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Upgrading your Customizations to Oracle E-Business Suite Release 12.x

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Development



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Introduction

- Oracle E-Business Suite Release 11i is now in Extended Support until Nov. 2013, so you need to upgrade from 11i to 12.1(.3) soon.
- You have many existing personalizations, extensions, and customizations.
 - You may not even know what you have
- The upgrade is daunting: big, complicated, expensive



Upgrading Customizations from Release 11i to 12

11i

Investigate R12 features

Retire as much as possible

Upgrade what you can

Reimplement what is left

**Choose right technologies
going forward**

Make future upgrades easier

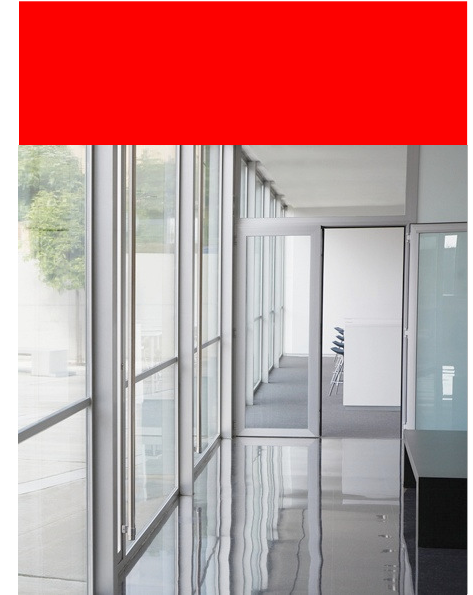


R12

**Smaller
Customization
Footprint**

Program **Agenda**

- Inventory Your Customizations
- Compare Customizations to Release 12
- Handling Common Customization Types
- Deprecated Technologies
- Creating Future Customizations
- Conclusion
- References





What Is CEMLI?

- The term "CEMLI" describes various types of customizations applied to Oracle E-Business Suite (EBS) environments.
 - **C**onfigurations
 - **E**xtensions
 - **M**odifications
 - **L**ocalizations
 - **I**ntegrations



Types of CEMLI in Oracle E-Business Suite

- Personalize
 - Add new items
 - Change prompts, titles, text
 - Reorder items or regions
- Extend
 - Add new functional flows or content
 - Extend or override existing business logic
- Configure
 - Profile Options
 - User-defined Flexfields
 - Function and Data Security Setups
- Modify
 - OVERWRITE Oracle Shipped code / business logic



11i to 12 Upgrade of Customizations

Planning Phase

- Inventory what CEMLIs you have
- Compare to Release 12 functionality

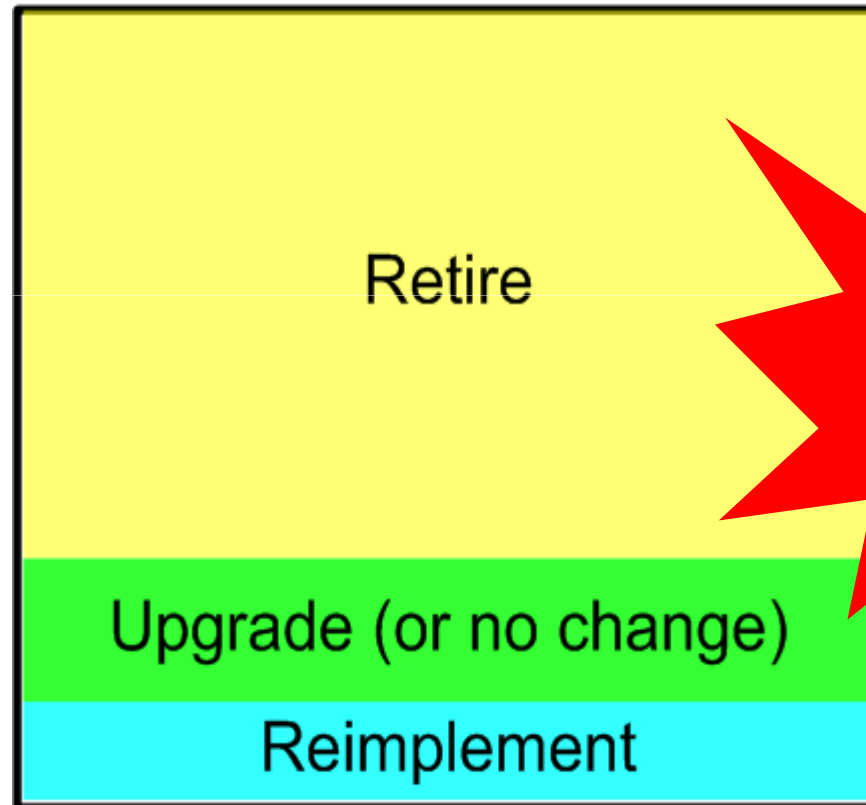


- Identify:
 - CEMLIs you can retire
 - What CEMLIs simply upgrade
 - What to re-implement going forward



The Goal: Retire Every Customization You Can Upgrade or Re-implement the Rest

All Your 11i Customizations



**Make
Future
Upgrades
Easier!**



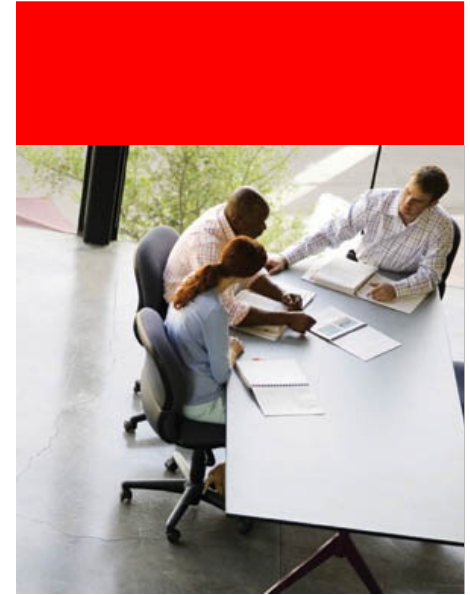
Going Forward After the Upgrade

Choose the Right Technologies

- Changing Oracle E-Business Suite screens
 - OA Framework Personalization
 - Form Personalization
- Extensions and new applications
 - OA Framework
 - Oracle ADF
 - Oracle Application Express (APEX)
 - ...and more



Inventory Your Customizations





Types of Customizations You Might Have

- Forms Screens and Personalizations
- OA Framework Pages and Personalizations
- Reports
- Workflows
- Database objects
- Concurrent Programs
- BI Publisher templates
- Java code
- Web ADI
- ADF
-



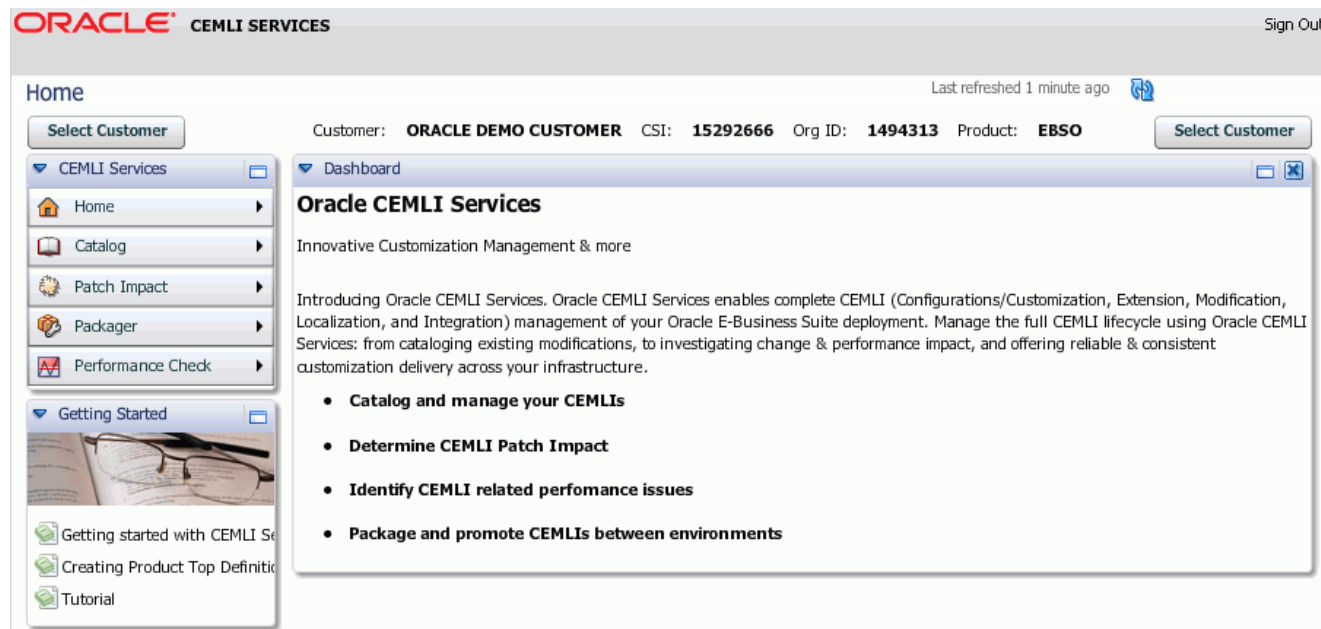
Oracle Applications applcust.txt File

One Place to Look for Customization Information

- Some customizations may be listed in applcust.txt file
 - File was provided specifically for registering customizations to help prevent loss of customizations from patches
 - Located in the \$APPL_TOP/admin directory

CEMLI Services Tool Lists Your CEMLI

- Database objects (tables, views, indexes, ...)
- Custom files (forms, pages, ...)
- Configurations (flexfields, functions, menu entries, ...)



The screenshot displays the Oracle CEMLI Services web interface. At the top, the Oracle logo and 'CEMLI SERVICES' are visible, along with a 'Sign Out' link. The main content area is titled 'Home' and includes a 'Last refreshed 1 minute ago' indicator. A 'Select Customer' button is present, and the current customer information is shown as 'ORACLE DEMO CUSTOMER', 'CSI: 15292666', 'Org ID: 1494313', and 'Product: EBSO'. The interface is divided into two main sections: 'CEMLI Services' and 'Dashboard'. The 'CEMLI Services' section contains a navigation menu with options: Home, Catalog, Patch Impact, Packager, Performance Check, and Getting Started. The 'Dashboard' section is titled 'Oracle CEMLI Services' and features the text 'Innovative Customization Management & more'. Below this, an introductory paragraph describes the tool's capabilities. A bulleted list of services is provided:

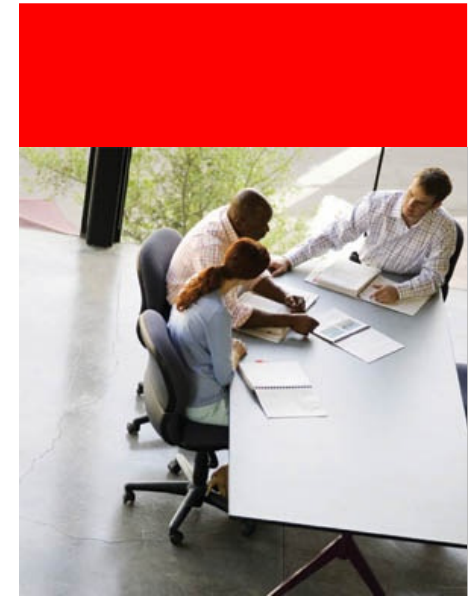
- **Catalog and manage your CEMLI**s
- **Determine CEMLI Patch Impact**
- **Identify CEMLI related performance issues**
- **Package and promote CEMLI**s between environments



CEMLI Services Tool Lists Your CEMLI

- Available as part of Oracle services
 - Beginning of Oracle Consulting upgrade engagement
 - Part of moving to On Demand services
- Stand-alone subscription through Advanced Customer Services
 - Self-service tool includes other features as well:
 - Packager for custom code patches
 - Impact analysis for incremental patches
 - Performance checker

Compare Customizations to Release 12





Compare Customizations to Release 12

Ripe for Retirement

- Save money by retiring customizations. Places to look include:
 - Personalizations on forms or pages that have changed
 - Financials and other products with new centralized setups
 - Deprecated technologies
 - And more...



Learn What Changed Between Releases

Understand Product-level Changes

- Many products redesigned flows through the product
 - Fewer, rearranged screens
 - Fewer steps for users to complete tasks
 - Better user productivity
- Better flows have side effects affecting customizations
 - Existing forms or pages changed
 - New screens are written using OA Framework instead of Oracle Forms
 - Old custom forms and programs may no longer be needed
 - Personalizations to old screens may no longer be valid



Learn What Changed Between Releases

Understand Product-family-level Changes

- Financials and Procurement changes may particularly impact customizations or make them obsolete
 - *Oracle Financials & Procurement Functional Upgrade Guide*
 - Tax Codes, Payments, Bank Accounts
 - Suppliers and Sites moved into TCA
 - Accounting Setup Manager Pre-Update Diagnosis Report
 - Setup inconsistencies you should resolve before upgrade



Learn What Changed Between Releases

Understand Product-family-level Changes

- Understand new 12.1 options
 - *Oracle Financials Concepts Guide*
 - *Oracle Financials Implementation Guide*
 - “*R12 Upgrade Considerations by Product*”, Document 889733.1
 - Process and configuration changes



Learn What Changed Between Releases

Understand Data Model Changes

- Review impact of data model changes
 - Lots of materials to help you
 - Release notes
 - TOI training
 - eTRM (Technical Reference Manual)
 - New: Database Comparison Report (Document 1290886.1)
 - Example: Switch from distribution lines stored in separate applications to new XLA tables



Learn What Changed Between Releases

Understand Data Model Changes

- As of Release 12.1.3, several 11.5.10.2 products are no longer included in Oracle E-Business Suite
 - Customizations that reference these will be affected
 - The following products are no longer registered in `fnd_oracle_userid` and `fnd_product_installations` tables in 12.1.3

ABM	CUN	IMT	OKR	VEH
AHM	EAA	IPD	OZP	XNC
AMF	EVM	ME	OZS	XNI
CSS	FPT	OKB	RHX	XNM
CUE	IBA	OKO	RLA	XNS

Database Comparison Report

Understand Data Model Changes

- Download report from My Oracle Support
 - Document 1290886.1

Data Model Comparison Report Between Release 11.5.10.2 (with ATG RUP4 + AD.I.4) and 12.1.3

Choose the Product:
GL

Product:GL

- [Regular Tables](#) ('136' differences found)
- [Partitioned Tables](#) (No differences found)
- [Queue Tables](#) (No differences found)
- [Index Organized Tables](#) (No differences found)
- [Global Temp Tables](#) ('102' differences found)
- [Indexes](#) ('246' differences found)
- [Views](#) ('264' differences found)
- [Sequences](#) ('75' differences found)
- [Materialized Views](#) ('1' differences found)
- [Materialized View Logs](#) (No differences found)
- [Advanced Queues](#) (No differences found)
- [Triggers](#) ('6' differences found)
- [Packages](#) ('257' differences found)
- [Types](#) ('6' differences found)

Regular Tables: ('136' differences found)

Regular Tables	Object Definition Differences Between 11.5.10.2 and 12.1.3
GL_ACCESS_SETS	Added in 12.1.3
GL_ACCESS_SET_ASSIGNMENTS	Added in 12.1.3
GL_ACCESS_SET_NORM_ASSIGN	Added in 12.1.3
GL_ACCT_DESC_TEMP	Added in 12.1.3
GL_AUTOREV_CRITERIA_SETS	Added in 12.1.3
GL_BC_PACKETS_HISTS	Added in 12.1.3
GL_BC_PERIOD_MAP_BKP	Added in 12.1.3
GL_BURDORF_BC_OPTIONS	Added in 12.1.3





Database Comparison Report

Understand Data Model Changes

- Drill down into a wealth of detail
 - For example: View Object Definition in 11.5.10.2 and corresponding View Object Definition in 12.1.3
- Use for impact analysis for custom code
 - Lists added and removed tables, views, packages, and so on
- Available in popular release combinations, such as comparison of 11.5.10.2 with 12.1.3
 - Support can download other combinations if needed



Learn What Changed Between Releases

Understand Technology Changes

- Certain technologies have been deprecated
 - Mod_plsql
 - Oracle Reports Server Reports
 - Oracle Graphics integrations with Oracle Forms
 - AK mode of Oracle Application Framework
- See “*Preparing Custom Development for the Next Oracle Applications E-Business Suite Release*”, Document 374398.1

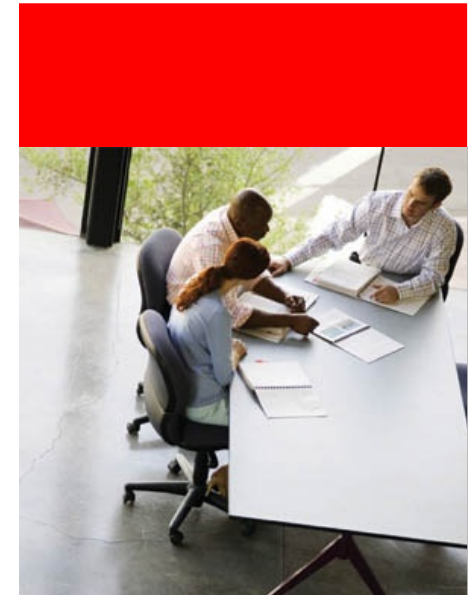


Plan the Upgrade of Customizations

Understand Technology Changes

- Custom code and custom applications in standard 11i development technologies is generally compatible with Release 12
 - OA Framework
 - Oracle Forms
- Custom applications in these technologies can be upgraded with little change
 - Assuming no change in underlying business logic or data model that affects your application

Handling Specific Types of Customizations



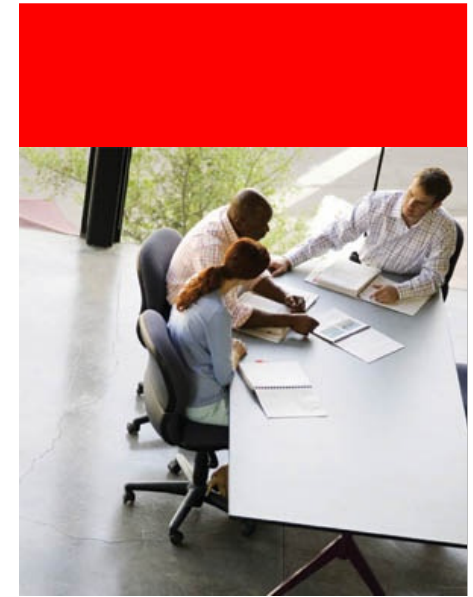


Handling Common Types of Customizations

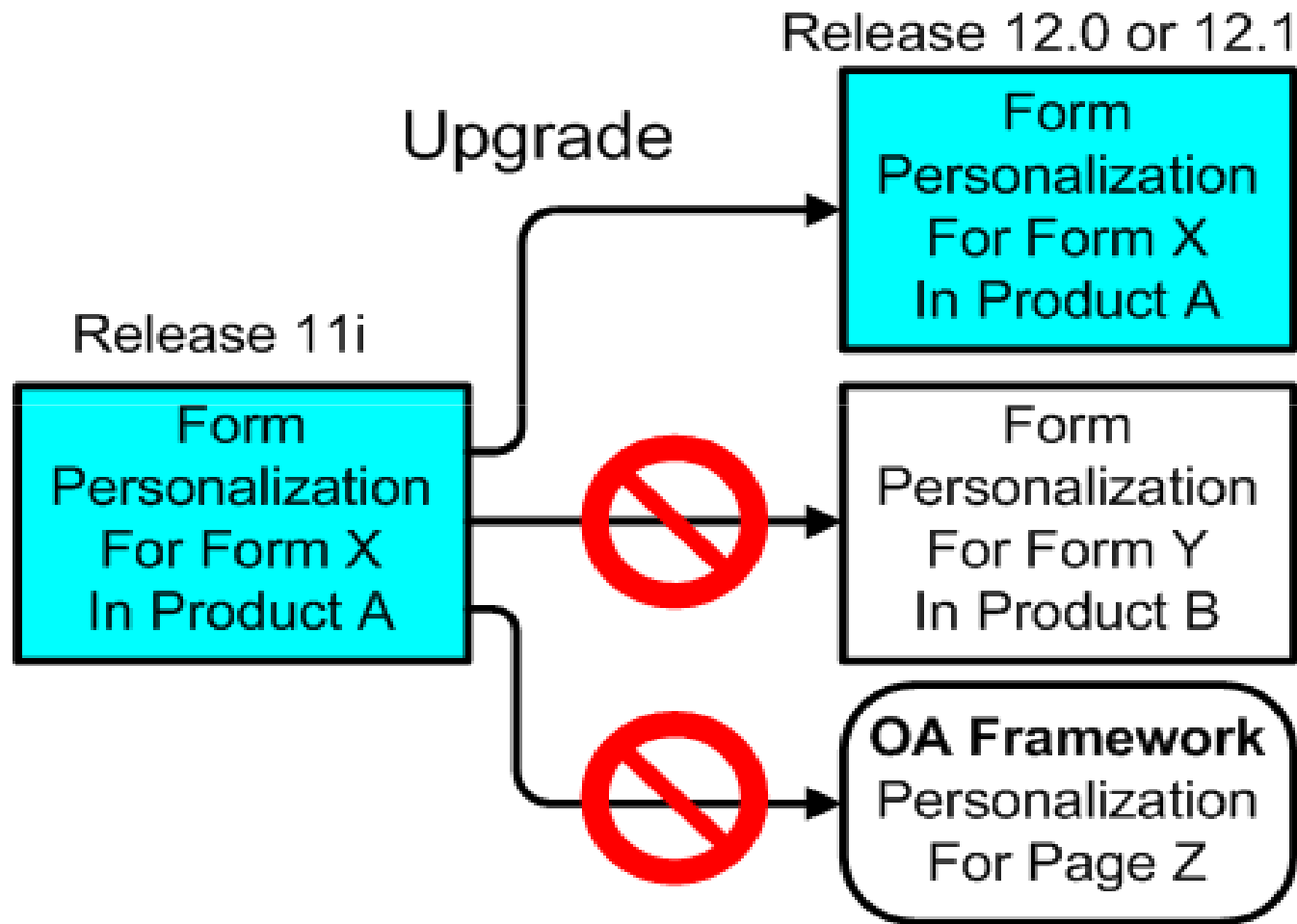
Upgrade Considerations

- Personalizations
- Oracle Forms
- OA Framework
- Web ADI
- Workflow

Upgrading Personalizations



Upgradability of Personalizations: "From Like to Like"





Factors Affecting Personalization Upgradability

Reasons personalizations might not upgrade:

- Screen has been modified so personalized old objects no longer exist in the new version.
- Oracle Forms-based screen is replaced by OA Framework-based page.
 - Very common across the 11i to 12.1 upgrade
- A screen or page has been moved into a different product so object identifiers are different.

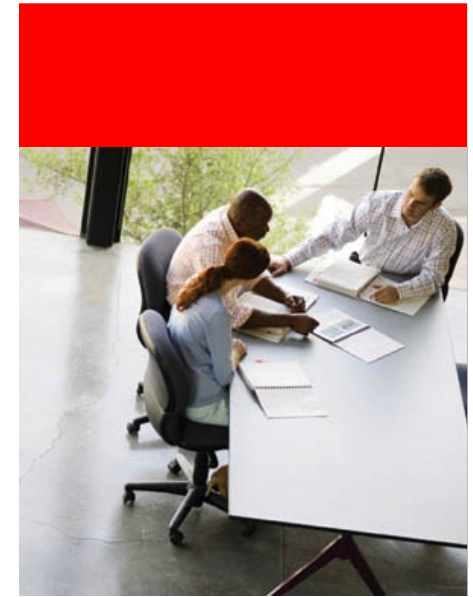
Personalizations should upgrade transparently if the form and its objects still exist in the target version



Many Personalizations Are Ripe for Retirement

- See "*Upgrading Form Personalizations and OA Framework Personalizations from Oracle E-Business Suite Release 11i to 12.1*", Document 1292611.1
 - Includes simple query to list 11i form personalizations

Upgrading Oracle Forms Extensions





Forms Extension and CUSTOM Library

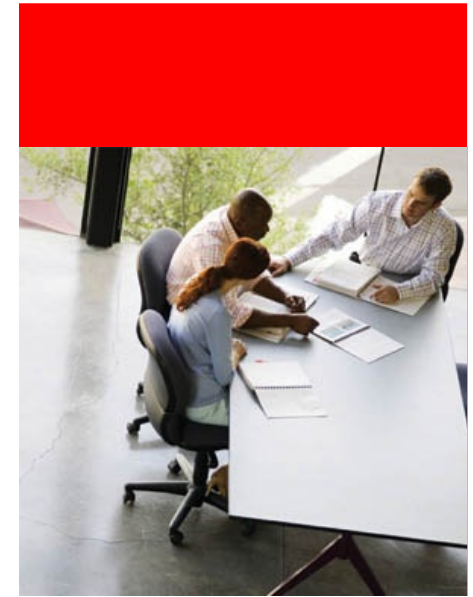
- CUSTOM is an Oracle Forms stub library that receives Trigger Events. Customers can add code to it.
 - CUSTOM and Form Personalization drive off the same trigger events
 - Considered "extension" instead of "personalization"
 - Used to implement site-specific business rules and complex business logic
- The CUSTOM library needs to be backed up and separately upgraded.



Upgrading Custom Oracle Forms Extensions

- Most required changes can be identified at build time.
- Some changes can only be identified at run time.
 - Test thoroughly!
- Information and utilities to help you:
 - frmcmp.sh utility (Forms generator—was f60genm)
 - Oracle Forms Migration Assistant
 - *Oracle Forms: Migrating Forms Applications From Forms 6i to 10g (10.1.2.0.2) for Windows and UNIX (B15572-01)*
 - *"Using the OracleAS 10.1.2 Forms and Reports Builders with Oracle Applications Release 12"*, Document 444248.1
 - *Oracle E-Business Suite Developer's Guide*

Upgrading Web ADI and Workflow Customizations





Web ADI Customizations

Web ADI customizations can be of two flavors:

- Custom Integrators created in 11i using Oracle shipped APIs
 - Custom integrators need to be tested in R12 after upgrading
- Modifying the layouts of seeded integrators
 - Layout modifications will be overwritten as part of the upgrade
 - Layout modifications have to be repeated after upgrade



Web ADI Customizations

- Spreadsheets created in 11i do not interact with Oracle Applications products after the upgrade
 - Replace existing spreadsheets with ones created using the Release 12 technology stack
- Starting in R12.1.2, Web ADI offers a design-time framework to create custom integrators using Desktop Integration Framework



Workflow Customizations

- Two options for customers to customize seeded business flow:
 - Plug in a custom flow into a seeded flow where a product has provided a placeholder
 - Extend a default business flow implementation with some configurations
- Workflow developers/customers can set their flows to be protected from upgrade.
 - Before upgrading, check that your protection and customization options are set correctly



Workflow Customizations

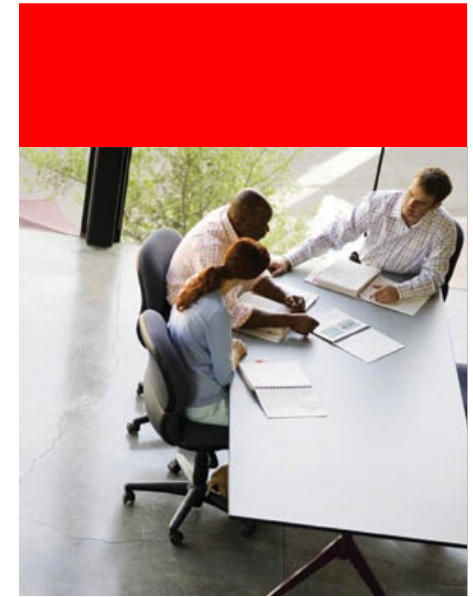
- Workflow developers operate with a specific Access Level when creating workflows
 - Oracle Workflow Development - 0-9
 - Other Applications Technology Products - 10 - 19
 - Product Teams - 20 - 100
 - Customers and their subsidiaries - 101 - 1000
- If Seeded flows are revamped during a major upgrade from 11i to R12, then customizations might have to be redone



Workflow Customizations

Supported	Not Supported
Customization that is stated as Required in the seeded workflow's product specific User guide/Doc note	Modifying a workflow object that has a protection level less than 100
Customization examples that are documented in the User guide or doc note	Altering a workflow object's protection level if its original level is less than 100
Workflows that are allowed for customization by the product i.e. Access Level of 100 or above.	Modifying user access level to less than 100 for modifying workflow objects that are protected at less than 100
Workflow customizations that comply to the customization guidelines	Customizations that are documented as UNSUPPORTED in the User Guide or Doc note

Deprecated Technologies





Deprecated Technologies from 11i to R12

- AK mode of OA Framework
- Mod_Plsql
- Oracle Reports Server Reports
- Oracle Graphics Integration
- Client ADI



Deprecated Technologies

AK

- Automatic migration of shipped OAF pages and personalizations from AK to MDS if the AK and MDS repositories are in the same database instance
- Manually migrate using Personalization Migration tool if AK and MDS repositories are not on same database instance
- Manually migrate the custom OAF pages and their personalization from AK into MDS repository
- Use the OA Framework Search feature to recreate personalizable search regions implemented as AK/ICX Web Inquiries in 11i



Deprecated Technologies

mod_plsql

- mod_plsql technology provided bridge between PL/SQL and Web worlds
 - Developers coded PL/SQL to generate raw HTML
- Upgrading mod_plsql extensions from 11i to R12
 - Determine if native R12 functionality replaces your mod_plsql extensions so extensions can be retired (preferred)
 - Re-implement UI in supported technology. PL/SQL business logic can usually be reused.



Deprecated Technologies

mod_plsql

- Re-implement mod_plsql UI on supported R12 technologies like OAF, Forms, ADF, APEX or BI Publisher.
 - “*Extending Oracle E-Business Suite Release 12 using Oracle Application Express (APEX)*”, Document 1306563.1
 - “*Mod_plsql and Oracle E-Business Suite Release 12*”, Document 726711.1
 - “*Preparing Custom Development for Next Oracle E-Business Suite Release*”, Document 374398.1



Deprecated Technologies

Oracle Reports Server Reports

- Reports Server is deprecated and replaced with BI Publisher, which is the standard for Reporting in R12
 - BI Publisher has complete template coverage for 12.1 reports, plus flexibility to create your own
- You can migrate custom reports to BI Publisher before you upgrade
 - May need to adjust queries, but formatting remains valid
 - Migration utility for Oracle Reports is available



Deprecated Technologies

Oracle Reports Server Reports

- Reports that generate HTML output should be modified
 - To generate XML output
 - To run in the context from a Concurrent Program
 - To define report layout as BI Publisher template



Deprecated Technologies

Oracle Graphics Integration

- Oracle Graphics has been replaced by OAF/BI Beans
 - Convert both the Form and the chart to an OAF-based application
 - Convert the chart to an OAF-based page that can be launched from Oracle Forms
 - Integration of Oracle Graphics into Oracle Reports-based reports must be re-implemented with BI Publisher and OAF/BI Beans



Deprecated Technologies

Client ADI

- Client ADI was deprecated to move to a 3-tier, standards-compliant desktop integration architecture
- Functionality in Client ADI is available through
 - Web ADI framework
 - Seeded Integrators
 - GL integrators
 - Asset integrators
 - Report Manager
- Customers can optionally move from Client ADI to Report Manager while on 11.5.10
- Customers upgrading from 11.5.10 to R12 must move to Report Manager

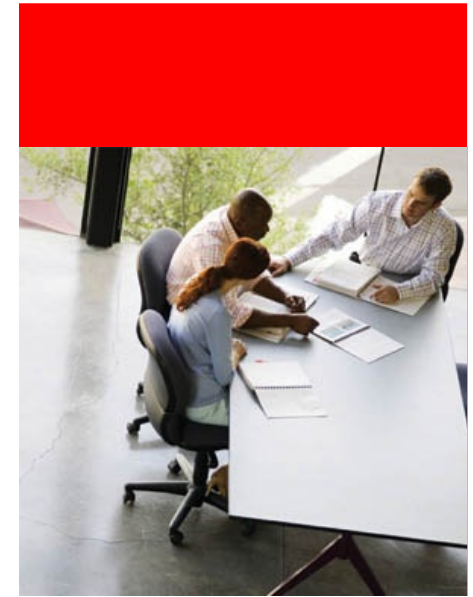


Deprecated Technologies

Upgrading from Client ADI

- Run the Data Migration tool
 - Upgrades Client ADI report data to Report Manager schema
 - Migrates Client ADI User to Value mappings to Report Manager
- Define custom templates
 - Use Report Manager Financial Report Template Editor to define custom spreadsheet layouts
 - Use BI Publisher to define custom RTF layouts
- Start publishing reports in Report Manager

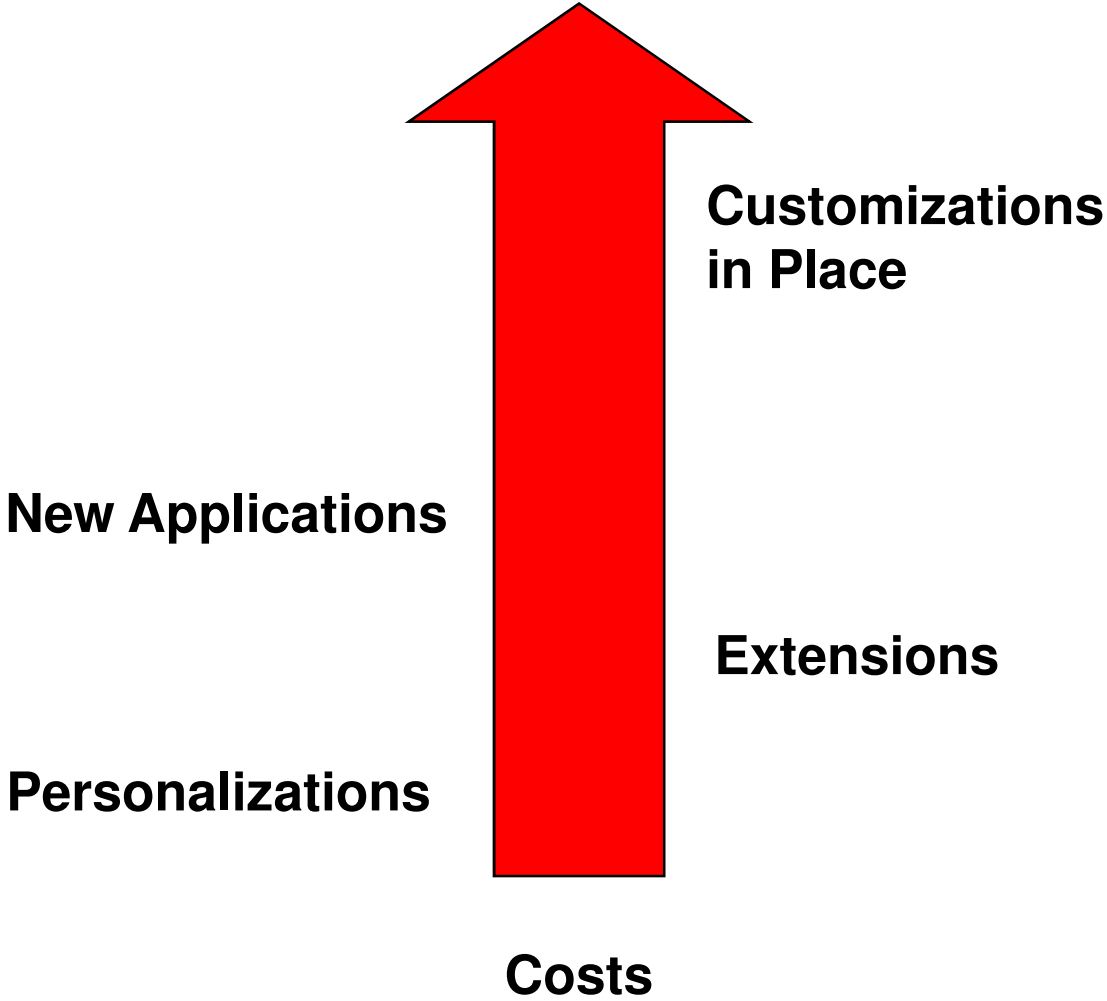
Creating Future Customizations: Choose the Right Technologies





Choosing the Right Technology

Cost of development and maintenance





Choosing the Right Technology

- Personalization
 - Oracle Forms
 - Oracle Application Framework
- Extension
 - Oracle Forms (including CUSTOM library)
 - OA Framework
 - APEX
 - ADF



Changing Oracle E-Business Suite Screens

Choose the Right Customization Approaches

- Configuration
 - Flexfields
 - Folders
- Personalization
 - Non-invasive
 - Can be turned off if problems occur
 - Upgrades automatically if screen and objects exist in the target version
- Personalization technology is the same as in the application
 - OA Framework personalization is being actively enhanced



Avoid Customization-in-Place

- Customization-in-place refers to modifying existing code and components "in place"
- Modification not supported
 - OA Framework controllers
 - Forms code
 - PL/SQL code or mod_plsql code
- Customizations-in-place will be overwritten by patches and upgrades



**Customization
In Place**



Choosing the Right Technology

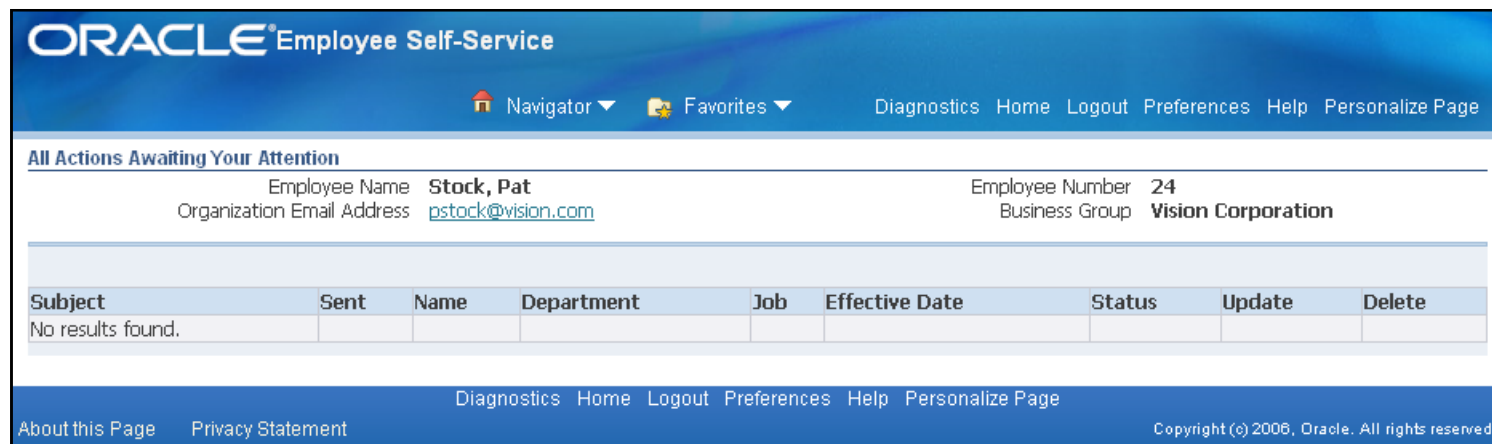
Extensions to Oracle E-Business Suite Applications

- Choose Forms or OA Framework to build screens if:
 - You are adding functionality to an existing application with one or more new UI screens
- Choose OA Framework / BC4J extension and substitution mechanism if:
 - Your existing OA Framework application requires changes to business logic
- Follow Customization Standards
 - Customization standards include placing custom code in separate CUSTOM_TOP directories, among other things
 - See *Oracle E-Business Suite Developer's Guide* and *Oracle Application Framework Developer's Guide*

Choosing the Right Technology

New Applications

- Use OA Framework if your application needs to
 - Use Flexfields
 - Use E-Business Suite function security and data security
 - Have seamless session management with E-Business Suite applications
 - Have same look and feel as the E-Business Suite application



The screenshot displays the Oracle Employee Self-Service interface. At the top, the Oracle logo is followed by "Employee Self-Service". Navigation links include "Navigator", "Favorites", "Diagnostics", "Home", "Logout", "Preferences", "Help", and "Personalize Page". Below this, a section titled "All Actions Awaiting Your Attention" shows user details: Employee Name "Stock, Pat", Employee Number "24", Organization Email Address "pstock@vision.com", and Business Group "Vision Corporation". A table with columns "Subject", "Sent", "Name", "Department", "Job", "Effective Date", "Status", "Update", and "Delete" is shown, with the message "No results found." in the first row. The footer contains "About this Page", "Privacy Statement", and "Copyright (c) 2006, Oracle. All rights reserved."

Choosing the Right Technology

New Applications

- Use ADF if your application needs to
 - Use the same standards-based Java development platform as Oracle Fusion Applications
 - Have rich user interface capabilities that are specific to ADF
 - Support mobile devices via ADF Mobile





Choosing the Right Technology

New Applications

- Use APEX if you are building PL/SQL-based applications with simple template-based UIs
 - Requires PL/SQL skills
 - No Java required or allowed
 - Provides lightweight HTML-based UI
- “*Extending Oracle E-Business Suite Release 12 using Oracle Application Express (APEX)*”, Document 1306563.1



Manage and Test Customizations Going Forward

Other Tools Available

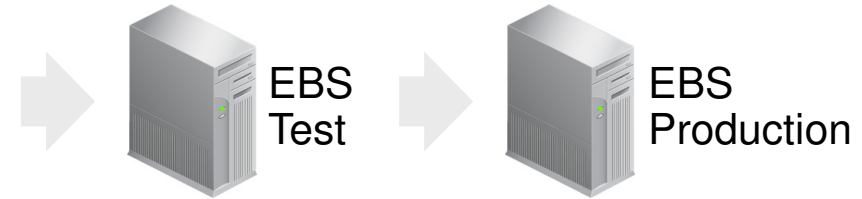
- Change Management Tools
 - Application Change Management Pack for Oracle E-Business Suite (ACMP) – Customization Manager
 - CEMLI Services Tool Subscription
 - OAM Patch Wizard Flagged Files
- Testing Tools
 - Database options
 - Real Application Testing
 - Database replay
 - SQL Performance Tester
 - Oracle Application Testing Suite (OATS)

Application Change Management Pack for Oracle E-Business Suite (ACMP)

Application Change Management Pack
for Oracle E-Business Suite

Application Management Pack
for Oracle E-Business Suite

Oracle Enterprise Manager
Grid Control



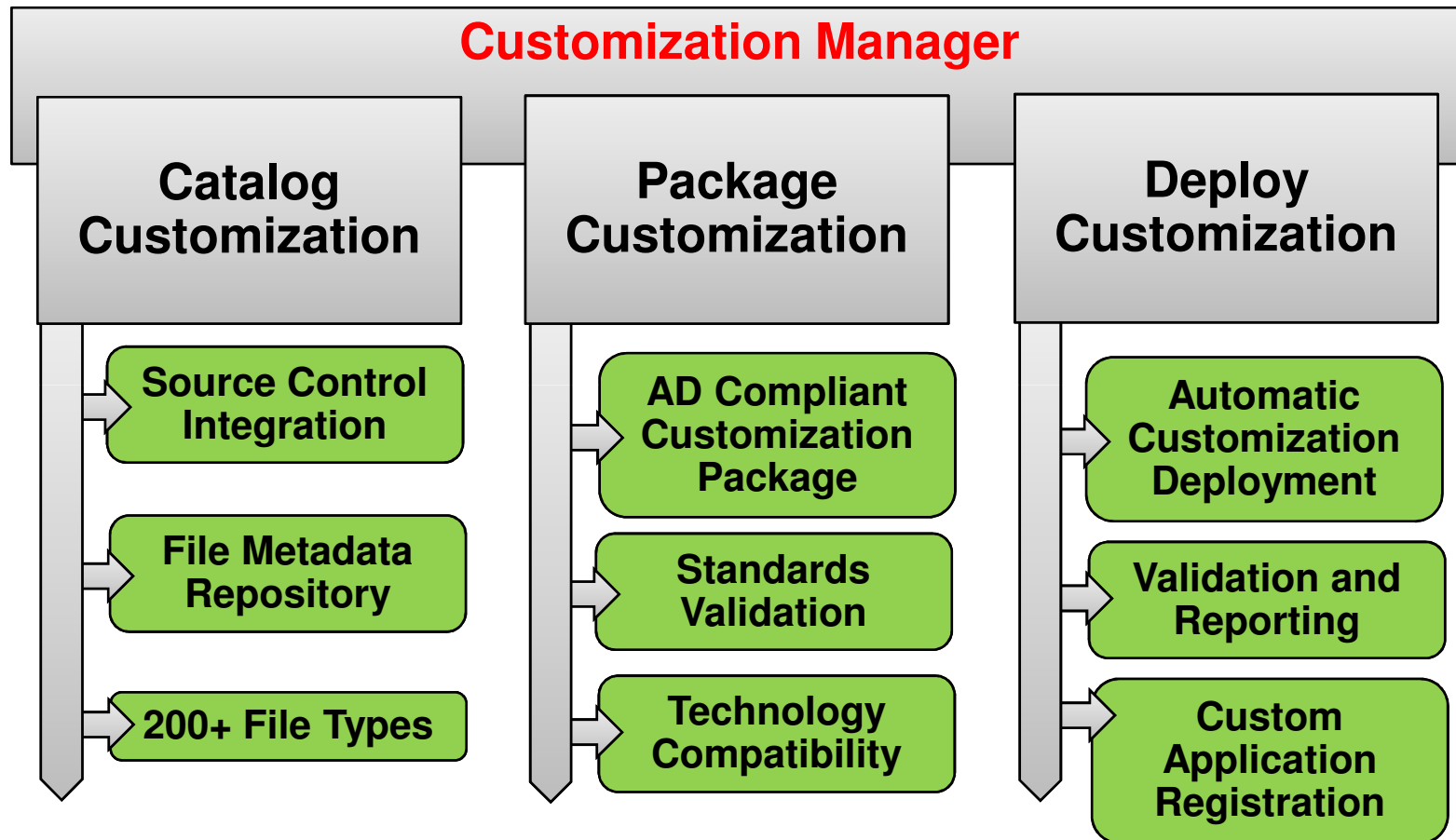
Plug-in for Oracle Enterprise Manager

Centralized Dashboard to review, monitor and orchestrate changes across Oracle E-Business Suite System

- Oracle EBS patches
- Your own customized patches
- Functional setups

Customization Manager

Application Change Management Pack for Oracle E-Business Suite



Testing Tools

Oracle Application Testing Suite (OATS)



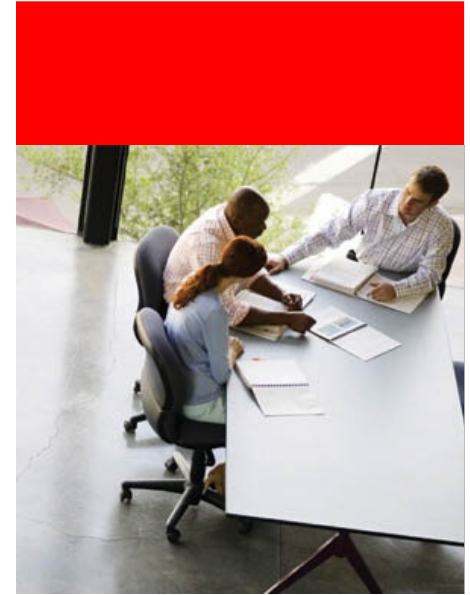
1. **Oracle Load Testing** – scalability, performance & load testing
2. **Oracle Functional Testing** – functional and regression testing
3. **Oracle Test Manager** – test process management, test execution & defect tracking

12.1.1 Test Starter Kit

- Instruction guide
- Sample QA test scripts
- See [Oracle Application Testing Suite Downloads](#) > Application Testing Suite



Conclusion





Summary of Recommendations

Going forward after the upgrade:

- Keep customizations to a minimum
- Use OA Framework Personalization or Form Personalization wherever possible
- Use OA Framework for extensions or new applications wherever possible
- Use ADF or Application Express for specific use cases



Upgrade Version Recommendations

- If you are already planning or executing an upgrade to Release 12.1(.3), keep going!
 - Get back on Premier Support until May 2014
 - Take your time getting to Release 12.2



What about Release 12.2?

- Everything discussed here applies to Release 12.2 as well
 - Get rid of unneeded old code and database objects
- Start learning about the key technologies used in Release 12.2
 - Oracle Database 11.2, Oracle WebLogic Server
 - Get familiar with using and managing these technologies now



Upgrade-related Services Available from Oracle

- Oracle Consulting
 - upgrade projects
- Advanced Customer Services
 - CEMLI Services Tool subscription
 - tailored support services for complex IT requirements
- On Demand
 - upgrade and move to On Demand services
 - Certified Configurations
 - On-site or hosted services



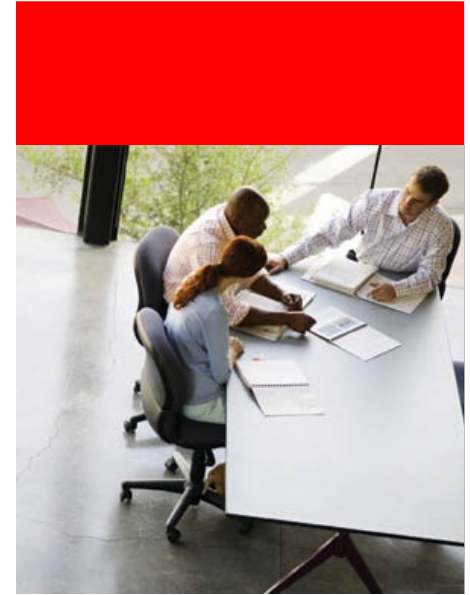
Oracle Consulting

500+ EBS Upgrades delivered through the Upgrade Lab

UPGRADE ADVISORY SERVICE	<ul style="list-style-type: none">✓ <i>Identifies business performance improvement opportunities</i>✓ <i>Quantifies business value obtained by leveraging the new release</i>
UPGRADE SERVICES	<ul style="list-style-type: none">✓ <i>R12 Functional and Technical Expertise</i>✓ <i>Upgrade Delta Fit Gap, CRP, and Configuration</i>✓ <i>Testing Support and Project Management</i>✓ <i>Training with R12</i>
UPGRADE LAB	<ul style="list-style-type: none">✓ <i>Fixed Price Services</i>✓ <i>Reduced Time, Reduced Cost, Reduced Risk</i>
MANAGED SERVICES	<ul style="list-style-type: none">✓ <i>EBS Application Maintenance Services</i>✓ <i>Keep your system fix current with fixed price managed services that apply bundles, retrofit customizations, and test your system.</i>



Additional Resources





References

- R12.1 documentation roadmap (790942.1)
- Oracle E-Business Suite Release 12.1 Info center(806593.1)
- Planning Your Oracle E-Business Suite Upgrade from Release 11i to Release 12.1 – Whitepaper (987516.1)
- Oracle E-Business Suite Upgrade Guide – Home (461705.1)
- Oracle Applications Upgrade Guide Release 11i to R12.1.1 (1082375.1)
- Form Personalizations - 279034.1 (R11i) and 395117.1 (R12)
- Database preparation guidelines for R12.1 upgrade (761570.1)

- OTN R12 upgrade forum
 - <http://forums.oracle.com/forums/forum.jspa?forumID=395&start=0>

Questions and Answers



SOFTWARE. HARDWARE. COMPLETE.

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