



Portlet Development Frameworks and Deploying Portlets in uPortal 2

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Agenda



Portlet Development Frameworks

- MVC a Review
- Portlets a Review
- Candidates
- Recommendation for uPortal 3.0

Agenda



Deploying Portlets in uPortal 2.x

- Deploying
- Publishing
- Subscribing

Background

- uPortal 3 will be Portlet based
- All uPortal basic administration channels will be rewritten as Portlets
- Look at development frameworks that exist for a model to develop uPortal 3 admin portlets
- Make a recommendation
 - <http://jasigch.princeton.edu:9000/display/UPC/Portlet+Development+Framework>

MVC

- MVC stands for Model View Controller
- The “original” Design Pattern
- Clean separation of user interface presentation
- Web applications have adopted MVC as a way to keep “html” out of the (Java) “code”
- MVC framework
 - Model – The data structures to hold data for the View and Controller (e.g., a Java Bean)
 - View – The file that includes all the markup for the rendered page, possibly including some dynamic sections (e.g., a JSP)
 - Controller – The main source code that gathers the data into the model and decides which View to use (e.g., a Servlet)

Portlets

- Portlets have certain traits that make them different than Servlets
- **URLs** – Portlets must use the Portlet container to create URLs
- **Render/Action** – Portlets define two distinct types of service calls
- **Modes** – Portlets support different modes
- **Window States** – Portlets support different window states

The Candidates

- MVCPortlet
- JavaServer Faces
- Struts
- Spring
- JSP (with JSTL and Portlet tag libraries)

MVCPortlet

- Built by Nabh Information Systems
- Open Source (GPL)
- XML Configuration
- JSP Views
- Custom Tag Libraries
- Supports Actions/Validators

- <http://www.nabh.com/>

Struts

- Most Popular Servlet based MVC framework
- No direct Portlet support in 1.x (latest is 1.2.7)
- Various proposals exist for 2.0
 - Shale
 - Jericho
 - Overdrive
- **Jetspeed subproject – Portals Bridges**
 - Portals Struts Bridge
 - Hard to separate from Jetspeed
 - Limits what can be done in struts
- <http://struts.apache.org/>

Spring

- Spring PortletMVC
- Not part of Spring 1.2.1 or before
- Currently in discussion for 1.3
- Simplifies some aspects of the main Portlet class
- Simplifies some aspects of the portlet.xml
- Supports various view technologies
- Custom JSP Tag (Spring WebMVC) libraries available

- <http://www.springframework.org/>
- <http://opensource.atlassian.com/confluence/spring/display/JSR168/Home>

JavaServer Faces

- JSR-127 defined JavaServer Faces
- JSR-252 is defining JavaServer Faces 1.2
- Portlet support is through an addon JSF Portlet library
- Changes the traditional WWW MVC paradigm
- Analogous to rich user interface programming
- Define screens, fields, beans, validators
- Uses JSP Views with custom JSF tag libraries

- <https://javaserverfaces.dev.java.net/servlets/ProjectDocumentList?folderID=1504&expandFolder=1504&folderID=0>
- <https://javaserverfaces.dev.java.net/>

Recommendation

- JSP
 - JSTL 1.1
(<http://jakarta.apache.org/taglibs/doc/standard-doc/intro.html>)
 - Portlet Tag Library (JSR-168)
 - Other Tag Libraries as necessary
 - Build to support embedding within other portlets
- Controller Style Portlets
- Business Logic and Data Classes
- Easy conversion to Spring PortletMVC in the future

Future Considerations

- Spring WebFlow
- Struts 2.0
- Tapestry 4
- Wicket

- Revisit
 - MVCPortlet
 - Spring PortletMVC
 - JavaServer Faces

Agenda

Deploying Portlets in uPortal 2.x

- Deploying
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Deployment

- **Web Application Archive (war) file**
 - portlet.xml
 - Portlet Preferences
 - web.xml
- **Server configuration**
 - Tomcat Cross Context Web Application
- **uPortal deployPortletApp Ant Task**

portlet.xml

```
<?xml version="1.0" encoding="UTF-8"?>
<portlet-app xmlns="http://java.sun.com/xml/ns/portlet/portlet-app_1_0.xsd"
             version="1.0" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
             xsi:schemaLocation="http://java.sun.com/xml/ns/portlet/portlet-app_1_0.

    <portlet>
        <description xml:lang="en">Number guessing game</description>
        <portlet-name>GuessNumberPortlet</portlet-name>
        <display-name xml:lang="en">Guess Number</display-name>
        <portlet-class>net.unicon.guess.web.GuessNumberPortlet</portlet-cla
        <expiration-cache>-1</expiration-cache>
        <supports>
            <mime-type>text/html</mime-type>
            <portlet-mode>view</portlet-mode>
        </supports>
        <supported-locale>en</supported-locale>
        <portlet-info>
            <title>Guess Number</title>
            <short-title>GuessNumber</short-title>
            <keywords>portlet, guess, number</keywords>
        </portlet-info>
```

...

portlet.xml

...

```
<portlet-preferences>
  <preference>
    <name>minimum</name>
    <value>0</value>
    <read-only>false</read-only>
  </preference>
  <preference>
    <name>maximum</name>
    <value>10</value>
    <read-only>false</read-only>
  </preference>
</portlet-preferences>
</portlet>
```

...

portlet.xml

...

```
<user-attribute>
    <description>Username</description>
    <name>username</name>
</user-attribute>

<user-attribute>
    <description>First Name</description>
    <name>firstName</name>
</user-attribute>

</portlet-app>
```

web.xml

```
<?xml version="1.0" encoding="UTF-8"?>  
<!DOCTYPE web-app PUBLIC  
    "-//Sun Microsystems, Inc.//DTD Web Application 2.3//EN"  
    "http://java.sun.com/dtd/web-app_2_3.dtd">  
  
<web-app>  
  
</web-app>
```

Portlet Deploy Ant Task

```
ant deployPortletApp -DportletApp=c:\Example\dist\Example.war
```

```
Buildfile: build.xml
```

```
prepare:
```

```
compile:
```

```
deployPortletApp:
```

```
    [echo] Invoking Portlet Application Deployment Tool
```

```
    [java] Deploying 'Example' ... Finished!
```

```
    [java] Preparing web archive 'Example' ... Finished!
```

```
BUILD SUCCESSFUL
```

```
Total time: 12 seconds
```

- **IMPORTANT:** Must run ant task from uPortal source directory

Post Deploy web.xml

```
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE web-app PUBLIC "-//Sun Microsystems, Inc.//DTD Web Application 2.3//EN"
"http://java.sun.com/dtd/web-app_2_3.dtd">
<web-app>

  <servlet>
    <servlet-name>GuessNumber</servlet-name>
    <display-name>GuessNumber Wrapper</display-name>
    <description>Portlet Wrapper</description>
    <servlet-class>org.apache.pluto.core.PortletServlet</servlet-class>
    <init-param>
      <param-name>portlet-class</param-name>
      <param-value>net.unicon.guess.web.GuessNumberPortlet</param-value>
    </init-param>
    <init-param>
      <param-name>portlet-guid</param-name>
      <param-value>GuessNumberPortlet.GuessNumber</param-value>
    </init-param>
  </servlet>

  <servlet-mapping>
    <servlet-name>GuessNumber</servlet-name>
    <url-pattern>/GuessNumber/*</url-pattern>
  </servlet-mapping>

  <taglib>
    <taglib-uri>http://java.sun.com/portlet</taglib-uri>
    <taglib-location>/WEB-INF/tld/portlet.tld</taglib-location>
  </taglib>

</web-app>
```


Publishing

- Channel Manager
- CPortletAdapter
- Portlet Definition ID
- Portlet Modes
- Portlet Preferences

Portlet Development Frameworks

Channel Manager

Channel Manager



Workflow: Channel Type → General Settings → Channel Controls → Categories → Groups → Review

Channel Type: Select the type of channel to add by clicking a select icon in the option column

Option	Channel Type	Description
<input type="radio"/>	Custom	This channel type allows the publication of channels with no accompanying CPD (Channel Publishing Document). It is typically used to publish channels with only one corresponding channel definition.
<input type="radio"/>	Applet	Displays a java applet
<input type="radio"/>	Image	Displays an image with optional caption and subcaption
<input type="radio"/>	Inline Frame	Renders an HTML page within a frame. Not supported in browsers older than Internet Explorer 5 and Netscape 6.
<input checked="" type="radio"/>	Portlet	Adapter for JSR-168 Portlets
<input type="radio"/>	RSS	Renders content provided in the popular RSS (Rich Site Summary) format
<input type="radio"/>	Web Proxy	Incorporates a dynamic HTML or XML application
<input type="radio"/>	WSRP Consumer	WSRP consumer implementation
<input type="radio"/>	XML Transformation	Transforms an XML document into a fragment of markup language given a set of XSLT stylesheets specified in a uPortal stylesheet list (SSL) file.

Portlet Development Frameworks

Channel Manager

Channel Manager

Workflow: Channel Type → General Settings → Portlet Definition → Portlet Preferences → Channel Controls → Categories → Groups → Review

Settings [one]: Complete the Settings form below

Options	General Settings
<input type="checkbox"/>	Channel Title: [example - StockCharts] <input type="text" value="Bookmark Portlet"/>
<input type="checkbox"/>	Channel Name: [example - StockCharts] <input type="text" value="Bookmark Portlet"/>
<input type="checkbox"/>	Channel Functional Name: [example - stock-charts] <input type="text" value="bookmark-portlet"/>
<input type="checkbox"/>	Channel Description: <input type="text" value="A example portlet that contains web links."/>
<input type="checkbox"/>	Channel Timeout: <input type="text" value="5000"/> milliseconds (1000 = 1 second)
<input type="checkbox"/>	Channel Secure: <input type="checkbox"/>

< Back Next > Review Cancel

Portlet Development Frameworks

Channel Manager

Channel Manager

Workflow: Channel Type → General Settings → **Portlet Definition** → Portlet Preferences → Channel Controls → Categories → Groups → Review

Portlet Definition: Enter the Portlet Definition ID.

Options	User can Modify?	General Settings
<input type="checkbox"/>	<input type="checkbox"/>	Portlet definition ID: [example - testsuite.TestPortlet1] <input type="text" value="BookmarkPortlet.BookmarkPortlet"/>

< Back Next > Review Cancel

Portlet Definition ID

- Portlet Definition ID

- Name of War file
- Dot
- Name of Portlet from the portlet-name tag in the portlet.xml file

- Example

- Example.war
- `<portlet-name>GuessNumberPortlet</portlet-name>`
- Example.GuessNumberPortlet

Portlet Development Frameworks

Channel Manager

Channel Manager

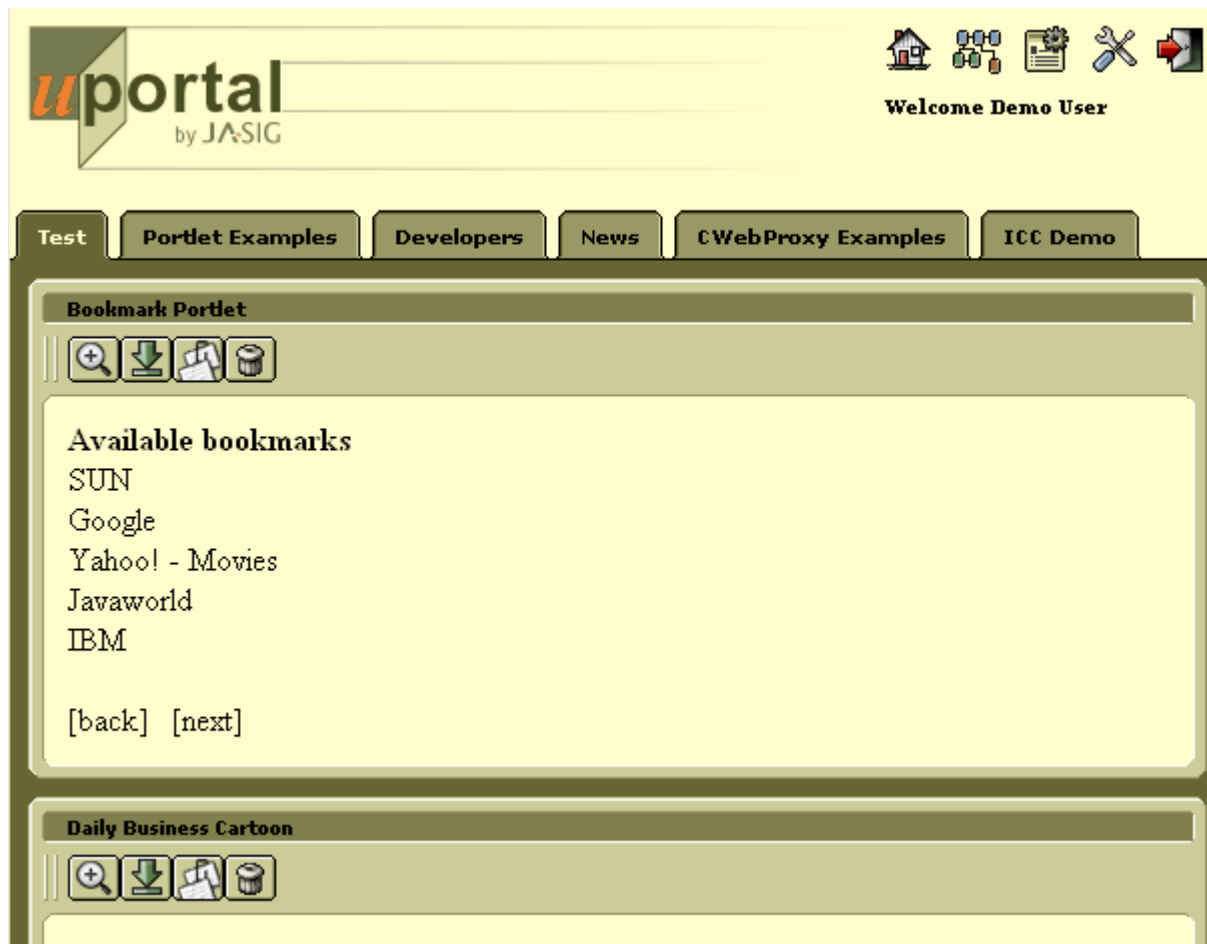
Workflow: Channel Type → General Settings → Portlet Definition → Portlet Preferences → Channel Controls → Categories → Groups → Review

Review: Please review the settings for accuracy (click workflow icons or items in the table below to edit settings)

User can modify?	Name	Value
	Channel Type:	Portlet
	Channel Title:	Bookmark Portlet
	Channel Name:	Bookmark Portlet
	Channel Functional Name:	bookmark-portlet
	Channel Description:	A example portlet that contains web links.
	Channel Timeout:	5000 milliseconds
	Channel Secure:	<input type="checkbox"/>
<input type="checkbox"/>	Portlet definition ID	BookmarkPortlet.BookmarkPortlet
	Channel Controls	<input type="checkbox"/> Editable <input type="checkbox"/> Has Help <input type="checkbox"/> Has About
	Selected Categories:	Applications
	Selected Groups and/or People:	

< Back Finished Cancel

Portlet Modes



Portlet Modes

Channel Manager

Workflow: Channel Type → General Settings → Portlet Definition → Portlet Preferences → Channel Controls → Categories → Groups → Review

Review: Please review the settings for accuracy (click workflow icons or items in the table below to edit settings)

User can modify?	Name	Value
	Channel Type:	Portlet
	Channel Title:	Bookmark Portlet
	Channel Name:	Bookmark Portlet
	Channel Functional Name:	bookmark-portlet
	Channel Description:	Bookmark Porlet
	Channel Timeout:	5000 milliseconds
	Channel Secure:	<input type="checkbox"/>
<input type="checkbox"/>	Portlet definition ID	BookmarkPortlet.BookmarkPortlet
	Channel Controls	<input checked="" type="checkbox"/> Editable <input checked="" type="checkbox"/> Has Help <input type="checkbox"/> Has About
	Selected Categories:	Applications
	Selected Groups and/or People:	Everyone

< Back
Finished
Cancel

Portlet Modes



Portlet Development Frameworks

Portlet Preferences

The screenshot shows the uportal Channel Manager interface. At the top left is the uportal logo with 'by JASIG' underneath. At the top right, there are navigation icons and a welcome message: 'Welcome Demo-User'.

The main content area is titled 'Channel Manager' and contains a workflow diagram with the following steps: Channel Type, General Settings, Portlet Definition, Portlet Preferences (highlighted with a blue arrow), Channel Controls, Categories, Groups, and Review.

Below the workflow, the 'Portlet Preferences' section is active. It includes a description: 'Portlet Preferences: These are the preferences of the portlet itself. There may be zero or more preferences.'

The configuration form has two columns:

- Left Column:**
 - Name:** Input field containing 'maximum'.
 - Value:** Input field containing '89'.
 - User can modify?**
 - add** button
- Right Column:**
 - Header: **Option** **User can Modify?** **Name** **Value**
 - Table with one row:

Option	User can Modify?	Name	Value
<input checked="" type="checkbox"/>	<input type="checkbox"/>	minimum	27

At the bottom, there are navigation buttons: '< Back', 'Next >', 'Review', and 'Cancel'.

Portlet Development Frameworks

Portlet Preferences

Channel Manager



Workflow: Channel Type → General Settings → Portlet Definition → **Portlet Preferences** → Channel Controls → Categories → Groups → Review

Review: Please review the settings for accuracy (click workflow icons or items in the table below to edit settings)

User can modify?	Name	Value
	Channel Type:	Portlet
	Channel Title:	GuessNumberPortlet
	Channel Name:	GuessNumberPortlet
	Channel Functional Name:	GuessNumberPortlet
	Channel Description:	GuessNumberPortlet
	Channel Timeout:	5000 milliseconds
	Channel Secure:	<input type="checkbox"/>
<input type="checkbox"/>	PORTLET.minimum	27
<input type="checkbox"/>	Portlet definition ID	GuessNumberPortlet.GuessNumber
<input type="checkbox"/>	PORTLET.maximum	89
	Channel Controls	<input type="checkbox"/> Editable <input type="checkbox"/> Has Help <input type="checkbox"/> Has About
	Selected Categories:	 Applications
	Selected Groups and/or People:	 Everyone

< Back Finished Cancel

Portlet Preferences

The screenshot shows a web portal interface. At the top left is the logo for 'portal by JASIG'. At the top right, there are several icons (home, network, document, tools, refresh) and the text 'Welcome Demo User'. Below the header is a navigation bar with tabs: 'Test', 'Portlet Examples', 'Developers', 'News', 'CWebProxy Examples', and 'ICC Demo'. The main content area features a portlet titled 'GuessNumberPortlet'. Inside the portlet, there is a toolbar with icons for zoom, download, print, and refresh. The main text reads: 'Hello demo. My name is Duke. I'm thinking of a number from 27 to 89. Can you guess it?'. Below the text is a cartoon character of Duke, a white bird with a red eye and a black hat. To the right of the character is a text input field and a 'submit' button. At the bottom of the portlet, it says 'The correct answer is 18'.

Subscribing

- Add Channel to Layout
- Portlet Modes
- Portlet Window States
- Portlet Preferences

Portlet Modes



Portlet Modes

The screenshot shows a web portal interface. At the top left is the 'uportal by JASIG' logo. At the top right, there are several icons (home, network, document, tools, arrow) and the text 'Welcome Demo User'. Below the header is a navigation bar with tabs: 'Test', 'Portlet Examples', 'Developers', 'News', 'CWebProxy Examples', and 'ICC Demo'. The main content area features a 'Bookmark Portlet' window. This window has a toolbar with icons for home, edit, search, download, print, and refresh. Below the toolbar is a section titled 'Available bookmarks' containing a table with two columns: 'Name' and 'URL'. Each row in the table includes a '[delete]' link. At the bottom of the table are two input fields and an 'Add' button. A 'Cancel' button is located at the bottom left of the portlet window.

Name	URL	
SUN	http://www.sun.com	[delete]
Google	http://www.google.com	[delete]
Yahoo! - Movies	http://movies.yahoo.com	[delete]
Javaworld	http://www.javaworld.com	[delete]
IBM	http://www.ibm.com	[delete]
Microsoft	http://www.microsoft.com	[delete]
Yahoo!	http://www.yahoo.com	[delete]

Portlet Window States



Additional Considerations

- **uPortal 3**
 - Native portlet support
- **Spring**
 - Each web application must do its own Spring configuration at this time
- **Portlet Development Frameworks**
 - Portlet tag library provided (defined by JSR-168) by uPortal
 - All other libraries must be provided by the portlet web application

