

### WebSphere Portal Application Development Best Practices using Rational Application Developer



#### Agenda

- RAD Best Practices
- Deployment Best Practices
- WSRP Best Practices
- Portlet Coding Best Practices
- Portlet JSP Best Practices
- Portlet Packaging Best Practices
- Portlet Configuration Best Practices
- Portlet Session Management Best Practices
- Portlet Internationalization Best Practices
- Resource Serving Best Practices
- Portlet Performance Best Practices
- Portlet Security Best Practices
- Portlet Documentation Best Practices
- JSF portlets Best Practices



### **RAD Best Practices**



#### **Install Options**

- IBM Installation Manager simplifies and optimizes install
  - -Minimize install footprint by only installing options you need
  - Shell-share with other Rational products to help more easily manage the desktop
  - Enterprise install capabilities for simple maintenance and provisioning of your own standardized install configurations (create response files for what install configuration you need)



#### **Flexible Help Options**

- Install documentation based on needs of your environment
  - -Available on the world-wide web
  - -No footprint on local workstation
  - -Available on internal web server
  - -No footprint on local workstation
  - -Available for download on each workstation



#### **Basic Hygiene**

- Close unused/unneeded projects
- Close unused editors and views
- Use multiple workspaces
  - -Don't have one big workspace with everything
  - -Better to have special-purpose workspaces



#### Use Binary Modules (AKA Shared EARs)

- Reduces the number of source projects in the workspace
  - -Most projects kept in binary form
- Basic approach
  - -Start with EAR file containing complete application, including source code.
    - Typically produced by a nightly or weekly build
  - -Developer imports this EAR as a base
  - -Developer imports from source control the projects to be changed
    - Source projects build against the binary modules in the EAR



#### **Tune Validation**

- Lots of different types of validation
- Validation can be "tuned"
- Much more tuning has been added in RAD 7.5
- Turning off validation will reduce error checking

ype filter text	Validation		4	• 💠 -	
General     Agent Controller     Ant     Backward Compatibility     Crystal Reports     Data Management     Ecore Diagram     Helo	Allow projects to override these preferen     Suspend all validators     Save all modified resources automatically     Show a confirmation dialog when perform     The selected validators will run when validati	prior to validatin ing manual valida	~		
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🗄 Java	Application Client 5.0 Validator			···	
🗊 Java EE		11		<u> </u>	
JavaScript	Application Client Validator		And a state of the		
- JPA	Classpath Dependency Validator				
Jython	Connector Validator				
Modeling	Crystal Reports Validator			10-10-	-
E Plug-in Development	DTD Validator				
Profiling and Logging	EAR 5.0 Validator		$\checkmark$		
Report Design	EAR Validator	$\checkmark$	$\checkmark$		
E Run/Debug	EJB 3.0 Validator	$\checkmark$	$\checkmark$		
E Server	EJB Validator	$\checkmark$	~		
Service Policies	HTML Syntax Validator	$\checkmark$	$\checkmark$		
SIP	iWidget Validator	$\checkmark$			
Software Analyzer	J2EE Classpath Validator				
± Team	JavaScript Syntax Validation				
🗄 Test	JAX-RS Web Validator				
Validation	JDBC Connection File Validator			10000	~
E Web		<u></u>			
Web Services	Enable All Disable All				
± XDodet					
1 XML		Restore D	efaults	Apply	7



#### Java EE 5 Annotation Scanning

- Speed up application install
  - -Provide a list of archives, or utility JAR files, that do not contain annotations

-Can provide a list of Java Packages that do not contain annotations



#### Annotation Scanning System Property

- For archives
  - -com.ibm.ws.amm.scan.context.filter.archives
- For packages
  - -com.ibm.ws.amm.scan.context.filter.archives



#### Annotation Scanning Property Files

- For archives, Ignore-Scanning-Archives
- For packages, Ignore-Scanning-Packages
- File amm.filter.properties in was\_home/properties
- File amm.filter.properties in profile\_home/properties
- META-INF/MANIFEST.MF in EAR
- META-INF/MANIFEST.MF in module

<ul> <li>Annotat</li> </ul>	tion Scanr	ning Filter
Annotation s	canning filter	of the module
Ignore-Scan	ning-Archive:	s: utils.jar
Ignore-Scan	ning-Package	95:
Dependencies	Source	



#### Consider...

- •Turning off "Build automatically"
- •Turning off "Refresh automatically"
- •Sharing preferences across individual workspaces
- •Turn off Quick Diff

type filter text	Quick Diff	🗘 • 🕁 - 👻
<ul> <li>General</li> <li>Appearance         <ul> <li>Capabilities</li> <li>Compare/Patch</li> <li>Content Types</li> <li>Editors</li> <li>File Associations</li> <li>Structured Text Edit</li> <li>Text Editors</li> <li>Accessibility</li> <li>Annotations</li> <li>Hyperlinking</li> <li>Linked Mode</li> <li>Quick Diff</li> <li>Spelling</li> <li>Error Reporting</li> <li>Keys</li> <li>Network Connections</li> <li>Performance Monitors</li> <li>Perspectives</li> <li>Search</li> <li>Security</li> <li>Startup and Shutdown</li> <li>Web Browser</li> <li>Workspace</li> <li>Agent Controller</li> <li>Ant</li> <li>Backward Compatibility</li> <li>Crystal Reports</li> <li>Data Management</li> </ul> </li> </ul>	Image: Colors         Changes: Chang	Restore Defaults

Preferences	
refresh	Workspace
⊡- General <b>Workspace</b>	See <u>'Startup and Shutdown'</u> for work
	Build automatically <u>R</u> efresh automatically     Save automatically
Export Preferences	
Export preferences to the loc	al file system.
• Export all	
C ⊆hoose specific preference	ces to export
Installed JREs	

#### Consider...

- Turn off label decorators
- Disabling Links Indexer
- Tuning Early Startup

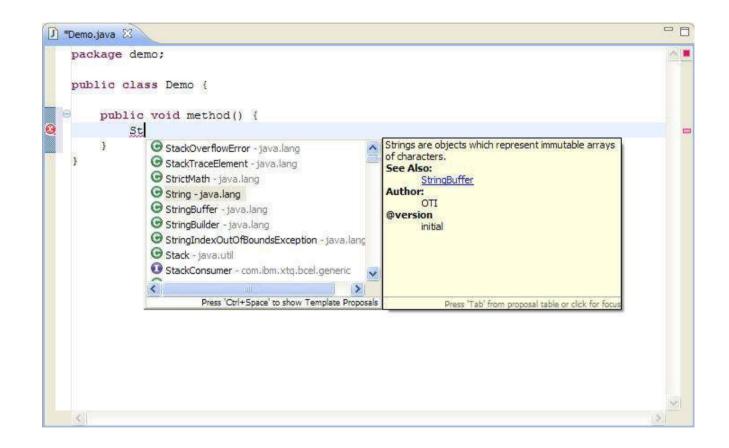
type filter text	Startup and Shutdown	⇔ • ⇔ • ◄
General Appearance Colors and Fonts Label Decorations Capabilities Compare/Patch Content Types Editors Editors Editors Error Reporting Keys Network Connections Perspectives Search Security Startup and Shutdown Web Browser Workspace Agent Controller Ant Backward Compatibility Crystal Reports Data Management Ecore Diagram Help Install/Update Java	<ul> <li>Prompt for workspace on startup</li> <li>Refresh workspace on startup</li> <li>Confirm exit when closing last window</li> <li>Plug-ins activated on startup:</li> <li>IDMS common licensing UI</li> <li>IDMS ITLM Enablement</li> <li>Debug Daemon</li> <li>Java anontations</li> <li>IBM Common Migration UI</li> <li>EJB Deployment Core UI</li> <li>Performance UI</li> <li>Links Indexer UI</li> <li>Code Coverage IDE UI</li> <li>Error Reporting</li> <li>IBM Rational Morge Clearcaseversioncheck</li> <li>IBM Rational Modeling Platform Update Support</li> <li>WTP Webservice UI Plug-in</li> <li>JavaServer Faces Tools - Core</li> <li>Automatic Updates Scheduler</li> <li>Service policy</li> </ul>	
Java EE     JavaScrint	Restore De	faults Apply

ype filter text	Label Decorations 🔅 🗧 🗧
General  Appearance Colors and Fonts Label Decorations	Label decorations show extra information about an item on its label or icon. Select which additional decorations should be displayed. Available label decorations:
Capabilities	Code Coverage Statistics
Compare/Patch	Connection Profile Decorator
Content Types	CVS
and markers	Data Tools - Bookmark Indicator
Error Reporting	Data Tools - Collection ID
<ul> <li>Keys</li> <li>Network Connections</li> </ul>	🔽 Data Tools - Column Data Type
Performance Monitors	🗹 Data Tools - Database Dirty Indicator
Perspectives	Data Tools - Dependency Decoration
Search	Data Tools - Foreign or Primary Key Indicator
E Security	Data Tools - Index and Trigger Decoration
Startup and Shutdown	Data Tools - Index and Trigger Decoration
Web Browser	Data Tools - Package Version Indicator
Workspace	Data Tools - Server Explorer DB2 Alias Indicator     Data Tools - Server Explorer Filter Node Indicator
Agent Controller	Data Tools - Table Row Count
Agent Controller	Data Tools - View Dependency Decoration
Backward Compatibility	DataTools - Native PSM Versioning Decorator
Crystal Reports	DataTools - Package Versioning Decorator
E Data Management	EJB Java Method Decorator
E Data Management	Enterprise Bean Annotation Decorator

 Show Key Assist (Ctrl + Shift + L): Use this to get a list of all key bindings in eclipse

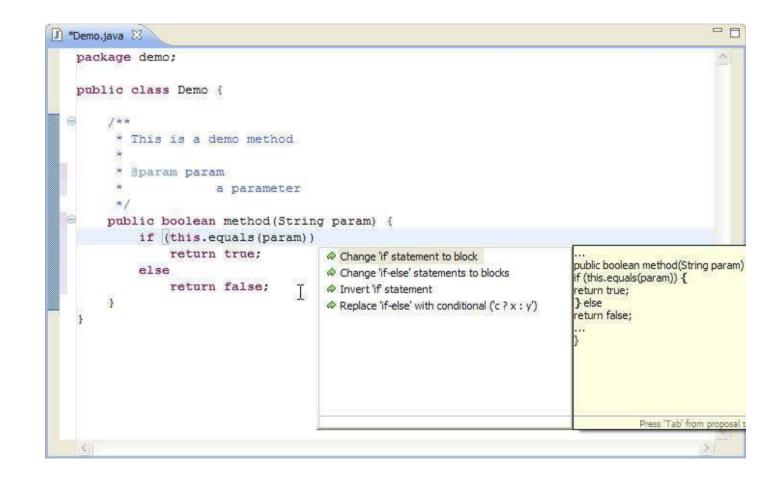
2	Activate Editor	F12	1
	Add Javadoc Comment	Alt+Shift+J	
	Administrative Script	Alt+Shift+X, N	
	All Instances	Ctrl+Shift+N	
	Backward History	Alt+Left	1
	Build All	Ctrl+B	
	Change Method Signature	Alt+Shift+C	4
	Close	Ctrl+W	
	Close All	Ctrl+Shift+W	
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	Content Assist	Ctrl+Space	
	Context Information	Ctrl+Shift+Space	
Data Source Ex	Сору	Ctrl+C	
	Cut	Ctrl+X	
	Debug Ant Build	Alt+Shift+D, Q	
State	Debug Eclipse Application	Alt+Shift+D, E	
	Debug JUnit Plug-in Test	Alt+Shift+D, P	
Stopped	Debug JUnit Test	Alt+Shift+D, T	
	Debug Java Applet	Alt+Shift+D, A	
	Debug Java Application	Alt+Shift+D, J	
	Debug Last Launched	F11	
	Debug OSGi Framework	Alt+Shift+D, O	
	Debug on Server	Alt+Shift+D, R	
	Declaration in Workspace	Ctrl+G	
	Delete	Delete	
	Display	Ctrl+Shift+D	-

 Content Assist (Ctrl + Space): Use this to provide context sensitive content completion



 Word Completion (Alt + /): Type a letter or two and then simply press Alt-/ to cycle through all words starting with those letters.

 Quick Assist (Ctrl + 1): Use this to assist you to perform local code transformations.





- Editor Templates
  - –a structured description of coding patterns that reoccur in source code.
  - –used to fill in commonly used source patterns.
  - Templates are inserted using content assist
    (Ctrl+Space).

e filter text	16	emplates					(D) = (D) = (P)
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Crystal Reports	2		Javadoc		on		
Data Management	1		A CONTRACTOR OF	<code></code>	on	-	Remove
Ecore Diagram			Javadoc Javadoc	<i></i>	on		4
Help			SWT statements	<pre></pre> add a listener to a	on		Restore Removed
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 Annotations View - Add or delete annotations, and to modify the attribute values of annotations

Reference in tasks in Properties into Serve	es 🎬 Data Source Explorer   🔄 Shippets 🕞 Annotations 🕄 💦 🧮 🗖
⊟	name: description: mappedName: Learn more about Java EE 5 annotations.



- Working Set
  - -categorize resources across

projects into a contextually relevant

representation

-sub-set of files/classes/folders/

projects that represent a certain developer workflow.

O Select Working Set	
Select a working set: Window Working Sets No Working Sets Selected Projects Selected Selected Projects Selected Projects	New Edit Remove
Select All Deselect All	OK Cancel



- Hot swapping
  - -Set build folder to <project\_name>/WebContent/WEB-INF/classes for portlets
  - -ensure that projects from the local workspace are used for deployment (for the local server when you use Run on Server)

Java Build Path
😕 Source 📴 Projects 🗎 🖹 Libraries 😽 Order
Source folders on build path:
: E-
Alow output folders for source folders
Defaul <u>t</u> output folder:
SamplePortal/PortalContent/WEB-INF/classes



# Application Deployment Best Practices



#### Use WAS Developer Profile

- WebSphere Test Environment already uses this
- WebSphere Profile designed for developers
  - -Faster startup time
  - -Faster application restart

🔞 Profile Management Tool 7.0
Profile Name and Location
Specify a profile name and directory path to contain the files for the run-time environment, such as commands, configuration files, and log files. Click <b>Browse</b> to select a different directory. Profile name:
AppSrv01
Profile directory:
D: RAD\SDPBeta\runtimes\base_v7\profiles\AppSrv01
Browse
Create the server using the development template. Select this option to create a server using configuration settings optimized for development. The development template reduces startup time and allows the server to run on less powerful hardware. Do not use this option for production servers.
Make this profile the default.
Each installation of WebSphere Application Server always has one default profile. Commands that run without referring to a specific profile use the default profile. Select this option to make this profile the new default
Important: Deleting the directory a profile is in does not completely delete the profile. Use the manageprofiles command to completely delete a profile.
The following naming rules must be used:
- Names must start and end with alphabetic characters (A-Z, a-z), numbers (0-9), and underscores (_) only.
- Names may contain alphabetic characters (A-Z, a-z), numbers (0-9), periods (.), dashes (-) and underscores (_) only.
- Names must not contain spaces or these characters: / \*, : ; = +?   <> $\%$ \* [] # \$ ^ {} ()
< Back Next > Finish Cancel



#### **Tune WAS Options**

- Be aware of different server options
- Can also run server on a different machine

Overview					
eneral Information becify the host name ar	d other common se	ettings.		Publishing     Modify settings for publishing.	
Server name:	WebSphere App	blication Server v7	.0 at localhost	Never publish automatically	
Host name:	localhost			O Automatically publish when resources change	
Runtime Environment:	WebSphere App	lication Server v7.	0.	Publishing interval (in seconds):	15
			17 C (1889)	Select enabled publishers:	
Server				Deploy J2EE Modules	
iter settings for the We	bSphere Applicatio	on Server.			
Profile name:		was70pro	file1 😽		
		000000000			
Application server name	:	server1	50		
Ipdate server status in Server connection typ	terval (in millisecon es and administrat	tive ports		▼ Timeouts Specify the time limit to complete server operations.	
Default server status in Server connection typ Automatically dete	terval (in millisecon es and administrat mine connection s onnection settings	nds): 5000 tive ports		Specify the time limit to complete server operations. Start (in seconds):	
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Jpdate server status in Server connection typ	terval (in millisecon es and administrat mine connection s onnection settings e Port 9633 2809	bive ports settings Default port 9633 2809	Recommended for local ser Designed to improve comm	Specify the time limit to complete server operations. Start (in seconds): Stop (in seconds): <b>Publishing settings for WebSphere Applicat</b>	120
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Jpdate server status in Server connection typ Automatically dete Manually provide c Connection Typ IPC RME SOAP Test Connection Enable universal tes	es and administrat mine connection s onnection settings e Port 9633 2509 8880 t client t client esting and develop workbench shutdo	bing ping pwn	Recommended for local ser Designed to improve comm	Specify the time limit to complete server operations. Start (in seconds): Stop (in seconds): Publishing settings for WebSphere Applicat Modify the publishing settings. @ Run server with resources within the workspace @ Run server with resources on Server	ion Server



#### **Server Startup Options**

- Ensure that these are selected:
  - -Run in development mode
  - -Parallel start
- Start components as needed

Integrated Solutions Console	Welcome jsp	Help   Logout
View: All tasks	Runtime Configu	
<ul> <li></li></ul>	General Propert	ties
<ul> <li>WebSphere applicatic</li> <li>WebSphere MQ serve</li> <li>Web servers</li> </ul>	Name server1 Node name	
Applications	cheyenneNode	
🗄 Services	🗹 Run in de	velopment mode
🗄 Resources	🗹 Parallel st	art
🗄 Security	Start com	ponents as needed



#### WAS basic hygiene

Restart applications instead of the server

5erver 🔺		State	Status
🛛 🔀 WebSphere	Application Server	😯 🖥 Started	Synchronized
🗏 🔓 TestEA	New	- Ted	Synchronized
🙆 Te	14699	81/j.	Synchronized
🐻 Te	Remove		Synchronized
	🔘 Start		
	📕 Stop		
	Restart		

- Remove un-needed applications like sample applications
  - -DefaultApplication
  - -IvtApp
  - -query

Integrated Solutions Console	Welcome jsp	Help   Logout	
View: All tasks	Cell=cheyenneNode03C	ell, Profile=was70profile1	Close page
• Welcome	Enterprise Applications		
🗄 Guided Activities	Enterprise Application	ns	
🗄 Servers	1	hage installed applications. A single	e application can be deployed on
Applications			
<ul> <li>New Application</li> <li>Application Types</li> <li>WebSphere enterprise</li> <li>Business-level applic</li> </ul>	Start Stop Instal	I Uninstall Update Rollout	Update Remove File Expo
Assets	Select Name 🛟		Application Status 🕻
Services	You can administer t	the following resources:	
🗄 Resources	DefaultApplica	ation	€>
🗄 Security			€
	guery		<b>e</b>
🗄 Environment			100



#### WebSphere Portal Installation

- Install the server using "Base" option
  - -Deploys a base set of portal features
  - -Allows selective enablement at any time later
  - -More efficient and speedy portal behavior



#### Server connection protocols in RAD

#### SOAP recommended for remote and local servers

-	name:	wp_p	rofile		🖌 Confi	gure profiles.
Serve	r connection t	types o	and administra	tive ports		
			e connection s	-		
⊙ Ma	nually provide	e conn	ection settings	;		
	Connection Ty	уре	Port	Default port	Description	
	RMI		10035	2809	Designed to in	
	SOAP		10025	8880	Designed to b	
						>
✓ Sec <u>u</u>	urity is enable bSphere secu	d on th	thentication:			
			1			
	Pa <u>s</u> sword:	••••	••••			
	Pa <u>s</u> sword:	•••••	••••			



#### Multiple profiles on WPv7

- Newly introduced feature in WPv7
- Allows for creating and maintaining multiple profiles to create multiple independent portal instances



#### Automatic publishing

- Use option "Never publish automatically"
- Use "Override default settings" if required to publish the changes whenever they are made but use it with care



#### Enable hot method replace in debug mode

- Enables hot replace and facilitates just-in-time compilation in debug mode.
- Speeds up the application deployment and also improves server startup time.



#### Enable developer mode

- Efficient and productive use of server
- Portlets and web applications are not activated on start-up
  - -Activated on first access
- Switches JVM heap size to
- maximum
  - -Reduces amount of garbage
    - collection during startup
- Not recommended for production environments

oblems 🙌 Servers 🛛 🔲 Propertie AJAX Test Server [Stopped]		
WebSphere Application Server v7.0 at	localhost [Stopped]	
WebSphere Application Server v8.0 B		
🖁 WebSphere Portal v7.0 Server at local	New D	
	Open	F3
	Show In	Alt+Shift+W
	📄 Сору	Ctrl+C
	📋 Paste	Ctrl+V
	💢 Delete	Delete
	Rename	F2
	🏇 Debug	Ctrl+Alt+D
	Start	Ctrl+Alt+R
	profile	
	🔲 Stop	Ctrl+Alt+S
	Publish	Ctrl+Alt+P
	Clean	
	📇 Add and Remove	
	Monitoring	
	Create Tables and Data Sour	ces
	Reconnect Debug Process	
	Site Designing Portlet	
	Enable Dev Mode	
	Disable Dev Mode	
	Restore original artifacts	
	Open Portal	
	Server Configuration Universal Test Client	
	Administration	
	Properties	Alt+Enter



#### Remote server use

- Consider using remote server if
  - -Desktop machine has less memory
- Can cause concurrency issues if multiple users are using same remote server



#### Recommended server editor settings in RAD

General		Automatic Publishing
ecify the host name	and other common settings.	Override when the server is automatically published to.
ierver name:	WebSphere Portal v6.0 Server @ localhost	O Use default publishing settings
lost name:	localhost	• Never publish automatically
luntime:	WebSphere Portal v6.0	L O Override default settings
Configuration path:	/Servers/WebSphere Portal v6.0 Server @ localhost-config Browse	Publishing interval (in seconds):
Server		▼ Publishing
ter settings for the :	server.	Modify the publishing settings.
VebSphere profile na	ame: wp_profile	• Run server with resources within the workspace
	s interval (in milliseconds): 5000	O Run server with resources on Server
-Server connection (	type and admin port	Minimize application files copied to the server
	to improve communication with the server)	
ORB bootstrap		Security
	d to be more firewall compatible)	Network Deployment
SOAP connecto	r port: 10033	
Enable hot metho	od replace in debug mode	
Enable hot metho Enable universal		
Z Enable universal (	test client	
☑ Enable universal I ☑ Optimize server fi		



# Remote Portlet (WSRP) Best Practices



#### Consider WSRP when ...

- Looking for portlet development which is faster to develop and test
- The Portlet requires huge loads for CPU and/or memory and is not really suited as a co-located application
- Portlets are owned and controlled by independent teams
  - Infrastructure and version management is not possible
  - Flexibility is key
  - Cross organisation usage would be in this category as well
- Portlet quality and level of testing does not match the quality and SLA of the overall Portal
  - Run the portlet remotely for some time to proof readiness and then move local
  - Typically called "quarantine Portal"
- If the remote connection is very chatty, or not existent
  - WSRP can consolidate a set of web services calls into a single WSRP call
  - Allows for co-location of the Portlet, if only local java api is available on remote server



DO NOT consider WSRP when ...

- Access to IBM extensions in portal is required like
  - -Portal SPIs and APIs is needed
  - -Credential vault, personalization features
  - -This can still be done when REST APis etc are used,..but typically using local Java yields higher developer productivity
- The portlets are very lightweight for example hello world, feed readers, AJAX heavy portlets
- It is not worth the admin overhead and network latency



WSRP thumb rule ...

... keep everything local until there is a reason to remote

• simply stating everything is remote, looks nice on diagrams but is not cost effective nor best practice





- Do not use instance variables
  - -Portlets like servlets are singletons
  - -Instance variables can create collisions across users and requests
- Pass data to the view (jsp) as bean in request object

   Once request is complete, data gets out of scope and is cleaned up
   Accessing bean properties is much cleaner
- Adopt good code documentation habits
- Follow JSF best practices for JSF portlets (covered in a separate section here)
- Categorize portlet state early in the design phase



### Minimize navigational state information

- -Navigational state is stored in url
- -url length has limits
- -If navigational state is larger that a specific value, it is stored in session instead of url, thus leading to a loss of bookmark ability
- The threshold can be customized in the StateManagerService.properties via the com.ibm.portal.state.keymanager.renderparameters.threshold constant.
- Internationalize portlets using resource bundles



 Declare J2EE roles in portlet applications only if absolutely necessary

-J2EE roles are separate and must not be managed by portal

- Always provide version information for portlet applications
   Declare the version in the META-INF/MANIFEST.MF using the Implementation-Version attribute
- Use P3P user profile attributes whenever possible
- Use url encoding for resources inside portlet application WAR file



- Do not spawn unmanaged threads from portlets
- Prepare portlets for parallel rendering
  - -If taking too much time, portal may cancel portlet rendering and IOException will result. Portlet should be ready to act accordingly
- Use http GET and POST correctly
  - -Render phase should provide a re-playable markup generation
  - Form submissions that change state should be handled using ActionURLs
- Use IBM extension markup property with care

-Some portals may not provide it



- Do not have same names for portlets and servlets within a web application
- Lookup portlet services in portlet init method
   –JNDI calls are quite expensive



# Portlet JSP Best Practices



#### **Portlet JSP Best Practices**

- Include only HTML fragments in portlet jsps
   Portlets contribute markup to a larger portal page
- Portlet jsp html fragments should be well-formed to avoid unbalanced pages
- Design the view to fit on a page with other portlets also
   A large portlet jsp may squeeze other portlets off the page
- Use java style comments instead of HTML
  - -Java code including comments are removed from rendered source
  - -Thus reduces document size leading to optimization of network data



#### **Portlet JSP Best Practices**

- Use portal style classes instead of specific style-oriented attributes
- Make pages fully accessible even for users with disabilities
- URIs, HTML element name attributes, and javascript resources must be namespace encoded

-Since many portlets exist on same page, avoid name collisions

- Prefer javascripts libraries like dojo to javascript
- Be careful with the usage of pop-ups



**Portlet JSP Best Practices** 

Use IFRAMES with caution

-Undermine the portlet principle by tunneling portlet apis



# Portlet Packaging Best Practices



#### **Portlet Packaging Best Practices**

- Make common functions available externally to portlets
  - -Collect common classes in a jar and place it in *PortalServer/shared/app* directory
- Group together portlets operating on same backend, into one portlet application
  - -Share configuration settings like server name etc



# Portlet Configuration Data Best Practices



#### **Portlet Configuration Data Best Practices**

Use portlet initialization parameters for storing static information

-Not meant to be changed by administrators or users

 Use read-only portlet preferences for storing configuration data

-Can only be changed by administrators in config mode

 Use writeable portlet preferences for storing customization data

-Can be changed by users in edit mode



#### **Portlet Configuration Data Best Practices**

- Write persistent data only in action phase
  - -Render phase must be re-playable to allow bookmarking and backbutton feature
- Use string arrays for preference lists



# Portlet Session Management Best Practices



### Portlet Session Management Best Practices

- Limit the use of portlet session for storing portlet state information
  - -Session management incurs cpu cycles and memory heap
  - -User specific data and data that cannot be created from any other means can be put in portlet session
- Do not rely on portlet session if the portlet is to allow anonymous access
  - -Unauthenticated user does not have a logout action, so the session does not invalidate until it times out, leading to memory overhead
- Always request an existing portlet session



### **Portlet Session Management Best Practices**

- Prevent the jsp from generating temporary sessions
   Add the JSP page directive <%@pagesession="false"%>
- Be aware of session timeouts
  - -Each portlet on a portal page may come from a different portlet application which will have different portlet session for each portlet
- Use attribute prefixing for global session scope
  - -Several entities of the same portlet on the same page may result in over-writing
  - -Provide a read-only portlet preference entry called session-prefix that the administrator can set in the config mode.



### **Portlet Session Management Best Practices**

- Use no prefixing only if the data needs to be shared among all portlet application entities of one Web application.
- Use application prefixing for sharing data among all portlet entities in one portlet application.
- Use application and config param prefixing for sharing data in a portlet application, but not between different entities of the same portlet.



# Portlet Internationalization Best Practices



#### **Portlet Internationalization Best Practices**

- All displayable portlet strings should be fetched from resource bundles
- All view JSPs should be language-independent.
- Be sensitive to cultural-specific formatting

   Use locale specific in the portlet request PortletRequest.getLocale
- Define preferences names as reference names to the resource bundle
- Define the supported locales in the deployment descriptor.



# Resource Serving Best Practices



#### **Resource Serving Best Practices**

- Parameters set on a resource URL are not render parameters

   Last only for the current serveResource request
- setCacheability method on the ResourceURL should be used to improve cache-ability of markup being returned
  - -It indicates that only parts of the overall state are needed via the cache level parameter
  - Results in an increased likelihood of a subsequent browser access being served from a browser/web cache



#### **Resource Serving Best Practices**

- Portal application is not involved in serving portlet fragments via serve resource so following are prohibited during resource serving
  - -Eventing or shared render params
  - -Setting new render params, portlet mode or window state
  - -Issuing redirects
  - -Changing application scoped session state
- Serving static resources like images, pdf, that are shared across portlet is not advisable to ensure portal can optimize caching of such resources
  - Resource url has the portlet ID encoded so link to same resource results in different urls



### Portlet Performance Best Practices



#### **Portlet Performance Best Practices**

- Do not spawn threads
  - -Since portlets are multi-threaded, spawning threads may lead to synchronization problems
- Do not use threads to access J2EE resources
  - -Some OS have limited threads in process thread pools
- Avoid synchronization methods
  - -May slow down portal
  - -May cause deadlocks
- Avoid long running loops to ensure fast portlets



#### **Portlet Performance Best Practices**

### Use JSPs instead of XML/XSLT

- -JSPs are more efficient
- -XML/XSLT apply stylesheets on every request

### Use caching as much as possible

- -For static content valid for a period of time, enable caching
- -Define default expiration time in portlet deployment descriptor



### Portlet Security Best Practices



#### **Portlet Security Best Practices**

- Use the credential vault to store sensitive data
   Enable single sign-on to avoid multiple login challenges
- Appropriately handle data which is passed to the client
   Consider encryption and securing sensitive information
- Enable single sign-on as appropriate



### Portlet Documentation Best Practices



#### **Portlet Documentation Best Practices**

- Document all context parameters and configuration parameters
  - -Under portal administration, they are prone to editing and deletion
- Document how the portlet uses caching
  - -Allows for portlet caching optimization
- Document portlet session requirements
  - -If a valid session is required for portlet, instruct administrator not to place it on an anonymous page



### JSF Portlets Best Practices



### Hosted on the public wiki

• Get access to the latest doc on our public wiki here

http://www.ibm.com/developerworks/wikis/download/attachments/115999431/JS F\_Portlet\_Development\_Tips\_and\_Suggestions.pdf?version=1



#### **Useful Links**

- RAD v8 Infocenter
  - http://publib.boulder.ibm.com/infocenter/radhelp/v8/index.jsp
- WebSphere Portal Infocenter links
  - http://www.ibm.com/developerworks/websphere/zones/portal/proddoc/ index.html
- RAD Portal Tools Wiki
  - https://www.ibm.com/developerworks/wikis/display/rad/Portal+tools
- RAD Wiki
  - https://www.ibm.com/developerworks/wikis/display/rad/Home
- RAD Performance Tips
  - https://www.ibm.com/developerworks/wikis/download/attachments/113607155/radtipsv754.p
     df
- Binary Modules
  - http://www.ibm.com/developerworks/rational/library/07/0619\_karasiuk\_sholl/



# Thank You