





JavaServer Faces

A new face on application development in Java



Brought to you by...

- Intermountain Health Care
 - IHC is a nonprofit organization driven by a mission of excellence and the pursuit of ever-higher standards of quality. As a Salt Lake City-based nonprofit organization with no investors, our commitment is to provide clinical excellence, quality and innovation rather than stockholder profit.
 - IHC consistently ranks as the nation's top integrated health system, gleaming this honor for four consecutive years. Integration means that doctors, hospitals, and health plans work together in a coordinated manner for the benefit of the patient.
- Thomas A. Valletta
- The letter "J"
- The number "8"



What is JSF?

- A set of APIs for
 - representing UI components
 - managing their state
 - handling events
 - input validation
 - defining page navigation
 - supporting internationalization and accessibility.
- A JavaServer Pages (JSP) custom tag library for expressing a JavaServer Faces interface within a JSP page.




Outline

1. JavaServer Faces Solutions
 - a. UI components
 - b. State management
 - c. Event handling
 - d. Input validation
 - e. Page navigation
 - f. Internationalization and accessibility.
 - g. Custom tag library
2. JavaServer Faces Gotchas
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 - d. Validation
 - e. Bundle Keys "x.y.z"
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 - a. Technical Support
 - b. Tool Support
 - c. Political Support



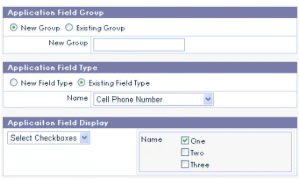
JSF Solutions

- UI components
- State management
- Event handling
- Input validation
- Page navigation
- Internationalization and accessibility.
- Custom tag library



UI Components (Standard)

Some of the standard JavaServer Faces Components



The screenshot shows three distinct JSF UI components. The first is an 'Application Field Group' with radio buttons for 'New Group' and 'Existing Group', and a text input field. The second is an 'Application Field Type' with radio buttons for 'New Field Type' and 'Existing Field Type', and a dropdown menu currently showing 'Cell Phone Number'. The third is an 'Application Field Display' with a 'Select Checkboxes' dropdown and three radio buttons labeled 'One', 'Two', and 'Three'.



UI Components (Custom)

Some custom JavaServer Faces Components

JSF Messages:

Application Map:

weblogic.servlet.WebAppComponentMBean	com.sun.faces.renderkit.RenderKitImpl
com.sun.faces.html_BASIC	com.sun.faces.renderkit.RenderKitImpl
weblogic.servlet.WebAppComponentRuntimeMBean	com.sun.faces.renderkit.RenderKitImpl
com.sun.faces.ApplicationAssociate	com.sun.faces.renderkit.RenderKitImpl
javax.faces.context.TempDir	com.sun.faces.renderkit.RenderKitImpl
com.sun.faces.OneTimeInitialization	com.sun.faces.renderkit.RenderKitImpl
com.sun.faces.OneTimeInitialization	com.sun.faces.renderkit.RenderKitImpl
dss_notify	com.ibm.java.accessweb.ui.dss.NotificationMgr
javax.faces.request.charset	UTF-8
AdminApplication.jsp	javax.faces.component.UIViewRoot@19e002
admin_notify	com.ibm.java.accessweb.ui.admin.NotificationMgr



UI Components (Open Source)

Some open source JavaServer Faces Components

4 - 6 of 7

ID	First Name	Family Name
4	Hans	Mueller
5	Amadeus	Mozart
6	Harry	Potter

- My Myself
- My Father
- Grand Father
- Dad's Mother
- My Mother

February 2004

Mon	Tue	Wed	Thu	Fri	Sat	Sun
29	30	1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		



UI Components (Third Party)

Some third-party JavaServer Faces Components

Product Name that

Processing: Baking the cake.

QuickTime™

Visited Step1 Visited Step2 Visited Step3 Active Step4 Next Step5 Next Step6



UI Components (Code)

Syntax for a text box component:

```
<h:inputText />
```

Syntax for a calendar component:

```
<v:calendar />
```

Syntax for a bean backed calendar component:

```
<v:calendar value="#{bean.date}" />
```



State Management

- JSF maintains the state of components over several requests.

- Example 1
- Example 2

- Code:
 - None Required



Event Handling

- Method Bindings


```
<h:outputText value="#{bundle.welcome}"
rendered="#{bean.showWelcome}" />
```
- Value Change Listeners


```
<h:selectOneMenu value="#{bean.type}"
onChange="submit()" immediate="true"
valueChangeListener="#{bean.change}">
<f:selectItems value="#{bean.types}" />
</h:selectOneMenu>
```
- Command Actions


```
<h:commandButton action="#{bean.submit}" />
```
- Action Listeners


```
<h:commandButton actionListener="#{bean.listen}"
action="#{bean.submit}" />
```



Input Validation

- Standard Validators
 - `<h:inputText id="card" value="#{bean.card}" required="true">`
`<f:validateLength minimum="13"/>`
`</h:inputText>`
 - `f:validateDoubleRange`
 - `f:validateLongRange`
 - `f:validateLength`
- Custom Validators



Input Validation - Errors

- Validation Errors
 - `<h:message for="card"/>`
 - `<h:messages/>`



Input Validation - Converters

- Standard Converters
 - `<h:inputText value="bean.date">`
`<f:convertDateTime pattern="MM/dd/yyyy"/>`
`</h:inputText>`
 - `f:convertNumber`
 - `f:convertDateTime`
- Custom Converters
 - `<h:inputText value="bean.user" converter="com.ihc.custom">`



Page Navigation

- Struts-like config file navigation


```
<navigation-rule>
  <from-view-id>/index.jsp</from-view-id>
  <navigation-case>
    <from-outcome>Success</from-outcome>
    <to-view-id>/thankyou.jsp</to-view-id>
  </navigation-case>
  <navigation-case>
    <from-outcome>Error</from-outcome>
    <to-view-id>/error.jsp</to-view-id>
  </navigation-case>
</navigation-rule>
```



Internationalization and accessibility

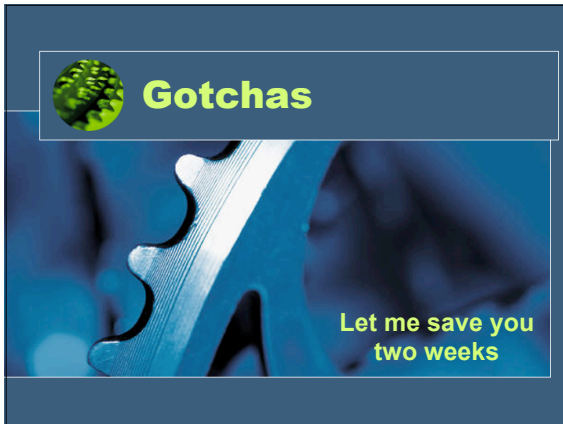
- Components and Converters support multiple locales
- Resource Bundle Support
 - `<f:loadBundle basename="resources" var="res"/>`
 - Define supported locales


```
<application>
  <message-bundle>resources</message-bundle>
  <locale-config>
    <default-locale>en</default-locale>
    <supported-locale>fr</supported-locale>
    <supported-locale>es</supported-locale>
  </locale-config>
</application>
```



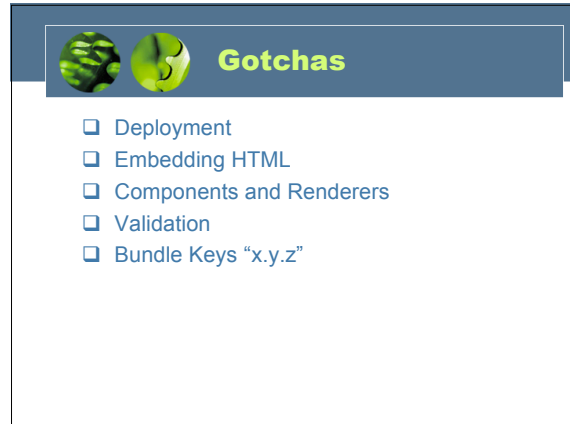
Custom tag library

- You have already seen it
 - `html-basic.tld <h: .../>`
 - `jsf-core.tld <f: .../>`



Gotchas

Let me save you two weeks



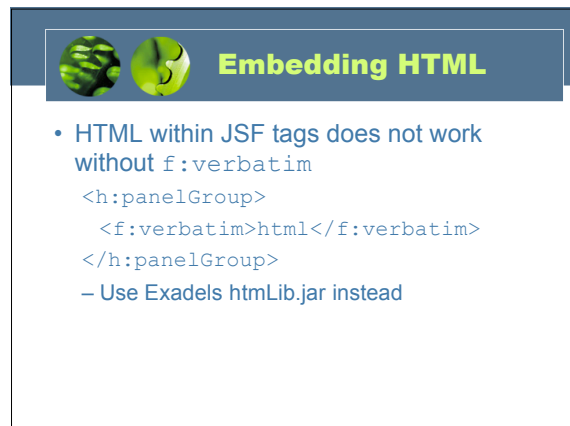
Gotchas

- Deployment
- Embedding HTML
- Components and Renderers
- Validation
- Bundle Keys "x.y.z"



Deployment

- BEA WebLogic Server 8.1 SP3
- The JavaServer Faces required jars
 - commons-beanutils.jar
 - commons-collections.jar
 - commons-digester.jar
 - commons-logging.jar
 - jsf-api.jar
 - jsf-impl.jar
 - jstl.jar (must be version 1.0)
 - standard.jar (must be version 1.0)



Embedding HTML

- HTML within JSF tags does not work without `f:verbatim`

```
<h:panelGroup>
  <f:verbatim>html</f:verbatim>
</h:panelGroup>
```

 - Use Exadels `htmlLib.jar` instead



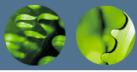
Components and Renderers

- Building custom components
 - No simple task
 - Separate the renderer (easy to do)



Validation

- If validation or conversion fails nothing happens
 - Action method bindings do not execute
 - Page just comes back
 - Most common JSF forum post
 - Use `h:message` or `h:messages`



Bundle Keys “x.y.z”

- Resource Bundles are loaded as maps
 - `{bundle.userslastname}` – works
 - `{bundle.user.name.last}` – fails
 - `{bundle['user.name.last']}` – works
- For properties:
 - `{bean.user.address.street}` – works



Example



Support



Support

- Technical Support
- Tool Support
- Political Support



Technical Support

- Google
<http://www.google.com>
- Sun Official JavaServer Faces Forum
<http://forum.java.sun.com/forum.jspa?forumID=427>
- See recommended reading (Starting with slide 31)



Tool Support

- Most IDEs have limited JSF support

Eclipse*	IntelliJ*	JBuilder	Netbeans*
IBM WSAD	Studio Creator	JDeveloper	Notepad**

- The following IDEs provide the ability to drag and drop components onto a page:
 - IBM WSAD
 - Borland JBuilder
 - Oracle JDeveloper
 - Sun Java Studio Creator

* Requires a free plugin
** Just kidding



Political Support

- Sun
- Oracle
- IBM
- ...and a bunch of little people but after those three it really doesn't matter



Recommended Reading



(the end)



Books

Books I can recommend:

- **Core JavaServer Faces**
by David Geary, Cay Horstmann
- **JavaServer Faces in Action**
by Kito D. Mann

Other books

- **JavaServer Faces**
by Hans Bergsten
- **Mastering JavaServer Faces**
by Bill Dudley, Jonathan Lehr, Bill Willis, LeRoy Mattingly
- **JavaServer Faces Programming**
by Budi Kurniawan
- **JavaServer Faces Kick Start (Kick Start)**
by James Turner, Craig McClanahan, Kunal Mittal



Sites

- Sun Official JavaServer Faces Page
<http://java.sun.com/j2ee/javaserverfaces>
- Sun Official JavaServer Faces Forum
<http://forum.java.sun.com/forum.jspa?forumID=427>
- Java Community Process JavaServer Faces Page
<http://www.jcp.org/en/jsr/detail?id=127>
- Sun Official JavaServer Faces implementation project
<https://jaserverfaces.dev.java.net/>
- Components and resources
 - <http://www.jsfcentral.com/>
 - <http://www.jamesholmes.com/JavaServerFaces/>