Betting Big on JavaServer Faces: Components, Tools, and Tricks

Steve Muench
Consulting Product Manager, JDeveloper/ADF Development Team
Oracle Corporation
Oracle's Betting Big on JSF…

► Standards
► Tools
► Components
► Frameworks
► Web Application Generators
► Community
► Enterprise Applications
Oracle's Betting Big on JSF…

▼Standards
- Key Member of JSF Expert Group
- Significant Experience in AJAX-Enabled Components

►Tools
►Components
►Frameworks
►Web Application Generators
►Community
►Enterprise Applications
Standard Component Model for Desktop Development

- J2SE Provides the Swing JComponent
- Swing Components:
  - Have Properties and Events
  - Can Contain Other Components
  - Predictable Rendering & Event-Handling Lifecycle
- Rich Library of UI Components
- Numerous Java IDE's Offer Tool Support
- Third Party Component Libraries
private void Button1_actionPerformed(ActionEvent e) {
    JLabel.setText(TextField1.getText());
}
Web Development Before JSF (Circa 2004)

= Component-Based, WYSIWYG Design

Scripting

L.A.M.P

.NET

Java (J2EE)

ADF

WebWork

Spring +

Tapestry

Struts

UIX
```csharp
using System.Configuration;
using System.Web;
using System.Web.UI;
using System.Web.UI.WebControls;
using System.Web.UI.WebControls.WebParts;
using System.Web.UI.HtmlControls;

public partial class Default_aspx
{
    void Button1_Click(object sender, EventArgs e)
    {
        Label1.Text = TextBox1.Text;
    }
}
```
<form id="form1" runat="server">
  <div>
    <asp:label ID="Label1" Runat="server" Text="Label"></asp:label>
    <asp:TextBox ID="TextBox1" Runat="server"></asp:TextBox>
    <asp:Button ID="Button1" Runat="server" Text="Button" OnClick="Button1_Click"/>
  </div>
</form>
JavaServer Faces: Net .Net

• Allows J2EE to Rival/Beat ASP.Net in Productivity

• With Many Choices for:
  • Hardware Platform
  • Operating System
  • Tools
  • Components
  • Application Server
JSF HTML JSP Tag Library

- Simple Components
  - Link, Button, Input Fields, Output Text, Select Lists, Radio Groups, Error Messages, etc.

- Composite Components
  - DataTable

- Layout Panels
  - Group & Arrange Contained Components
Demonstration

Simple Example of Using JSF UI Components
JavaServer Faces (JSF) JSR-127

- Standard Thin Client Development Framework
  - Components with Properties and Events
  - Validators
  - Model-Layer Integration
  - Page Navigation
- Designed To Be Leveraged By Tools
- Many Component Libraries Already Available
## JSF vs. Traditional JSP

<table>
<thead>
<tr>
<th>Developer</th>
<th>JSP</th>
<th>JSF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Events</td>
<td>Lower Level</td>
<td>Ease of Development</td>
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<tr>
<td>Events</td>
<td>Http Requests</td>
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<td>UI</td>
<td>Markup</td>
<td>UI Components</td>
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<tr>
<td>Product</td>
<td>Pages</td>
<td>Applications</td>
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</table>
Oracle's Betting Big on JSF...

▶ Standards
▶ Tools
  • Comprehensive IDE Support for JSF
  • Visual Studio 2005 Enterprise Features, J2EE-Based
▶ Components
▶ Frameworks
▶ Web Application Generators
▶ Community
▶ Enterprise Applications
JSF EL & Managed Beans

• Expression Language Connects UI Components
  • To Model Properties for Data…

    <h:inputText id="lastName"
        required="true"
        value="#{customer.lastName}"/>

  • To Web-Tier Application Object Methods for Handling Events…

    <h:commandButton id="save"
        value="Save Changes"
        action="#{customerHandler.saveAll}"/>

• Declaratively Configure Beans to Use
  • Managed Beans and Properties
JSF Components Can…

- Write values back to the model
- Deliver strongly-typed events to Event Handlers
- Automatically maintain UI state
- Validate user input
- Provide outcomes that drive page-flow
DEMONSTRATION

Backer Bean for a Page:
- Defining Typed Properties
- Handling an Action
- "Wiring" Components to Properties
Page Flow / Navigation Rules

• Component Events Can Trigger Action Methods
  
  `<h:commandButton
      value="Press Me"
      action="#{handler.handlePress}"/>

• Action Methods Return a String Result

• faces-config.xml Can Contain Navigation Rules
  
  `<navigation-rule>
    <from-view-id>page1.jsp</from-view-id>
    <navigation-case>
      <from-action>${handler.handlePress}</from-action>
      <from-outcome>case1</from-outcome>
      <to-view-id>page2.jsp</to-view-id>
    </navigation-case>
  </navigation-rule>

• String Outcome of Action Method Causes Navigation
  • Default Return value of null means “Stay on the Same Page”
DEMONSTRATION

Simple Page Navigation Example
Oracle's Betting Big on JSF…

- Standards
- Tools
- Components
  - Enterprise-Ready Library of Nearly 100 Controls
  - Sophisticated Skins and Multi-Device Support
- Frameworks
- Web Application Generators
- Community
- Enterprise Applications
Spec Allows Freedom to Innovate

• JSF Provides the Basic Extensibility Points
• And Supplies an Implementation of the Basics
• Vendors are Already Doing Extremely Interesting Things with Their JSF Component Libraries
• Look for Third-Party Libraries of:
  • UI Components
  • Render Kits
  • Validators
ADF Faces for JSF

- JavaServer Faces (JSR-127) Components
- Support Web Browsers, Mobile Devices
- Rich Components, Layouts, and Render Kits (± 100 Components)
- Powerful Runtime Features
  - Partial Page Rendering, Accessibility Support, Look and Feel "Skinning"
DEMONSTRATION

AJAX-Style Partial Page Rendering
DEMONSTRATION

ADF Faces in the SRDemo Sample App

- Tree, Train, Shuttle, Inline Tabs
- Inline Tabs
- Dialog Windows (LOV)
- Skins
Multi-client development
DEMONSTRATION

ADF Faces for
Telnet and PDA Devices
ADF Faces on Telnet Device
ADF Faces on Telnet Device

Telnet 127.0.0.1

Parts Demo - Main Menu

<List Parts>
<Reserve Parts>
<Parts Inventory>
ADF Faces on Telnet Device

Part Number: [Field]
Description: [Field]
Warehouse: [Field]
Available Qty: [Field]
Qty Required: [Field]
<Reserve Now>
<Main Menu>
ADF Faces on Telnet Device

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Part Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>101</td>
<td>Ink Cartridge</td>
<td>For Xerox F233 Printer</td>
</tr>
<tr>
<td>102</td>
<td>Paper Roller</td>
<td>Paper Roller rolls paper out of printer</td>
</tr>
<tr>
<td>203</td>
<td>Paper Feeder</td>
<td>Feeds paper into printer</td>
</tr>
<tr>
<td>204</td>
<td>Front Cover</td>
<td>Covers the front of the printer</td>
</tr>
<tr>
<td>305</td>
<td>Scan Head</td>
<td>Scans documents for the copier</td>
</tr>
<tr>
<td>Part Number</td>
<td>203</td>
<td></td>
</tr>
<tr>
<td>-------------</td>
<td>-----</td>
<td></td>
</tr>
<tr>
<td>Description</td>
<td>Paper Feeder</td>
<td></td>
</tr>
<tr>
<td>Warehouse</td>
<td>[Field]</td>
<td></td>
</tr>
<tr>
<td>Available Qty:</td>
<td>[Field]</td>
<td></td>
</tr>
<tr>
<td>Qty Required</td>
<td>[Field]</td>
<td></td>
</tr>
</tbody>
</table>

<Reserve Now>
/Main Menu/>
ADF Faces on Telnet Device

Pick one of the matching warehouses.

<table>
<thead>
<tr>
<th>Warehouse Id</th>
<th>Warehouse Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>504</td>
<td>Palo Alto</td>
</tr>
<tr>
<td>502</td>
<td>San Francisco</td>
</tr>
<tr>
<td>505</td>
<td>San Jose</td>
</tr>
</tbody>
</table>

<Select>
<table>
<thead>
<tr>
<th>Part Number</th>
<th>203</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td>Paper Feeder</td>
</tr>
<tr>
<td>Warehouse</td>
<td>San Francisco</td>
</tr>
<tr>
<td>Available Qty</td>
<td>21</td>
</tr>
<tr>
<td>Qty Required</td>
<td>200</td>
</tr>
</tbody>
</table>

<Reserve Now>
<Main Menu>
ADF Faces on Telnet Device

Parts Demo - Main Menu

<List Parts>
<ReserveParts>
<Parts Inventory>

Reservation of 200 units of 203 made at San Francisco warehouse.
ADF Faces on Palm Pilot
ADF Faces on Palm Pilot

Part Demo
Reserve Parts

- Part Number: 102
- Description: Paper Roller
- Warehouse: 
- Available Qty: 
- Qty Required: 

Find

Reserve Now
ADF Faces on Palm Pilot

---

**Parts Demo**

Choose Warehouse

*Pick a matching Warehouse and press select* - Pick one of the matching warehouses.

<table>
<thead>
<tr>
<th>Select</th>
<th>Warehouse Id</th>
<th>Warehouse Location</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>504</td>
<td>Palo Alto</td>
</tr>
<tr>
<td></td>
<td>503</td>
<td>Redwood City</td>
</tr>
<tr>
<td></td>
<td>502</td>
<td>San Francisco</td>
</tr>
</tbody>
</table>

---

**Main Menu**
- List Parts
- Locate/Reserve Parts
- Parts Inventory

---

Full Size

1:00p
ADF Faces on Palm Pilot
ADF Faces on Palm Pilot

Information
- Reservation of 200 units of 102 made at San Francisco warehouse.

Parts Demo
Main Menu
List Parts
Locate/Reserve Parts
Parts Inventory

http://127.0.0.1:888
Oracle's Betting Big on JSF…

► Standards
► Tools
► Components
▼ Frameworks
  • Make Common Coding Tasks Declarative
  • Productivity for J2EE Gurus & Enterprise 4GL Dev's
► Web Application Generators
► Community
► Enterprise Applications
Typical JSF Application

- Backing Bean
  - Page-Specific Logic
- App Logic Beans
  - App-Wide Logic
  - Service Delegates
- Phase Listener
  - Prepare Data for Presentation
- EL Expressions
  - The "Glue"
JSR 227: Bindings & Data Controls

UI Control

€ 5008,00

Data Control

yourDC

Control Binding

salary

Model Layer

employeesIter

Iterator Binding

Business Service

Model Layer
Overview of Oracle ADF

- Swing
- ADF Swing
- ADF Faces
- JSF
- JSP
- Struts
- ADF Controller
- ADF Model
- XML
- Web Services
- EJB + TopLink
- ADF Business Components
- JavaBeans
- Oracle JDeveloper 10g
- Web Services
- EJB + TopLink
- ADF Business Components
- JavaBeans
Declarative, Visual Development of Data-Bound Pages
DEMONSTRATION

Creating a Declarative Master / Detail Search Page Using ADF and JSF
Oracle ADF Benefits for JSF

- Additional Design Time Productivity
  - Drag and Drop Data Binding
- ADF Business Components
  - Simplifies Building Business Services for Forms/4GL Developers
- Support Multiple Data Sources
  - JavaBean, EJB+TopLink, Web Services, XML/CSV from URL, ADF Business Components
- Current Selection Handling
  - Simplifies master-detail & “drill-down” scenarios
- Declarative Method Invocation
  - Call Any Service Methods, EL-valued Arguments
Oracle ADF Benefits for JSF

• Sorting
  • Makes it Declarative

• Centralized, Reusable UI Hints
  • Prompts, Tooltips, Format Masks

• Declarative Security
  • JAAS-Based Authorization Can Drive the UI

• Declarative Control Over Lifecycle
  • Refresh & RefreshCondition on Iterator, Action

• Centralized, Reusable Validation
  • Error messages in translatable resource bundles
Oracle's Betting Big on JSF…

- Standards
- Tools
- Components
- Frameworks
- Web Application Generators
  - Automatically Generate JSF Pages for ADF Modules
  - Iteratively Refine Declarative Application Definition
- Community
- Enterprise Applications
JHeadstart Application Generator

- JDeveloper 10g Extension
  - Additional Editors for Defining Application Structure Declaratively
- Generates Complete Web Tier for ADF App Modules with:
  - Quick- and Advanced Search Regions, Single- & Multi-row Editing
  - Scrollable Tables with Nested/Overflow Areas
  - Dropdown Lists and Pop-Up LOV's with Validation like Forms
  - Shuttle pickers, Tree controls, Role-based Authorization, and More
- Generates JSF Pages and Declarative Artifacts
  - Not Java Code!
- Migrate Oracle Designer-Created Forms to ADF
- Available From, Supported By Oracle Consulting
DEMONSTRATION

JHeadstart 10.1.3
Application Generator
Oracle's Betting Big on JSF…

➤ Standards
➤ Tools
➤ Components
➤ Frameworks
➤ Web Application Generators
➤ Community
  • Free Enterprise IDE, Open Source Components
  • Source Available for Productivity Frameworks
➤ Enterprise Applications
Oracle JDeveloper 10g Release 3 (10.1.3):
Feature Matrix by Download

This document is intended as a tool to help you determine which JDeveloper download is right for you. Different developers have different needs, so we’ve created separate downloads of JDeveloper to allow you to get just the features you want. This is by no means an exhaustive feature list; instead it provides an overview of the types of features you can expect to find in each download.

Furthermore, each download edition is available with or without a J2SE 5.0 JDK for Windows platforms. If you already have a J2SE 5.0 JDK installed on your machine (or if you are using an operating system other than Windows) you can download one of the smaller, “base” versions from the download page.

<table>
<thead>
<tr>
<th>Feature</th>
<th>Java Download</th>
<th>J2EE Download</th>
<th>Studio Download</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extensible core IDE components</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(windowing environment, menu system, navigators, etc.)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Extension SDK (sample extensions, javadoc, documentation for extending JDeveloper)</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Java coding tools (refactoring, code navigation, editor features, class editor, etc.)</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Java compiler/runner/debugger with J2SE 5.0 support</td>
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<tr>
<td>Source control (CVS)</td>
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<td></td>
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<tr>
<td>Other Source Control Systems (ClearCase, Perforce, Dimensions)</td>
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<td>Studio Download</td>
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<tr>
<td>------------------------------------------------------------------------</td>
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<tr>
<td>Extensible core IDE components (windowing environment, menu system, navigators, etc.)</td>
<td>✗</td>
<td>✗</td>
<td>✗</td>
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<td>Other Source Control Systems (ClearCase, Perforce, Dimensions)</td>
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<td>Ant support</td>
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<td>JUnit support</td>
<td>✗</td>
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<td>✗</td>
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<td>Java tuning tools (profilers, audit/metrics, CodeCoach)</td>
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<td>✗</td>
<td>✗</td>
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<tr>
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<td>JSF and Struts development tools (visual page flow designers, Expression Language editor, etc.)</td>
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<td>✗</td>
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<tr>
<td>Struts source and javadoc documentation</td>
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<td>J2EE 1.3/1.4 development and deployment tools</td>
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<td>EJB 3.0 support</td>
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<tr>
<td>TopLink visual mapping tool</td>
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<tr>
<td>Web services development tools (creation and deployment wizards, TCP Packet Monitor, WS-I BP tester, etc.)</td>
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<tr>
<td>Database development (online/offline schema editing and design, SQL and PL/SQL support)</td>
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<tr>
<td>Visual modelers (Java Class, EJB, Database, Web services)</td>
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<tr>
<td>UML modelers (Java Class, Activity, Use Case, Sequence)</td>
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<td>ADF Faces components</td>
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<td>ADF Swing</td>
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<td>ADF Business Components (ADF BC)</td>
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<td>ADF Model (drag and drop data binding, data controls)</td>
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<td>Visual Modeler for ADF BC</td>
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<td>Wireless development tools</td>
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<tr>
<td>ADF Sample Application</td>
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Welcome to the Apache MyFaces Project

This is the official homepage of the first free open source Java Server Faces implementation called "Apache MyFaces".

What is Java Server Faces (JSF)?

Java Server Faces is a new and upcoming web application framework that accomplishes the MVC paradigm. It is comparable to the well-known Struts Framework but has features and concepts that are beyond those of Struts - especially the component orientation.

Look at Sun's JSF Page to learn more about the Java Specification Request 127 and to download the specification. You can also find a useful Tutorial there!

Quickstart

- Make sure to have a look at our examples - you can find a working distribution here.
- Find instructions on installing them yourselves in our "Getting Started" section. If you can't find information you need on these pages, make sure you also go to our Wiki.

ADF Faces

ADF Faces refers to an open source code donation contributed by Oracle. The actual components are now licensed under the ASF license and can be used by the public. You can download the source for the components here. Please be aware that these components are subject to change (especially package and tag name changes) as the donation works its way through the incubation process and eventually merges with MyFaces.

ADF Faces comes with very high quality components, a dialog framework, as well as personalization and skinning capabilities. ADF Faces features include: file upload support, client-side validation, partial rendering of a page (AJAX-style), data tables, hierarchical tables, color/date pickers, progress indicators, menu tabs/buttons, wizards, internationalization and accessibility. A complete list of the ADF Faces components is available (here.) This project starts with more than 100 components which have already been documented and thoroughly tested.

ADF Faces is a temporary name for this project; what it will be called in the future is yet to be determined by the Apache
Demonstration

Using ADF with Off the Shelf JSF AJAX Components
Oracle's Betting Big on JSF…

- Standards
- Components
- Tools
- Frameworks
- Web Application Generators
- Community
- Enterprise Applications
  - 4000+ Internal Developers Building EBusiness Suite
  - Next-Generation Oracle Fusion Apps are JSF-Based
ADF Faces “Rich Client”

- Automatically Leverage Additional “Ajax” Techniques
- JSF components with live updates in the Browser
- Popup menus, Drag & Drop, Trees, Splitters etc…
Demonstration

ADF Faces 11g
Sneak Preview

ADF Faces
Rich Client
JSF-Aware Tools

- Complete Tools Including Visual Editors
  - Oracle JDeveloper 10g 10.1.3
  - Sun Java Studio Creator
  - IBM WebSphere Application Developer 5.1.2
  - BEA Nitrox (Formerly from M7)
- Code-Focused Support
  - Borland JBuilder 2005
  - For Eclipse
    - MyEclipse
    - JSF Console by James Holmes
    - Exadel JSF Studio (Eclipse Addin)
    - Web Tools Project (Eventually…)
Recent JSF Books Authored by Oracle Staff
Summary: Oracle's Betting Big on JSF…

▼ Standards
  • Continued Strong Participation in JSF and Other J2EE Standards

▼ Tools
  • Free JDeveloper 10.1.3 on OTN (Java, J2EE, and Studio Editions)

▼ Components
  • Get ADF Faces with JDeveloper 10.1.3 on OTN (or from myfaces.apache.org)

▼ Frameworks
  • ADF Runtime is Free with Oracle App Server (Source Code Available)

▼ Web Application Generators
  • Iteratively Generate Web Tier Using Higher-Level App Definition

▼ Community
  • http://otn.oracle.com (blogs, articles, software, discussion forum)

▼ Enterprise Applications
  • Oracle Fusion Apps Use JSF + ADF Tech Stack (ADFM, ADFBC, ADF Faces)
Oracle ADF Learning Center

The Oracle Application Development Framework (Oracle ADF) is an end-to-end JEE framework that simplifies development by providing out of the box infrastructure services and a visual and declarative development experience.

This page contains resources to help you learn Oracle ADF. It is broken into two sections using a different approach to business service development. One is using Oracle ADF Business Components, and the other uses Oracle TopLink and EJBs.

4GL and Fusion Applications Developers

Developers who have a 4GL tool background (such as Oracle Forms, Powerbuilder, Visual Studio, PeopleTools and SiebelTools) and are familiar with relational database concepts, SQL and declarative development, will find this technology stack the most productive. The technology stack used here is JSF, ADF Faces, ADF Model, ADF Business Components.

Experienced Java Developers

Developers with an Object Oriented background who have experience developing Java applications - either using a POJO or an EJB approach - will find this technology stack more appropriate. The technology stack used here is JSF, ADF Faces, ADF Model, EJB3.1, TopLink.

Short Online Demo
Step-by-Step Tutorial
Developer Guide Book (PDF) HTML
Sample Application