



## **Upgrade to R12.1 – A Technical Perspective**

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# Agenda

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- **Reasons for Upgrade**
- **Types of Upgrades, pros and cons**
- **Upgrade Vs. Re-implement**
- **Comparing with structures in 11i**
- **Tasks - Before, During and After the Upgrade**
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# About *Cerebra consulting, Inc.*

- **Headquartered in Bensalem, PA**
- **Oracle Gold Partner**
- **Focused on Oracle Applications since 2004**
  
- **Oracle EBS Implementation Specialists**
- **Oracle EBS R12 Upgrades**
- **Oracle Configurator Experts**

# Why upgrade?

## Incentives for Upgrade

- **New features and functionality to assist business**
- **Change in business direction; keep IT aligned**
- **Replace customizations and bolt-ons with standard features**
- **Take advantage of Tech. stack improvements**
- **Obtain better support when patched current**
- **Be “Fusion ready”**
- **Stay “in” support**

## Other:

- **Delaying the inevitable may cost more in long run**
- **Unsupported applications add risk to business**
- **Unsupported technology stack, operating system and/or infrastructure adds unnecessary organizational risk**
- **Finding/retaining skilled staff becomes more difficult with time**
- **Security patches and fixes more difficult to attain**
- **Stalls business innovation and investment**
- **Cultural/organization impact of not upgrading**
- **In some cases, it is not an option (i.e., HRMS/Payroll)**

# Advantages with R12 upgrade

## Add Value

- Take advantage of new features, functionality, and modules
- Use the opportunity to re-design and enhance business processes, and reduce complexity
- Decommission legacy and non-Oracle related systems and perform instance consolidation
- Move to an better architecture
- Mitigate Risk

## Reduce risk of losing premium / sustaining support levels

- Meet business executive's expectations for reliability and availability
- Move closer to using standard functionality by reducing the number of bolt-ons and customizations

## Reduce Costs

- Reduce the total cost of IT ownership, rationalization of software, tools, and hardware
- Avoid the 20% maintenance fee uplift
- Replace, minimize, and migrate complex customizations

# Types of Upgrade

## Technical

- **Keep current with the latest Oracle Application and database functionality**
- **High level gap / fit analysis**
- **RICE elements retrofit assessment**
- **Migrate to a new infrastructure**
- **Performance Testing, Test Automation**

## Functional

- **Leverage technical baseline**
- **Limited redesign of business processes**
- **Implement some new functionality and / or modules**
- **Replace, minimize and migrate customizations (limited)**

## Re-implement

- **Redesign business processes, consolidate instances**
- **Optimize on best practices**
- **Implement much new functionality and / or modules**
- **Replace, minimize and / or migrate complex customizations (comprehensive)**
- **Implement organizational change / enable business transformation**

# Technical upgrade - Pros and Cons

## Pros

- **Requires less time than other options**
- **No data migration required**
- **Reduced organizational resource requirements**
- **Short term costs significantly less**
- **Less overall impact to the business**

## Cons

- **An 'as is' migration leaves limited room for improving solution**
- **Unable to address some org requirements (COA redesign)**
- **Requires *Big Bang* cutover**
- **Can add risk if upgrade resources do not have right skills**
- **More difficult to justify with no immediate business benefits**

# Functional upgrade - Pros and Cons

## Pros

- **Good compromise of alternatives**
- **More viable for medium sized businesses**
- **Right approach when adding modules or COTS functionality**
- **Opportunity to involve business to address their concerns**
- **Provides organization a chance to *mature* their footprint**

## Cons

- **May leave users wanting more**
- **Missed opportunity to truly transform business**
- **More cost and resource involvement than pure tech upgrade**
- **Longer duration required – potentially more downtime required**
- **More complex effort requiring specialty skills and/or SI help**



# Re-implementation - Pros and Cons

## Pros

- Provides the opportunity to re-engineer business processes
- Able to address longstanding issues with the application
- Can limit amount of historic data
- Re-engineer critical flex-fields (i.e., Chart of Accounts)
- Lower risk with several options available (i.e., can roll out in phases)
- Option with potential to add the most value for the organization

## Cons

- Data migration is required across all modules
- Stronger Business/IT focus to re-engineer processes
- Costs likely to be significantly higher
- Scope can be difficult to manage
- Longer duration required – potentially more downtime required
- More complex effort requiring specialty skills

# Upgrade vs. re-implement

## Upgrade is recommended

- **Unless there is a significant reason causing you to have to re-implement**
- **Upgrade process, technology, tools, and scripts are significantly improved (pre 11i, people opted to re-implement, because of concerns about upgrading tech stack and apps stack)**
- **Re-implementation means much more extensive project**
- **Data conversion / testing will be an issue with re-implementation**

## You might need to re-implement if:

- **You have changed your basic business / organization structure and your application configuration does not still fit your business**
- **You have tons of customizations that you would like to retire in order to use current features and functionalities and streamline your operations**
- **Your original implementation got messy and unusable**
- **You have tons of really, really bad data**
- **Single instance**

# Upgrade Paths

## Oracle Applications R12

If you are at	Upgrade Path	Where to look for info
11.0, 11.5.1 - 11.5.6	-> Release 11.5.10 CU2 -> Release 12	-> Maintenance Pack Installation Notes, Release 11.5.10 CU2 (Doc ID: 289788.1) -> Oracle Applications Upgrade Guide: Release 11i to Release 12 (Doc Library CD)
11.5.7 - 11.5.10	-> Release 12	-> Oracle Applications Upgrade Guide: Release 11i to Release 12 (Doc Library CD)

If you are at	Upgrade Path
Release 11.5.9 CU2 and 11.5.10 CU2	Upgrade database before migrating to R12 to limit R12 migration downtime or during R12 migration.
Release 11.5.7, 11.5.8, 11.5.9 base, 11.5.9 CU1, 11.5.10 base, and 11.5.10 CU1	Upgrade database during R12 migration downtime.

# Upgrade Paths

## Oracle Applications R12.1

If you are at	Upgrade Path	Where to look for info
11.0	-> Release 11.5.10 CU2 -> Release 12.1.1	<i>Upgrading Oracle Applications, Release 11.5.10.2 &gt; Oracle Applications Upgrade Guide: Release 11i to Release 12.1.1</i>
11.5.1 - 11.5.8	-> Release 11.5.10 CU2 > Release 12.1.1	<i>Maintenance Pack Installation Notes, Release 11.5.10 CU2 (Doc ID: 289788.1) &gt; Oracle Applications Upgrade Guide: Release 11i to Release 12.1.1.</i>
11.5.9, or 11.5.10 (base, CU1, CU2)	> Release 12.1.1	<i>Oracle Applications Upgrade Guide: Release 11i to Release 12.1.1.</i>

If you are at	Upgrade Path
Release 11.5.9 CU2 and 11.5.10 CU2	Migrate database to at least Oracle10g Release 2, (during the upgrade downtime window).
Release 11.5.9 base, 11.5.9 CU1, 11.5.10 base, and 11.5.10 CU1	Upgrade your database as described in Migrate database to at least Oracle10g Release 2, (during the upgrade downtime window).

# File system comparison

File system component	11i	Release 12 / 12.1
RDBMS Oracle Home	<Base>/<SID>db/9.2.0	<Base>/db/tech_st/10.2.0
Developer Oracle Home	<Base>/<SID>ora/8.0.6	<Base>/apps/tech_st/10.1.2
iAS Oracle Home	<Base>/<SID>ora/iAS	<Base>/apps/tech_st/10.1.3
Data files	<Base>/<SID>data	<Base>/db/apps_st/data
APPL_TOP	<Base>/<SID>appl	<Base>/apps/apps_st/appl
COMMON_TOP	<Base>/<SID>comn	<Base>/apps/apps_st/comn
INSTANCE_TOP	(no separate COMMON_TOP)	<Base>/apps/apps_st/inst

# Component version comparison

Component	11.5.10	R12	R 12.1
Database	9i Release 2 (9.2.0.5)	10gR2 10.2.0.2	10gR2 10.2.0.2 / 11gR1 11.1.0.7
Web Server	Internet Application Server iAS 1.0.2.2.2 (Apache 1.3.19)	Oracle Application Server 10g 10.1.3 (Apache 1.3.34)	Oracle Application Server 10g 10.1.3 (Apache 1.3.34)
Java Servlet Container	JServ	OC4J	OC4J
Forms Server	Oracle Developer6i 6.0.8.24	Oracle Application Server 10g 10.1.2	Oracle Application Server 10g 10.1.2
Reports Server	Oracle Developer6i 6.0.8.24	Oracle Application Server 10g 10.1.2	Oracle Application Server 10g 10.1.2
Client Viewer Applet Host	Oracle JInitiator 1.3.1.18	Java (J2SE) native plug-in 1.5.0_09+	Java (J2SE) native plug-in 1.6.0_10
Discoverer	Discoverer 4i -4.1.48	Discoverer 10g - 10.1.2.0.2	Discoverer 10g - 10.1.2.0.2
JDK	JDK 1.4 – 1.4.2	JDK 5.0 - 1.5.0_08	JDK 6.0

# Tasks *before* downtime

## Technical tasks

- Familiarization and Sizing
- Analyze current and legacy system functionality against target release functionality for potential retirement
- Review reports for obsolescence and redundancy
- Review integration tools / methods for obsolescence
- Determine architectural options
- Review understanding of Oracle upgrade toolkit / scripts

## Functional tasks

- Familiarization
- Determine business objectives, issues, and drivers through a series of stakeholder interviews/workshops
- Assess the business value of implementing new functionality and/or application modules
- Provide an implementation / resource estimate

# Tasks *during* downtime

## Technical tasks

- **Migrate to 10gR2 (if not already completed)**
- **Apply R12 AD.A Minipack**
- **Run the R12 Patch Driver**
- **Apply Latest Product Patches**
- **Configure and Start Services**
- **Reapply Customizations**
- **Finish System Admin Tasks (SSL, Workflow Mailer, XML Gateway, PDF Printing, XML Publisher Setup)**



# Tasks *after* downtime

## Technical tasks

- **Verify Completion of Concurrent Programs**
- **Install Online Help**
- **Migrate Custom Development**
- **Run Data Migration program for Historical Data**
- **Update URLs in Open Workflows**
- **Product Related Tasks**

## Functional tasks

- **Verification Tasks**
- **Identify approach to Upgrade Historical Data**

# Post upgrade tasks

- **Integrate third party software**
- **Configure SSL**
- **Setup autoconfig for RAC instances**
- **Setup PCP**
- **Configure workflow notification mailer**
- **Complete manual tech stack configuration changes if any**
- **Setup XML gateway for fonts, template, pdf printing, temp directory**
- **Complete functional steps (this can be a very long list)**
- **Disable maintenance mode**
- **Apply consolidated online help patch**
- **Start services**
- **Perform DBA sanity check**
- **Backup**

# Custom objects that need changes

- **Forms & Reports**
- **C code**
- **Java code**
- **Any code using mod\_plsql**
- **Development Tools: compilers, Forms/Reports Builder 10.1.2, JDev 10.1.3**
- **User Interfaces: new look & feel**

# Tools to aid in upgrade

## Patch Wizard

- Utility installed as part of EBS products
- Accessed from Oracle Applications Manager
- Recommended patches
- Impact analysis
- Download patches and merge
- Specific patches
- Note 976188.1 - Patch Wizard Utility

## Maintenance Wizard

- Tool to perform the upgrade
- Step-by-step instructions
- Dynamically filters tasks
- Identifies critical patches
- Automatically execute tasks
- Audit reports for tasks performed
- Release 12.1.3/11gR2
- Note 434387.1 - Maintenance Wizard

# Resources that aid in upgrade

- **Upgrade Lifecycle Advisors**
- **Patching & Maintenance Advisor**
- **Upgrade Community**
- **EBS Data Model Comparison Report**
  - **Identifies data model changes between releases**
  - **Compares products that exist in both releases**
  - **Supported object types**
  - **Useful for evaluating customizations**
  - **Complete information**
  - **Note 1290886.1 EBS Data Model Comparison Report Overview**

# How can you minimize downtime

- If 11.5.9.2 or 11.5.10.2, upgrade RDBMS to 10gR2 –it is certified with 11i (Oracle MetaLink Note 362203.1)
- Establish adequate hardware
- Convert to Oracle Applications Tablespace Model (OATM) (FAQ Note: 269293.1)
- Upgrade to ATG\_PF.H.RU4 or Higher (Patch 4676589)
- Use TUMS (The Upgrade Manual Script) to skip unnecessary tasks (\$AD\_TOP/patch/115/sql/adtums.sql)
- Increase available storage (by a min of 10%)
- Apps R12 no longer uses (disables) mod\_plsql; so you need to plan for migration if you have any custom use for mod\_plsql
- Oracle Graphics is no longer supported, Oracle recommends using BI Publisher
- Follow Module Specific Tasks to Reduce Downtime in Appendix E of the *R12 Upgrade Guide*
- Archive or Purge Historical Data that has past retention
- Take advantage of "Upgrade by Request"

# Sample TUMS report

## Oracle Applications R12 Upgrade Report(TUMS) - VIS

### Unnecessary steps

Based on the analysis of your installation, it has been determined that you do not need to perform the following upgrade steps.

You may safely omit carrying out these steps from the Upgrading Oracle Applications Release R12 manual during your upgrade.

### Chapter 2: Preparing for the Upgrade

Depot Repair, Step 1 (CSD\_DATA\_CHECK)

Service Contracts, Step 1 (OKS\_VALIDATE\_GCD)

Service Contracts, Step 2 (OKS\_VALIDATE\_RULE)

Oracle Financials(India), Step 1 (JAI\_CHECK\_CUST)

Internet Expense, Step 1 (OIE\_IMPORT\_INTERCOMPANY\_CHECK)

# **Sample – Product specific upgrade issues – Finance/GL**

- **Sub ledger Accounting (SLA) for Operating Unit flexibility**
- **E–Business tax setups for each financial module have been removed and are now centralized.**
- **Multi-Org Access Control (MOAC) - Provides role based access to Operating Units. It can be confusing and dangerous to set up due to access to multiple operating units**
- **Check out the critical reports early - Trial balances, sub ledger accounting, etc. are different with the XML /PDF output.**
- **Many reports no longer exist. New setups are needed in Sub Ledger Accounting (Open balance definitions) and some new Templates**



# Sample – Product specific upgrade issues – Oracle Configurator

Release Name	Date	New Features
R 12.0.x	Jan 2007	Integration of APC User defined attributes, Model Migration, JSP Tag Library, TSO Enhancements
R 12.1.1	Mar 2009	Fusion Configurator Engine, Configurator Attributes, CIO Emulation
R 12.1.2	Dec 2009	User Interface Enhancements, Model JVM Routing, Integration with Agile Variant Management
R 12.1.3	Aug 2010	Processing Page for Long Running FCE Actions, Rule import for FCE Models

# Testing – Post Upgrade

- **Use Library of Test Cases, with detailed test scripts**
- **Include and use cases from past 11i Implementation or upgrades**
- **Be prepared to add some test cases for new features or functionality**
- **Modify test cases to reflect new or changed functionality**
- **Make sure your test cases have specifics about test data and expected results**
- **Check them back in to the library for next time**

# Best Practices and Lessons Learned

## Planning

- Plan early
- Develop upgrade strategy
- Ensure adequate hardware resources
- Ensure skilled resources
- Get trained
- Study technical and functional impacts
- Do multiple test upgrades
- Do cutover and transition tests
- Minimize downtime

## Address High Impact Issues

- Large database – archive / purge
- Long downtime – use best practices
- Complexity – understand the impact and plan
- Integration – practice, document
- Customization – plan in advance
- Regression Testing - plan
- Rush to go live – allocate sufficient time

# Best Practices and Lessons Learned

(continued ...)

## Stay Current

- **Keep up-to-date on latest AD/FND code**
- **Upgrade RDBMS to latest certified version**
- **Archive and purge old data**
- **Enable multi-org and OATM**
- **Read R12 RCD, TOI, Documents, get trained**

## Leverage Tools

- **Use maintenance wizard for simplicity and repeatability of upgrade**
- **Performance test utilities**

# Best Practices and Lessons Learned

(continued ...)

## Tune for Upgrade

- Properly size RDBMS for upgrade
- init.ora - update to parameters
- Undo
- Shared pool
- DB Cache
- PGA Aggregate Target
- Plan for additional storage for staging patches, pre-built code
- Use production like hardware for UAT
- Optimize CBO stats
- Set plsql\_no\_compile=yes
- Use higher batch size (10000-20000)
- Choose adequate numbers of workers
- 1 to 1.5 Times number of CPU

# Best Practices and Lessons Learned

(continued ...)

## Monitor Potential Issues

- CPU <95%
- MEM/Swap
- IO <10-15 ms
- Disk storage
- Alert log
- Temp space
- Undo
- Session waits
- Locking
- Latching
- Always backup at critical points

# Best Practices and Lessons Learned

(continued ...)

## Validate Everything

- **HRGLOBAL driver before NLS patches**
- **Manifest for NLS patches**
- **Help related patches**
- **Archive ad task timing table for comparison**
- **Repeat the upgrade until all issues are fixed and downtime is consistent**
- **Ensure new customizations comply to new standard**

# Critical Success Factors for R12 Implementation

- Estimating appropriate level of effort
- Obtaining support and gaining buy-in
- Estimating data cleansing efforts and executing
- Establishing and maintaining a stable technical environment
- Estimating and addressing the organizational change impact
- Utilizing a proven approach to implementation
- Clearly communicating the program objectives and benefits
- Ensure effective sponsorship throughout
- Select dedicated *R12-skilled* project team
- Managing scope effectively – strike balance
- Start planning early and do it right



**Questions?**

# References

- MOS ID 806593.1 – R12.1 Info Center
- MOS ID 398877.1 – R12.1 Live Advisor Webcasts
- MOS ID 804373.1 – R12.1 Value Proposition documents
- E-Business Suite R12.0 Information Center [ID 401740.1]
- E-Business Suite Upgrade Guide – [ID 461705.1]
- Advisor Webcasts: New R12 Fin. Prod. Features [ID 744894.1]
- E-Business Suite Release 12.1 Information Center [ID 806593.1]
- Advisor Webcasts: E-Business Suite Release 12.1 [ID 398877.1]
- Upgrade Community – Forums
- Steven Chan's blog, "Choosing Between Release 12 or 11i"

# Thank You!

**Contact details**

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