BEA WebLogic Portal™

WebLogic Portlets for SAP Development Guide

Contents

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This document explains how to develop Portlets for the BEA WebLogic Portlets for SAP application from an existing framework.

The BEA WebLogic Portlets for SAP application integrates the BEA WebLogic Portal application with the SAP R/3 4.6C System.

This guide contains the following sections:

- About Portlet Architecture

- Creating a New Portal Application with the Portlets

- Adding the Portlets to an Existing Portal Application

- Creating a New Portlet

- Analyzing SAP Business Objects

- Extending the .jsp Template

- Extending the .jpf Template

- Updating the .properties File for Configuring the Business Object

- Deploying the Portal Application

- Configuring BEA WebLogic Portlets Administration

- Understanding Application Constants

- Password Encryption
- Database Tables
- Linking Portlets

About Portlet Architecture

The basic architecture of the BEA Portal application, shown in Figure 1, helps in integrating with the business objects from SAP R/3 system.

Figure 1   Architecture diagram
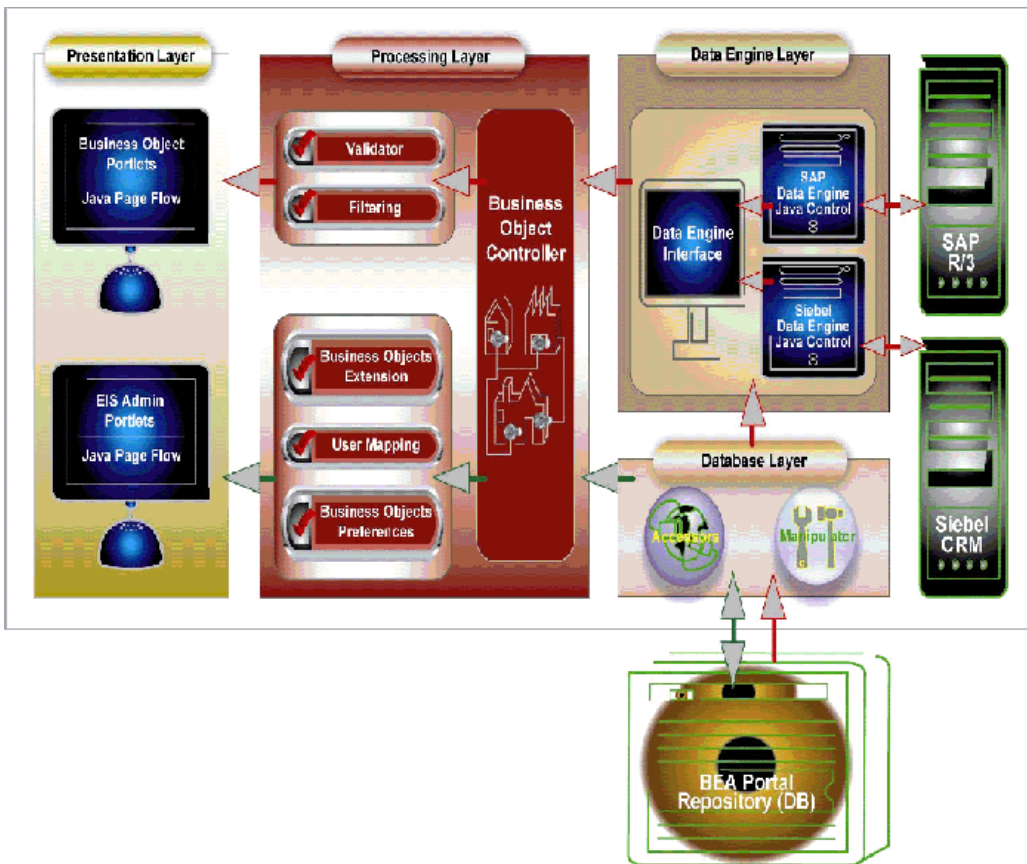
About Login Portlet Transaction Flow

1. Login portlet helps to login to the portal.

2. The User enters the user credentials and clicks Submit. The request is posted to a Backing file.

3. The Backing file uses BEA's API for authentication to validate the user entered credentials. On successful validation the logged in user information is stored in the session.

4. On successful login, portlets are displayed with information based on the user information that is stored in the session by the backing file. Other wise the login screen is shown with the appropriate message.

Business Portlet Transaction Flow

1. A Business Process Request is invoked from the portlet.

2. Any action in the portlet is routed to the Business Object Controller (BOC) specific to that portlet through the Java Page Flow (JPF).

3. First, the Control comes to the JPF depending on the action performed in the portlet.

4. Before sending the business request to the BOC, validations are performed, if any, using the Validator. If any validation error occurs, the request is redirected to the pages specified in the error handling mechanism for that action.

5. On successful validation, the JPF routes the request to the BOC.

6. The Business Object routes the request to the Data Engine Layer (DEL).

7. SAP DEL processes the request by accessing the Database Layer (DBL).

8. The responsibility of the DEL is to process the business request, get the required information using the DBL, connect to the ERP, and call the respective BAPI to process the Business Request and return the response back to the JPF, which in turn displays the portlet.

Creating a New Portal Application with the Portlets

To Create a New Portal Application with the Portlets (SAP):

1. Open BEA WebLogic Workshop application.

2. Navigate to File > New > Application, and create an application category portal.

3. To setup the data, right-click on the data folder and navigate to Install, and click on PortletsforSAPPropertySet.

4. Create a new Portal Web Project:

5. Right-click on the newly created portal web project and select PortletsForSAP option.

6. Open the portal file (.portal) and right-click on the placeholder and insert the required portlets.

Adding the Portlets to an Existing Portal Application

To Add Portlets to an existing Portal Application:

1. Open BEA WebLogic Workshop application.

2. To set up the data, right-click on the data folder, navigate to Install, and click on Update PortletsforSAPPropertySet.

3. Right-click on the existing portal web project and select Update PortletsForSAP option.

4. Open the portal file (.portal) and right-click on the placeholder and insert the required portlets.

Creating a New Portlet

A sample portlet is available under the following location:

```
<%BEA_HOME%>\weblogic81\portal\thirdparty\sapportlets\newportlet
```

To Create a New Portlet:

1. Copy the sample .jsp and .jpf files in the folder having BEA portlets.

2. Rename the sample file with the name of your choice.

3. Modify the code in the .jpf and .jsp files that is inside "< >" brackets.

4. Deploy the newly created portlet from BEA WebLogic Workshop.

Creating a New Portlet from a Pre-configured Business Object

To Create a New Portlet from a pre-configured business object:

1. Copy the sample .jsp and .jpf files in the folder having BEA portlets.

2. Rename the sample file with the name of your choice.

3. Modify the code in the .jpf and .jsp files that is inside "< >" brackets.

4. Deploy the newly created portlet from BEA WebLogic Workshop.

5. Login to BEA WebLogic Portlets V1.0 as an administrator, if you want to change the look and feel of the portlet by changing the label names of the columns shown to the users.

Adding Create, Update, or Delete Functionality to an Existing Portlet

To Add Create, Update, or Delete Functionality to an existing Portlet:

1. Copy the sample .jsp and .jpf files in the folder having BEA portlets.

2. Rename the sample files with the name of your choice.

3. Under the sample folder there is a folder called portlets. Under this folder, there is a file called SamplePortlet.portlet. Rename this file with the name of your portlet.

4. Under the sample folder there is one more folder called SamplePortletFlow. Rename the folder with the name of your portlet and append the word "Flow". Modify the .jsp and .jpf files as per your requirements.

5. Under the SamplePortletFlow folder there is a folder called SamplePortletPref. Rename the folder with the name of your portlet and append the word "Flow". Modify the .jsp and .jpf files as per your requirements.

6. Deploy the newly created portlet from BEA WebLogic Workshop.

Creating a New Portlet from a New SAP Business Object

1. Login to BEA WebLogic Portlets V1.0 as an administrator, and configure the business object as per your requirements. Refer to administration guide (BEA WebLogic Portlets Administration Guide) for details.

2. Deploy the newly created portlet from BEA WebLogic Workshop.

Analyzing SAP Business Objects

Log in to your SAP 4.6C system in order to get information regarding the available business objects. Once you have analyzed the BAPI's that you will be requiring for your application you

can configure these BAPI's (Business Object Preferences) using the BEA WebLogic Portlets Administration Screen. Refer to administration guide (BEA WebLogic Portlets Administration Guide) for details.

Extending the .jsp Template

The .jsp file is for viewing. This can be updated and extended as per the developer's requirements.

Extending the .jpf Template

The .jpf files can be updated and extended by adding new actions as per the requirements for the portlet.

Updating the .properties File for Configuring the Business Object

To update the .properties file:

1. Open BEA WebLogic Workshop application.

2. Open the file PORTALnet.properties file.

3. Update the properties file as per the requirements.

    a. If a new portlet is developed, Portlet ID and the required input fields for that portlet should be specified.

    b. For Sales Order portlet the following information needs to be updated depending on the EIS.

```
############################################
# SAP Sales Area
############################################
SAP_SALES_AREA_PLANT                = value
SAP_CONTROLAREA                     = value
SAP_COMPANYCODE                     = value
SAP_SALES_ORG                       = value
SAP_DISTR_CHANNEL                   = value
SAP_DIVISION                        = value
SAP_SALES_ORDER_DOC_TYPE            = value
SAP_RETURN_ORDER_DOC_TYPE           = value
SAP_PARTNER_ROLE                    = value
SAP_RETURN_ORDER_STORAGE_LOCATION   = value
```

Deploying the Portal Application

1. Open BEA WebLogic Workshop application.

2. Build the Application.

3. Start the Server.

Configuring BEA WebLogic Portlets Administration

The portlets can be configured using BEA WebLogic Portal Administration functionality.

For more information refer to Administration Guide for BEA WebLogic Portlets.

Understanding Application Constants

This section explains the purpose of the main constants that are used across the product. This is helpful in centralizing the constants and their values.

DateFormat Constants Used in DateUtil.java:

Constants defined under this section hold all the possible date formats used across the product.

Symbolic Constants:

Constants defined under this section hold all the symbols used across the product.

For example: "&", "<", ">"

Property set Name:

Constant used to define the property file name representing Property set Name.

DataType Name Constants:

Constants defined under this section hold all the datatypes used in the product to be shown as list of values.

Constants Used for Window:

Constants defined under this section hold all values that are used to set the properties of the browser window, that has been created using javascript.

Constants Used for Code Lookup:

Constants defined under this section hold all values that are used as one of the parameters while looking up for the code description.

Note: Any change to the constant applications without analysis will hinder the product functionality

Password Encryption

Password encryption is done using digital certificates. Digital certificates are generated using the Java keytool. Encryption and decryption is done using the DES algorithm on the private key and public key of the digital certificate.

Database Tables

This section details the database design (tables, fields, data types and description etc.,)

Table 1 PNET_APPL_INSTANCE

Table Alias	PNET_APPL_INSTANCE
Description	This table holds the EIS application instance details.
Owner	

Data Element Name	Data Type	Mandatory	Description
ID	NUMBER	N	Unique id
APP_ID	NUMBER	N	Unique Application id for EIS
NAME	VARCHAR 2(32)	Y	Name of the EIS Application
NATIVE_BASE_URL	VARCHAR 2(300)	Y	Url to connect to the EIS Application
DEF_USER_NAME	VARCHAR 2(30)	Y	User id for connecting to the EIS Application
DEF_PASSWORD	VARCHAR 2(200)	Y	Password for connecting to the EIS Application
DEF_FLAG	VARCHAR 2(1)	Y	This flag represents the instance to be used by the application by default.
CON_STR_1	VARCHAR 2(30)	Y	Represents connection string parameters that are required to connect to EIS.
CON_STR_2	VARCHAR 2(30)	Y	Represents connection string parameters that are required to connect to EIS.
CON_STR_3	VARCHAR 2(30)	Y	Represents connection string parameters that are required to connect to EIS.
CON_STR_4	VARCHAR 2(30)	Y	Represents connection string parameters that are required to connect to EIS.

CON_STR_5	VARCHAR 2(30)	Y	Represents connection string parameters that are required to connect to EIS.
CON_STR_6	VARCHAR 2(30)	Y	Represents connection string parameters that are required to connect to EIS.
CON_STR_7	VARCHAR 2(30)	Y	Represents connection string parameters that are required to connect to EIS.
CON_STR_8	VARCHAR 2(30)	Y	Represents connection string parameters that are required to connect to EIS.
CON_STR_9	VARCHAR 2(30)	Y	Represents connection string parameters that are required to connect to EIS.
CON_STR_10	VARCHAR 2(30)	Y	Represents connection string parameters that are required to connect to EIS.

Primary Key	ID
Foreign Key	APP_ID
Sequence	ID

Table 2 PNET_APP_ROLE

Table Alias	PNET_APP_ROLE
Description	This table holds the possible user types example CUSTOMER/EMPLOYEE
Owner	

Data Element Name	Data Type	Mandatory	Description
ID	NUMBER	N	Unique Id

APP_ID	NUMBER	N	Unique Application id for EIS
ROLE_ID	NUMBER	N	Represents role Id (Example representing CUSTOMER/ EMPLOYEE)

Primary Key	ID
Foreign Key	APP_ID,ROLE_ID
Sequence	

Table 3 PNET_COMP_DET

Table Alias	PNET_COMP_DET
Description	This table holds information pertaining to the Business Object Input/Output parameters.
Owner	

Data Element Name	Data Type	Mandatory	Description
ID	NUMBER	N	Unique Id
COMP_MAST_ID	NUMBER	Y	Represents for which business Object this info pertaining to
PAGELET_PARAM_ID	NUMBER	Y	Represents portlet id
PARAMETER_TYPE	VARCHAR2 (30)	Y	Represents either input or output
SUB_TYPE	VARCHAR2 (30)	Y	Represents type of parameter scalar/table/struct
NAME	VARCHAR2 (30)	Y	Name of the parameter
MANDATORY	CHAR (1)	Y	This filed is required or not.

Primary Key	ID
Foreign Key	COMP_MAST_ID
Sequence	ID

Table 4 PNET_COMP_DET_SAP

Table Alias	PNET_COMP_DET_SAP
Description	This table holding default values for parameters for the business objects.
Owner	

Data Element Name	Data Type	Mandatory	Description
ID	NUMBER	Y	Represents the pagelet parameter id
COMP_DET_ID	NUMBER	N	Unique
FIELD_NAME	VARCHAR2 (30)	Y	Represents the fields name
DEFAULT_VALUE	VARCHAR2 (30)	Y	Holds default value
MANDATORY	CHAR (1)	Y	Represents either mandatory or not
COMP_DET_SAP_ID	NUMBER	Y	Unique id

Primary Key	ID
Foreign Key	COMP_DET_ID
Sequence	COMP_DET_SAP_ID

Table 5 PNET_COMP_MAST

Table Alias	PNET_COMP_MAST
Description	This table holds information pertaining to the Business Object s
Owner	

Data Element Name	Data Type	Mandatory	Description
ID	NUMBER	N	Unique Id
PAGELET_ID	NUMBER	N	Holds pagelet id
NAME	VARCHAR 2(100)	Y	Holds Name of the business object
APP_ID	NUMBER	Y	Represents application id
ACTION	VARCHAR 2(10)	Y	Represents the business object action used (create/update.)
AUTHOR	VARCHAR 2(1)	Y	Represents owner
VERSION	NUMBER	Y	Version
PORTLET_ID	NUMBER	Y	Represents portlet id

Primary Key	ID
Foreign Key	PAGELET_ID, PORTLET_ID
Sequence	ID

Table 6 PNET_CONN_STR_CFG

Table Alias	PNET_CONN_STR_CFG
Description	Holds the description for the instance details
Owner	

Data Element Name	Data Type	Mandatory	Description
ID	NUMBER	N	Unique Id
APP_ID	NUMBER	N	Represents EIS application
LABEL	VARCHAR 2(70)	Y	Represents label name for the parameter
COL_NAME	VARCHAR 2(30)	Y	Represents name of the column for the parameter
DISPLAY_ORDER	NUMBER	Y	--

Primary Key	ID
Foreign Key	APP_ID
Sequence	

Table 7 PNET_PAGELET

Table Alias	PNET_PAGELET
Description	Holds the information pertaining to the portlets
Owner	

Data Element Name	Data Type	Mandatory	Description
ID	NUMBER	N	Unique id
APP_ID	NUMBER	N	Represents EIS application
NAME	VARCHAR 2(32)	N	Represents Portlet name
TITLE	VARCHAR 2(100)	N	Represents portlet title
VERSION	NUMBER	N	Portlet version
ACTION	VARCHAR 2(10)	Y	For which action like view, update, delete, create
CREATEDBY	VARCHAR 2(1)	Y	Represents creator name.

Primary Key	ID
Foreign Key	APP_ID
Sequence	ID

Table 8 PNET_PAGELET_DET

Table Alias	PNET_PAGELET_DET
Description	Holds the display parameters for the business object.
Owner	

Data Element Name	Data Type	Mandatory	Description
ID	NUMBER	N	Unique Id
PAGELET_ID	NUMBER	N	Id representing the portlet

NAME	VARCHAR 2(32)	N	Name of the display parameter
URL	VARCHAR 2(300)	Y	Url
TARGET_FLAG	VARCHAR 2(1)	N	Has values yes or no.
DATATYPE	VARCHAR 2(70)	N	Represents type of data Char, Number, Date
HIDDEN_FLAG	VARCHAR 2(1)	N	Whether this field is to be displayed or not.
DISPLAY_ORDER	NUMBER	Y	--
SORT_ORD	VARCHAR 2(4)	Y	--
LABEL	VARCHAR 2(70)	N	Represents Display label
COMP_MAST_ID	NUMBER	Y	Represents business object id.
COMP_DET_ID	NUMBER	Y	Represents display parameter table/struct/scalar id.
SEED_FLAG	VARCHAR 2(1)	Y	--
AUTHOR,	VARCHAR 2(1)	Y	Created by
MANDATORY,	VARCHAR 2(1)	Y	This field is mandatory for business object to function or not

Primary Key	ID
Foreign Key	PAGELET_ID,COMP_MAST_ID,COMP_DET_ID
Sequence	ID

Table 9 PNET_PAGELET_DET_ROLE

Table Alias	PNET_PAGELET_DET_ROLE
Description	This table holds the information pertaining for the display parameters based on the user types.
Owner	

Data Element Name	Data Type	Mandatory	Description
PAGELET_DET_ID	NUMBER	Y	Represents pagelet det id
PAGELET_ID	NUMBER	Y	Represents the pagelet id
PARAM_ROLE	VARCHAR 2(30)	Y	Represents user type either (ex customer/employee)
COMP_DET_ID,	NUMBER	Y	Represents comp det id.
HIDDEN_FLAG,	VARCHAR 2(1)	Y	This field is mandatory for business object to function or not
LABEL	VARCHAR 2(70)	N	Represents Display label

Primary Key	PAGELET_DET_ID
Foreign Key	COMP_DET_ID,
Sequence	

Table 10 PNET_PAGELET_PARAM

Table Alias	PNET_PAGELET_PARAM
Description	This tables holds the list of edit parameters
Owner	

Data Element Name	Data Type	Mandatory	Description
ID	NUMBER	N	Unique Id
PAGELET_ID	NUMBER	N	Represents the pagelet id
NAME	VARCHAR 2(32)	Y	Name of the edit parameter

DATATYPE	VARCHAR 2(70)	Y	Represents type of data Char, Number, Date
PARAM_ROLE	VARCHAR 2(30)	Y	Represents user type either (ex customer/employee)
CONDITION	VARCHAR 2(30)	Y	--
COMP_MAST_ID	NUMBER	Y	Represents business object id
COMP_DET_ID	NUMBER	Y	Represents comp det id
LOCAL_FLAG	VARCHAR 2(1)	N	--
LOCAL_VAL	VARCHAR 2(70)	Y	--
REQUEST_FLAG	VARCHAR 2(1)	N	--
LABELNAME	VARCHAR 2(32)	Y	Represents Display label

Primary Key	ID
Foreign Key	PAGELET_ID,COMP_MAST_ID,COMP_DET_ID
Sequence	

Table 11 PNET_PAGELET_PARAM_ROLE

Table Alias	PNET_PAGELET_PARAM_ROLE
Description	This table holds the information pertaining to the edit display parameters based on user type.
Owner	

Data Element Name	Data Type	Mandatory	Description
PAGELET_PARAM_ID	NUMBER	N	Represents pagelet param id
PAGELET_ID	NUMBER	Y	Represents pagelet id

PARAM_ROLE	VARCHAR 2(30)	N	Represents param role
LOCAL_FLAG	VARCHAR 2(1)	Y	--
LOCAL_VAL	VARCHAR 2(70)	Y	--
REQUEST_FLAG	VARCHAR 2(1)	Y	--
COMP_DET_ID	NUMBER	Y	

Primary Key	None
Foreign Key	COMP_DET_ID
Sequence	None

Table 12 PNET_ROLE

Table Alias	PNET_ROLE
Description	This table holds the information pertaining to the user types
Owner	

Data Element Name	Data Type	Mandatory	Description
ID	NUMBER	N	Unique id
NAME	VARCHAR 2(30)	Y	User type (example EMPLOYEE/CUSTOMER)

Primary Key	ID
Foreign Key	None
Sequence	None

Table 13 PNET_SINGLE_SIGN

Table Alias	PNET_SINGLE_SIGN
Description	Holds user credential mapping values.
Owner	

Data Element Name	Data Type	Mandatory	Description
ID	NUMBER	N	Unique Id
PORTAL_USERID	VARCHAR 2(32)	N	Represents portal user id
APP_INST_ID	NUMBER	N	Represents application instance id
TGT_USERNAME	VARCHAR 2(30)	Y	Represents EIS user id value
TGT_PASSWORD	VARCHAR 2(200)	Y	Represents EIS password
NATIVE_ENABLED_FLAG	VARCHAR 2(1)	N	Represents whether to give permission to native enable or not to EIS
TARGET_ENABLED_FLAG	VARCHAR 2(1)	N	Represents whether to give permission to target enable or not to EIS
USER_ROLE	VARCHAR 2(1)	Y	Represents user type Customer/Employee
ACTIVE_FLAG	VARCHAR 2()	Y	This flag represents whether this mapping is active or not.
DEFAULT_CREDENTIAL	CHAR (1)	Y	Represents to use the EIS Instance Credential or not.

Primary Key	ID
Foreign Key	APP_INST_ID
Sequence	ID

Table 14 PNET_SRC_APPLICATION

Table Alias	PNET_SRC_APPLICATION
Description	This holds the application instance details.
Owner	

Data Element Name	Data Type	Mandatory	Description
ID	NUMBER	N	Unique Id
NAME	VARCHAR 2(32)	Y	EIS Instance application name
VERSION	VARCHAR 2(32)	Y	Default value 1.0
DESCRIPTION	VARCHAR 2(200)	Y	About the EIS Instance Application
NATIVE_URL_TEXT	VARCHAR 2(200)	Y	--
APP_TYPE	VARCHAR 2(32)	Y	Represents application type SAP/Siebel

Primary Key	ID
Foreign Key	None
Sequence	None

Table 15 PNET_URL_PARAM

Table Alias	PNET_URL_PARAM
Description	This table holds the parameters pertaining to the native drill down.
Owner	

Data Element Name	Data Type	Mandatory	Description
ID	NUMBER	N	Unique Id
PAGELET_DET_ID	NUMBER	N	Represents Pagelet id
PARAM_NAME	VARCHAR 2(30)	Y	Represents Parameter Name
PARAM_TYPE	NUMBER	Y	Represents parameter type
PARAM_VALUE_SRC	VARCHAR 2(300)	Y	--
PARAM_VALUE	VARCHAR 2(300)	Y	Represents field name in the business object.

Primary Key	ID
Foreign Key	PAGELET_DET_ID
Sequence	

Table 16 PNET_USER_PARAM_MAP

Table Alias	PNET_USER_PARAM_MAP
Description	This table holds the customer id for the portal user
Owner	

Data Element Name	Data Type	Mandatory	Description
USER_ID	NUMBER	N	Represents the portal user id
APP_ID	NUMBER	N	Represents the EIS Application Id
USER_PARAM_ID	NUMBER	N	--
VALUE	VARCHAR 2(70)	Y	Represents the customer id in EIS.

Primary Key	None
Foreign Key	USER_ID,APP_ID,USER_PARAM_ID,
Sequence	None

Linking Portlets

Inter-portlet communication can be achieved using backing files, but the page flow is the recommended mechanism. This topic explains how to use multiple page flows that react to browser events such as forms. To create page flow portlets that communicate with each other, take the following steps:

To Create Portlets that Share Messages:

1. Inside the portal Web application, create a portlets directory.

2. Within this portlets directory, create two new page flows. (A separate directory will be automatically created for each one).

3. Create a portlet for each page flow and place these portlets on a portal.

4. In the Portal, click on the second portlet and set the listen to attribute to the instanceLabel of the first portlet. (Open the Portal in Design View, click once on the second portlet and find the properties editor.)

   Note: The listenTo attribute is associated with the instanceLabel of the other portlet. You can change the definitionLabel without affecting the listenTo behavior.

5. In the .jpf file for the second portlet you can do one of two things.

   The first option is to use the same action method signature as in the first page flow. For example, this action definition is from the page flow controller for portlet 2:

```
/**
 * @jpf:action
 * @jpf:forward name="listening" path="listening.jsp"
 */
public Forward passString1(portlets.j1.j1Controller.Form form)
{
```

```
        thePassedText = form.getText();

        return new Forward( "listening" );

    }
```

Or you can add a handler for ActionNotFoundException handler. For example, in the page flow controller for portlet 2, make sure the @jpf:catch annotation is defined at the class level:

```
/**
 * @jpf:controller
 * @jpf:catch type="ActionNotFoundException" method="doNothing"
 */
```

And in the same page flow controller, that an action method such as the following is defined:

```
/**
 * @jpf:exception-handler
 * @jpf:forward name="current" return-to="currentPage"
 */
 protected Forward doNothing( ActionNotFoundException e, String
actionName, String message, FormData form )
 {
     return new Forward( "current" );
 }
```

As you edit the page flow, you can verify the navigation by opening a viewer that will preview the pages without the portal.

6. Place the two portlets inside placeholders within your portal.