TurbineResources" %>

<% RunData rundata = (RunData)request.getAttribute("rundata"); %>
<jsp:useBean id="errorBean" class="com.ibm.wps.auth.ErrorBean" scope="request" />

<form method="POST"
      action="WPSAuthServlet"
      enctype="application/x-www-form-urlencoded">
<input name="Function" type="hidden" value="login">

<table border="0" cellspacing="2" cellpadding="1">
<tr>
    <% if (errorBean.getCause() != null) { %>
    <td> </td>
    <td><FONT COLOR=RED> <%=errorBean.getCause() %> </FONT></td>
    <% } %>
</tr>
<BR>
<tr>
  <td>User Id:</td>
  <td><input size="12"
        value="<%= rundata.getParameters().getString("username", "") %>"
        name="userid" maxlength="25" type="text"></td>
</tr>
................
```

Custom Registration Pages

Registration pages are .JSP files in:
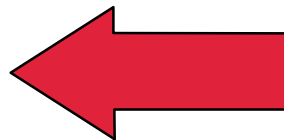 **...**/WEB-INF/puma/jsp

- **NewUserForm.jsp**   **- First registration page.**

- **NewUserConf.jsp**   **- Displays entered information.**

- **Congrats.jsp**   **- Creation successful.**

- **RegistrationError.jsp** **- Error page for registration.**

- **SelfcareUserForm.jsp** **- Displays current information.**

- **SelfcareUserConf.jsp** **- Says that data was changed.**

Agenda

- **WPS Overview Review**

- **Unfinished Business**

- **WPS Internals**

- **WPS "Branding"**

- **Portlet Development**

- **v1.2 Considerations**

Portlet Development

- **The "no coding" method**

- **Basic Portlet**

- **Portlet Renderer**

The "no coding" method

- **Leverages existing Portlets by extending and/or re-configuring**

```
<portlet-entry type="abstract" name="HTML">
      <classname>org.apache.jetspeed.portal.portlets.FileServerPortlet</classname>
</portlet-entry>

<portlet-entry type="abstract" name="JSP">
    <classname>org.apache.jetspeed.portal.portlets.ServletInvokerPortlet</classname>
</portlet-entry>

<portlet-entry type="ref" parent="JSP" name="Calendar">
                <parameter name="url" value="/WEB-INF/portlets/calendar/index.jsp"/>
                <meta-info>
                        <title>calendarTitle</title>
                </meta-info>
</portlet-entry>

<portlet-entry type="ref" parent="HTML" name="SAP Common Connector Framework">
                <url>/WEB-INF/portlets/MyPortlets/com/ibm/test1/CCF_SAP.html</url>
                <meta-info>
                        <title>CCF_SAP_title</title>
                </meta-info>
</portlet-entry>
```
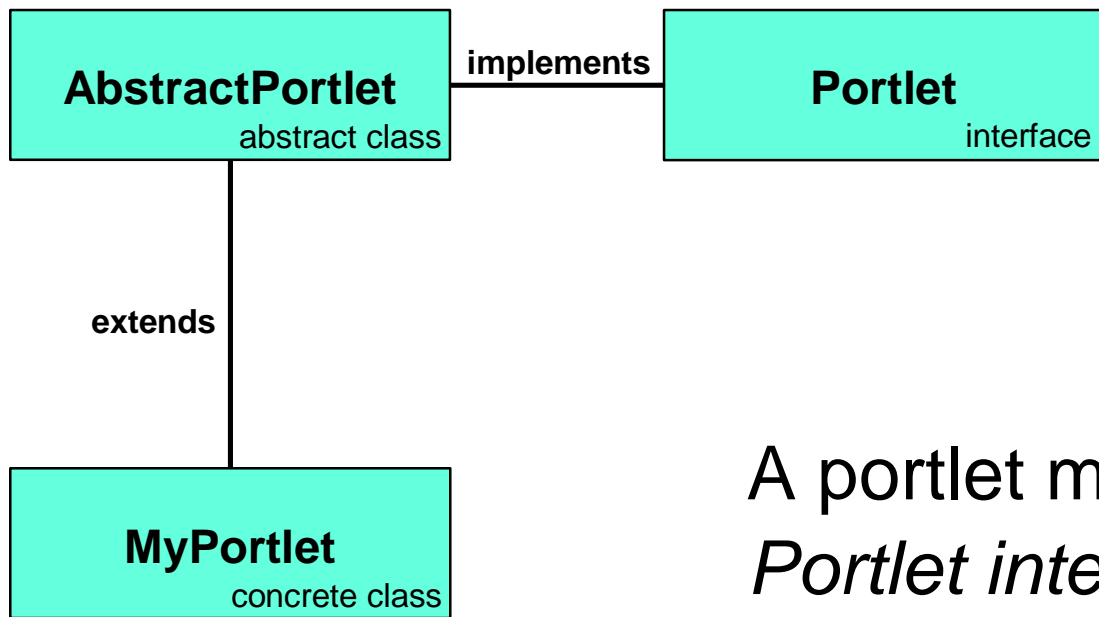
Basic Portlet (1 of 3)

AbstractPortlet	implements	Portlet
abstract class		interface

extends

MyPortlet
concrete class

A portlet must implement the *Portlet interface*. Typically this is accomplished by extending the *AbstractPortlet* class.

- **Portlet instances are singletons**
  - ▶ **Do not use instance variables**
  - ▶ **Do not synchronize**

- **methods:**
  - ▶ expires method controls portlet caching (for faster rendering)

  - ▶ getContent method returns markup for portlet display, maximized display, edit display, etc.

  - ▶ getPortletConfig returns parameters or other data

  - ▶ supportsType method lists supported markups

Basic Portlet (3 of 3)

```java
import org.apache.jetspeed.portal.portlets.AbstractPortlet;

import org.apache.turbine.util.RunData;

import org.apache.ecs.*;

public class HelloWorldPortlet extends AbstractPortlet
{
    public ConcreteElement getContent(RunData aRunData)
    {
        return (new StringElement("Hello World!"));
    }
}
```

Portlet Renderer

- **MDPortlet delegates device support to another class**

```
<portlet-entry application="false" admin="false" hidden="false"
                            type="ref" parent="MDPortlet" name="WBAccounts">
    <meta-info>
        <title>WBAccountsTitle</title>
    </meta-info>
    <parameter name="languages" value="en"/>
    <parameter name="html.main.jsp" value="/MWB_Accounts.jsp"/>
    <parameter name="height" value="500" />
    <parameter name="width" value="100%" />
    <parameter name="renderer.html" value="com.ibm.portlets.WebBankHTMLRenderer"/>
    <parameter name="jsp.base" value="/WEB-INF/portlets/WebBank/jsp"/>
    <parameter name="html.edit.jsp" value="/LoginEdit.jsp"/>
    <parameter name="html.browserError.jsp" value="/BrowserError.jsp"/>
    <parameter name="html.supportedBrowser.0" value="MSIE 5."/>
    <parameter name="html.supportedBrowser.1" value="Mozilla/5."/>
    <parameter name="html.configureError.jsp" value="/LoginConfigureError.jsp"/>
</portlet-entry>
```

Portlet Renderer - example

-
-
-

```
  public void init(Portlet portlet) throws PortletException {

// insert code here to get parameters passed from Portlet Registry
  }


  public ConcreteElement renderContent(RunData rundata) throws PortletException {

// insert code here to check for specific browser support
    if (!supported){
      return new EcsServletElement(rundata,
          jspBaseDirectory + getPreferredLanguage(rundata) + browserErrorJSP);
    }

// create the WebBank javabean and set it into the request
    createWebBankBeans(rundata);

    return new EcsServletElement(rundata,
        jspBaseDirectory + getPreferredLanguage(rundata) + mainJSP);

  }
```

-
-
-

WPS and the VAJ WTE

■ **Check the WebSphere Developer Domain:**

  http://www7b.boulder.ibm.com/wsdd/

  Go to "Library",
  then the "WebSphere Portal Server"
  product family.

  Watch this space for more whitepapers on
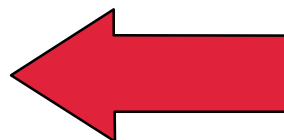 a variety of technical topics.

Agenda

- **WPS Overview Review**

- **Unfinished Business**

- **WPS Internals**

- **WPS "Branding"**

- **Portlet Development**

- **v1.2 Considerations**

v1.2 Considerations

- **Significant API change**

- **Deprecation of Element Control Set (ECS). Replaced with:**
  - ►**Java PrintWriter**
  - ►**SAX Events**

- **Turbine RunData object replaced with PortletContext**

- **Introduction of:**
  - ►**PortletRequest, PortletResponse, PortletSession**
  - ►**PortletData**
  - ►**Portlet Archive Files (PAR)**

Further Information

- **UEx STEW 2001 repository:**
  w3.transarc.ibm.com/websphere/stew2001/uex

- **IBM WebSphere Portal Server product page:**
  www.software.ibm.com/websphere/portal

- **AIM Info internal WPS page:**
  http://w3.software.ibm.com/sales/aim/prod/portal/

- **Internal newsgroups:**
  msic.zurich.ibm.com

- **WebSphere Developer's Domain:**
  http://www7b.boulder.ibm.com/wsdd/

Contacts:

- **WebSphere Foundation Extension Team (Americas)**
  Dan Langley/Raleigh/IBM@IBMUS

- **Portal Server War Room:**
  Portal Warroom/New York/IBM@ibmus