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Modernizing Legacy Business Applications with Oracle Application Express

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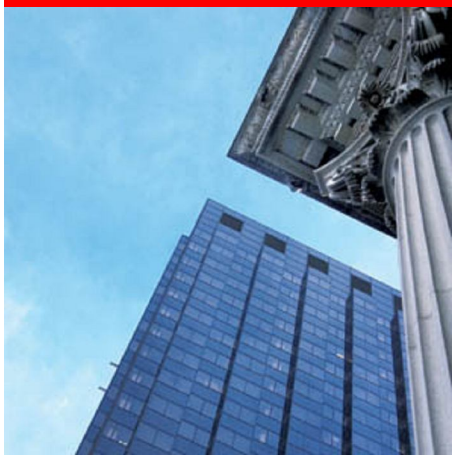
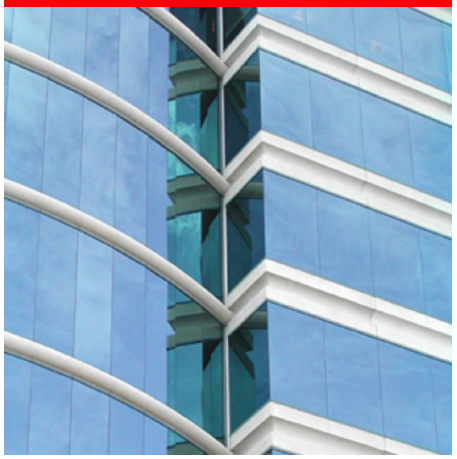
Agenda



- Oracle Application Express Overview
- MS Access Migration
  - Why Migrate from Microsoft Access?
  - Application Migration Workshop
  - Migration Process
- Oracle Forms Modernization
  - Similarities and differences between Forms and APEX
  - Oracle APEX Forms Converter
  - Conversion Project
  - Demonstration Forms to APEX



Oracle Application Express

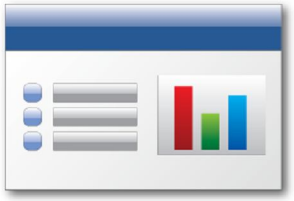
Overview

Oracle Application Express Overview

- Unique Rapid Application Development (RAD) tool for the Oracle Database
- Browser based for Development, Deployment and Use
- Allows to declaratively build professional Web 2.0 applications that are fast and secure
- Leverages full Oracle database capabilities and existing SQL & PL/SQL skills
- Standard component of the database
- Fully supported, “no-cost” option with all editions of the Oracle Database

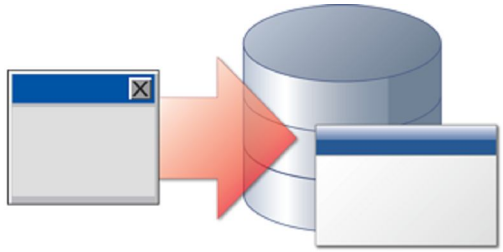
Easy to develop • Easy to deploy • Easy to manage

Oracle Application Express Overview



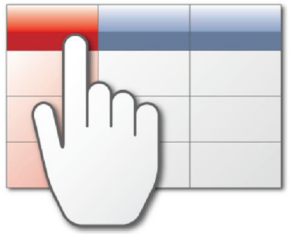
Data-driven Applications

Develop opportunistic and departmental productivity applications



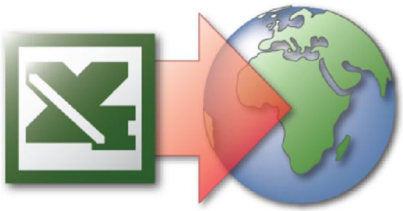
Oracle Forms Modernization

Leverage SQL & PL/SQL declarative programming skills to move Forms applications to HTML / Web 2.0



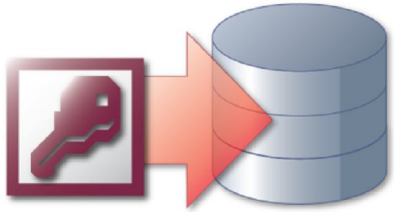
Online Reporting

Build SQL-based reporting applications on existing database schemas



Spreadsheet Web-ification

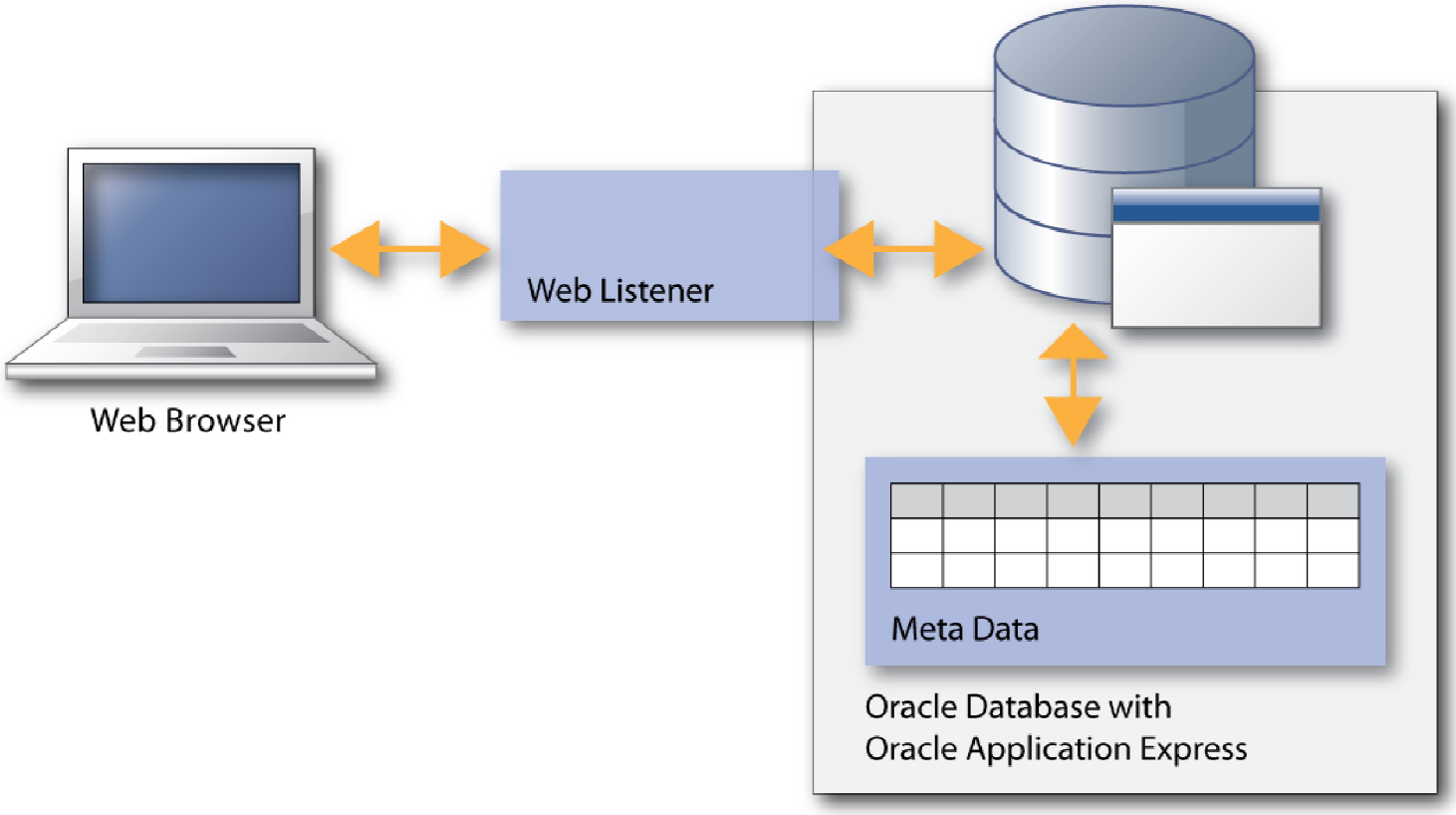
Convert spreadsheets to Web applications where they can be concurrently viewed and edited



Access Replacement

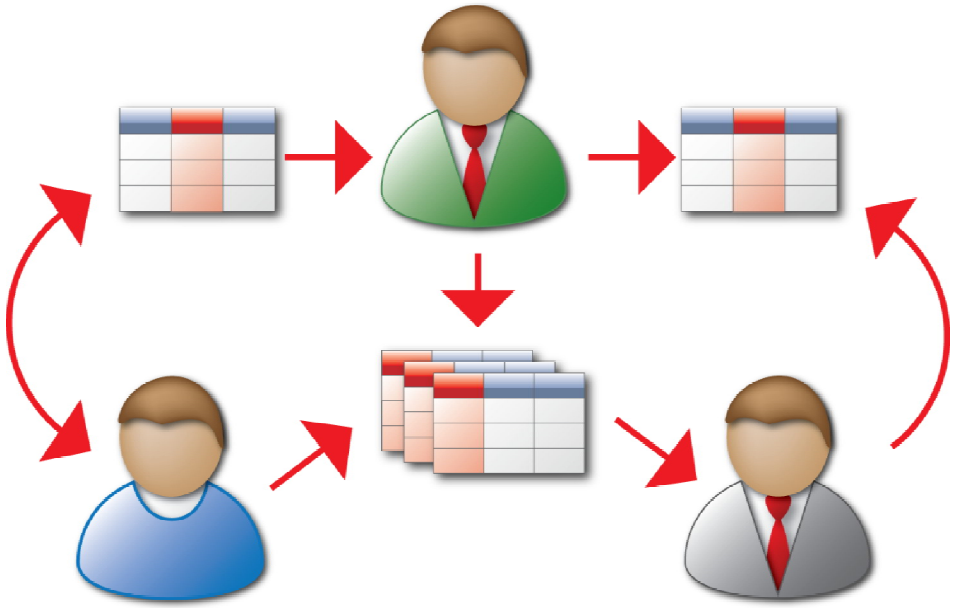
Consolidate outgrown Access applications to the Oracle database with an APEX Web front end

Oracle Application Express Overview



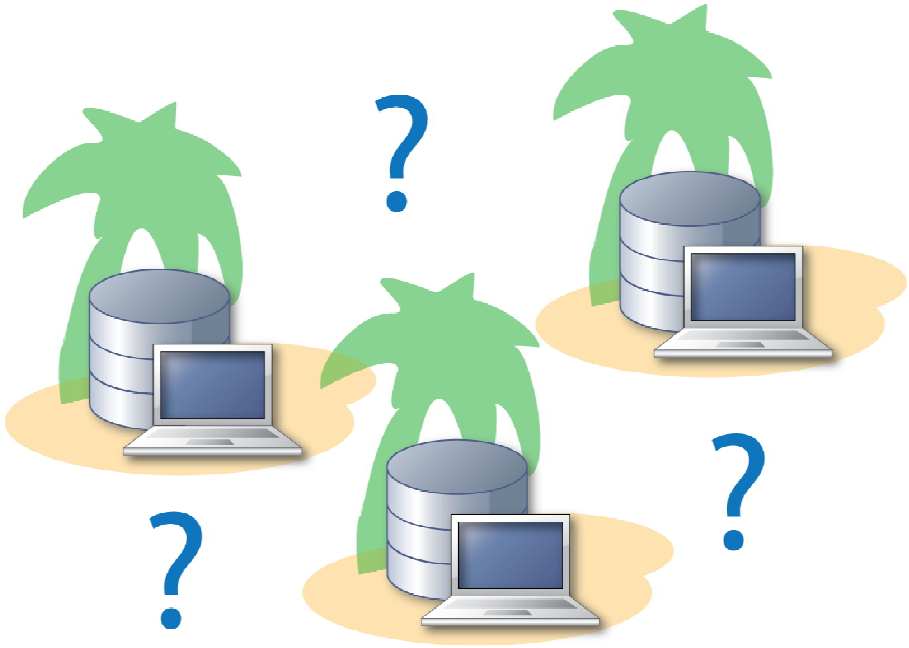
Problem: Spreadsheets

- Multiple sources of truth
- Manual collation from different sources
- Reports generated from partial truth
- No controls over who sees the information



Problem: Personal Databases

- Fragmented
- Platform dependent
- Web unfriendly
- Vulnerable
- Can be easily copied
- Backups inconsistent
- Password Security inadequate
- Scattered locations
- Inefficient utilization of IT resources



Meeting Business Requirements with Oracle Application Express

- ✓ Centrally managed Enterprise Database
- ✓ Backed-up
- ✓ Secure
- ✓ Scalable

- ❑ Gain more data visibility
- ❑ Integrate data silos
- ❑ Additional reporting
- ❑ Increase productivity
- ❑ React to market forces
- ❑ Meet compliance requirements

Do more with fewer people and less budget

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MS Access Migration

Why Migrate from Microsoft Access?

- Drivers
  - Consolidation of departmental applications to centrally managed IT
  - Some applications have grown and become mission critical
  - Web unfriendly
  - Platform dependent
  - Poor security
  - Limited scalability / excessive network traffic
- Challenges
  - Effort / business knowledge required to migrate
  - Poor data model design
  - No documentation

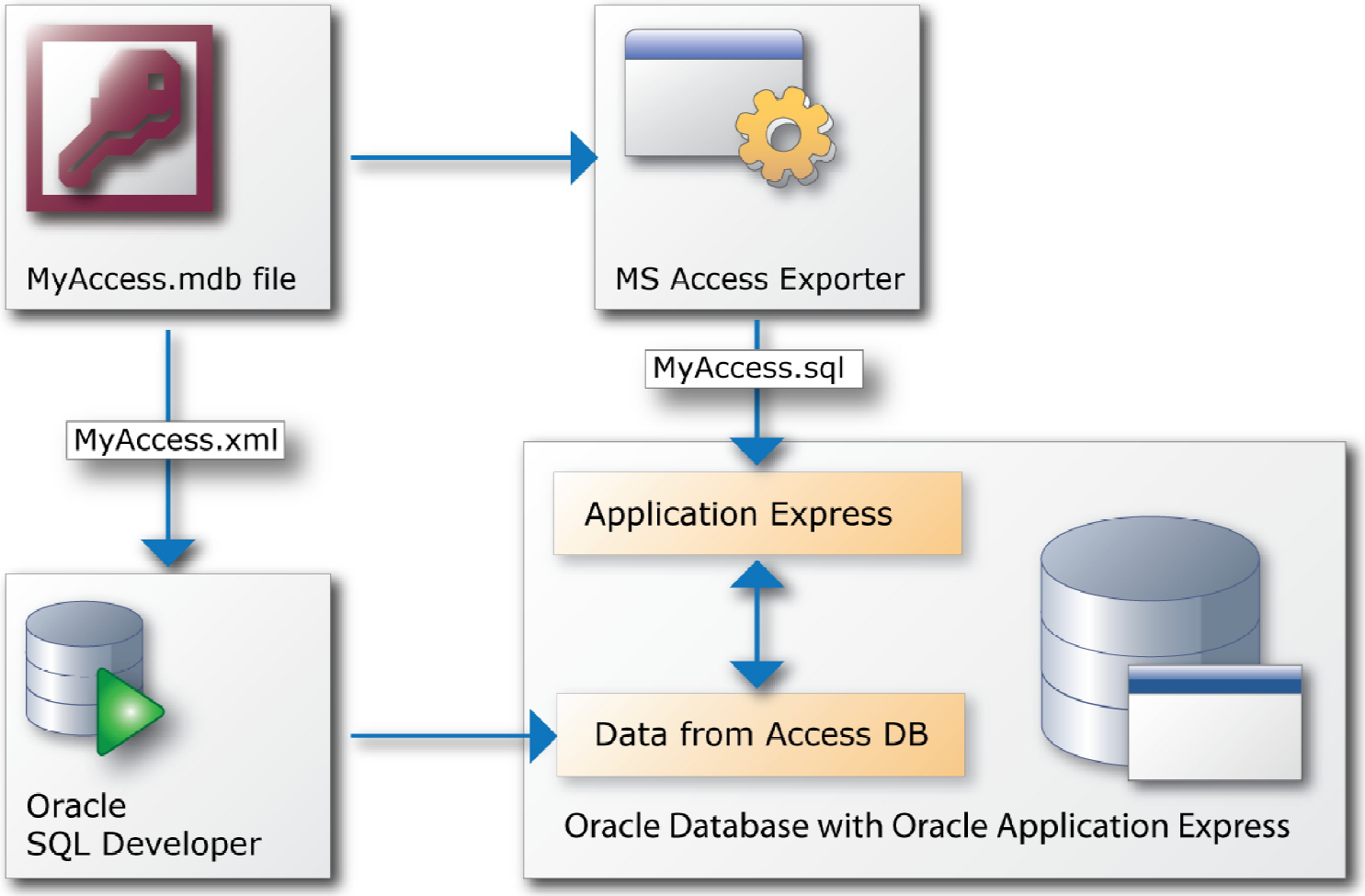
Application Migration Workshop

- Standard feature since Oracle Application Express 3.0
- Provides view of all Access application metadata
- Generate Two types of Applications
  - Application – Based on Forms / Reports
  - Maintenance – Based on Tables / Views

Application Migration Workshop

- Database Refactoring
  - The better the Data Model, the easier it will be to create good Oracle APEX applications
  - Identify tables without Primary Keys, Foreign Keys, UI Defaults.
- Design Recovery
  - Provide detailed information about the original Access Application
  - Workshop approach allows developer to define scope and fix any objects identified as invalid resulting in increased automatic conversion %
- Native Oracle APEX Applications
  - No emulation of unique Access functionality
  - Leverages the Application Model behind the Create Application Wizard

MS Access Migration



MS Access Migration

- Migration Process
  - Export MS Access metadata
  - Migrate the Microsoft Access database to Oracle
  - Create an Oracle Application Express Workspace
  - Create a migration project
  - Analyze the Microsoft Access application
  - Generate the Oracle Application Express Application
  - Customize your Application Express application

Demonstration

MS Access to APEX Migration

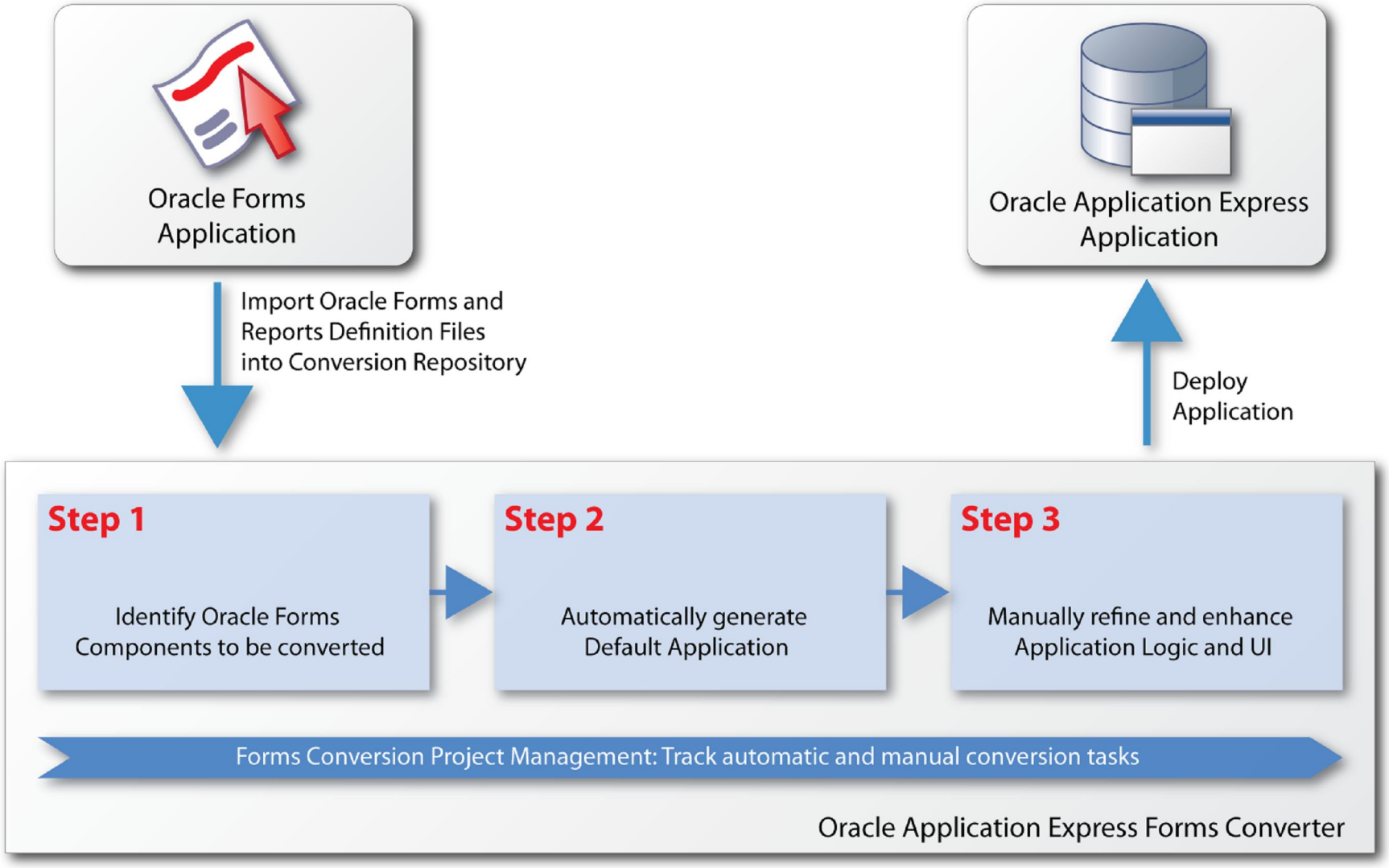
Oracle Forms Modernization

Oracle Forms to APEX Conversion

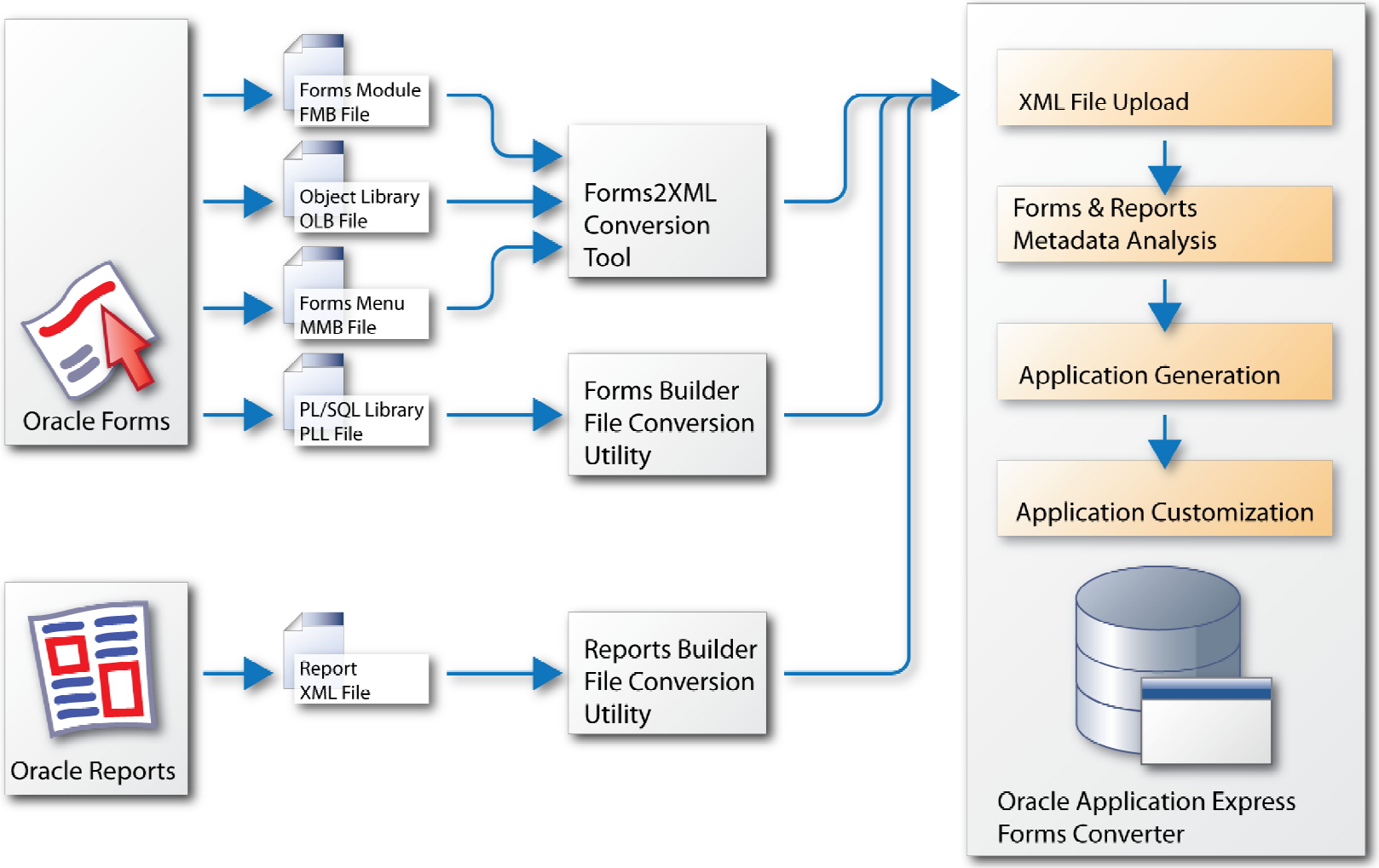
- Drivers
  - Modernization of software / hardware
  - Incorporate Web 2.0 capabilities
  - Deliver greater user interactivity
  - Utilize existing Database objects
  - Can re-use existing IT developer skill-set
  - Difficulty finding new Oracle Forms developers

- Challenges
  - Availability of IT application matter experts
  - Conversion is non-trivial, requiring significant effort and resources
  - APEX application will not look nor feel like Forms application

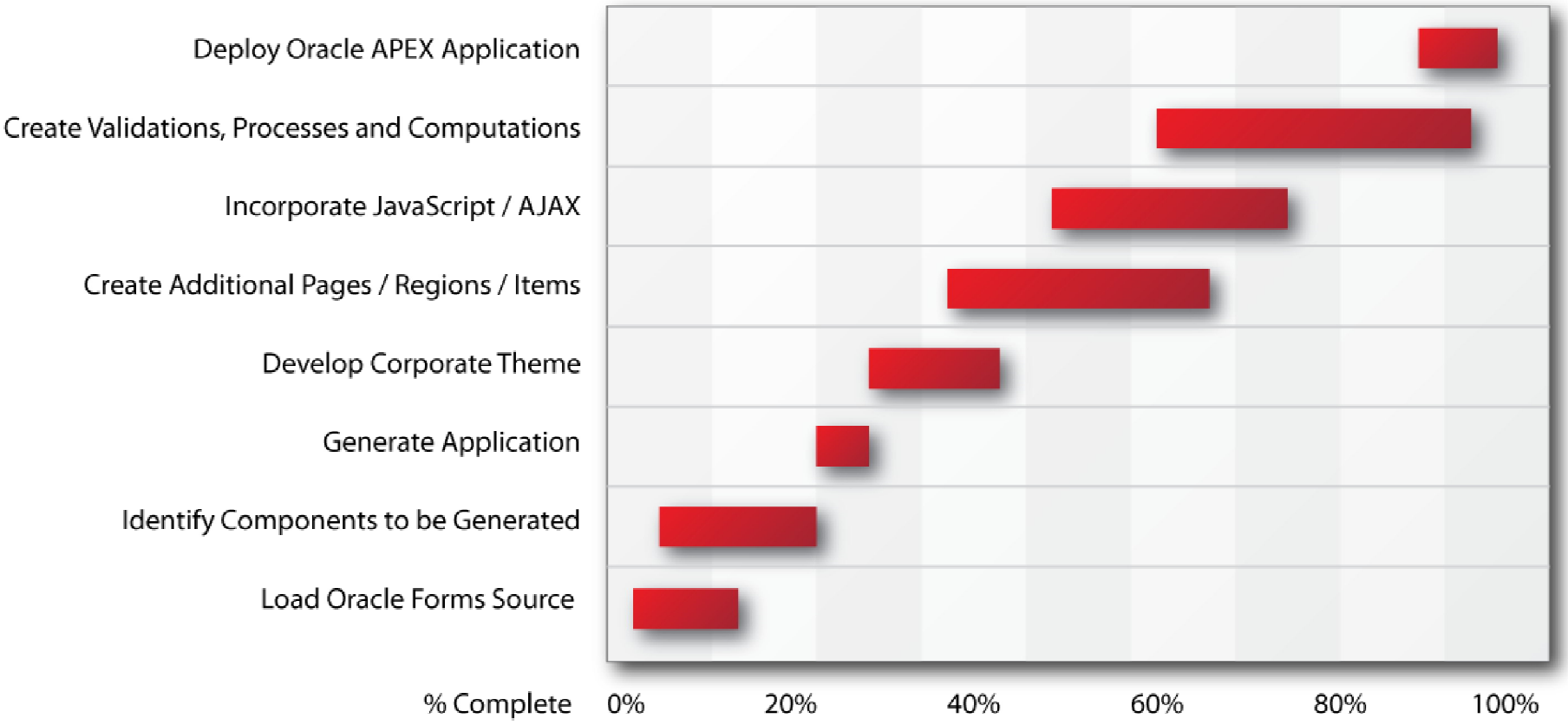
Oracle Forms to APEX Conversion



Oracle Forms to APEX Conversion



Forms to APEX Conversion Project



Oracle Forms vs. Oracle APEX

Feature	Oracle Forms	Oracle APEX	Description
4GL Declarative	Yes	Yes	Oracle Forms renders applications using metadata stored in an .fmx file. Oracle APEX renders applications using metadata stored in an Oracle database.
4GL Languages	SQL and PL/SQL	SQL and PL/SQL	Oracle Forms runs server-side and client-side PL/SQL. Oracle APEX uses server-side PL/SQL.
User Interface	Java	HTML	Oracle Forms can be accessed using a web browser and its user interface is rendered using a JVM. Oracle APEX is also invoked from a Web browser but its user interface is HTML and JavaScript.

Oracle Forms vs. Oracle APEX

Feature	Oracle Forms	Oracle APEX	Description
Page Layout	Windows / Canvases	Page / Regions	Oracle Forms uses exact positioning and Oracle APEX uses relative positioning.
Web Service Support	Yes	Yes	Both Oracle Forms and Application Express support the calling of Web Services, for example BPEL.
Client-side Field Control	Form triggers	JavaScript and AJAX	Oracle Forms provides field-level validation and event processing. Oracle APEX supports declarative page-level validation and event processing. Programmatic field-level validation and event processing requires JavaScript and AJAX.

Oracle Forms vs. Oracle APEX

Feature	Oracle Forms	Oracle APEX	Description
Charting	BI Beans	Flash Charts	Oracle Forms uses BI Beans. Oracle APEX uses Flash Charts as its integrated charting engine.
Database Connections	Synchronous	Asynchronous	Oracle Forms uses synchronous connections to allow transactions to span multiple screen interactions. Oracle APEX does not transparently allow this but programmatically supports transactions spanning page views using collections.
Locking	Pessimistic, Optimistic, Custom	Optimistic, Custom	Oracle Forms supports a range of locking models with pessimistic as the default. Due to its asynchronous architecture, Oracle APEX uses an optimistic locking model.

Oracle Forms vs. Oracle APEX

Feature	Oracle Forms	Oracle APEX	Description
Concurrent User Support	DB connectivity maintained by user session	DB connectivity only maintained for processing of requests	Each connected user in Oracle Forms maintains a synchronous connection to the Oracle database. Oracle APEX users are asynchronously connected to the Oracle database.
Architecture	3 Tier	2 Tier	With Oracle Forms, Application logic is processed in the Oracle database, a mid-tier Forms Server, or in the rich client. With Oracle APEX, PL/SQL application logic is processed within the Oracle database. Client-side logic is implemented using JavaScript. HTTP communications are facilitated using Apache and Mod/PLSQL.

Forms to APEX Conversion Project

- Define scope of project
  - Identify the Forms application(s) and modules
  - Specify which Oracle Forms are to be migrated
  - Analyze data model used by Forms application(s)
  - Collect any related documentation on the Form modules and database design

Converting Forms Modules to XML

- Forms to XML conversion tool: `Forms2XML`
- Invoked from the command line or Java program
- Can be used with:
  - FormsModule (`.fmb`)
  - ObjectLibrary (`.olb`)
  - MenuModule (`.mmb`) files
- Convenience Scripts
  - frmf2xml.bat/sh - Converts Forms Modules to XML format
  - frmxml2f.bat/sh - Converts XML to Forms Modules
  - frmxmlsg.bat/sh - Generates the Forms XML Schema (forms.xsd)
  - frmxmlv.bat/sh - Validates the structure of a Forms XML file

Oracle APEX Forms Converter

- Manage conversion throughout life-cycle of project
- Automatically translate main components
- Generate forms, reports, master-detail, tabular forms
- But no automatic reproduction with a new technology
- 100% generation not possible due to:
  - The complexity and variety of logic incorporated into Oracle Forms applications specifically within triggers, program units, libraries, etc.
  - The difference in inherent user interactivity between Oracle Forms and APEX.

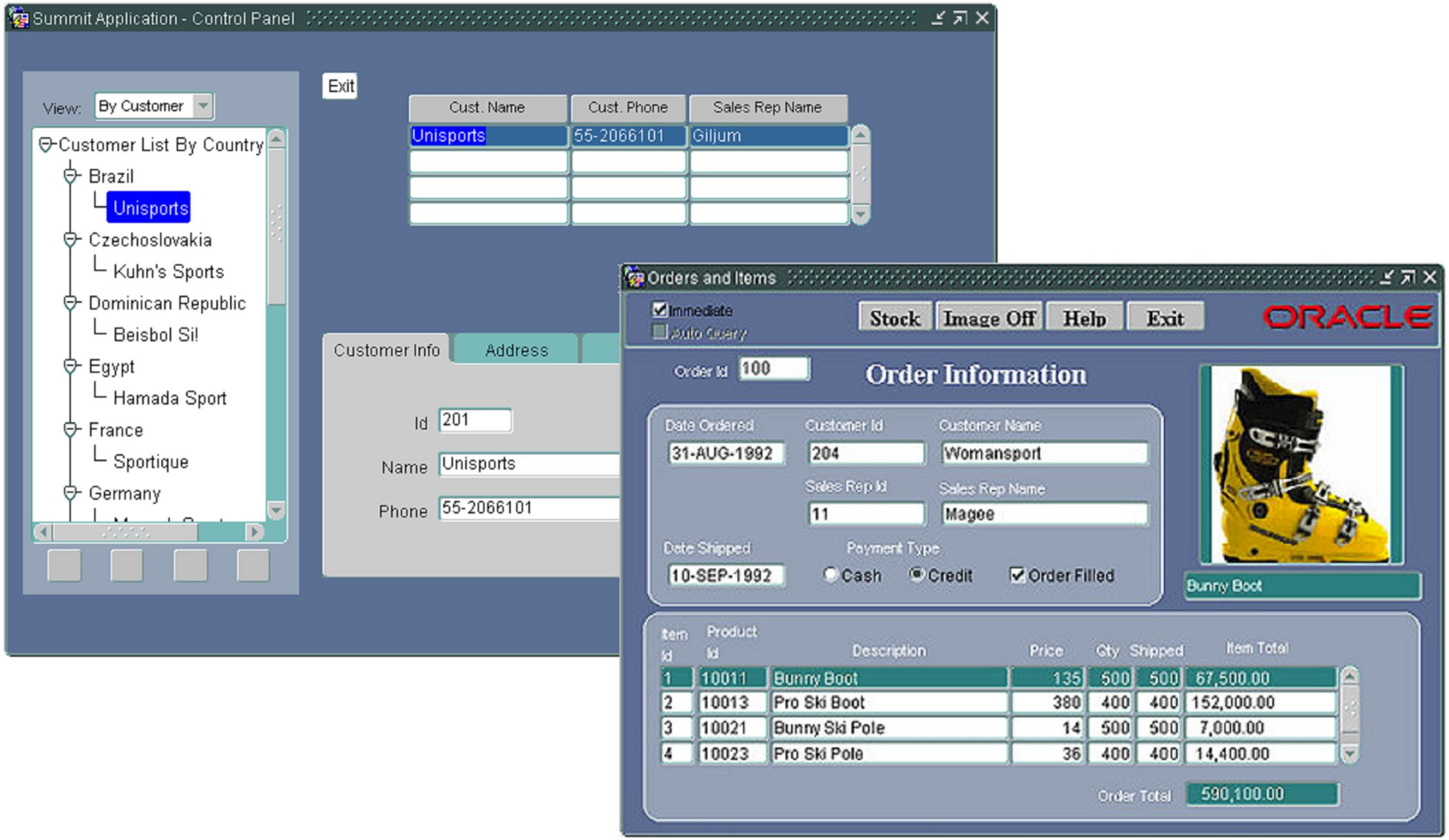
Post-Generation Conversion Tasks

- Examine triggers and program units within the conversion project
- Enhance the generated Oracle APEX application
- Develop Oracle Database components
- Add additional Oracle APEX components
- System Test Oracle APEX application(s)
- Train users on Oracle APEX application(s)
- Implement Oracle APEX application(s)

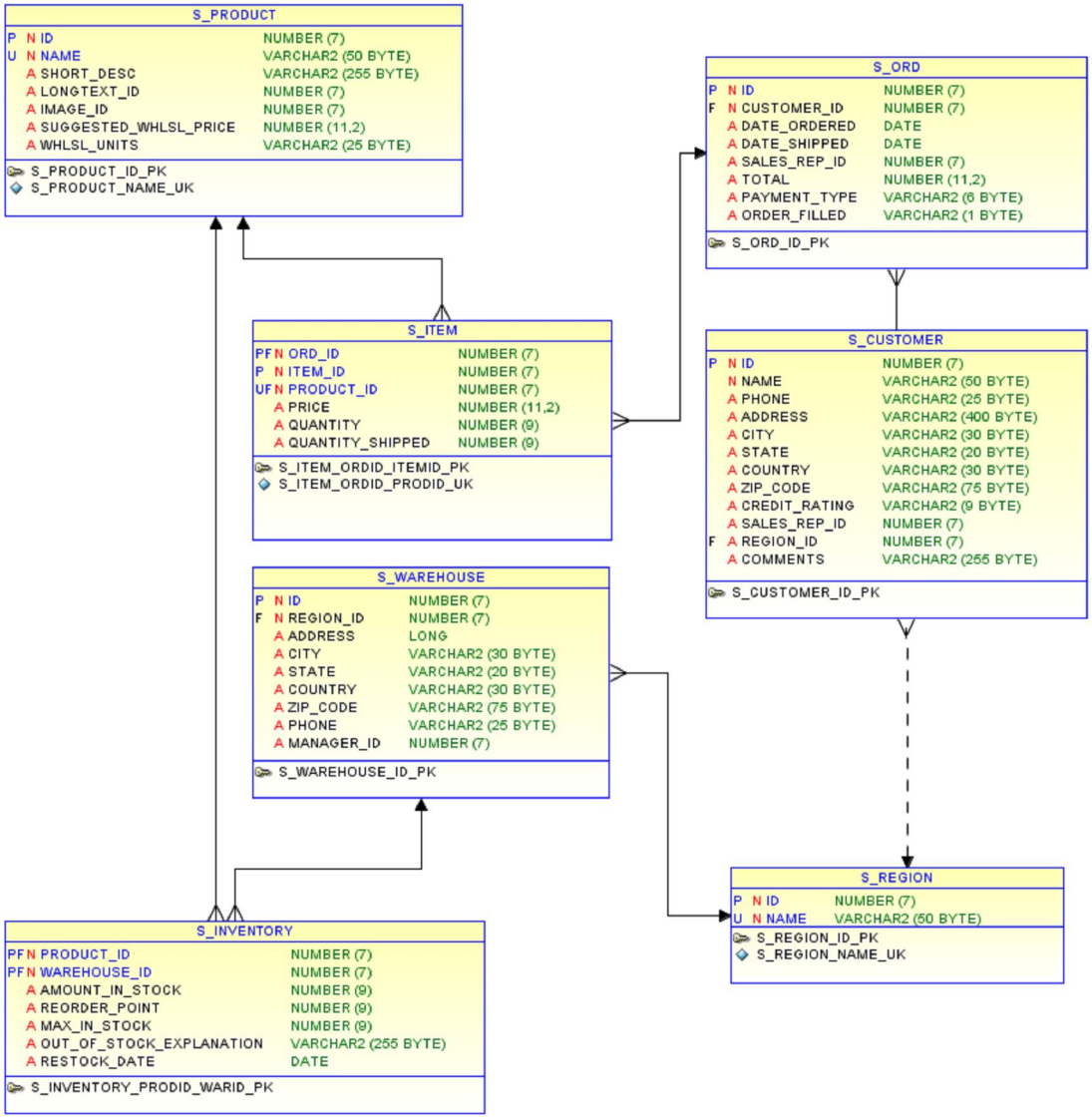
Demonstration

Forms to APEX Conversion

“Summit” Demo Application



“Summit” Data Model




Q&A