

Creating and Using Page Templates in Oracle WebCenter Portal Applications

Oracle WebCenter Portal 11g R1 PS5 (11.1.1.6.0)

ORACLE

Objectives

After completing this module, you should be able to:

- Create and use page templates both at design- and run time
- Create an editable page template
- Create a portal resource from an existing page template
- Explain the round-trip development process for page templates
- Describe the differences between page templates for an Oracle WebCenter Portal Framework application and Oracle WebCenter Portal: Spaces

Agenda

- Working with Page Templates
- Page Templates for WebCenter Portal Framework Applications
- Page Templates for WebCenter Portal: Spaces

What is a Page Template

A page template controls the layout and common content of the application's pages.



Typical Elements on a Page Template: Layout Elements

The image shows a screenshot of a website page template with three callout boxes pointing to specific layout elements:

- Header:** Located at the top right, it contains the text "Welcome weblogic | Logout" and a globe icon.
- Content area:** A large central area with a blue border. It features a "Design & Build" section with a sub-header, a paragraph of text, and three small images of construction professionals. A callout box points to this area.
- Footer:** Located at the bottom right, it contains the text "Administrator | Privacy Statement".

Other visible elements include the "el piju design with nature" logo on the left, a navigation menu with "Home", "Company", "Services", and "Expertise", and a "Services" sidebar with "Preconstruction", "Construction", and "Design & Build" options.



Typical Elements on a Page Template: Brand-Specific Elements

The image shows a screenshot of a website page template with three yellow callout boxes pointing to specific elements:

- Logo:** Points to the 'el piju design with nature' logo in the top left corner.
- Slogan:** Points to the slogan 'Sustainability through natural building' in the top right area, below the navigation menu.
- Copyright message:** Points to the copyright notice 'Copyright © 2011, El Piju and/or its affiliates. All rights reserved.' located at the bottom left of the page.

The website content includes a navigation menu with 'Home', 'Company', 'Services', and 'Expertise'. A 'Services' section is visible on the left, with 'Design & Build' selected. The main content area features a 'Design & Build' heading and a paragraph of text. On the right side, there are three small images showing construction-related activities: a person using a power tool, a person in a safety vest holding blueprints, and a person measuring a wall.

Typical Elements on a Page Template: Navigation

Global navigation

el piju design with nature

Welcome weblogic | Logout

Sustainability through natural building

Home Company **Services** Expertise

Preconstruction
Construction
Design & Build

Services

Preconstruction
Construction
Design & Build

Design & Build

El Piju's Design & Build project delivery method offers you the security of a single-source of responsibility for both the design and construction of your project. On a Design & Build project, El Piju engages the client prior to the start of design professionals and consultants, creating a "win win" partnership environment. Key benefits include an early guarantee of project costs, a shorter overall project schedule, and fewer burdens on your management resources.

Copyright © 2011, El Piju and/or its affiliates. All rights reserved. Administrator | Privacy Statement

Typical Elements on a Page Template: Additional Links and Actions

The image shows a screenshot of a web page template for 'el piju design with nature'. The page features a header with the company logo, a navigation bar with 'Home' and 'Compa' links, and a main content area. A 'Services' section is highlighted in a dark green bar. Below it, a 'Design & Build' section is visible, containing a description of the project delivery method and three images of construction professionals. A 'Pop-up menu' is shown in the top right corner, listing options like 'Administration', 'My Profile', 'Preferences', 'Edit Page', 'Edit Space', 'Space Activities', and 'Space Documents'. A 'Global links' callout points to the footer area, which includes 'Administrator' and 'Privacy Statement' links. A 'Login/Logout' callout points to the top right corner of the page.

el piju design with nature

Welcome weblogic | Logout

Sustainability through i

Home Compa

Services

Preconstruction
Construction
Design & Build

Design & Build

El Piju's Design & Build project delivery method offers you the security of a single-source of responsibility for both the design and construction of your project. On a Design & Build project, El Piju engages the client prior to the start of design professionals and consultants, creating a "win win" partnership environment. Key benefits include an early guarantee of project costs, a shorter overall project schedule, and fewer burdens on your management resources.

Administrator | Privacy Statement

Pop-up menus

Global links

Login/Logout

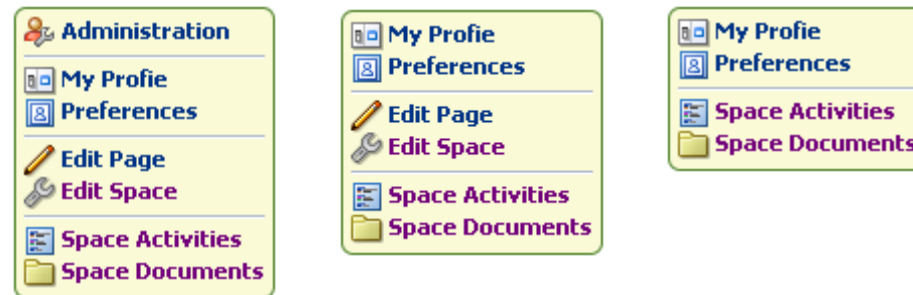
Typical Elements on a Page Template: Conditional Elements

Elements of the page template can be displayed conditionally.

- Depending on whether the user is public or authenticated



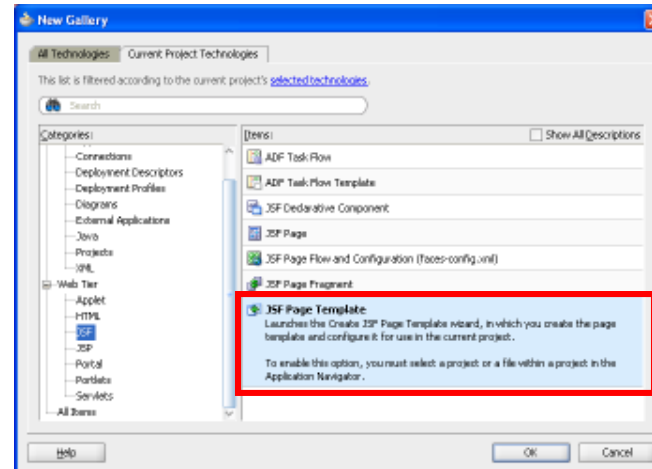
- Depending on the user's role and privileges



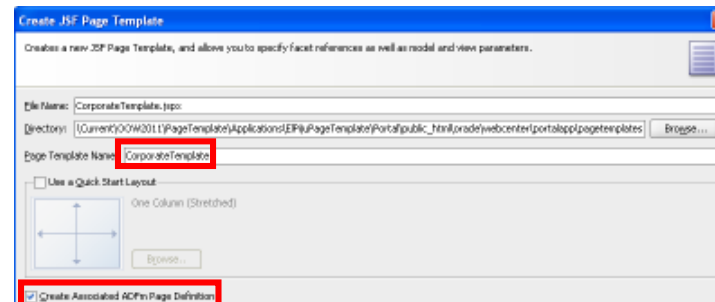
Working with Templates at Design Time

Create Template (1)

1. New Template



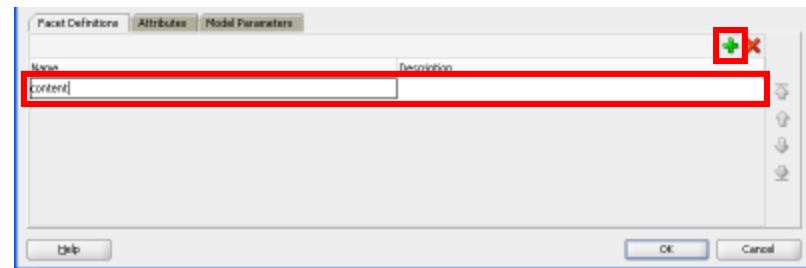
2. Define name, create page definition



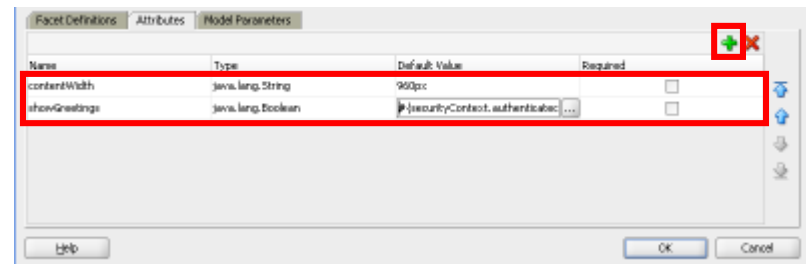
Working with Templates at Design Time

Create Template (2)

3. Create facet(s)



4. Create attribute(s)



JSF Page Template wizard is not reentrant, but you can edit the template source to add more facets and attributes.

Structure of the Template Source

```
<?xml version='1.0' encoding='UTF-8'?>
<jsp:root xmlns:jsp="http://java.sun.com/JSP/Page" version="2.1" ...
    xmlns:cust="http://xmlns.oracle.com/adf/faces/customizable">
  <jsp:directive.page contentType="text/html; charset=UTF-8" ...
  <af:pageTemplateDef var="attrs">
    <af:facetRef facetName="content"/>
  <af:xmlContent>
    <component xmlns="http://xmlns.oracle.com/adf/faces/rich/component">
      <display-name>Corporate Template</display-name>
      <facet><facet-name>content</facet-name></facet>
      <attribute>
        <attribute-name>contentWidth</attribute-name>
        <attribute-class>java.lang.String</attribute-class>
        <default-value>960px</default-value>
      </attribute>
    </component>
  </af:xmlContent>
</af:pageTemplateDef>
</jsp:root>
```

Tag libraries

Template content

Template name

Facet definition(s)

Attribute(s)

Working with Templates at Design Time: Populate Template

- Add components to the template (similar to populating pages)
 - Drag-and-drop from the component palette
 - Edit the source if necessary
- Add facet reference where the page content will be displayed

```
<af:facetRef facetName="content" />
```

Template Attributes

- Define attributes in the template:

name, class, and optionally, a default value

```
<attribute>  
  <attribute-name>contentWidth</attribute-name>  
  <attribute-class>java.lang.String</attribute-class>  
  <default-value>960px</default-value>  
</attribute>
```

- Default value can be an EL expression
- Default can be overridden,
 - in the page, where the template is used
 - At run time by Composer, when the page is displayed
- Refer to an attribute:

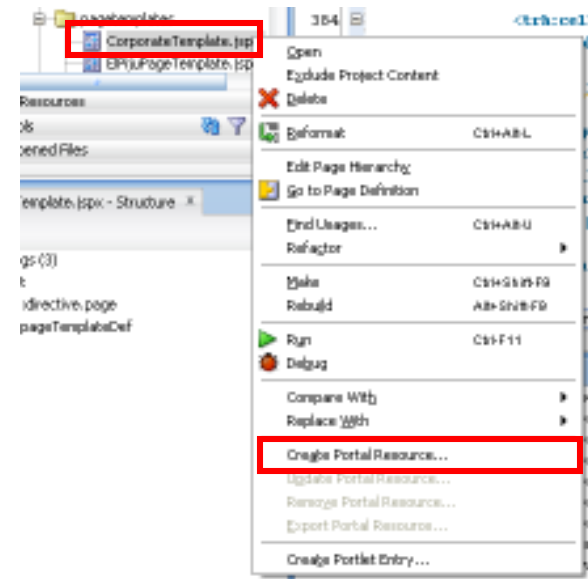
```
<trh:tableLayout id="globalPageTable"  
  width="#{attrs.contentWidth}">
```

Page Template as Portal Resource

- A page template can become a portal resource.
 - Packed in a resource archive (EAR, MAR)
 - Stored in MDS
- Rules:
 - Create under
`/oracle/webcenter/portalapp/pagetemplates`
 - Must have a facet called **content**
 - Must have a reference to the **content** facet

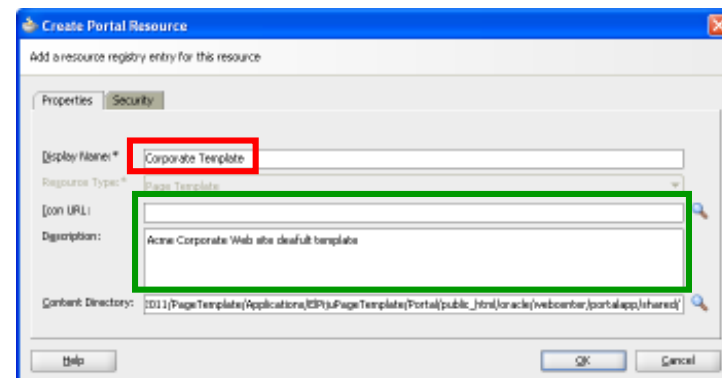
Page Template as Portal Resource: Creating the Resource

1. Create resource



2. Define properties

- Name optionally
- Description
- Icon URI, ...



Page Template as Portal Resource: Working with Resources

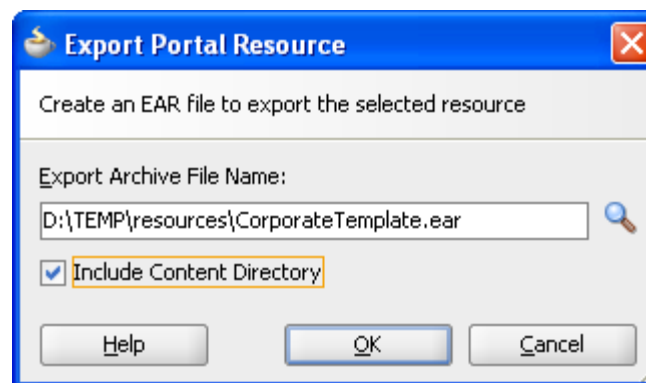
- Update, remove



- Export

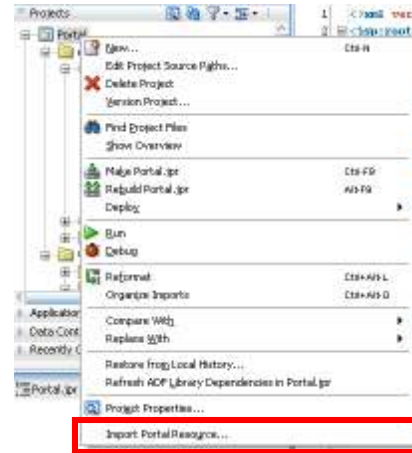


- Provide location (EAR file)
- Include the content directory, if necessary

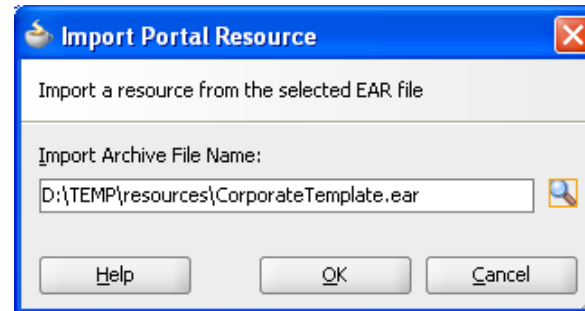


Page Template as Portal Resource: Importing a Resource

1. Menu on the project

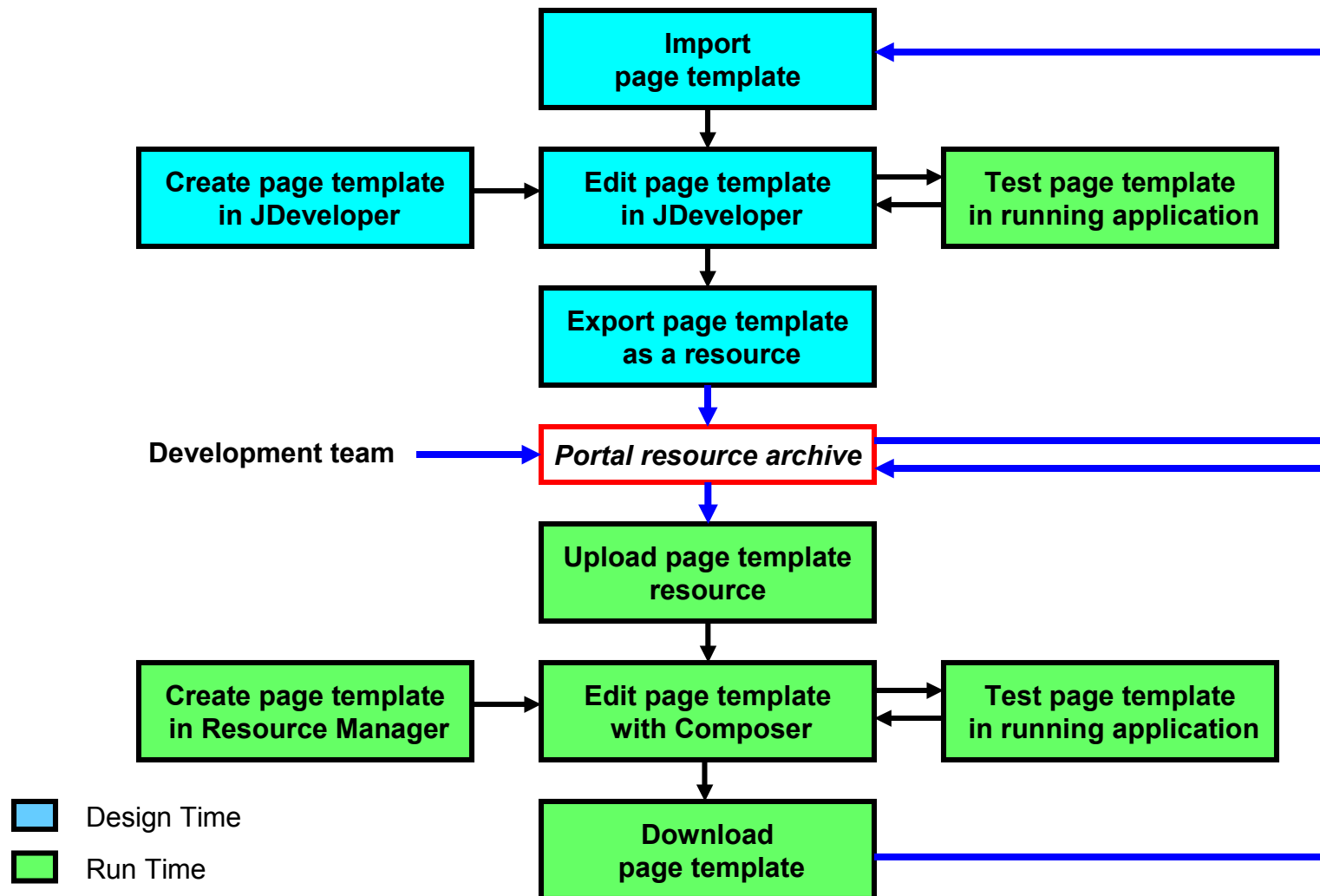


2. Provide location (EAR file)



After importing a page template, you need to edit
pagetemplate-metadata.xml
to register the newly imported template for JDeveloper.

Round-Trip Development Process for Page Templates



Working with Templates at Run Time

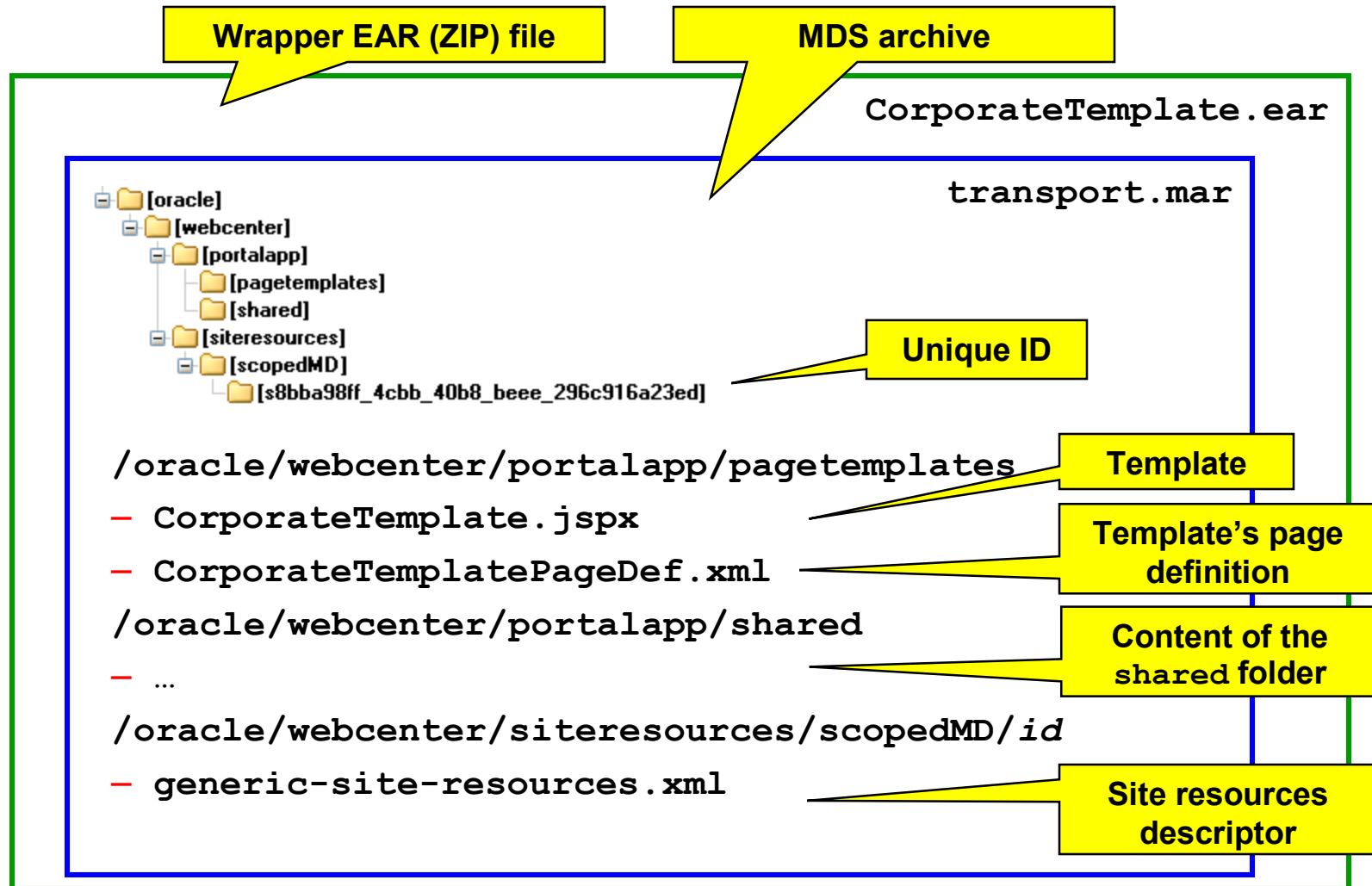
Use: Administration > Resources > Page Templates

- Create, Upload, Copy
- Delete
- Download
- Edit, Edit Source, Edit Properties, Show

The screenshot displays the Oracle WebCenter Portal Administration Console. The top navigation bar includes 'ORACLE WebCenter Portal Administration Console' and a user greeting 'Welcome weblogic | Back to Portal | Logout'. The main interface is divided into several sections:

- Resources:** A red box highlights this section in the left sidebar.
- Structure:** A red box highlights 'Page Templates' under the 'Resources' section.
- Actions:** A red box highlights the 'Create', 'Upload', 'Download', 'Preview', 'Edit', and 'About' buttons at the top of the main content area.
- Table:** A table lists three page templates:
 - Corporate Template:** Acme Corporate Web site default. Status: Hidden.
 - Globe Page Template:** Globe PageTemplate. Status: Available.
 - Swooshy Page Template:** Swooshy PageTemplate. Status: Available.
- Context Menu:** A red box highlights the 'Edit' button, which has opened a context menu with options: Edit, Copy, Security Settings, Customize, Delete, Show, Edit Source, and Edit Properties.
- Filter:** A search filter is located at the top right of the table.
- Modified By:** A column on the right side of the table shows the user who last modified each template, all being 'system'.

Page Template Resource Archive



Template Content Tips (1)

- Use CSS or JavaScript

- Embedded in the template

```
<af:resource type="css"> ... </af:resource>
```

```
<af:resource type="javascript"> ... </af:resource>
```

- Add CSS to the skin

- Use external files

```
<af:resource type="css" source="url" />
```

```
<af:resource type="javascript" source="url" />
```

- Use JavaServer Pages Standard Tag Library

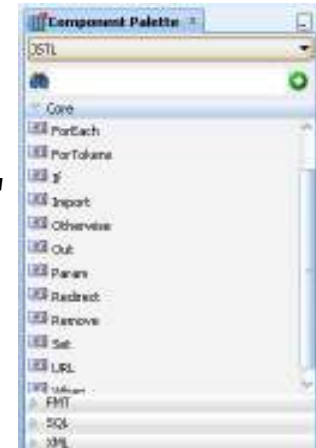
- Add namespace

```
xmlns:c="http://java.sun.com/jsp/jstl/core"
```

- Add source

```
<c:if test="..."> ... </c:if>
```

- Drag from Component Palette



Template Content Tips (2)

- Use variables

```
<c:set var="contextRoot"  
    value="{facesContext.externalContext.requestContextPath}"  
    scope="session"/>  
<af:goLink id="home"  
    destination="/#{contextRoot}/spaces/  
                #{spaceContext.currentSpaceName}" >
```

- Conditional display
 - ADF tags, use **rendered** attribute
 - Other tags, surround with conditional JSTL tags

```
<c:if test="..."> ... </c:if>  
<c:choose>  
    <c:when test="..."> ... </c:when>  
    <c:otherwise> ... </c:otherwise>  
</c:choose>
```

Template Content: Use Additional Files

Page template might refer to external files: images, JavaScript, CSS.

- Deploy separately, use fix context root
- Deploy together with the application
 - Place under the context root
 - Use PortalWebAssets project
 - Does not work with packaged resources
- Use the `/oracle/webcenter/portallapp/shared` folder
 - Shared folder content packed into the resource archive
 - In PS3, PS4, only images files are accessible
 - In PS5, you can use other file types, for example CSS or JavaScript; you can use folder hierarchy

Editable Templates

A page template can be edited at run time if it contains editable components.

Panel Customizable

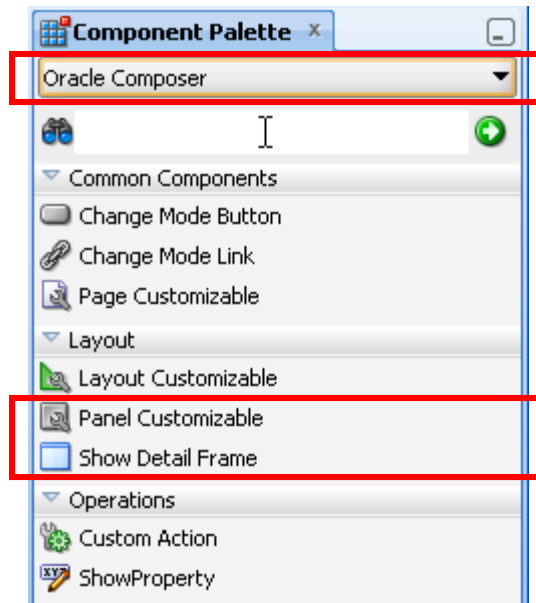
- Container with horizontal or vertical layout
- Holds other components

Show Detail Frame

- Chrome for an actual component
- Add actions, like show, hide, move
- Enables editing the frame or the embedded component properties

Editable Templates: Design Time

- Add from the Oracle Composer component group
- **Must not add Page Customizable**
- Add at least one Panel Customizable
- Add ADF components surrounded by Show Detail Frame
 - Output Text
 - Rich Text Editor
 - Go Image Link
 - Go Link
 - ...



Editable Templates: Source Example

```
<cust:panelCustomizable id="pt_pc2">
  <cust:showDetailFrame id="pt_sdf1"
    text="HTML Fragment"
    displayHeader="#{changeModeBean.inEditMode}"
    showMinimizeAction="none"
    showResizer="never"
    stretchContent="false">
    <f:attribute name="sdf_selection_rule"
      value="sdf_for_edit_mode_only"/>
    <af:outputText id="pt_ot3" value="Any HTML fragment" />
  </cust:showDetailFrame>
  <cust:showDetailFrame id="pt_sdf2"
    text="Rich Text" ... >
    <af:richTextEditor label="Label 1" id="pt_rtel"
      contentStyle="width:100%" clientComponent="true"
      simple="true" toolboxLayout="font formatCommon color list"/>
  </cust:showDetailFrame>
</cust:panelCustomizable>
```

1. Add Panel Customizable

2. Wrap components into Show Detail Frame

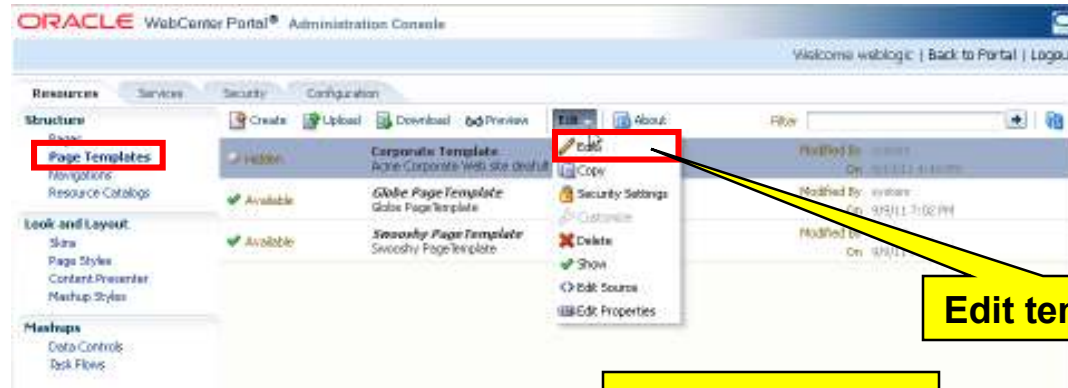
3. Set this attribute that Show Detail Frame will customize the embedded component

4. Use ADF component, Output Text

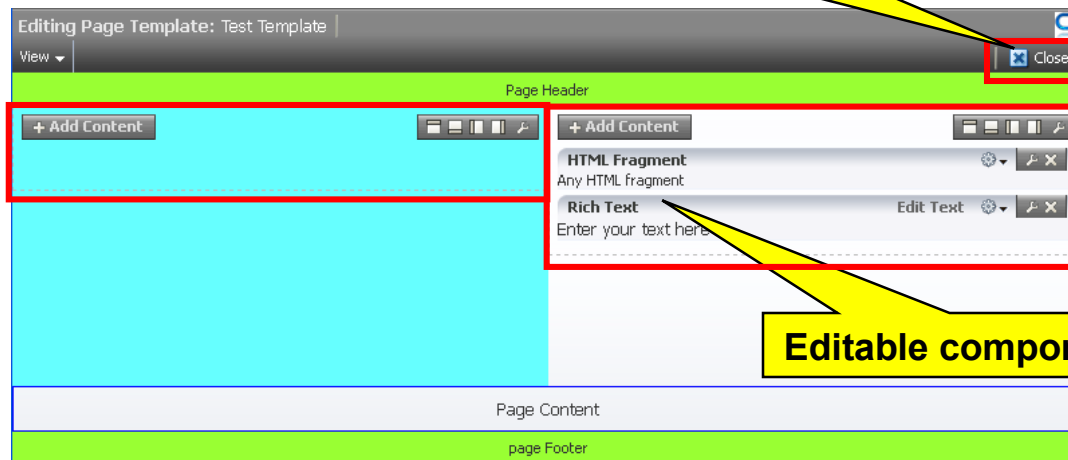
5. Rich Text Editor component
No need for the attribute here

Editing Templates at Run Time

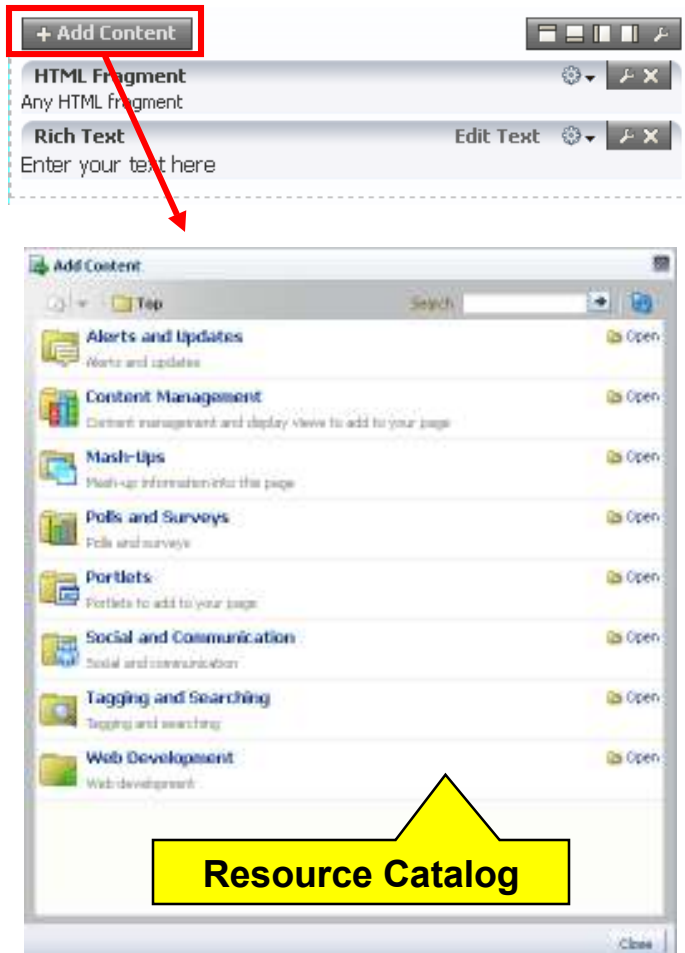
- Resource Manager



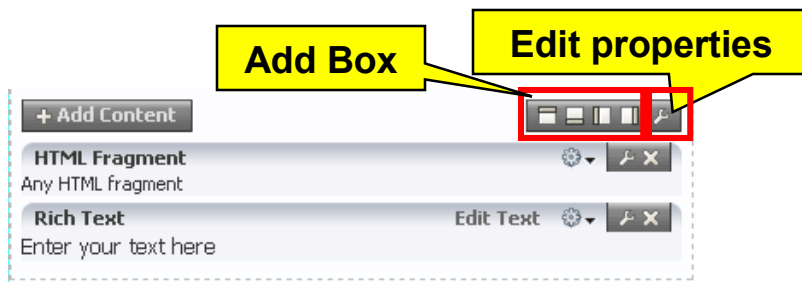
- Composer



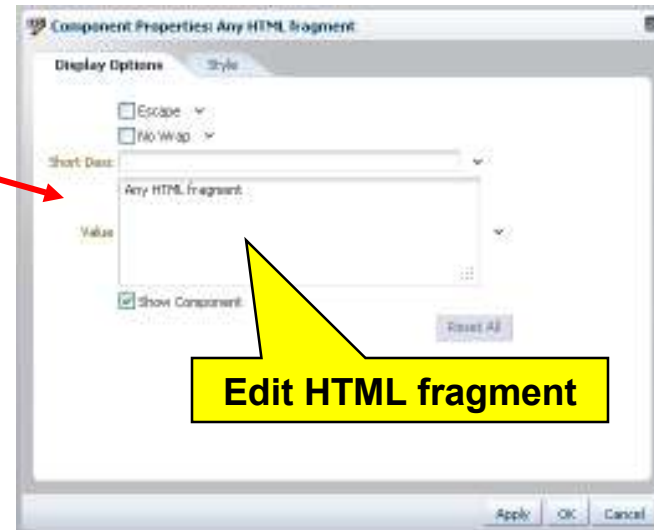
Editing Templates: Run-Time Example



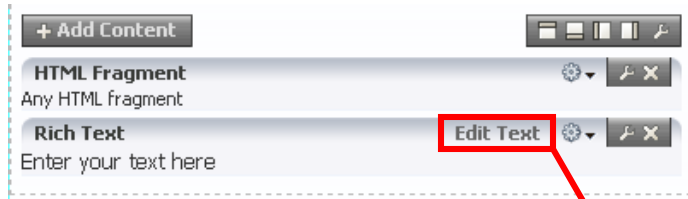
Editing Templates: Run-Time Example



Editing Templates: Run-Time Example



Editing Templates: Run-Time Example



Rich Text Editor

Editing Templates: Run-Time Example

The diagram illustrates the run-time editing workflow for templates. It consists of three main components:

- Component Properties: Any HTML fragment**: A dialog box with tabs for 'Display Options' and 'Style'. The 'Value' field contains 'Any HTML fragment'. A yellow callout box labeled 'Edit HTML fragment' points to this field.
- Add Content**: A resource catalog window showing various content types such as Alerts and updates, Content Management, Mash-Ups, Polls and Surveys, Portlets, Social and Communication, Tagging and Searching, and Web Development. A yellow callout box labeled 'Resource Catalog' points to this window.
- Rich Text**: A rich text editor window with a toolbar and a text area containing 'Enter your text here'. A yellow callout box labeled 'Rich Text Editor' points to this window.

Red arrows indicate the flow of the process: from the 'Add Content' button in the top-left panel to the 'Add Content' window; from the 'Edit Text' button in the top-left panel to the 'Rich Text' editor; and from the 'Edit HTML fragment' callout to the 'Value' field in the 'Component Properties' dialog.

Editable Templates: Resource Catalog

Web development components

The screenshot shows the 'Add Content' dialog box in a web development tool. The dialog is titled 'Add Content' and has a search bar and a 'Web Development' folder selected. The components listed are:

- Data Controls**: Data controls created at design time and through SRM. (Callout: Panel Customizable)
- Box**: A box in which content can flow vertically or horizontally. (Callout: Output Text)
- HTML Markup**: Raw HTML and JavaScript. (Callout: Go Link)
- Hyperlink**: Link to a page or a Web site. (Callout: Go Image Link)
- Image**: An image with a hyperlink. (Callout: Go Image Link)
- Links**: Add links to the current page. (Callout: Show Detail Frame)
- Movable Box**: A box in which content can flow vertically or horizontally. It also provides customization options such as move, expand or collapse, and resize. (Callout: Show Detail Frame)
- Text**: Formatted text. (Callout: Rich Text Editor)
- Web Page**: Includes another Web page. (Callout: Inline Frame)

Page Layout

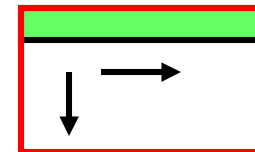
The biggest challenge in page template design is how to lay out components:

- elements of the template
- page content

There are two basic strategies:

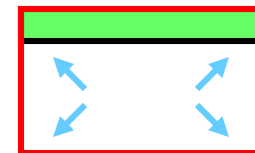
- Flow layout:

- Components have fixed sizes and are arranged side by side.
- If necessary, the [browser](#) displays scroll bar(s).



- Stretch layout:

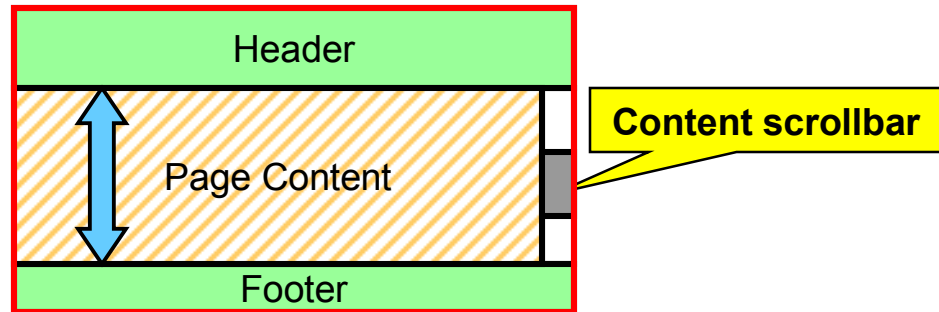
- Components will be stretched to occupy the available space on the page.
- If necessary, [individual components](#) may have scroll bars.



Page Template Layout: Vertical Behavior

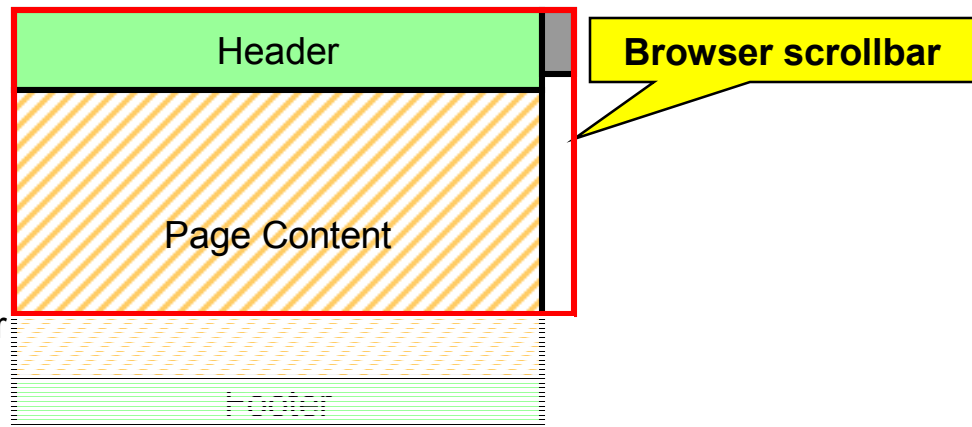
- **Stretching:**

- Header & footer always visible
- Height of the page is determined by the browser window
- Content stretched vertically
- Content might have scroll bar



- **Flowing:**

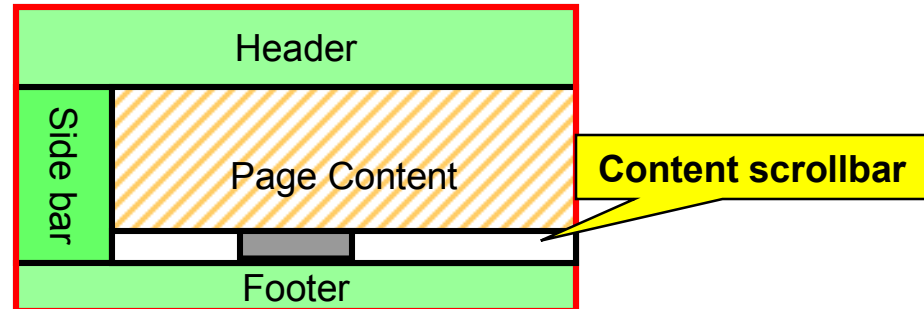
- Content never stretched vertically
- Height of the page is calculated based on the components
- Browser might display scrollbar
- Header and/or footer not necessarily visible



Page Template Layout: Horizontal Behavior

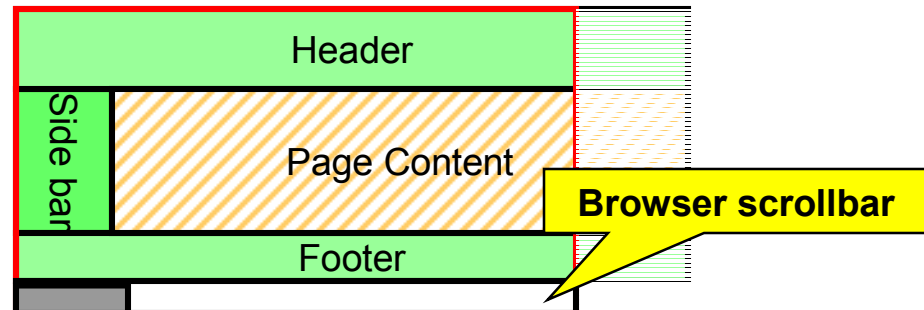
- **Stretching**

- Content stretched horizontally
- Content might have scroll bar
- Other components have fixed width

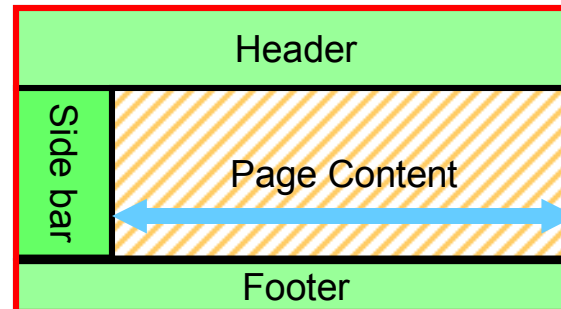


- **Flowing**

- Content width is fixed
- Browser might show scroll bar



- Some components might be stretched to fill up existing space



Page Layout Usage

- Majority of web sites use flow-type layout.
- “Application” type web sites prefer stretch-type layout.
- As a template developer, you can control whether the content facet is in a stretching or flowing region of the page.
- Page content must be created taking the layout strategy into consideration.
- Since a page template can be changed dynamically, create pages and design custom components that display properly in stretching and flowing context.
- We recommend using ADF Faces containers to create the layout.

Page Template Layout ADF UI Components (1)

Stretching layouts:

- Build outer structure with containers that can be stretched and stretch its children.
 - `PanelStretchLayout`, `PanelSplitter`, ...
- Create flowing islands.
 - Use `PanelGroupLayout` with `type="scroll"` or `type="vertical"`
this can be stretched, but will not stretch its children
- You should not embed stretching components inside flowing islands.
- Never try to stretch something vertically when inside of a flowing container. Do not use height with percent unit.

Page Template Layout

ADF UI Components (2)

Flowing layouts:

- Use non-stretching containers
 - `PanelGroupLayout`, `PanelBorderLayout`, ...
 - `PanelBorderLayout` can be used to approximate HTML table component
- To avoid multiple scroll bars, do not nest scrolling `PanelGroupLayout` components. Consider `type="vertical"`
- Most stretchable ADF components also work in flowing context with `dimensionsFrom="auto"`
- To stretch a component horizontally, use `styleClass="AFStretchWidth"` instead of ~~`inlineStyle="width:100.0%"`~~

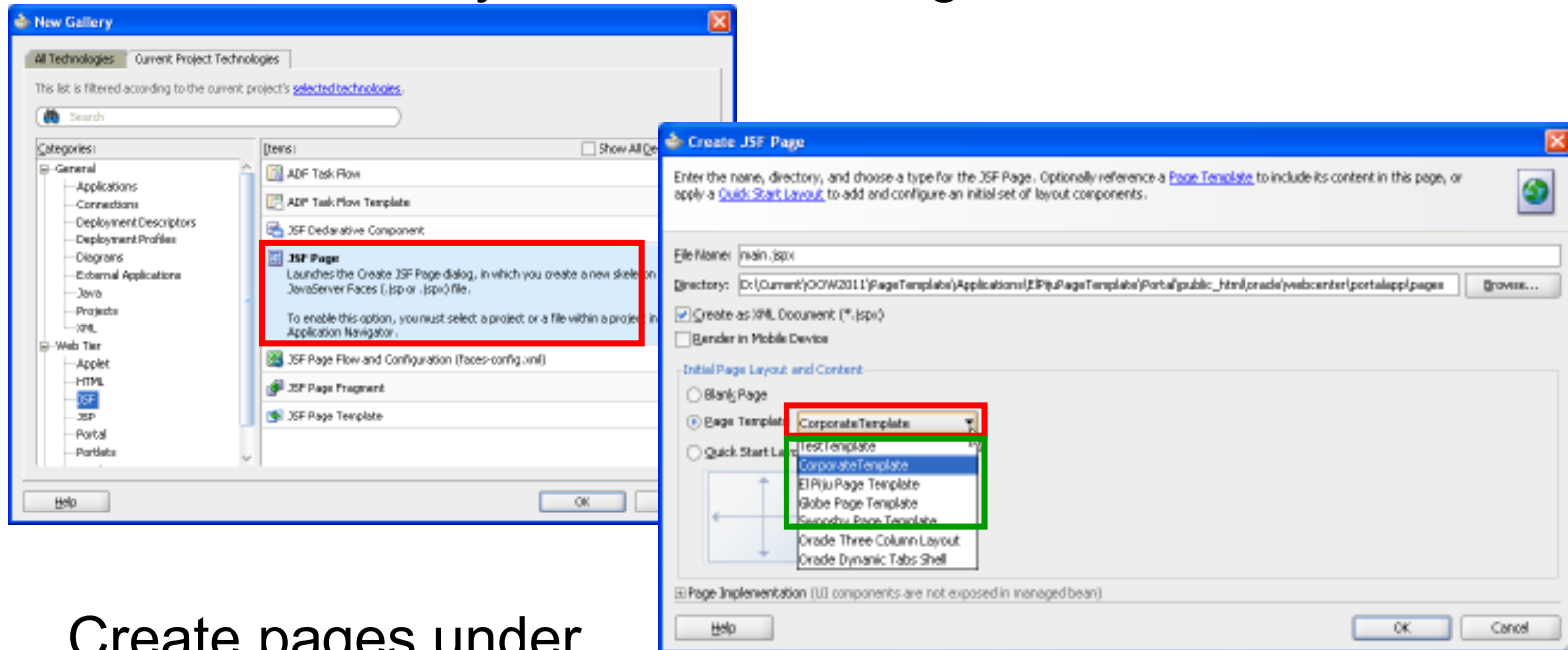
Page Template Layout ADF UI Components (3)

Customizable components:

- In `PanelCustomizable`, use `layout="auto"` to detect whether to stretch its children or not.
- In order to support flow and stretch layouts, use `ShowDetailFrame` with `stretchChildren="auto"`

Creating Pages Using Page Templates: Design Time

- Use New Gallery > JSF > JSF Page

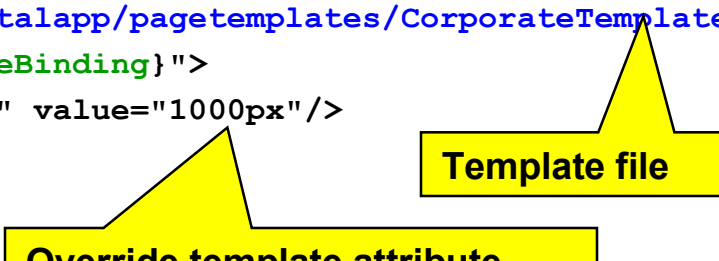


- Create pages under `/oracle/webcenter/portalapp/pages`
- Choose page template
- Find available templates in `pagetemplate-metadata.xml`

Creating Pages Using Page Templates: Page Source

- *main.jspx*

```
<af:form id="f1">
  <af:pageTemplate id="pt1"
    viewId="/oracle/webcenter/portalapp/pagetemplates/CorporateTemplate.jspx"
    value="#{bindings.pageTemplateBinding}">
    <f:attribute name="contentWidth" value="1000px"/>
    <f:facet name="content"/>
  </af:pageTemplate>
</af:form>
```



- *mainPageDef.xml*

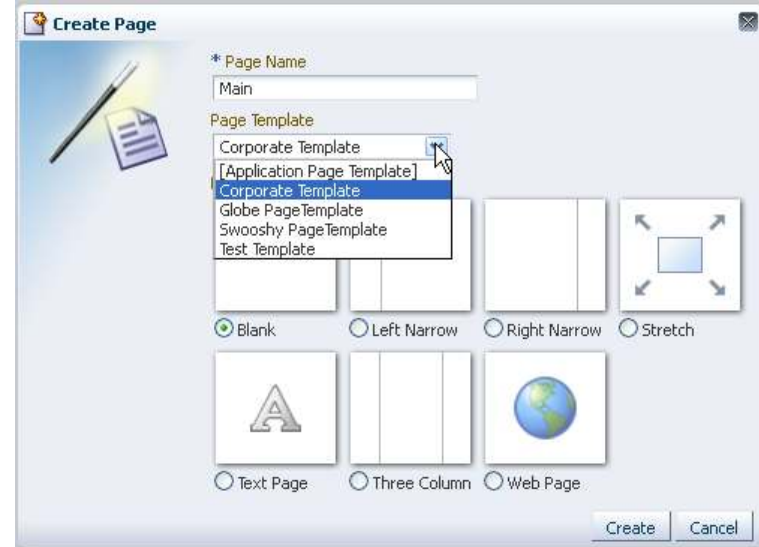
```
<executables>
  <variableIterator id="variables"/>
  <page path="oracle.webcenter.portalapp.pagetemplates.CorporateTemplatePageDef"
    id="pageTemplateBinding" Refresh="ifNeeded"/>
</executables>
```

Creating Pages Using Page Templates: Run Time

- Use Administration > Resources > Pages > Create Page



- Choose page template
- Choose page style



Agenda

- Working with Page Templates
- Page Templates for WebCenter Portal Framework Applications
- Page Templates for WebCenter Portal: Spaces

Default Page Template

- There is a preference bean that stores default values for the application UI.
 - Page Template
 - Navigation Model, Resource Catalog, Skin
 - others
- To use the default template, change the source of the page.

- *main.jspx*

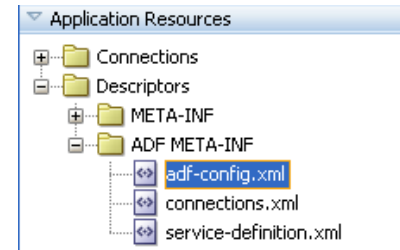
```
<af:pageTemplate id="pt1"  
    value="#{bindings.pageTemplateBinding.templateModel}">
```

- *mainPageDef.xml*

```
<page path="{preferenceBean.defaultPageTemplate}"  
    id="pageTemplateBinding" Refresh="ifNeeded"/>
```

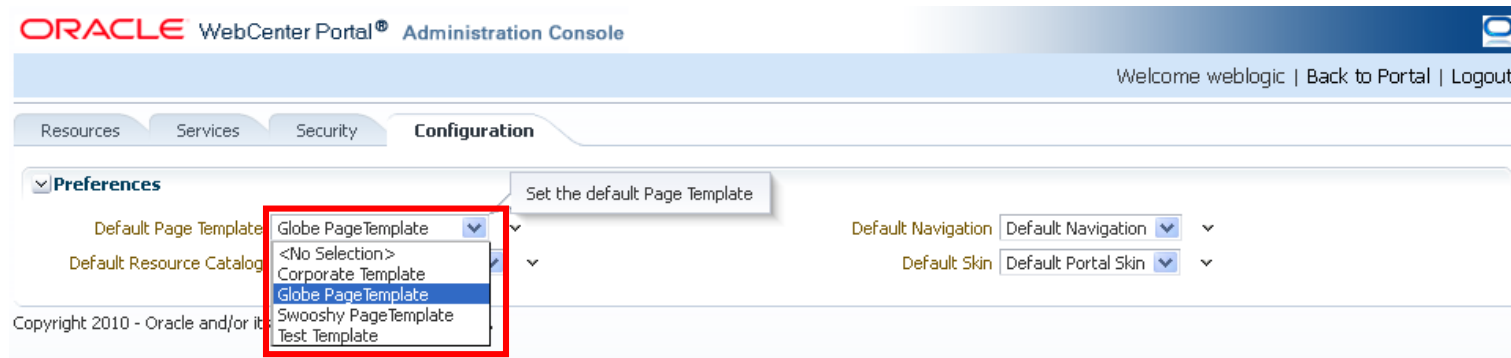
Default Page Template: Setting the Default Template

- Design time: edit `adf-config.xml`



```
<portal:preference
  id="oracle.webcenter.portalapp.pagetemplate.pageTemplate"
  desc="Default Page Template"
  value="/oracle/webcenter/portalapp/pagetemplates/CorporateTemplate.jspx"
  resourceType="Template" display="true"/>
```

- Run time: Administration > Configuration



Out-of-the-Box Templates

A WebCenter Portal application has two OOTB page templates:

- **Globe: `pageTemplate_globe.jspx`**



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- **Swooshy: `pageTemplate_swooshy.jspx`**



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Out-of-the-Box Templates: Template Attributes

Name	Type	Default
<code>contentWidth</code>	String	<code>960px</code>
<code>showNavigation</code>	Boolean	<code>true</code>
<code>showGreetings</code>	Boolean	<code>{securityContext.authenticated}</code>
<code>showLogin</code>	Boolean	<code>true</code>
<code>showAdmin</code>	Boolean	<code>{securityContext.authenticated}</code>
<code>isAdminPage</code>	Boolean	<code>false</code>
<code>isEditingTemplate</code>	Boolean	<code>false</code>

Out-of-the-Box Templates: Template Attributes (continued)

- In OOTB `login.jspx`, `error.jspx`
`showNavigation = false`, `showLogin = false`
- In built-in administration pages
`isAdminPage = true`
- When editing the template, Resource Manager sets
`isEditingTemplate = true`

Use these attributes in your custom application template if the template will be used as default template or you intend to use the OOTB login page.


Hiding the Template from Page Editing

Hide the template content, *except the facet reference*, when editing the page.

- For example, use the rendered attribute:

```
rendered = "#{!composerContext.inEditMode or attrs.isEditingTemplate}"
```

```
<af:panelGroupLayout id="..." layout="vertical" halign="center" ... >
  <af:panelGroupLayout id="..." ... inlineStyle="width:#{attrs.contentWidth};">
    <af:panelBorderLayout id="headerRow" rendered="...">...</af:panelBorderLayout>
    <af:panelGroupLayout id="bodyRow" layout="horizontal" valign="top" ...>
      <af:panelGroupLayout id="contentCell" layout="vertical" valign="top"
        styleClass="AFStretchWidth">
        <af:facetRef facetName="content"/>
      </af:panelGroupLayout>
    </af:panelGroupLayout>
  </af:panelGroupLayout>
  <af:panelBorderLayout id="footerRow" rendered="...">...</af:panelBorderLayout>
</af:panelGroupLayout>
```



- Essential only when the template has editable components

Login/Logout

- Use ADF security – redirect to login page

```
<af:goLink id="pt_glnk3" text="Login"
  destination="/adfAuthentication?success_url=/"
  rendered="#{!securityContext.authenticated}"/>
```

```
<af:goLink id="pt_glnk4" text="Logout"
  destination="/adfAuthentication?logout=true&end_url=/"
  rendered="#{securityContext.authenticated}"/>
```

- Use utility Java Bean: `o_w_s_l_LoginBackingBean`

- Set attributes: `username`, `password`

- Invoke methods: `doLogin`, `doLogout`

```
<af:commandLink id="pt_logincb" text="Login"
  action="#{o_w_s_l_LoginBackingBean.doLogin}"
  rendered="#{!securityContext.authenticated}"/>
```

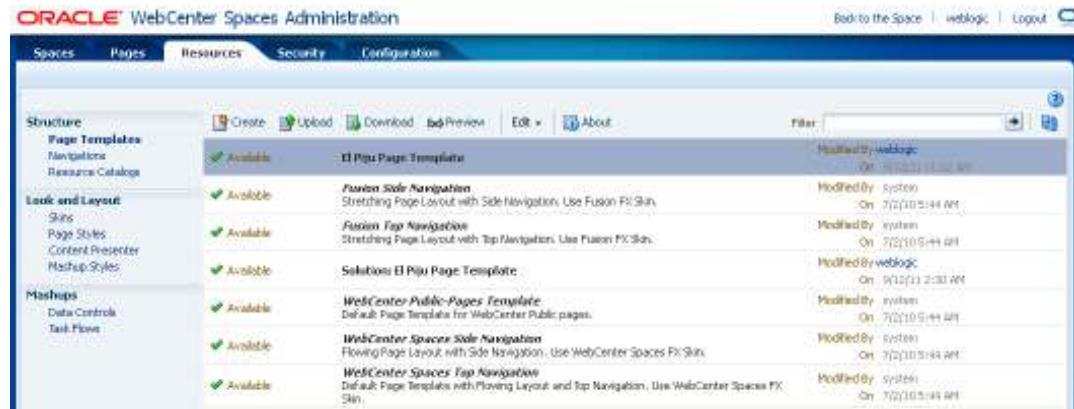
```
<af:commandLink id="pt_glnk4" text="Logout"
  action="#{o_w_s_l_LoginBackingBean.doLogout}"
  rendered="#{securityContext.authenticated}"/>
```

Agenda

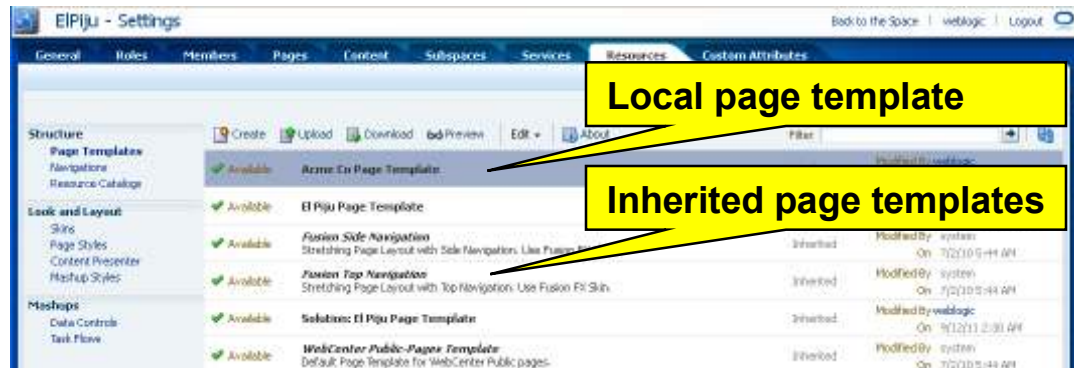
- Working with Page Templates
- Page Templates for WebCenter Portal Framework Applications
- Page Templates for Oracle WebCenter Portal: Spaces

Run-Time Resource Management

Global templates:



Space templates:



- Global templates inherited in a space
- Template created in JDeveloper uploads as global template

Out-of-the-Box Templates

PS5 (11.1.1.6.0)

In PS5 release, new OOTB page templates will be introduced:

Flowing layout:

- Top Navigation
- Side Navigation
- Collaborative with Top Navigation
- Portal-Centric with Top Navigation

Stretching Layout:

- Top Navigation (Stretch)
- Side Navigation (Stretch)
- Fusion Side Navigation
- Fusion Top Navigation
- Public Pages Template

Creating a Page Using Page Templates

- Pages are created only at run time.
- Pages always use a template defined by Spaces.
 - Defined at application level: Administration > Configuration.
 - Defined in each Space



- Defined in the navigation

Template Content: Spaces Components

Examples

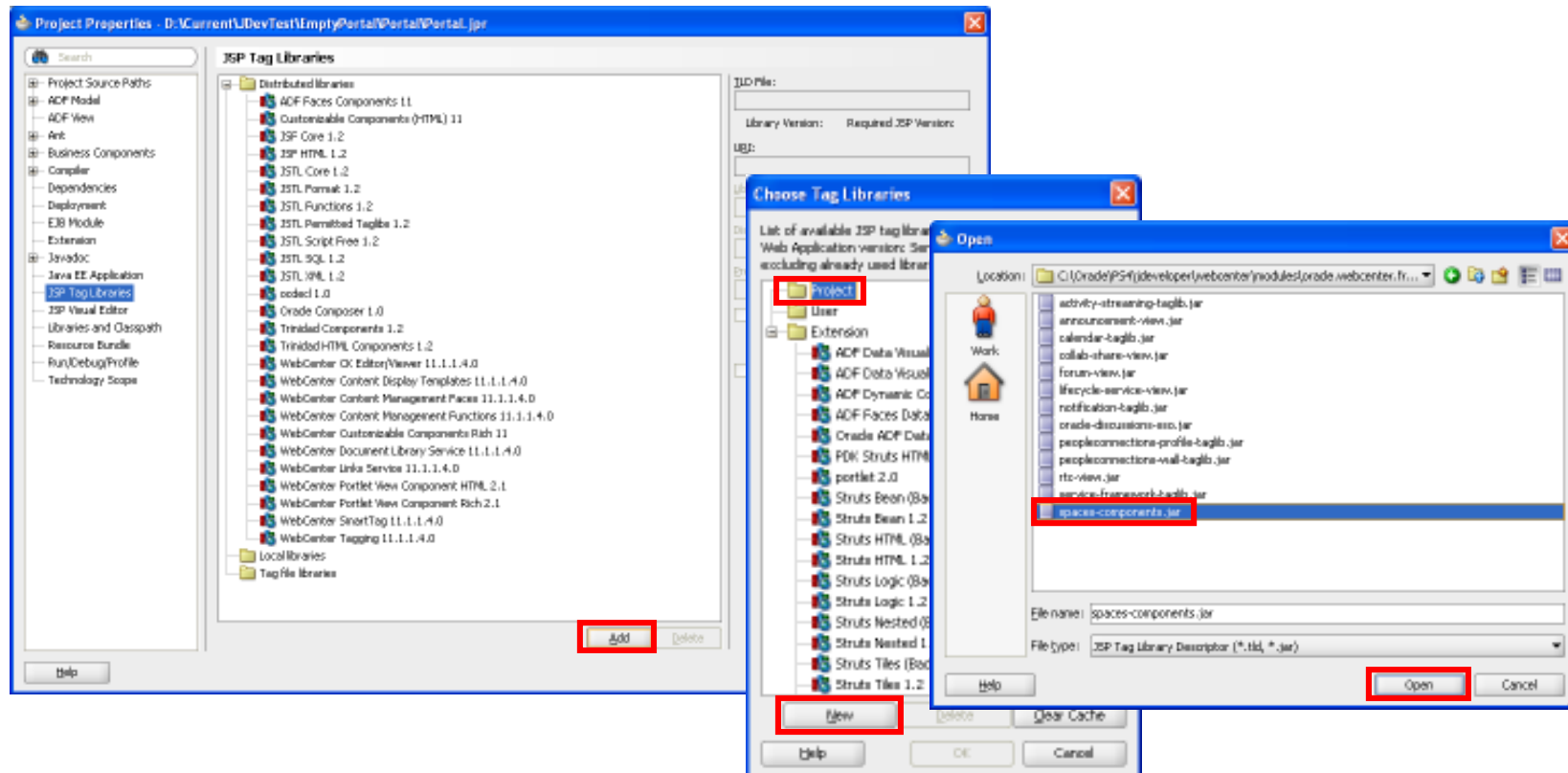
- Login/Logout
- User profile/User preferences
- Edit Page/Create Page/Manage Pages
- Home space
- Spaces Switcher
- Contact Administrator
- Copyright Message, ...



Spaces Components: Design Time (1)

- Add JSP Library to project:

`<JDev_HOME>/jdeveloper/webcenter/modules/
oracle.webcenter.framework_11.1.1/spaces-components.jar`



Spaces Components: Design Time (2)

- Drop from Spaces Declarative Components

Result in source:

- Added namespace definition

```
xmlns:wcdc=
```

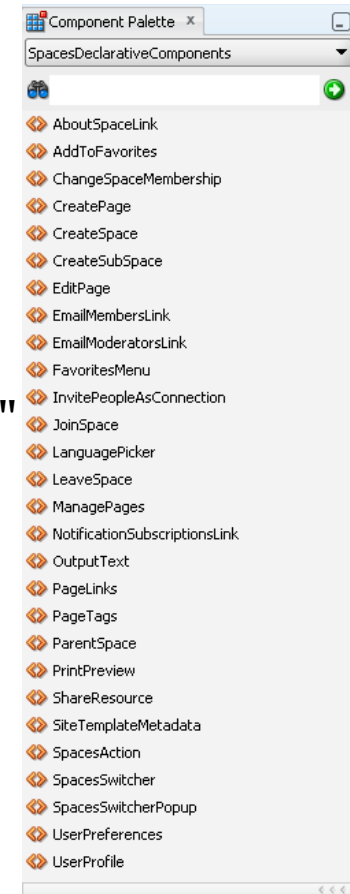
```
"http://xmlns.oracle.com/webcenter/spaces/taglib"
```

- Added tags

```
<wcdc:spacesAction id="..."  
    type="login" text="Login"/>
```

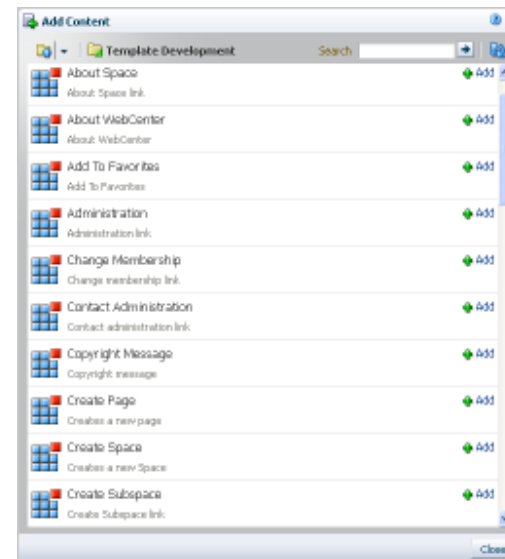
```
<wcdc:spacesAction id="..."  
    type="logout" text="Logout"/>
```

```
<wcdc:editPage ... />
```



Spaces Components: Run Time

- Add from Resource Catalog > Template Development



Template Content: Miscellaneous Tips

- No need to hide the template when editing the page
- Surround template with special tags:

```
<wcdc:siteTemplateMetadata type="start"/>
```

```
<wcdc:siteTemplateMetadata type="end"/>
```

- If you use `wcdc:spacesAction`, add the following:

```
<af:resource type="javascript">
```

```
function wcNavigate(event) {  
    window.location =  
        event.getSource().getProperty('wcDestination');  
    event.cancel(); }  
function wcLaunchWindow(event) {  
    window.open(event.getSource().  
        getProperty('wcDestination'));  
    event.cancel(); }  
</af:resource>
```


Summary

In this module you should have learned how to:

- Create and use page templates both at design- and run time
- Create an editable page template
- Create a portal resource from an existing page template
- Explain the round-trip development process for page templates
- Describe the differences between page templates for an Oracle WebCenter Portal Framework application and Oracle WebCenter Portal: Spaces