

The Heart of Your Application: Oracle ADF Core Technologies

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Agenda

- ADF overview
- The core technologies

Mon

12:30 - Oracle WebLogic
Server Application Security:
Implementing the Superstition
(copresented with Duncan Mills)

5:00 - Oracle ADF On-Ramp: What
You Need to Know

Thurs

12:00 - Achieving the Perfect
Layout with Oracle ADF
Faces Rich Client



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Second Law of Serendipity

If you wish to make an improved product, you must already be engaged in making an inferior one.

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Oracle Application Development Framework (ADF)

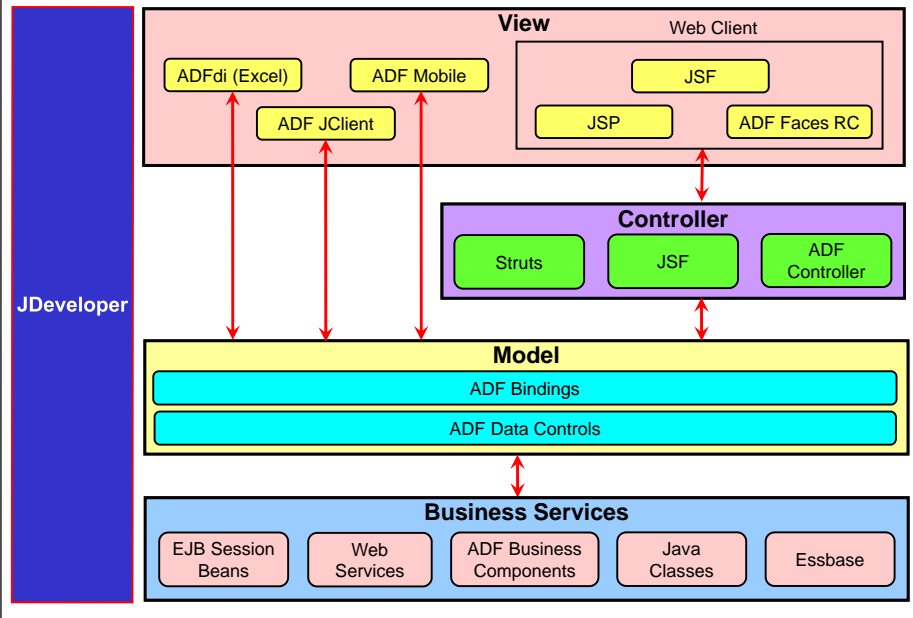
- A *framework* is a prebuilt service for solving a particular problem – like access to the database
 - Code libraries and standards support the framework
 - Implements code reuse and best practices
 - An architecture with code libraries
- ADF is a *meta-framework*
 - A wrapper for other frameworks
 - Available starting in JDeveloper 10g
 - Provides a consistent developer experience
- Pre-ADF available in OAF
 - Oracle Application Framework (UIX/MVC)
- Based on Model-View-Controller Java EE design pattern



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ADF Architecture



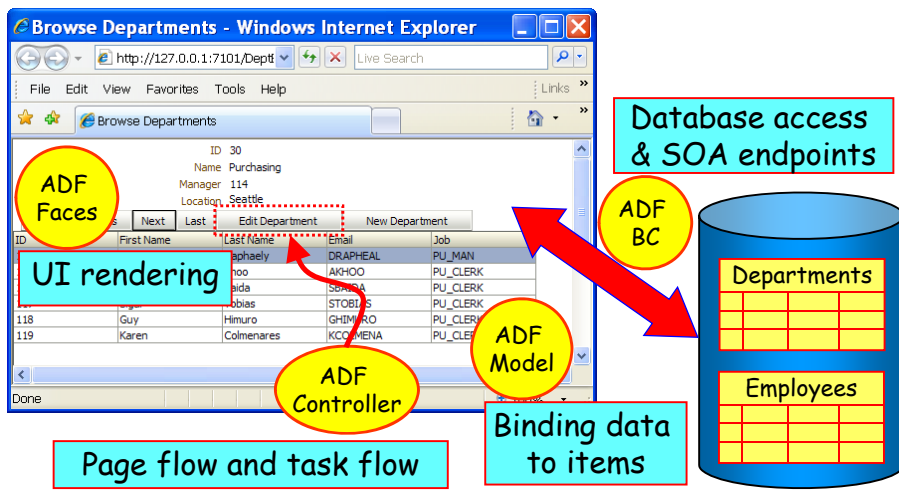
Which ADF Technologies to Use?

- Core technology stack used to create Fusion Applications is:
 - ADF Business Components
 - ADF Faces Rich Client
 - ADF Model
 - ADF Controller
- Other high-level technologies or strategies also used
 - SOA, ESB, Business Rules, WebCenter, BPM, BPA, BAM
 - Need to consider those, too, at the architectural level

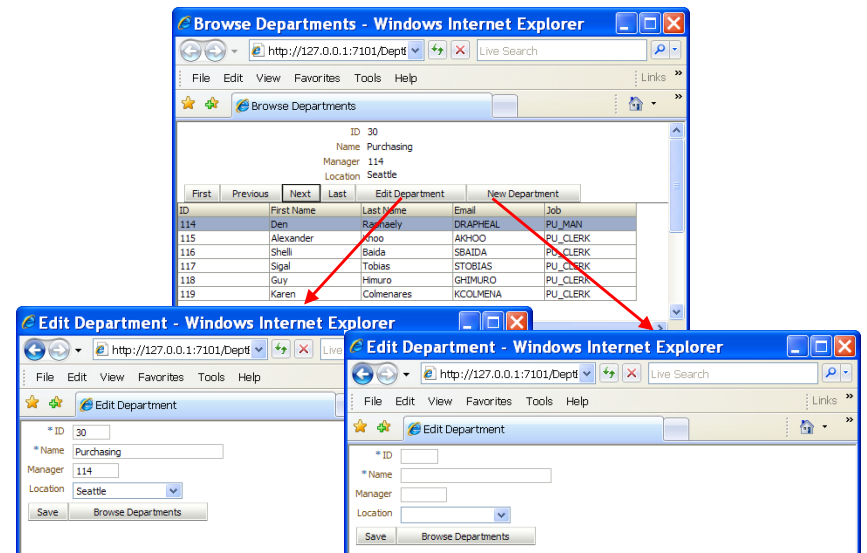
but OOS



Where Do The Fusion Technologies End Up?



Sample Page Flow



Agenda

- ADF overview

- ADF core technologies

ADF BC

ADF Faces

ADF Model

ADF Controller



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ADF Business Components

- ADF BC: an option in the Business Services layer of ADF
- Persistence: storing data in a database
- O/R mapping: Translates relational database things to object-oriented (Java) whatsits
- Handles JDBC mechanics
 - Creates SQL and handles results
- Primarily declarative
 - XML source code to define the use of framework classes



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More About ADF BC

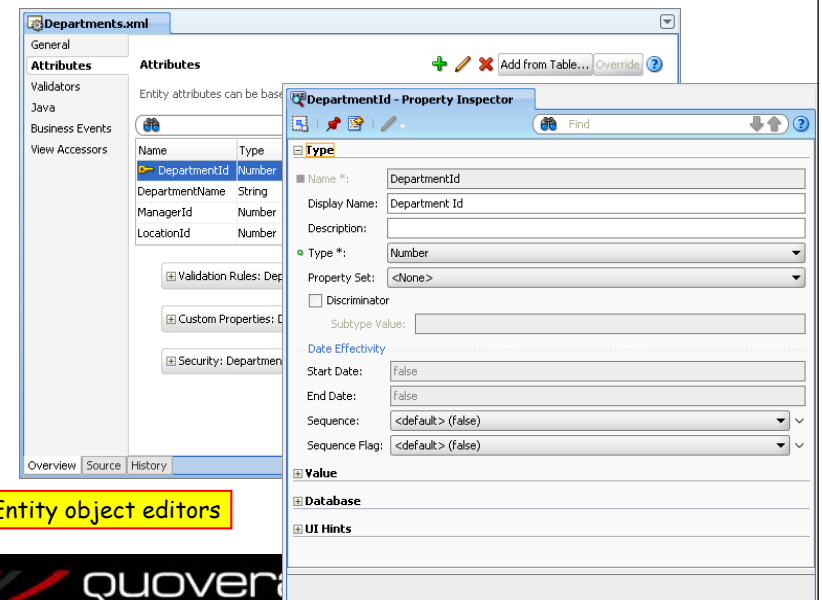
- Various component types
 - View objects: define queries
 - Entity objects: define insert-update-delete (“DML”)
 - View links: view object relationships
 - Associations: entity object links
 - Application modules: Define the data models and the database transaction
- It does not create user interfaces



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Sample ADF BC Development



The screenshot shows the ADF BC development environment. On the left, a tree view shows the 'Departments.xml' file. The main area displays the 'DepartmentId - Property Inspector' dialog. The 'Type' tab is active, showing the following configuration:

| Property | Value |
|------------------|--------------------------|
| Name * | DepartmentId |
| Display Name | Department Id |
| Description | |
| Type * | Number |
| Property Set | <None> |
| Discriminator | <input type="checkbox"/> |
| Subtype Value | |
| Date Effectivity | |
| Start Date | False |
| End Date | False |
| Sequence | <default> (false) |
| Sequence Flag | <default> (false) |

Below the dialog, a yellow box highlights the text 'Entity object editors'.

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View Object Code

View Object = SELECT statement

```
<ViewObject
xmlns="http://xmlns.oracle.com/bc4j"
Name="AllEmployees"
Version="11.1.1.53.41"
SelectList="Employees.EMPLOYEE_ID,
Employees.FIRST_NAME,
Employees.LAST_NAME,
Employees.JOB_ID,
Employees.EMAIL,
Employees.HIRE_DATE,
Departments.DEPARTMENT_NAME,
Departments.DEPARTMENT_ID,
Departments.LOCATION_ID"
FromList="DEPARTMENTS Departments,
EMPLOYEES Employees"
Where="Departments.MANAGER_ID =
Employees.EMPLOYEE_ID"
BindingStyle="OracleName"
CustomQuery="false"
PageIterMode="Full"
UseGlueCode="false">
...
```

View Attribute = Column in query

```
<ViewAttribute
Name="EmployeeId"
IsUpdateable="false"
IsNotNull="true"
PrecisionRule="true"
EntityAttrName="EmployeeId"
EntityUsage="Employees"
AliasName="EMPLOYEE_ID"/>
```

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- ADF overview

- ADF core technologies

- ADF BC
- ADF Faces
- ADF Model
- ADF Controller



ADF Faces Rich Client Overview

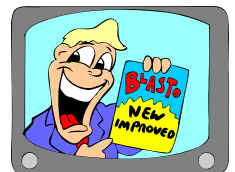
- Fits into the View layer of ADF
- Evolution:
 - ADF UIX → ADF Faces → Apache Trinidad
 - ADF Faces → ADF Faces RC
- Built on top of JSF APIs
- Deployable on any 1.2 implementation of JSF
- Support for pop-ups and dialogs
- ADF model support out-of-the-box
- Data Visualization Tools (DVT) components
 - Charts, Gantt, Pivot, Maps, Hierarchy

Really rich!

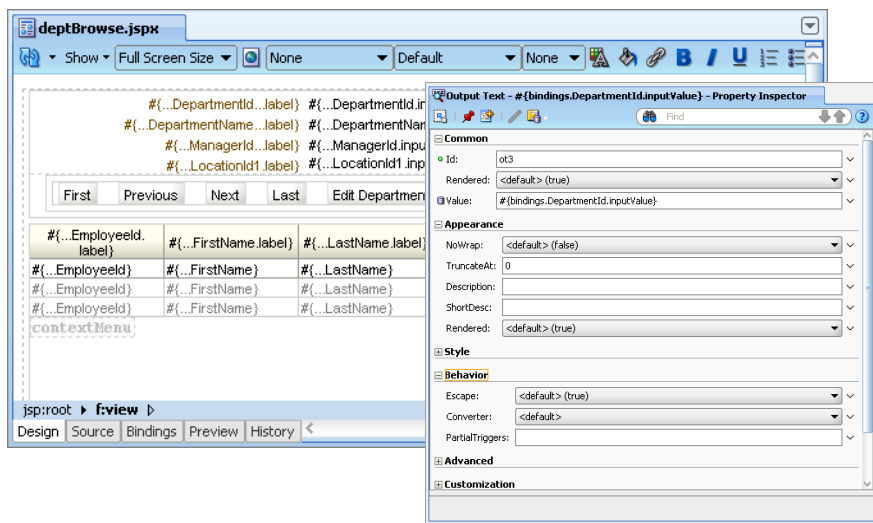


Some ADF Faces Features

- Solid development support in JDeveloper
- Changeable “skins”
 - Common look-and-feel characteristics
- Declarative AJAX
- Layout management features
- Extensive set of properties
 - Declarative access to application metadata
 - Properties can reference dynamic values using Expression Language
- Template support



Sample ADF Faces Development



ADF Faces JSF Snippet

```
<jsp:root xmlns:jsp="http://java.sun.com/JSP/Page" version="2.0"
xmlns:f="http://java.sun.com/jsf/core"
xmlns:af="http://xmlns.oracle.com/adf/faces/rich">
...
<af:panelStretchLayout styleClass="AFVisualRoot" topHeight="105px"
bottomHeight="20px">
<f:facet name="top">
<af:panelBorderLayout>
<f:facet name="start">
<af:image source="/images/tuhra.gif" shortDesc="TUHRA Logo"/>
</f:facet>
<f:facet name="end">
<af:panelGroupLayout layout="horizontal" valign="right"
valign="bottom">
<af:commandImageLink text="Logon" shortDesc="Logout from TUHRA"
depressedIcon="/images/groupdisconnect_dwn.png"
disabledIcon="/images/groupdisconnect_dis.png"
hoverIcon="/images/groupdisconnect_ovr.png"
icon="/images/groupdisconnect_ena.png"
disabled="true"
rendered="#{attrs.anonymous}"/>
<af:commandImageLink text="Logoff" shortDesc="Logout from TUHRA"
depressedIcon="/images/groupdisconnect_dwn.png"
disabledIcon="/images/groupdisconnect_dis.png"
hoverIcon="/images/groupdisconnect_ovr.png"
icon="/images/groupdisconnect_ena.png"
disabled="true"
rendered="#{!attrs.anonymous}"/>
</af:panelGroupLayout>
</f:facet>
</af:panelBorderLayout>
</f:facet>
</af:panelStretchLayout>
```

Agenda

- ADF overview

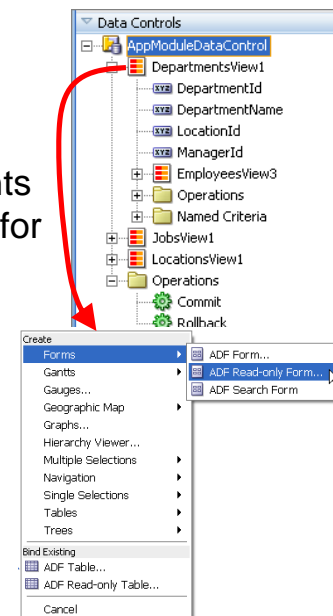
- ADF core technologies

- ADF BC
- ADF Faces
- ADF Model
- ADF Controller



ADF Model

- ADF Data Controls
 - Provides list of components or groups of components for a node in the data model
 - “Drop as” options
- ADF Bindings
 - Prebuilt connection from the ADF BC to the UI
 - Drag and drop action above does the work



Drop As Examples: Form and Table

deptBrowse.jspx

Full Screen Size None Default None

#{...DepartmentId...label} #{...DepartmentId.inputValue}
 #{...DepartmentName...label} #{...DepartmentName.inputValue} ← Note the binding expressions
 #{...ManagerId...label} #{...ManagerId.inputValue}
 #{...LocationId1...label} #{...LocationId1.inputValue}

First Previous Next Last Edit Department New Department

| #{...EmployeeId...label} | #{...FirstName.label} | #{...LastName.label} | #{...Email.label} | #{...JobId.label} |
|--------------------------|-----------------------|----------------------|-------------------|-------------------|
| #{...EmployeeId} | #{...FirstName} | #{...LastName} | #{...Email} | #{...JobId} |
| #{...EmployeeId} | #{...FirstName} | #{...LastName} | #{...Email} | #{...JobId} |
| #{...EmployeeId} | #{...FirstName} | #{...LastName} | #{...Email} | #{...JobId} |

contextMenu

jsp:root ▶ f:view ▶

Design Source Bindings Preview History

Binding Code

In the JSF page file

```
<af:inputText value="#{bindings.DepartmentId.inputValue}"
    label="#{bindings.DepartmentId.hints.label}"
    required="#{bindings.DepartmentId.hints.mandatory}"
    columns="#{bindings.DepartmentId.hints.displayWidth}"
    maxLength="#{bindings.DepartmentId.hints.precision}"
    shortDesc="#{bindings.DepartmentId.hints.tooltip}"
    id="it1">
</af:inputText>
```

In the bindings PageDef file

```
<bindings>
  <attributeValues IterBinding="DepartmentsView1Iterator"
    id="DepartmentId">
    <AttrNames>
      <Item Value="DepartmentId"/>
    </AttrNames>
  </attributeValues>
```

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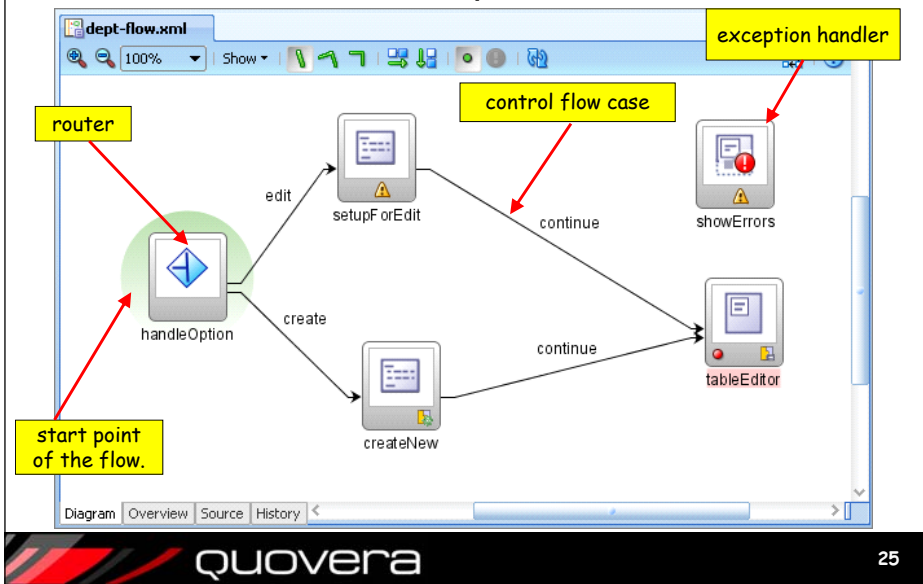


ADF Controller (ADFc)

- Extension to standard JSF Controller functionality
- Defines *task flows*
 - Logic and page fragment components
 - Embedded on the page in a region component
- Benefits
 - Page fragment re-use
 - Executing code in a logic-defined flow
 - “Task flow” not “page flow”
 - Security
 - Exception handling and transaction management
- Defined in a diagram
 - Like JSF but more components available



Sample ADF Controller Development



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Sample ADF Controller Code

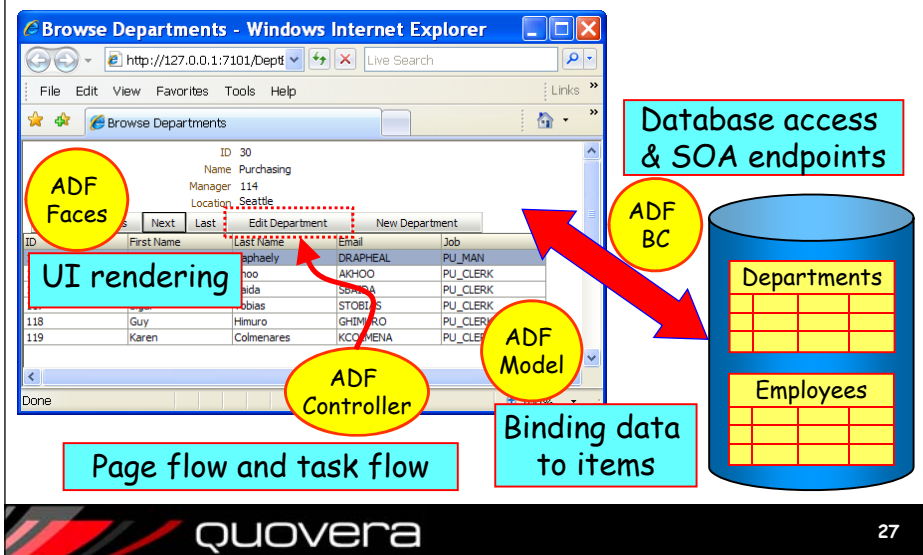
```
<task-flow-definition id="dept-flow">
<default-activity>deptBrowse</default-activity>
<view id="deptBrowse">
  <page>/deptBrowse.jsp</page>
</view>
<view id="deptEdit">
  <page>/deptEdit.jsp</page>
</view>
<control-flow-rule>
  <from-activity-id>deptBrowse</from-activity-id>
  <control-flow-case>
    <from-outcome>toEdit</from-outcome>
    <to-activity-id>deptEdit</to-activity-id>
  </control-flow-case>
</control-flow-rule>
<router id="checkForExplicitID">
  <case id="__6">
    <expression>#{!empty pageFlowScope.employeeId}
    </expression>
    <outcome>byId</outcome>
  </case>
  <default-outcome>currentUser</default-outcome>
</router>
<method-call id="queryEmployeeById">
  <method>#{bindings.queryEmployeeById.execute}</method>
  <outcome>
    <fixed-outcome>queryEmployeeById</fixed-outcome>
  </outcome>
</method-call>
</task-flow-definition>
```

From
To

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Summary: ADF Core Technologies



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Summary

- Oracle is using the "Fusion Technology Stack" and ADF to build the next EBS – Fusion Applications
- ADF offers a consistent developer experience regardless of the technologies
- ADF Business Components provide access to the database and other data sources
- ADF Faces provide 150+, feature-rich item and container components for JSF JSP pages
- ADF Model connects ADF BC to ADF Faces
- ADF Controller manages page flow and task flow



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