

Fusion Middleware Development



Presented by: John Jay King

King Training Resources - john@kingtraining.com

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- Understand what the Fusion Middleware stack is and where it fits?
- Become familiar with the Oracle Fusion Middleware “stack” Tools
- Explore which Fusion Middleware tools might be used to help customize Fusion Applications or create custom applications
- Utilize Fusion resources from Oracle and User Groups

Who Am I?



- John King – Partner, King Training Resources
- Providing training to Oracle and IT community for over 20 years – <http://www.kingtraining.com>
- “Techie” who knows Oracle, SQL, Java, and PL/SQL pretty well (along with many other topics)
- Leader in Service Oriented Architecture (SOA) design and implementation
- Home is Centennial, Colorado – I love the mountains!
- Member of ODTUG Board of Directors
- Active member of Rocky Mountain Oracle Users Group (RMOUG)



- Development Tools: JDeveloper, ADF, Eclipse Pack (Forms, Reports, BEA Workshop)
- Application Server and Transaction Processing: WebLogic Server, JRockit, Tuxedo, TopLink, Coherence (Oracle AS, OC4J)
- Service Oriented Architecture (SOA): Oracle Service Bus, Oracle BPEL, Complex Event Processing, Data Integrator, Business Activity Monitoring (WebLogic Integration)
- SOA Governance: AquaLogic Enterprise Registry, Service Registry, Web Services Manager, Enterprise Manager SOA Pack & Service Level Management Pack



- Business Process Manager: Oracle BPM (AquaLogic BPM & Oracle BPEL), Business Activity Monitoring, WebCenter, Business Rules, AquaLogic BPM Designer, BPA Designer, Document Capture & Imaging
- Enterprise 2.0 & Portals: WebCenter Framework, WebCenter Spaces, Universal Content Management, BEA Ensemble & Pathways (WebLogic Portal, AquaLogic User Interaction)
- Identity Management: Directory Services, Identity Manager, Role Manager, Access Manager, Adaptive Access Manager, AquaLogic Enterprise Security, Identify Federation



- System Management: Enterprise Manager Management Pack, Configuration Pack, Provisioning Pack, and Diagnostics Pack
- Oracle Fusion SOA Suite provides many of Oracle Fusion Middleware's tools



- BAM (Business Activity Monitoring) provides real-time access to business performance information
- BPEL (Business Process Execution Language) Process Manager defines/executes processes
- Business Rules Engine to manage business rules
- Web Services Manager for security (Oracle Directory, Active Directory, LDAP) and mgmt.
- ESB (Enterprise Service Bus), based largely upon AquaLogic ESB to provide routing & msgs
- CEP (Complex Event Processing from BEA Event Processor)
- Oracle Web Center (including AJAX)
- Connectivity including: WSIF bindings, over 300 application adapters, legacy adapters, and technology adapters



- JDeveloper provides support for a unified SOA Suite toolset
- In addition the Oracle Service Registry, Oracle Portal, and other products are also available



- Oracle Fusion Applications rely on Oracle Fusion Middleware components, the opposite is not true
- An organization may use Oracle Middleware and its wide array of tools even if Oracle Fusion Applications are not installed
- Oracle Middleware stack's reliance on industry standards (like SOAP, WSDL, and UDDI) and SOA makes it an excellent choice no matter how applications are supported in an organization
- Fusion Middleware is already good, but will get better and better since it is the lynchpin toolset for Fusion Applications



- WebLogic Server
- Application Grid
- JDeveloper
- Oracle Application Development Framework (ADF)
- Oracle Developer Tools
- Oracle SOA Suite



- WebLogic Server; the acquisition of WebLogic provided Oracle with a leader in Web Application Server products
- Oracle Application Server
- OC4J
- GlassFish
- Many older servers from Sun
- Java EE Alternatives include: IBM WebSphere, JBoss, Tomcat, SAP NetWeaver



- Oracle WebLogic Server is Oracle's preferred platform to provide both a standard Java EE environment and an environment specifically tailored to Oracle Fusion Middleware; providing:
 - Complete Java EE 5 compatibility
 - Complete Java SE 6 compatibility
 - Web Services support
 - Integration with Oracle's Fusion Middleware tools



- Oracle WebLogic Server is the replacement for Oracle Application Server (OAS) and OC4J
- OAS and OC4J are still supported and may be used instead of WebLogic if desired
- To learn more about Oracle WebLogic Server see Oracle's website:

<http://www.oracle.com/appserver/index.html>



- The “Application Grid” is the name Oracle applies to combining several Oracle technologies including: Oracle WebLogic Server, Tuxedo, Coherence, JRockit, and Oracle Enterprise Manager
- At last year’s Oracle Application Grid Excellence Awards; winners reported successfully running over 1,000 transactions per minute per server; 400,000 page hits per day, and successful management of hundreds of servers (see the Excellence Award site for more)



- WebLogic Server(s) Provides the processing power and infrastructure
- Tuxedo brings mainframe-level distributed transaction management on low-end hardware
- Coherence's in-memory data grid allows high-performance and great scalability
- JRockit's Java Virtual Machine provides the fastest possible Java execution
- Oracle Enterprise manager provides automated management of it all



- JDeveloper provides a world-class, easy to use IDE
- JDeveloper 11g is Oracle's latest release
- Oracle has extended JDeveloper beyond Java to include:
 - Oracle ADF modeling, business services, & GUI design
 - XML edits with Syntax Checking & Schema Validation
 - SQL development including debugging of stored PL/SQL
 - UML Modeling and MDA (Model Driven Architecture)
 - Web Services development
 - ESB design
 - BPEL design
 - Portlets

What is ADF?



- Oracle Application Development Framework (ADF) is a Java-based development tool (much like Forms is a PL/SQL-based tool) designed to take full advantage of Java Enterprise Edition or Java EE
- Java EE is one of the most widespread application environments today
- Oracle is rewriting their ERP stack as “Fusion Applications” using ADF; the already rich toolset gets richer every day



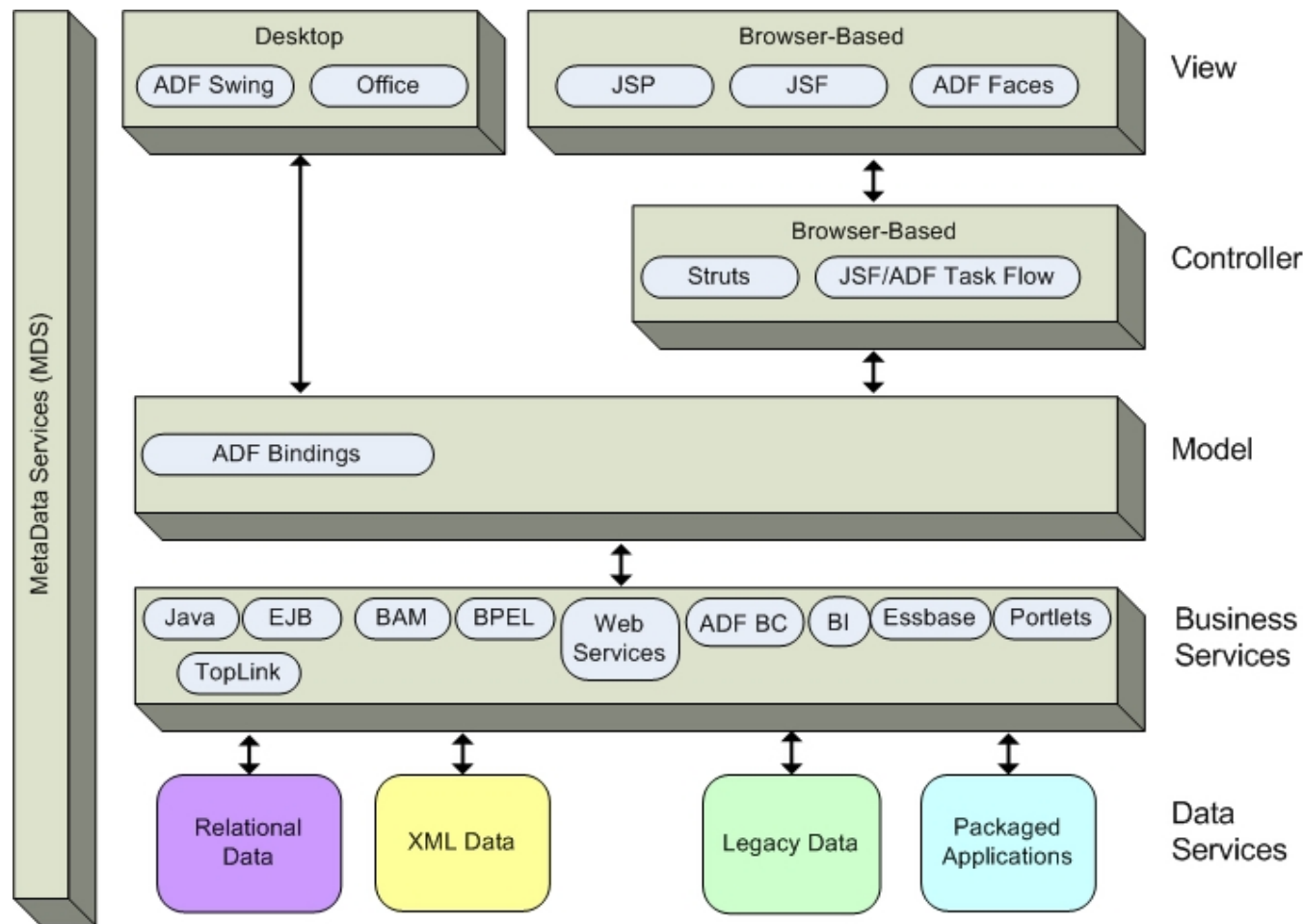
- Probably not well
 - Much the same as someone with basic PL/SQL could create very basic Oracle Forms
 - Someone with very basic Java and Web Skills can easily create applications with ADF
- Someone on your team needs to know Java very well
- Someone on your team needs to understand ADF and its available components very well



- ADF is a “meta-Framework” interacting with a variety of underlying software components (including Frameworks) to provide:
 - Database connectivity and transfer
 - Mapping of application views to data sources
 - Database interaction: constraints, keys, data types, master/detail, null handling
 - Data caching via entity objects
 - Transaction management (locks, commit, rollback, etc...)
 - Declarative validation
 - Business logic and event handling
 - User Interface (UI) logic, flow, look & feel
 - Data-bound UI Components
 - UI properties including: formatting, colors, defaults, visual components, LOVs, etc...



- ADF Technology simplifies interaction with “Java” EE and Oracle’s Fusion Middleware





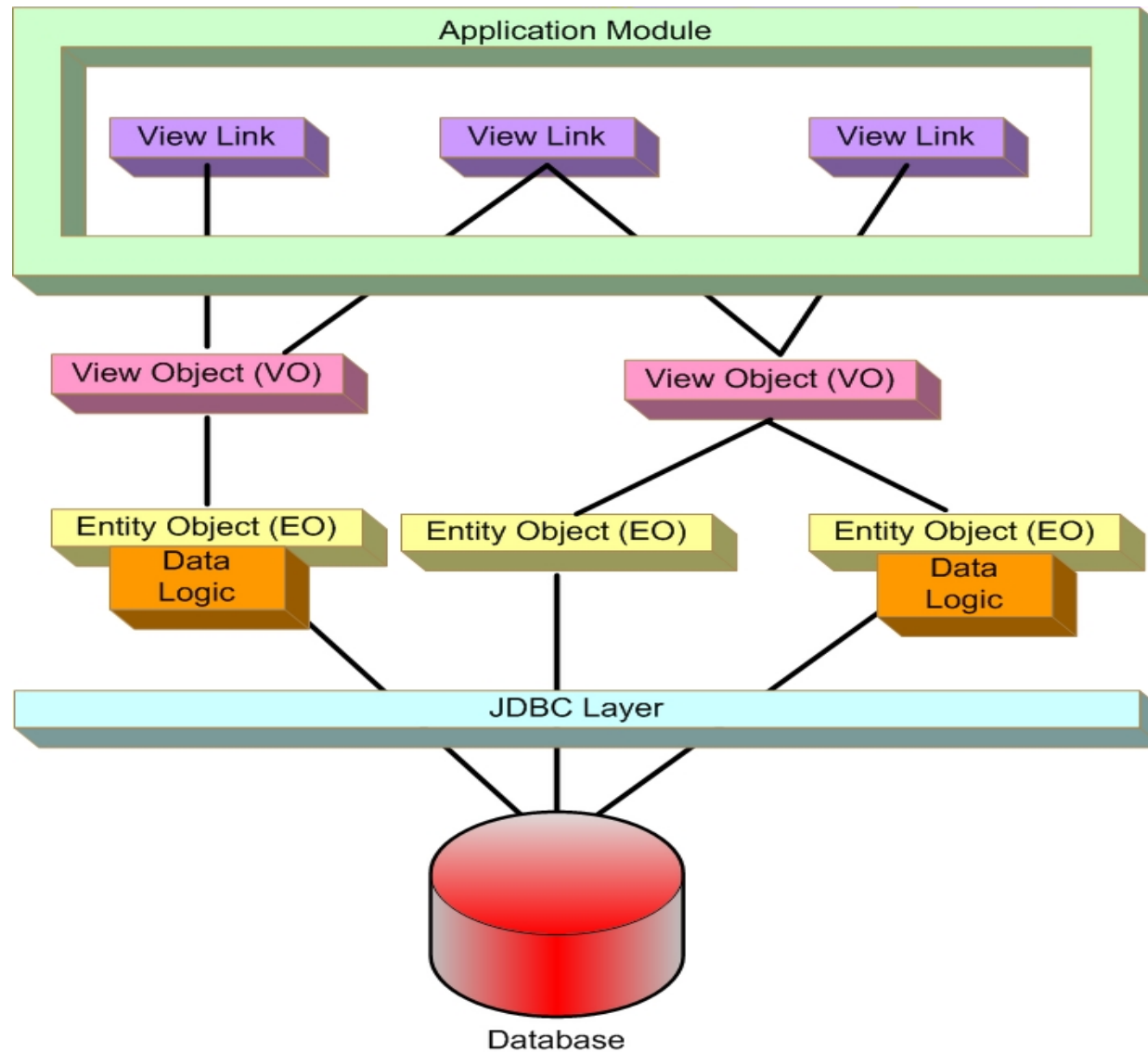
- ADF has many parts but two are central to creating applications
 - ADF BC Business Components (data)
 - ADF Faces Graphical User Interface



- ADF Business Components is a framework that simplifies developing Java EE business services
- ADF BC is part of the ADF Business Services layer and is used to:
 - Provide persistence and data retrieval with SQL using data views
 - Object-Relational Mapping (ORM) between Java classes and database data
 - Simplified data access, validation, and business logic
 - Provide transactional infrastructure
 - Implement best practices



- ADF BC is implemented using a variety of objects to:
 - Define query views (read-only)
 - Define Insert-Update-Delete views to perform data manipulation
 - Define links between queries





- ADF BC uses a variety of object types to represent data:
 - Database tables and views Application Base Data
 - Entity Objects Business rules, validations, defaults for a table (or view)
 - View Objects SQL output to query, filter, join, modify, sequence data
 - Application Modules Use View Objects to access/modify data acting as a back-end data service
 - Appl. Module Data Model Describes actual View Object uses
- Objects may be reused in other Modules



- After identifying Entity Objects and View Objects two additional ADF Data Model components are used
 - Data Controls
Java objects used to abstract View Object Business Services
 - Binding Containers
Java object; provides data access to a single ADF application page, fragment, or activity



- Java Server Faces (JSF) is a Web-tier framework of JSP technology and JSP Tag libraries to create and use User Interface components
- JSF is extended by components of Oracle ADF Faces
- JSF includes:
 - Runtime architecture
 - Library of JSF components
 - JSF “Life Cycle”
 - Many JSF-Oriented Files



- Even though JSF sought to simplify user interface; it is often felt to be too complex
- Oracle has extended JSF as “ADF Faces” providing a set of libraries and tags that include enhanced UI components and easier use
- Oracle has presented ADF Faces to the Open Source community where it is part of the Apache Foundation Trinidad MyFaces project

<http://myfaces.apache.org/trinidad/index.html>



- Using ADF Faces is simple using JDeveloper:
 - Application layout containers
 - Add ADF Faces components to layout containers
 - All UI is done with ADF Faces; no HTML coding
- Features added by ADF Faces:
 - Pop-ups and Dialog boxes
 - Data Visualization Tools: Charts, graphics, etc...
 - Declarative AJAX support
 - More...



- The ADF Controller extends the JSF controller and controls ADF's MVC (Model-View-Controller) in ADF
- ADF Controller features include:
 - Sequence of page displays (may be conditional)
 - Allows partial-page processing in the same way as full page processing; only the necessary part of a page is rendered, the rest is unchanged
 - Allows reuse of page parts
 - Provides conditional control of page flow



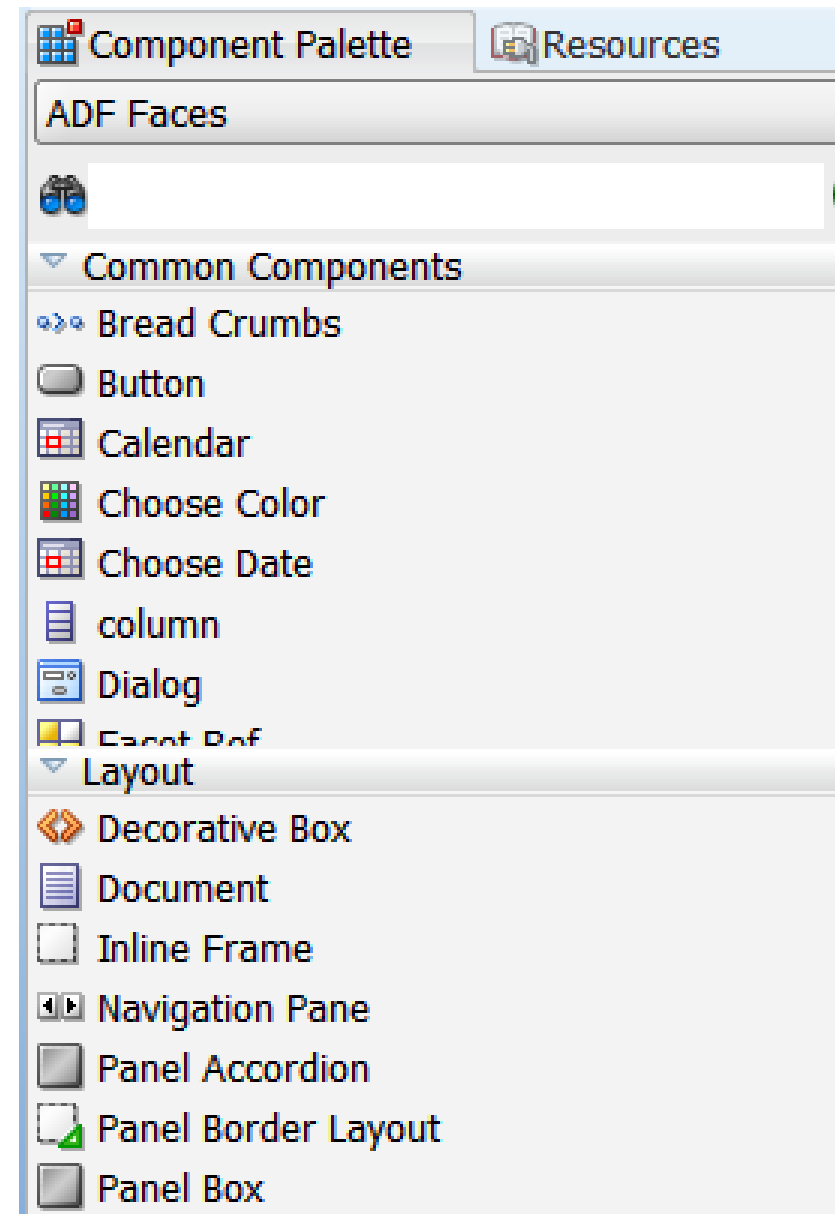
- ADF Faces is designed to create “rich-client” (RC) interfaces; full-featured and declarative including:
 - Complete JDeveloper support graphic development (screen-painter) and property palettes
 - Visual Editor
 - Property Inspector
 - Changeable “skins” to easily alter look-and-feel
 - Modifiable look-and-feel properties (declarative)
 - Layout control

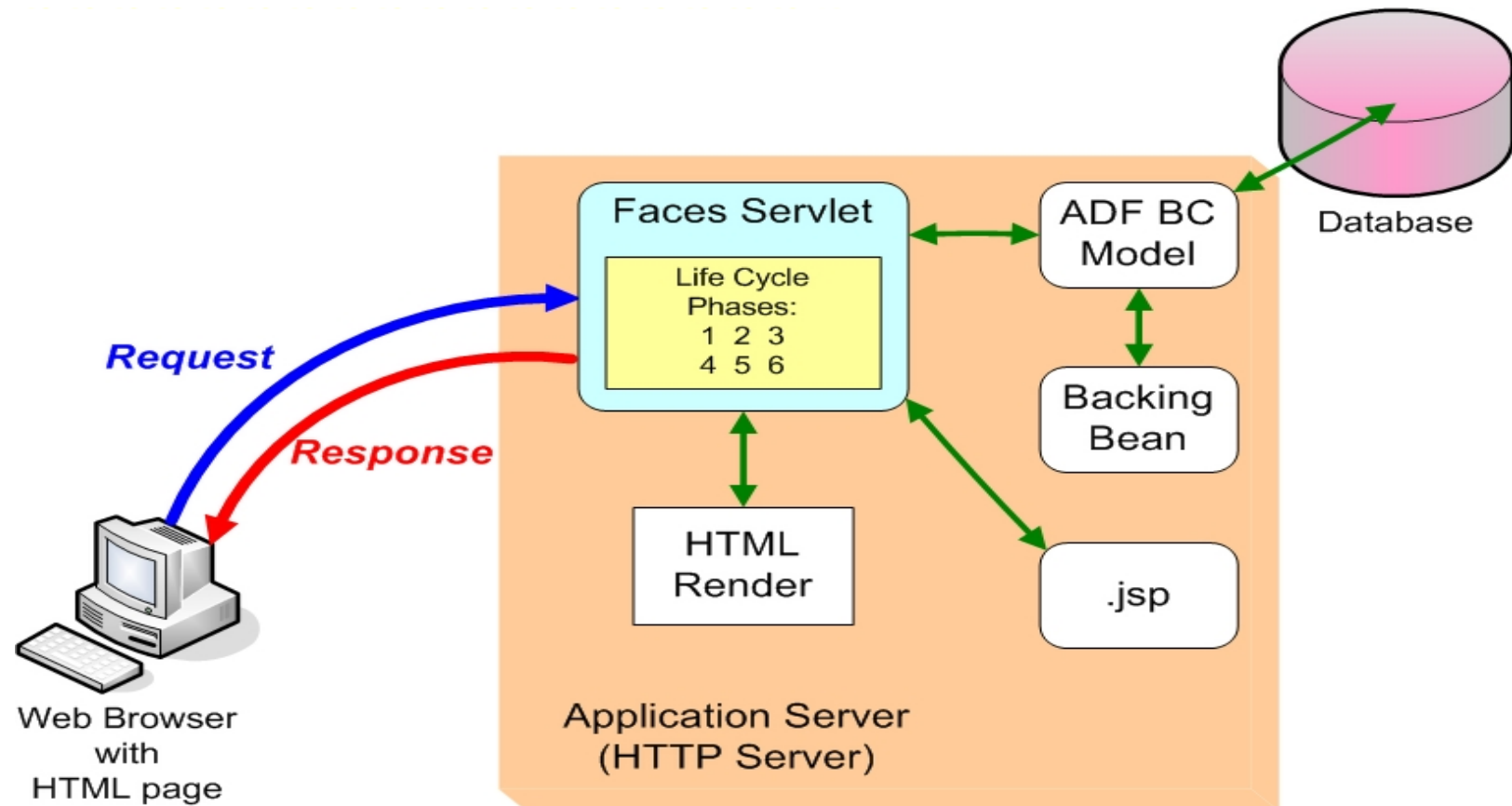


- JDeveloper's Visual Designer may be used to “paint” a User Interface using the Component Palette
- The JDeveloper Visual Designer is intended to be WYSIWYG (What You See Is What You Get); however the nature of the web and HTML is that it's really WYSIKOWYG (What You See Is Kind-Of What You Get)



- The ADF Faces Component Palette includes icons representing various User Interface objects
- Drag-and-drop desired components into the position desired







- In Oracle Forms we defined “data blocks” that represented tables and views that would be used in our forms
- ADF BC components do that and more, plus they may be shared by many applications
- In Oracle Forms once the “data block” was created we would then use it to create the presentation
- With ADF we use ADF Faces to accomplish the same thing and more
(again creating components that may be reused by other applications)



- Are Oracle Forms and Reports going away?

NO, NO, NO, NO, NO

- Oracle is committed to supporting Oracle Forms for many years to come
- A new version of Oracle Forms (12g) is on the way!
- Oracle Forms 11g has incorporated the Oracle WebLogic server



- Fusion Middleware Stack tools may be used to customize Fusion Applications
 - Some (a minority) of your developers need to understand Java and Java EE pretty well
 - Some (a smaller group) of your developers need to learn the ADF component library and its use very well
 - Most developers will use the drag-and-drop application painting capability of JDeveloper and require little knowledge of Java or ADF



- Oracle User Groups
 - ODTUG, OAUG, Quest, IOUG, local user groups
- Oracle Corporation
 - Oracle Technology Network (OTN)
 - Oracle Ace Program
 - Oracle Wiki



- Many Oracle User Groups exist to help Oracle community members improve their use of Oracle's many products and tools
- This session was coordinated by a consortium of user group leaders and Oracle representatives including:
 - HEUG
 - IOUG
 - OAUG
 - ODTUG
 - Quest



www.heug.org

- Higher Education User Group (HEUG) consists of higher education institutions using Oracle products and provides a forum for sharing information and experience among higher education customers on selection, implementation and cost-effective use of Oracle products



www.ioug.org

For the Complete Technology & Database Professional

- The IOUG is a user-driven membership organization for Oracle technology and database professionals providing education, information and networking for more than 15,000 database administrators, developers, architects and technical managers throughout North America and worldwide.



www.oaug.org

- The OAUG provides users of the family of Oracle applications with education, networking, training and support via a wide range of activities including conferences, publications, special interest groups and online communities.



www.odtug.com

- ODTUG is an independent, not-for-profit global organization providing education, support, advocacy, and networking opportunities for all developers who work on Oracle Databases. ODTUG's members design applications, model data, write code, manage application systems, maintain legacy code, and are key to the middle-tier technology in Oracle Fusion. ODTUG's annual conference, ODTUG Kaleidoscope, is considered the premier conference for Oracle developers. ODTUG has expanded to include non-Oracle products. ODTUG is the premier source of up-to-date information and developer networking on the technology underlying the Oracle Fusion, E-Business Suite and PeopleSoft applications. Whether you design applications, model data, write code, manage application systems, or maintain legacy code you need to be a part of ODTUG.



www.questdirect.org

- Quest International Users Group is a communications, networking, and education forum for the PeopleSoft, JD Edwards and Oracle Utilities applications users with members in more than 50 countries and a network of affiliated user communities worldwide.



International Oracle
Users Group Community

www.iouc.org

- A single source for user-group information is the IOUC (International Oracle User Group Community)
- The IOUC is supported by Oracle and acts as a central collection-point for Oracle's dissemination of information to users; we also provide information and feedback to Oracle



- Many user groups exist regionally both within the United States and Internationally including:



–UKOUG (United Kingdom Oracle User's Group)



–AUSOUG (Australia Oracle User's Group)



–DOAG (German Oracle User's Group)



–The Asia Pacific Oracle UserGroup Communit (APOUC) is a central point for many Asia-Pacific groups including AUSOUG

(see www.iouc.org for complete list)



- Austria
- Belgium
- Bulgaria
- Croatia
- Cyprus
- Czech Republic
- Denmark
- Estonia
- Finland
- France
- Germany
- Hungary
- India
- Ireland
- Israel
- Latvia
- Luxembourg
- Netherlands
- Nigeria
- Norway
- Pakistan
- Philippines
- Poland
- Russian Federation
- Serbia and Montenegro
- Slovenia
- South Africa
- Spain
- Sweden
- Switzerland
- United Kingdom



- Canada
 - Calgary Oracle Users Group
 - Manitoba Oracle Users Group
 - ORA*GEC (Eastern Canada)
 - Ottawa Oracle Users Group
 - Toronto Oracle Users Group
 - Victoria Oracle Users Group
- Caribbean, Central America, South America
 - Eastern Caribbean Oracle Users Group
 - Asociacion de Usuarios de Oracle Columbia (ASUOC)
 - Chilean Oracle Users Group
 - Rio Grande Do Sul Oracle Users Group
 - Peru Oracle Users Group



- Capital District Oracle Users Group
- Central Alabama Oracle Users Group
- Central Florida Oracle Users Group
- Charlotte Oracle Users Group
- Connecticut Oracle Users Group
- Delaware Valley Oracle Users Group
- East Tennessee Oracle Users Group
- First State Oracle User Group
- Georgia Oracle Users Group
- Greater Richmond Oracle Users Group
- Green Mountain Oracle Users Group
- Gulf Coast Oracle Users Group
- Hampton Roads Oracle Users Group
- Johnstown Oracle Users Group
- MESDA
- National Capital Oracle Users Group
- New Hampshire Oracle Users Group

Eastern USA User Groups, 2



- New Jersey Oracle Users Group
- New York Oracle Users Group
- North Carolina Oracle Users Group
- North Florida Oracle Users Group
- Northeast Oracle Users Group
- Philadelphia Oracle Users Group
- Pittsburgh Oracle Users Group and BI Community
- Rhode Island Oracle Users Group
- South Florida Oracle Users Group
- Southeast Michigan Oracle Professionals
- Southeastern Oracle Users Conference
- SunCoast Oracle Users Group
- Upstate New York Oracle Users Group
- Upstate South Carolina International Oracle User
- Virginia Oracle Users Group

Central USA User Groups



- Ann Arbor/Detroit Oracle Users Group
- Baton Rouge Oracle Users Group
- Central Illinois Oracle Users Group
- Chicago Oracle Users Group
- Database Users Association of Iowa
- Greater Cincinnati Oracle Users Group
- Indiana Oracle Users Group
- Iowa Oracle Users Group
- Jackson Oracle Users Group
- Kansas City Oracle Users Group
- Midwest Oracle Users Group
- Nashville Oracle Users Group
- New Orleans Oracle Users Group
- Northeast Ohio Oracle Users Group
- Ohio Oracle Users Group
- Southern Indiana/Louisville Oracle Users Group
- St. Louis Oracle Users Group
- Sunflower Oracle Users Group
- Toledo Metro Oracle Users Group
- Twin Cities Oracle Users Group
- Western Michigan Oracle Users Group
- Wichita Area Oracle Users Group
- Wisconsin Oracle Users Group



- Austin Oracle Users Group
- Dallas Oracle Users Group
- Hawaii Oracle Users Group
- Houston Oracle Users Group
- Idaho Oracle Users Group
- Los Angeles Oracle Users Group
- Nevada Oracle Users Group
- New Mexico Oracle Users Group
- Northern California Oracle Users Group
- Northwest Oracle Users Group
- Oklahoma (City) Oracle Users Group
- Oracle Developer and DBA Users Group of San Antonio
- Orange County Oracle Users Group
- Permian Basin Oracle Users Group
- Pikes Peak Oracle Users Group
- Rocky Mountain Oracle Users Group
- Sacramento Oracle Users Group
- San Diego Oracle Users Group
- South Central Oracle Users Group
- TriState Oracle Users Group
- Tulsa Oracle Users Group
- University of Alaska Oracle Users Group
- Utah Oracle Users Group

- Oracle provides the OTN is free-of-charge (must provide email address to utilize free downloads)
<http://www.oracle.com/technetwork>
- OTN provides a rich source of information for the Oracle community including:
 - Software downloads
 - Documentation, white papers, presentations
 - Tutorials, Tips, Sample Code
 - Blogs
 - Schedule of Oracle Developer Events



- Oracle Ace Directors and Oracle Aces are nominated by Oracle users for recognition by Oracle
- Oracle's OTN provides resources to aggregate the blogs, articles, and other contributions of Aces and Ace Directors
- Oracle gathers Aces and Ace Directors periodically to gather suggestions and to discuss potential product directions

http://www.oracle.com/technology/community/oracle_ace



- Oracle provides the resources and moderation for a true wiki that is open to the comments and collaboration of Oracle users and employees alike

<http://wiki.oracle.com>

- What if you're not ready to go to Fusion Applications? (it's allowed....)
- Oracle provides access to “best-of-breed” Fusion functionality through the Oracle Application Integration Architecture (AIA)



- AIA “Packs” combine Fusion Middleware, Business Objects, and Business Services
 - AIA Foundation Pack (cross-industry)
 - AIA “Process Integration Packs (PIPs)” – some cross-industry and some industry-specific
- AIA components have been gleaned as “best of breed” from Fusion and may be plugged-in to existing applications



- Architecture
- Business Process Management
- Certification
- Composite Application Validation System (CAVS)
- Development
- Enterprise Business Objects (EBO)
- Error Handling
- Governance
- High Availability
- Install & Upgrade



- AIA Process Integration Packs (PIPs) are prebuilt integrations combining “best of breed” solutions from various Oracle applications such as:
 - Siebel CRM
 - Oracle E-Business Suite
 - Agile PLM
 - Oracle Communications Billing and Revenue Management (Portal)
 - Oracle Utilities Customer Care and Billing



- Oracle's Fusion Applications development tools may be used to customize Fusion and/or create custom applications
 - Fusion Middleware tools stack is current and full-function
 - Industry-standard basis of Fusion Middleware provides greater talent pool and interoperability
- Application Integration Architecture provides the ability to use some Fusion Applications components "ala-carte"



Training Days 2011

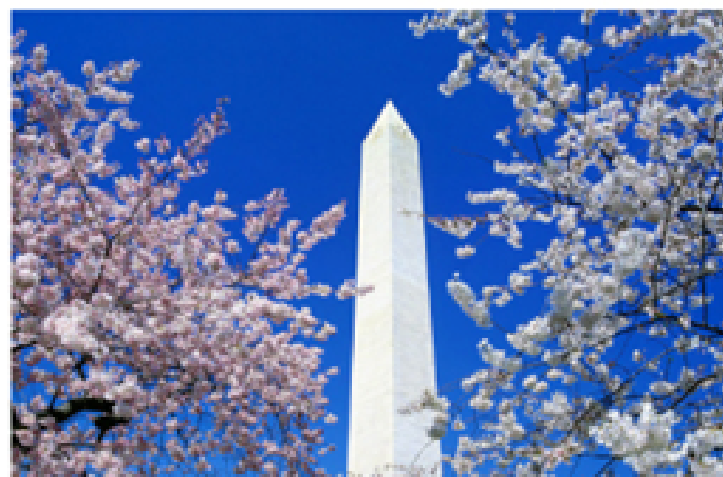
Save the dates!

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- SOA and BPM
- Other

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To contact the author:

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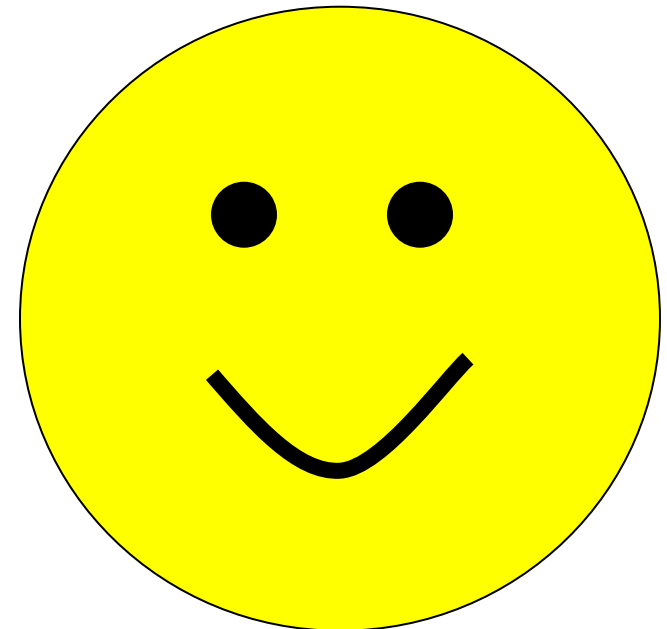
King Training Resources

6341 South Williams Street

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1.800.252.0652 - 1.303.798.5727

Email: john@kingtraining.com



Thanks for your attention!

Today's slides and examples are on the web:

<http://www.kingtraining.com>

<http://www.odtug.com>

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John Scott, Oracle ACE Director, Sumneva

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