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Oracle Forms Modernization with Oracle Application Express

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Agenda

- Oracle Application Express Overview
- Similarities and differences between Oracle Forms and Oracle APEX
- Oracle APEX Forms Converter
- Demonstration Forms to APEX Conversion
- Post-Generation Conversion Tasks

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Oracle Application Express

Overview

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Oracle Application Express Overview

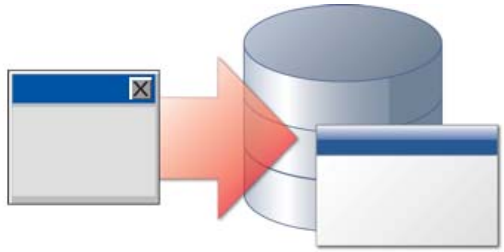
- Unique Rapid Application Development (RAD) tool for the Oracle Database
- Browser based for Development, Deployment and Use
- Allows to declaratively build professional Web 2.0 applications that are fast and secure
- Leverages full Oracle database capabilities and existing SQL & PL/SQL skills
- Standard 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

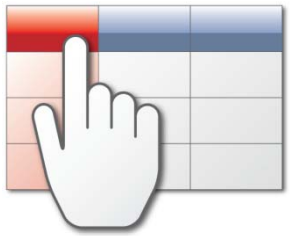
Data-driven Applications

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

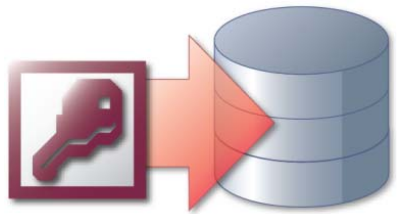


Online Reporting

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

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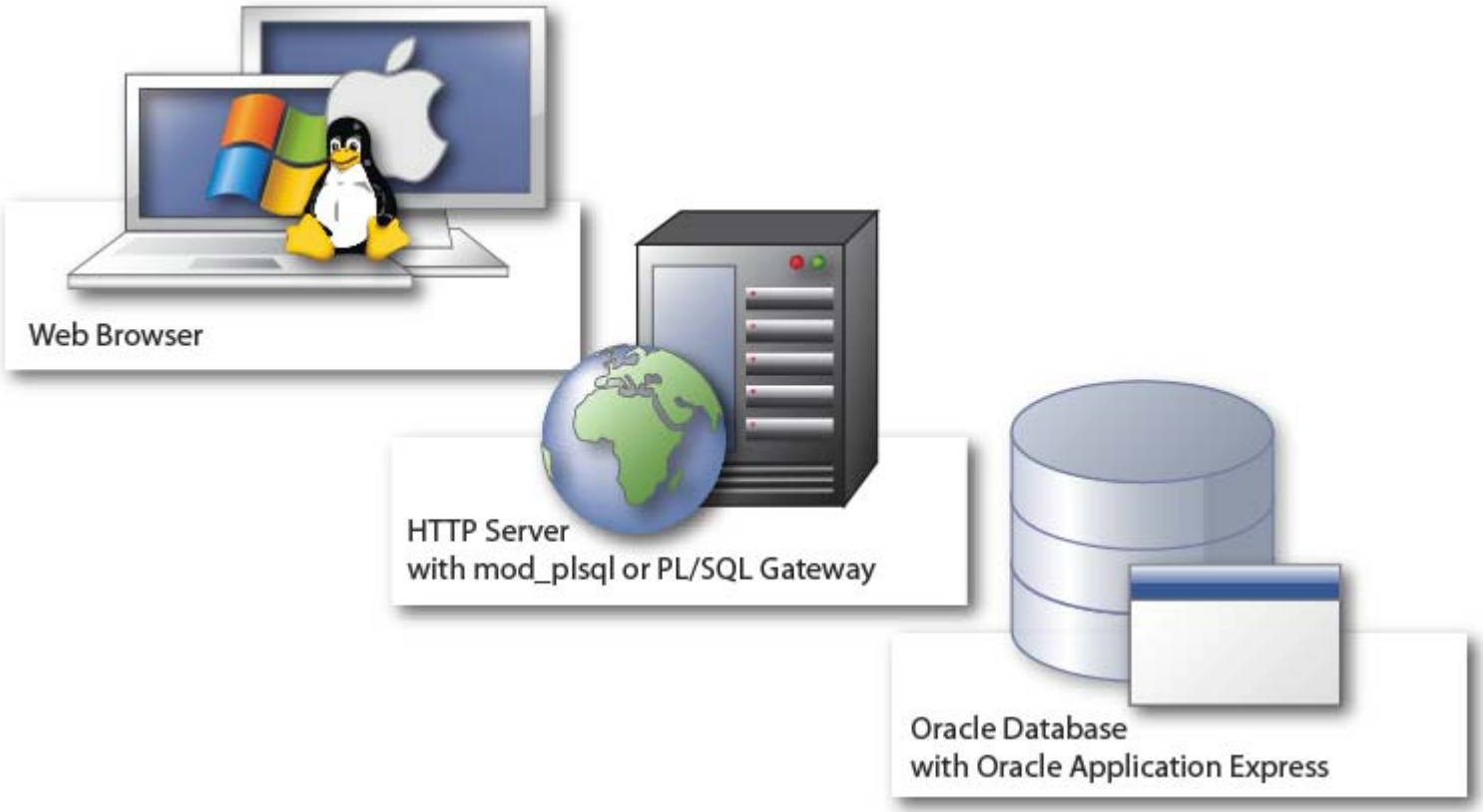
Oracle Application Express Overview



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Oracle Forms vs.

Oracle APEX

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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.

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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.

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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.

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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.

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Oracle APEX

Forms Converter

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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.

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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

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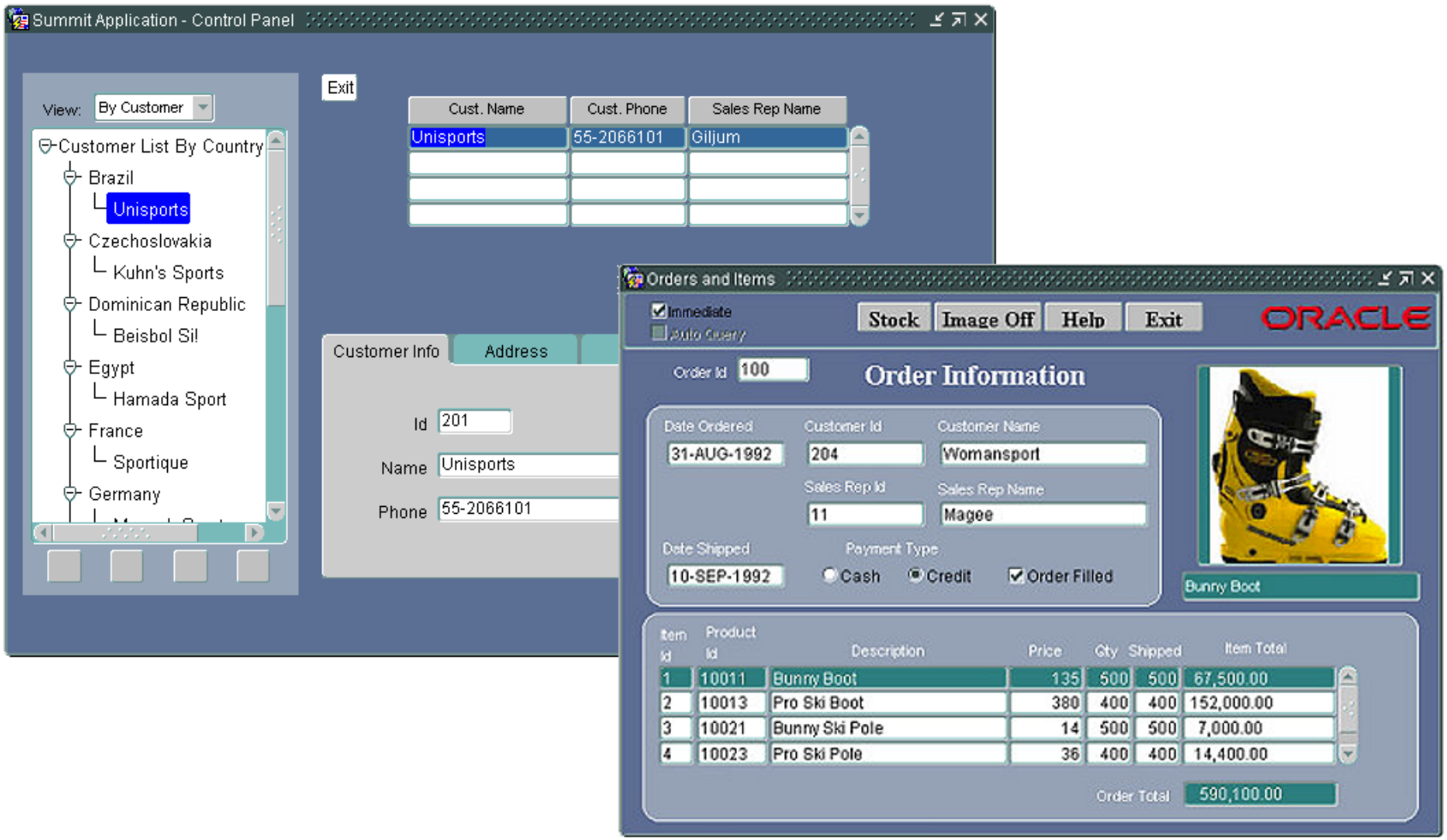
“Summit” Demo Application



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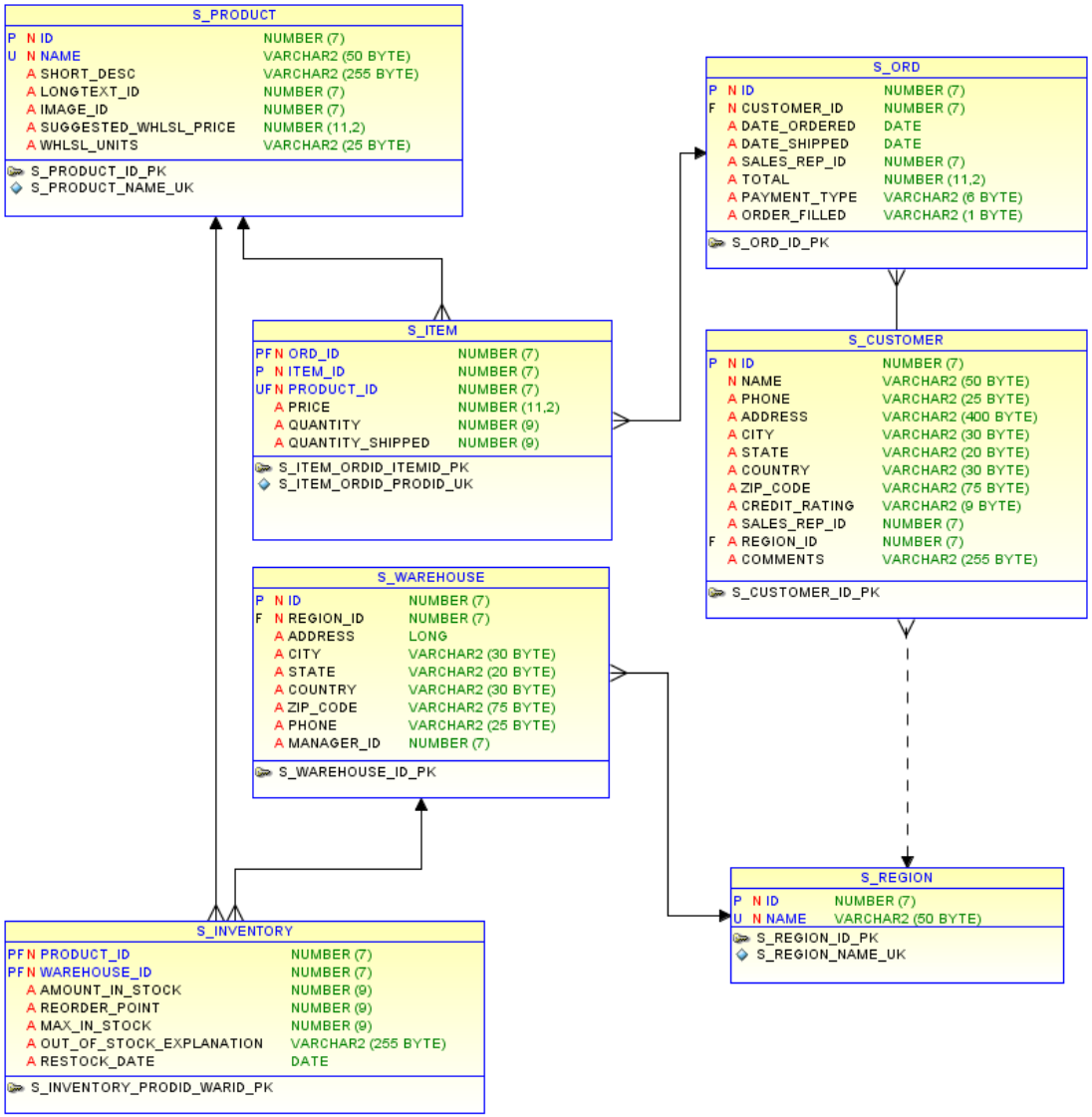
“Summit” Data Model



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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

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Demonstration

Forms to APEX Conversion

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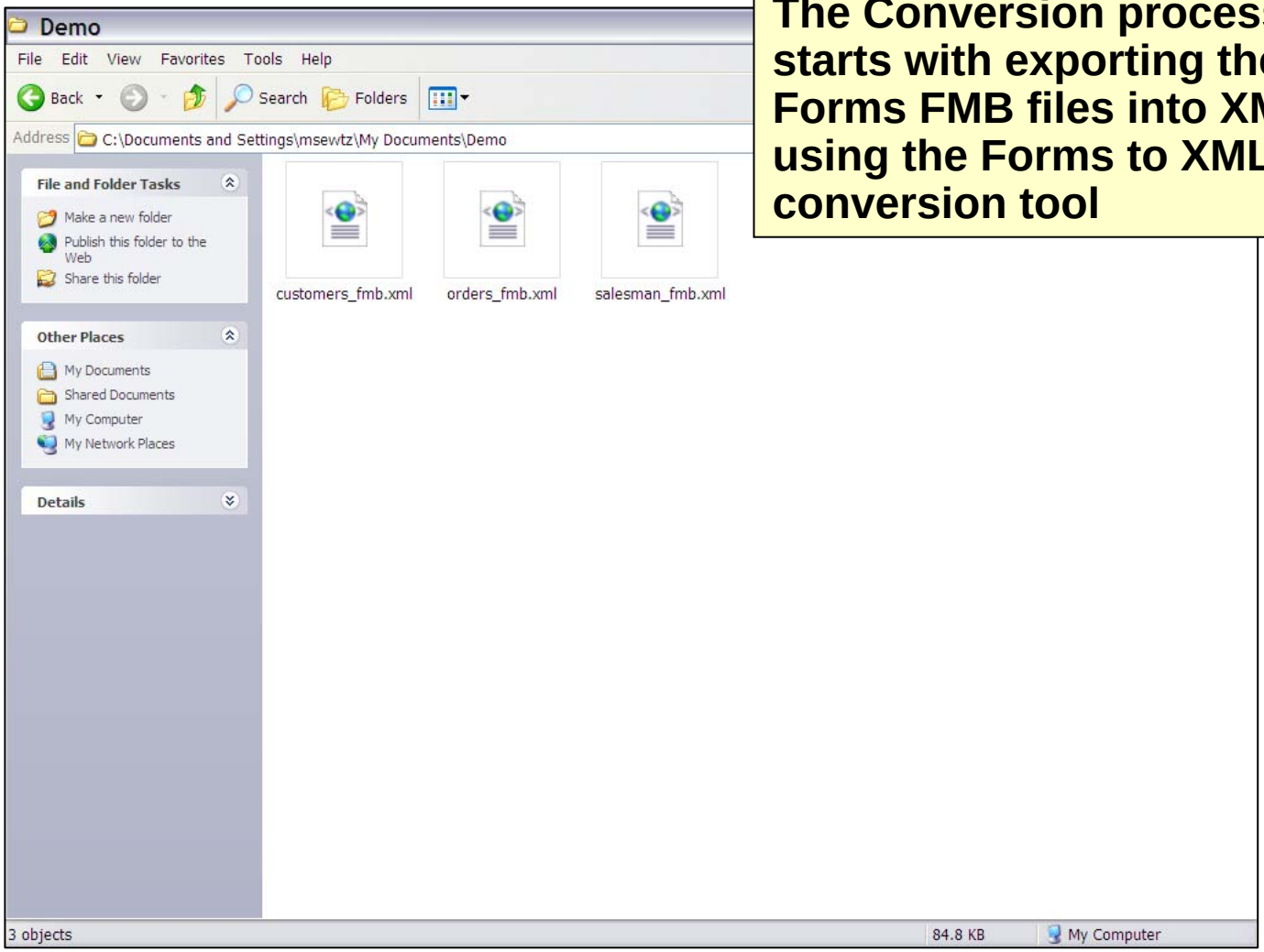
Forms to APEX Conversion Process



The Conversion process starts with exporting the Forms FMB files into XML using the Forms to XML conversion tool

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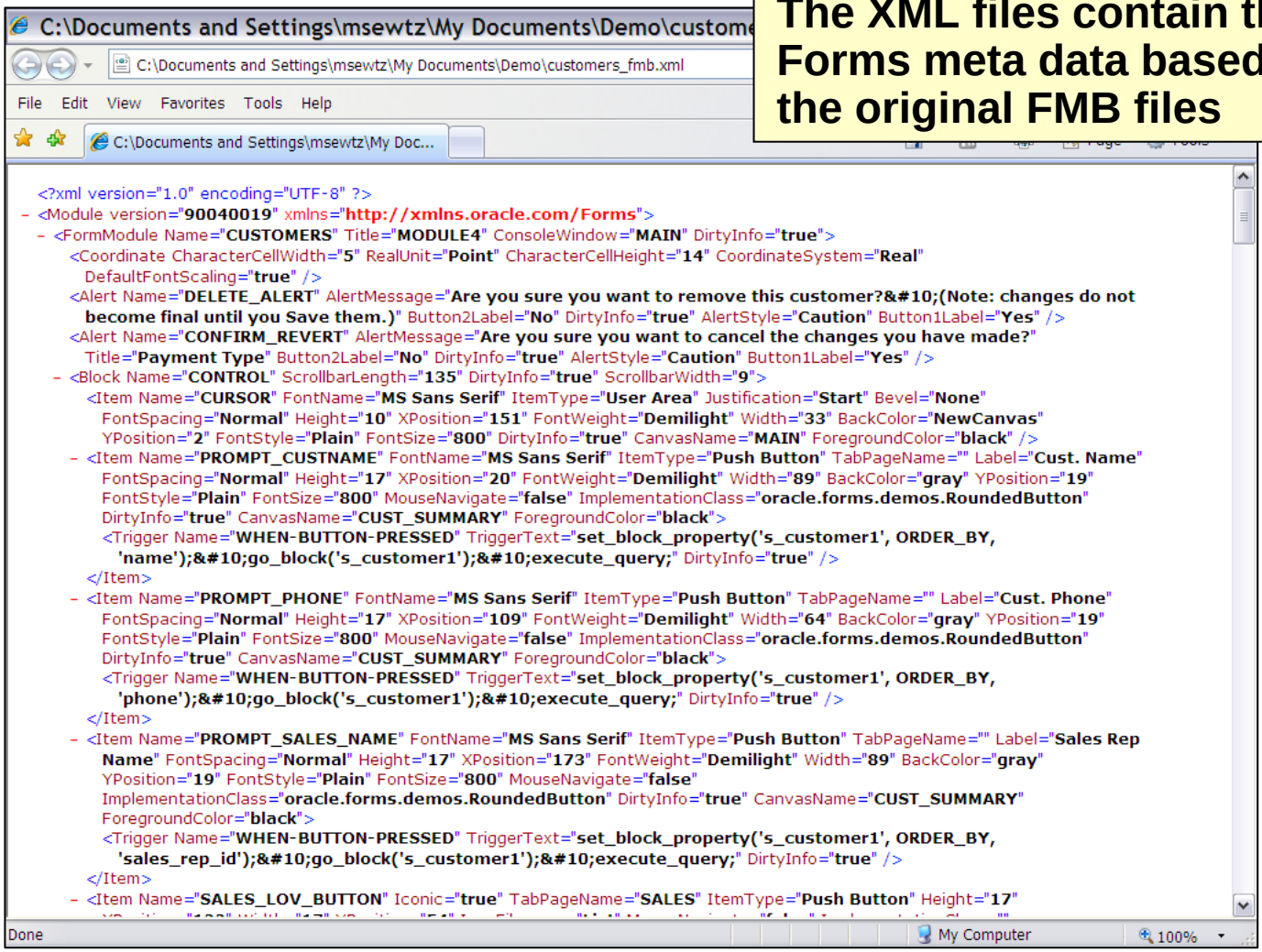
Forms to APEX Conversion Process

The XML files contain the Forms meta data based on the original FMB files




```
<?xml version="1.0" encoding="UTF-8" ?>
- <Module version="90040019" xmlns="http://xmlns.oracle.com/Forms">
  - <FormModule Name="CUSTOMERS" Title="MODULE4" ConsoleWindow="MAIN" DirtyInfo="true">
      <Coordinate CharacterCellWidth="5" RealUnit="Point" CharacterCellHeight="14" CoordinateSystem="Real"
        DefaultFontScaling="true" />
      <Alert Name="DELETE_ALERT" AlertMessage="Are you sure you want to remove this customer?&#10;(Note: changes do not
        become final until you Save them.)" Button2Label="No" DirtyInfo="true" AlertStyle="Caution" Button1Label="Yes" />
      <Alert Name="CONFIRM_REVERT" AlertMessage="Are you sure you want to cancel the changes you have made?"
        Title="Payment Type" Button2Label="No" DirtyInfo="true" AlertStyle="Caution" Button1Label="Yes" />
    - <Block Name="CONTROL" ScrollbarLength="135" DirtyInfo="true" ScrollbarWidth="9">
        <Item Name="CURSOR" FontName="MS Sans Serif" ItemType="User Area" Justification="Start" Bevel="None"
          FontSpacing="Normal" Height="10" XPosition="151" FontWeight="Demilight" Width="33" BackColor="NewCanvas"
          YPosition="2" FontStyle="Plain" FontSize="800" DirtyInfo="true" CanvasName="MAIN" ForegroundColor="black" />
      - <Item Name="PROMPT_CUSTNAME" FontName="MS Sans Serif" ItemType="Push Button" TabPageName="" Label="Cust. Name"
          FontSpacing="Normal" Height="17" XPosition="20" FontWeight="Demilight" Width="89" BackColor="gray" YPosition="19"
          FontStyle="Plain" FontSize="800" MouseNavigate="false" ImplementationClass="oracle.forms.demos.RoundedButton"
          DirtyInfo="true" CanvasName="CUST_SUMMARY" ForegroundColor="black">
          <Trigger Name="WHEN-BUTTON-PRESSED" TriggerText="set_block_property('s_customer1', ORDER_BY,
            'name');&#10;go_block('s_customer1');&#10;execute_query;" DirtyInfo="true" />
        </Item>
      - <Item Name="PROMPT_PHONE" FontName="MS Sans Serif" ItemType="Push Button" TabPageName="" Label="Cust. Phone"
          FontSpacing="Normal" Height="17" XPosition="109" FontWeight="Demilight" Width="64" BackColor="gray" YPosition="19"
          FontStyle="Plain" FontSize="800" MouseNavigate="false" ImplementationClass="oracle.forms.demos.RoundedButton"
          DirtyInfo="true" CanvasName="CUST_SUMMARY" ForegroundColor="black">
          <Trigger Name="WHEN-BUTTON-PRESSED" TriggerText="set_block_property('s_customer1', ORDER_BY,
            'phone');&#10;go_block('s_customer1');&#10;execute_query;" DirtyInfo="true" />
        </Item>
      - <Item Name="PROMPT_SALES_NAME" FontName="MS Sans Serif" ItemType="Push Button" TabPageName="" Label="Sales Rep
          Name" FontSpacing="Normal" Height="17" XPosition="173" FontWeight="Demilight" Width="89" BackColor="gray"
          YPosition="19" FontStyle="Plain" FontSize="800" MouseNavigate="false"
          ImplementationClass="oracle.forms.demos.RoundedButton" DirtyInfo="true" CanvasName="CUST_SUMMARY"
          ForegroundColor="black">
          <Trigger Name="WHEN-BUTTON-PRESSED" TriggerText="set_block_property('s_customer1', ORDER_BY,
            'sales_rep_id');&#10;go_block('s_customer1');&#10;execute_query;" DirtyInfo="true" />
        </Item>
      - <Item Name="SALES_LOV_BUTTON" Iconic="true" TabPageName="SALES" ItemType="Push Button" Height="17"
```

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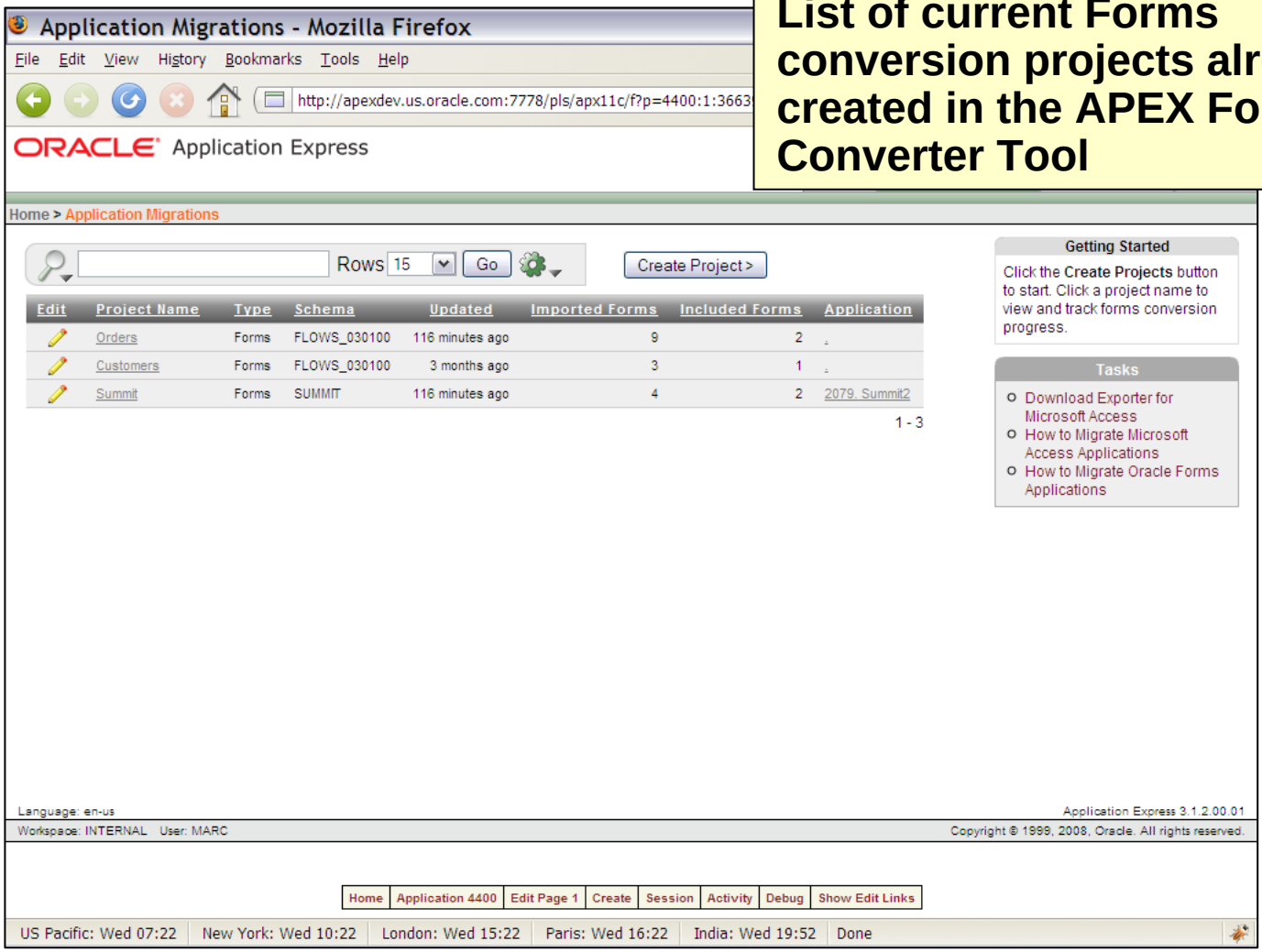
Forms to APEX Conversion Process

List of current Forms conversion projects already created in the APEX Forms Converter Tool



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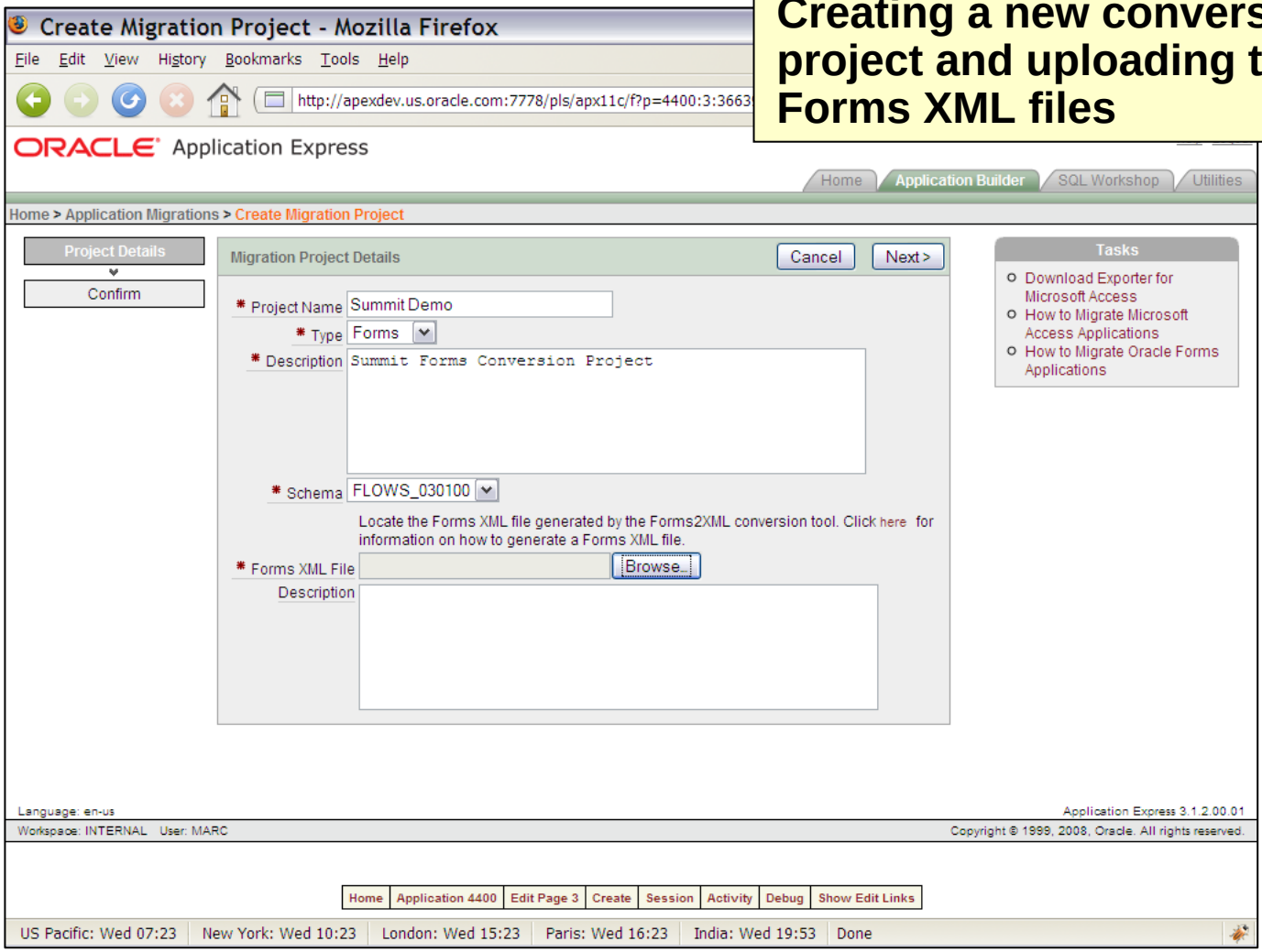
Forms to APEX Conversion Process

Creating a new conversion project and uploading the Forms XML files



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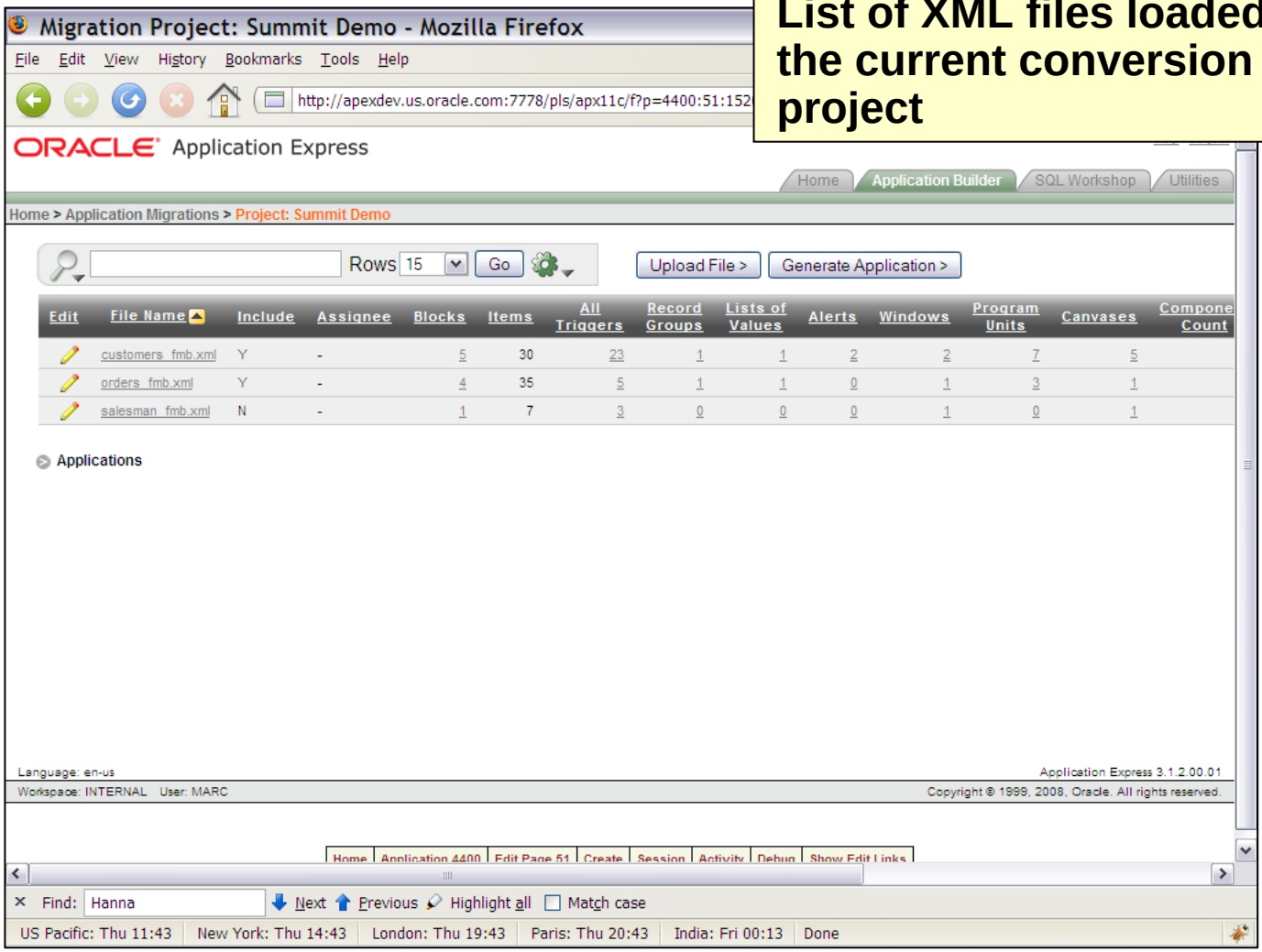
Forms to APEX Conversion Process

List of XML files loaded into the current conversion project



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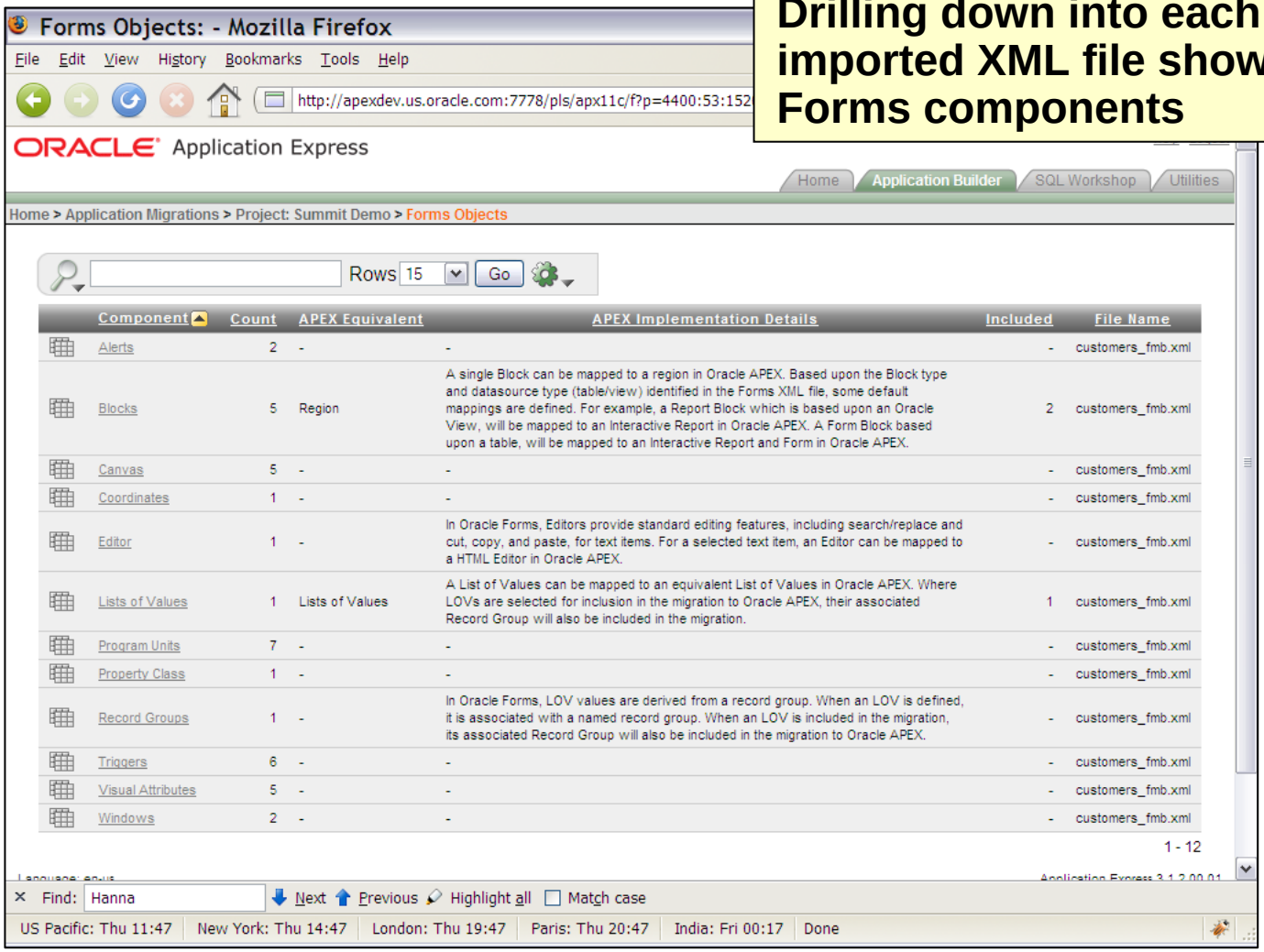
Forms to APEX Conversion Process

Drilling down into each imported XML file shows Forms components



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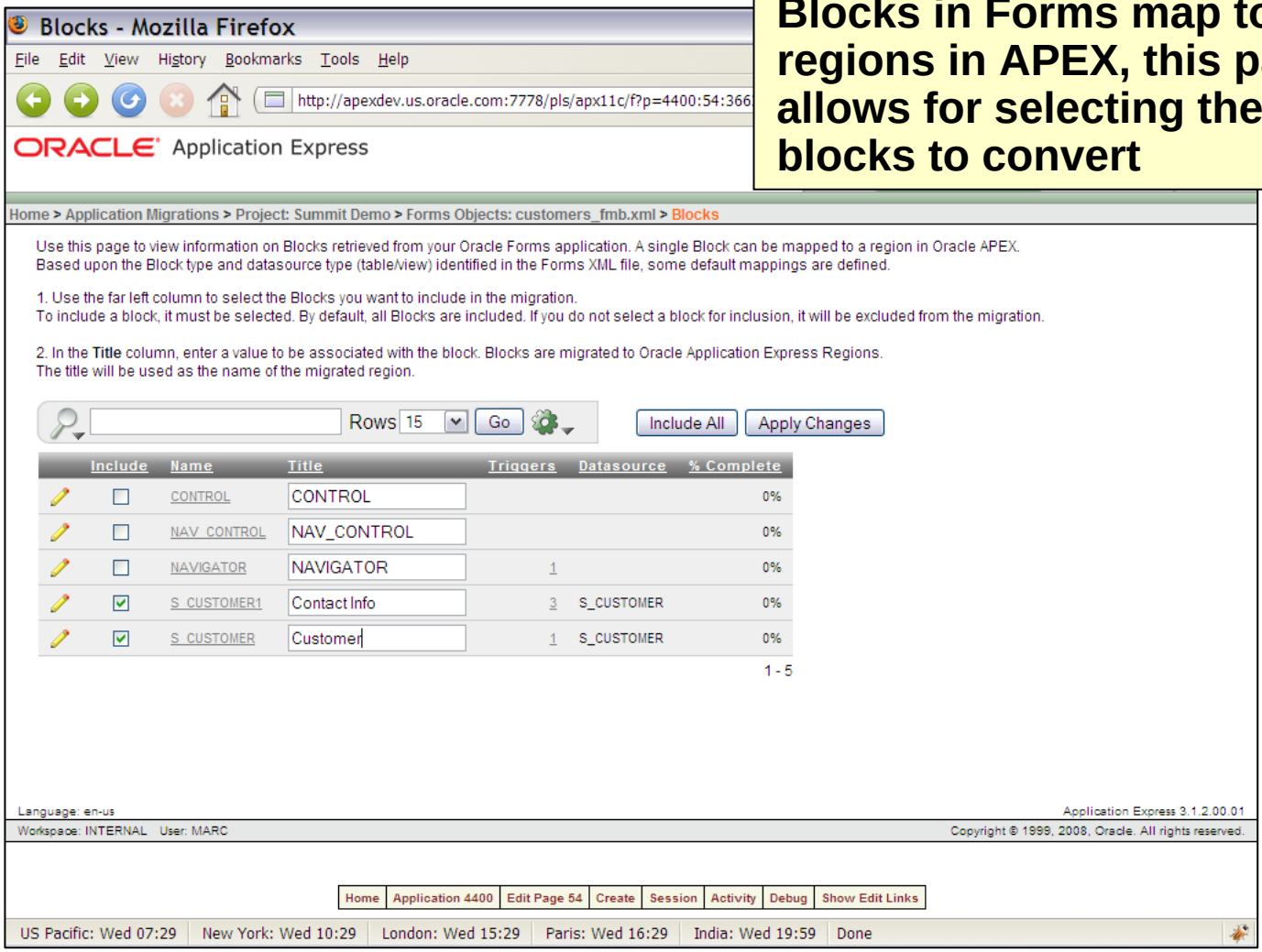
Forms to APEX Conversion Process

Blocks in Forms map to regions in APEX, this page allows for selecting the blocks to convert



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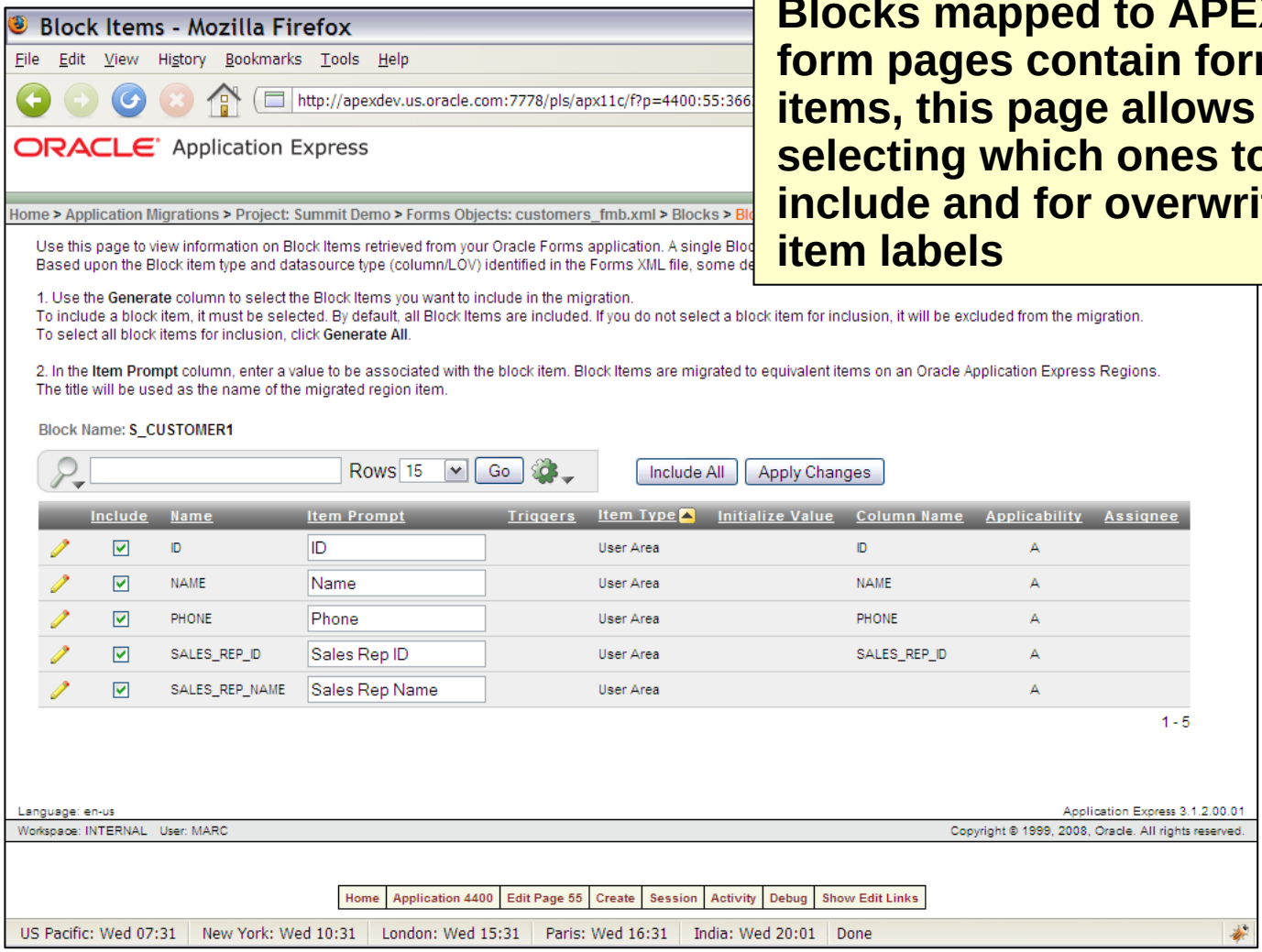
Forms to APEX Conversion Process



Blocks mapped to APEX form pages contain form items, this page allows for selecting which ones to include and for overwriting item labels

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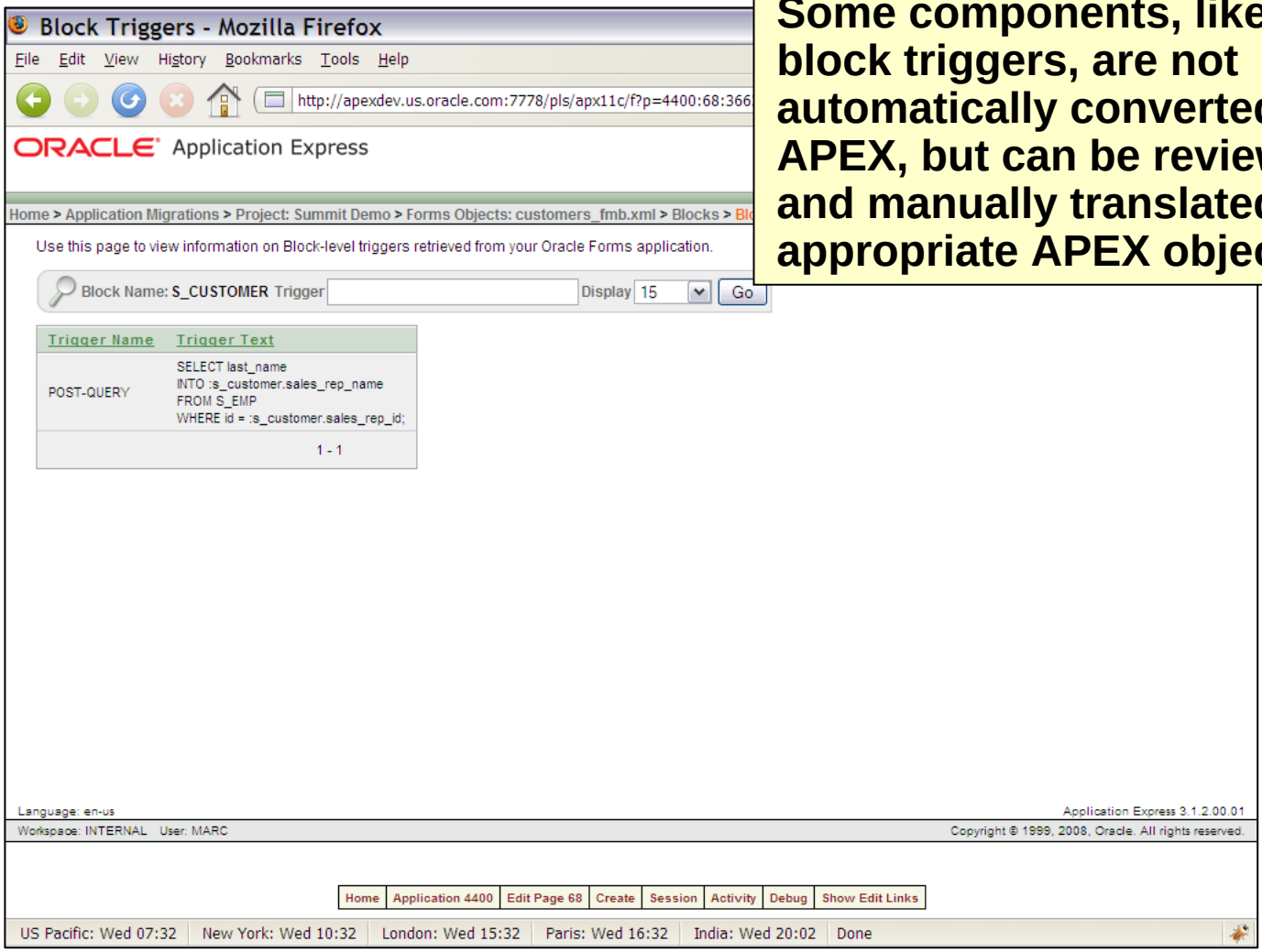
Forms to APEX Conversion Process



Some components, like block triggers, are not automatically converted to APEX, but can be reviewed and manually translated into appropriate APEX objects

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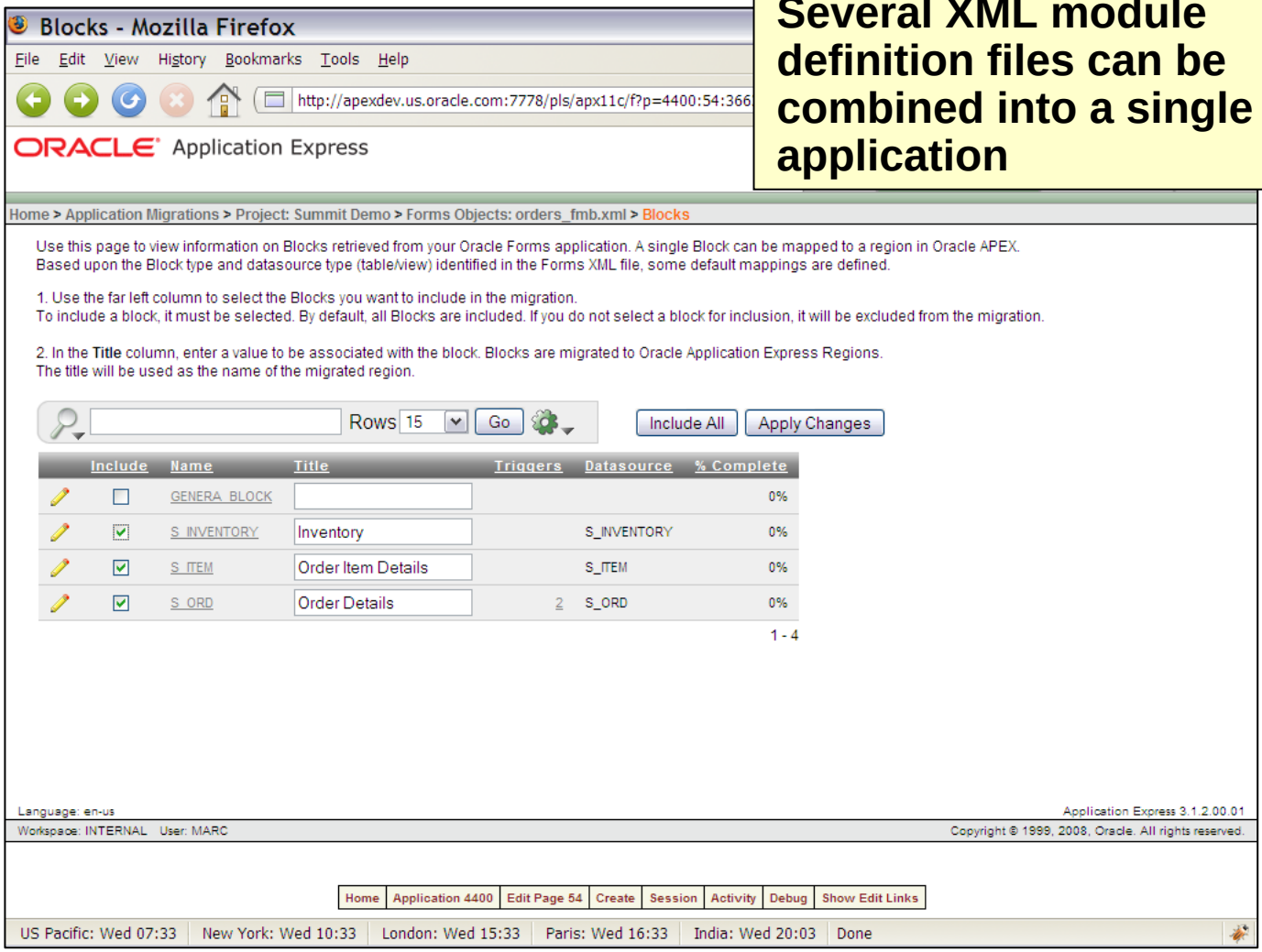
Forms to APEX Conversion Process



Several XML module definition files can be combined into a single APEX application

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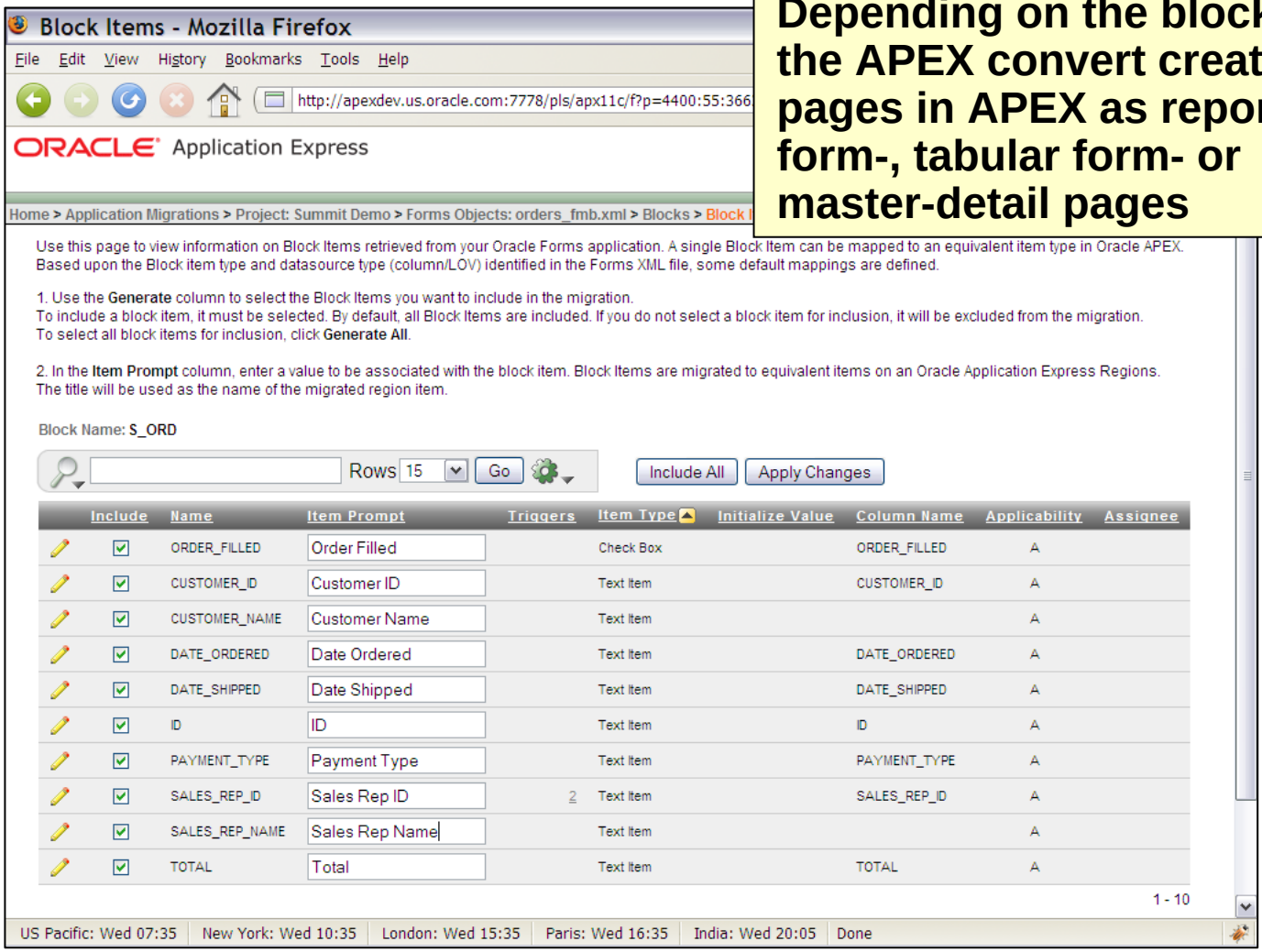
Forms to APEX Conversion Process



Depending on the block type, the APEX convert creates pages in APEX as report-, form-, tabular form- or master-detail pages

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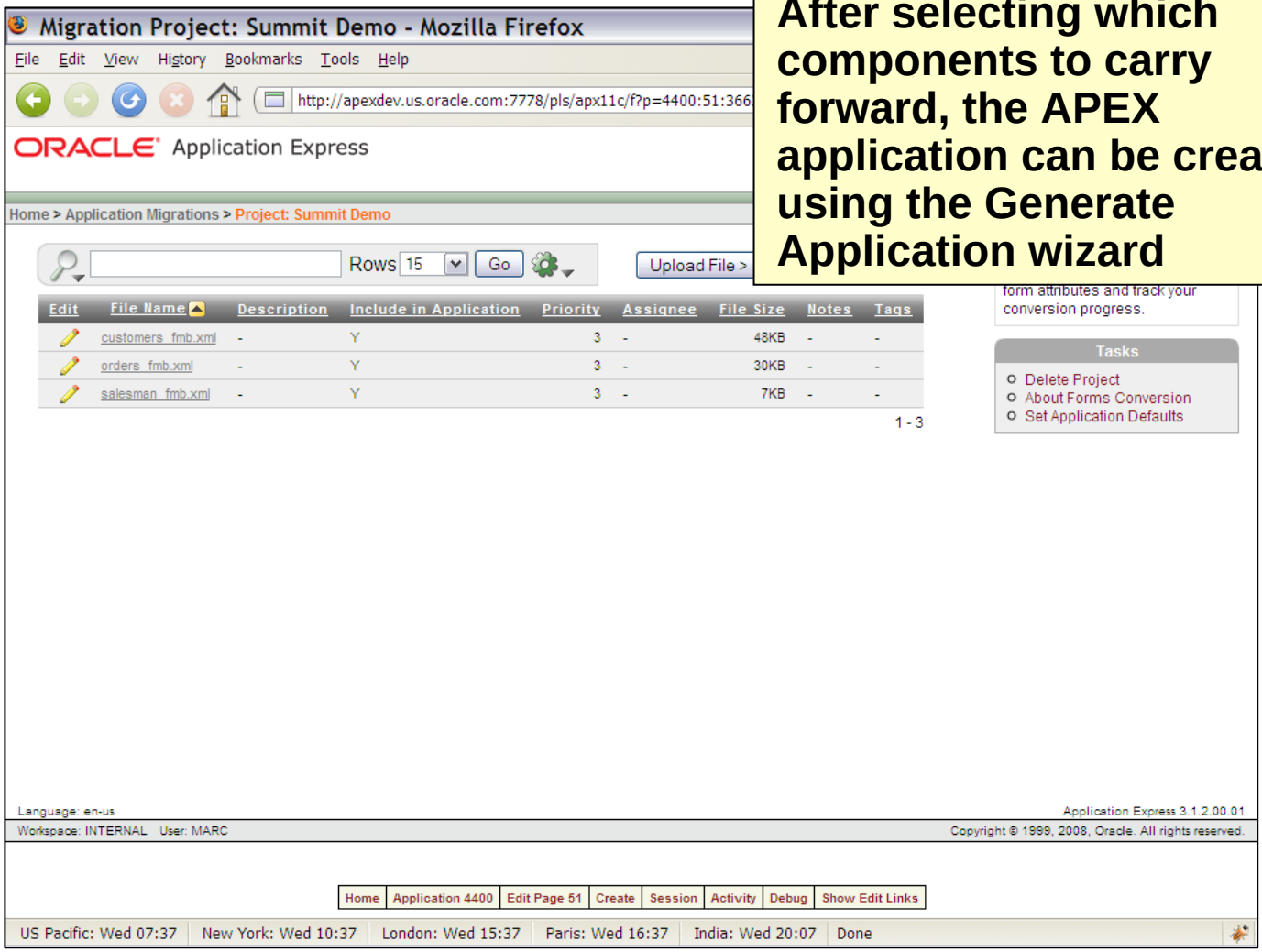
Forms to APEX Conversion Process



After selecting which components to carry forward, the APEX application can be created using the Generate Application wizard

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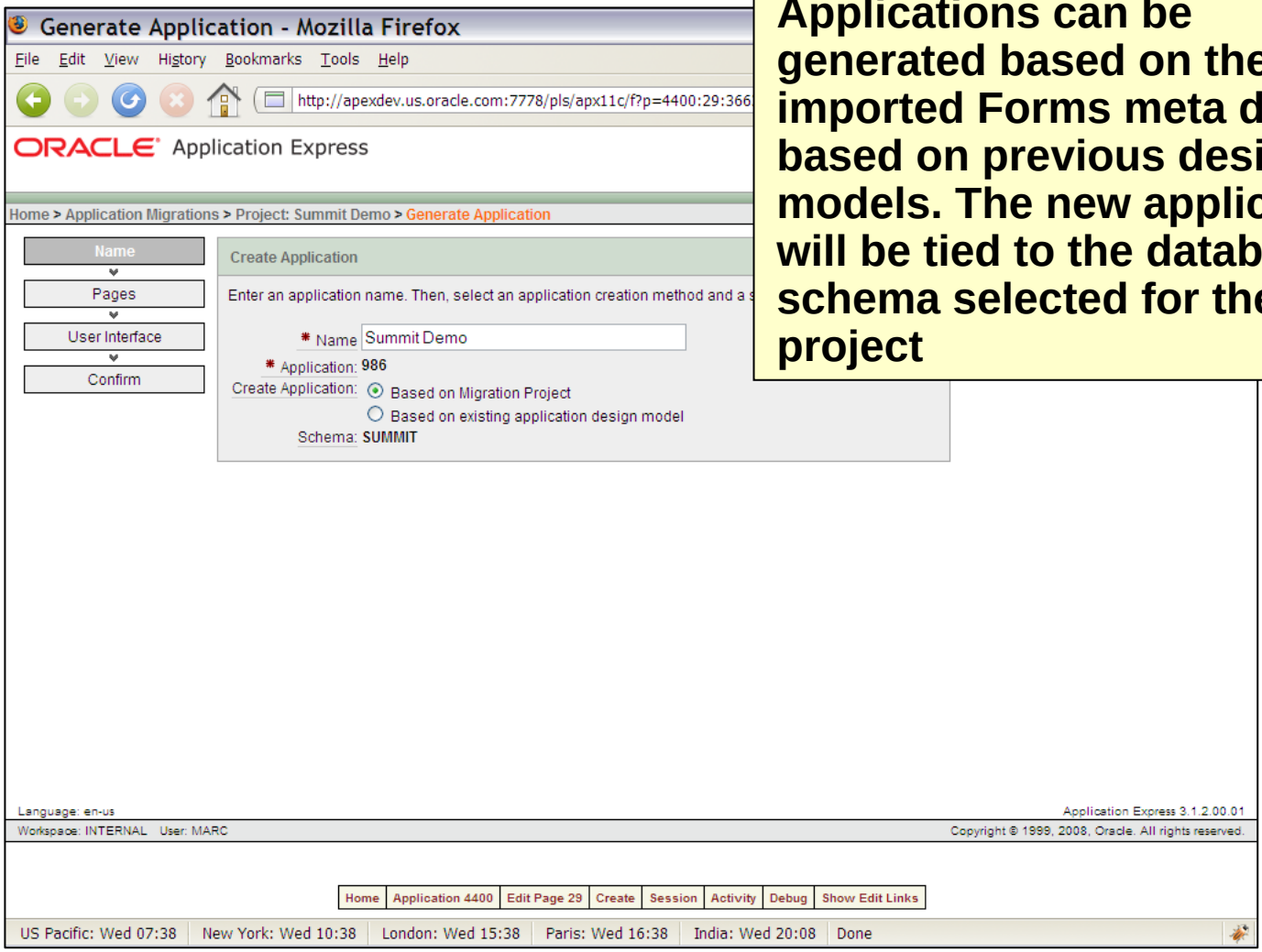
Forms to APEX Conversion Process



Applications can be generated based on the imported Forms meta data or based on previous design models. The new application will be tied to the database schema selected for the project

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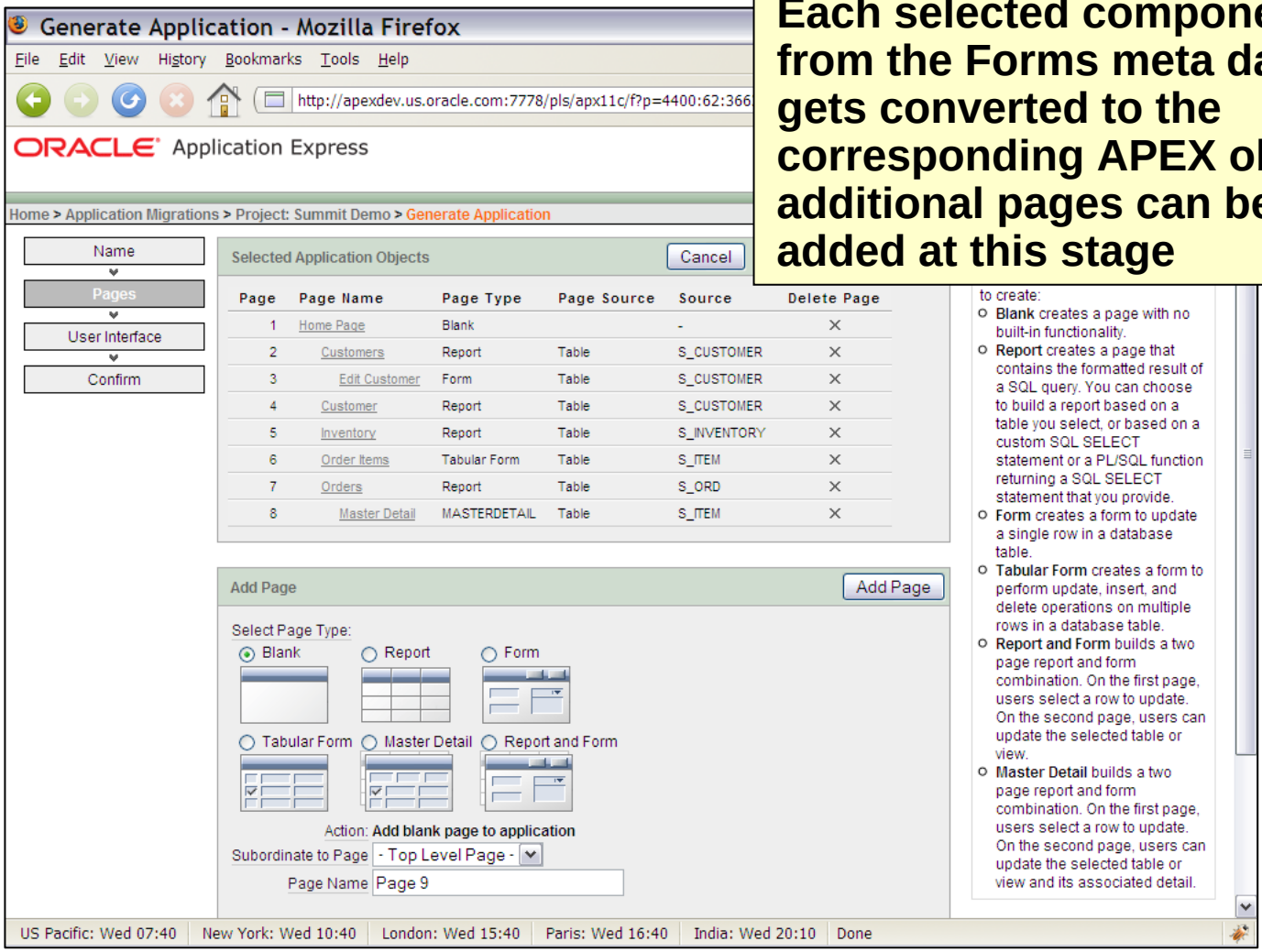
Forms to APEX Conversion Process



Each selected component from the Forms meta data gets converted to the corresponding APEX object, additional pages can be added at this stage

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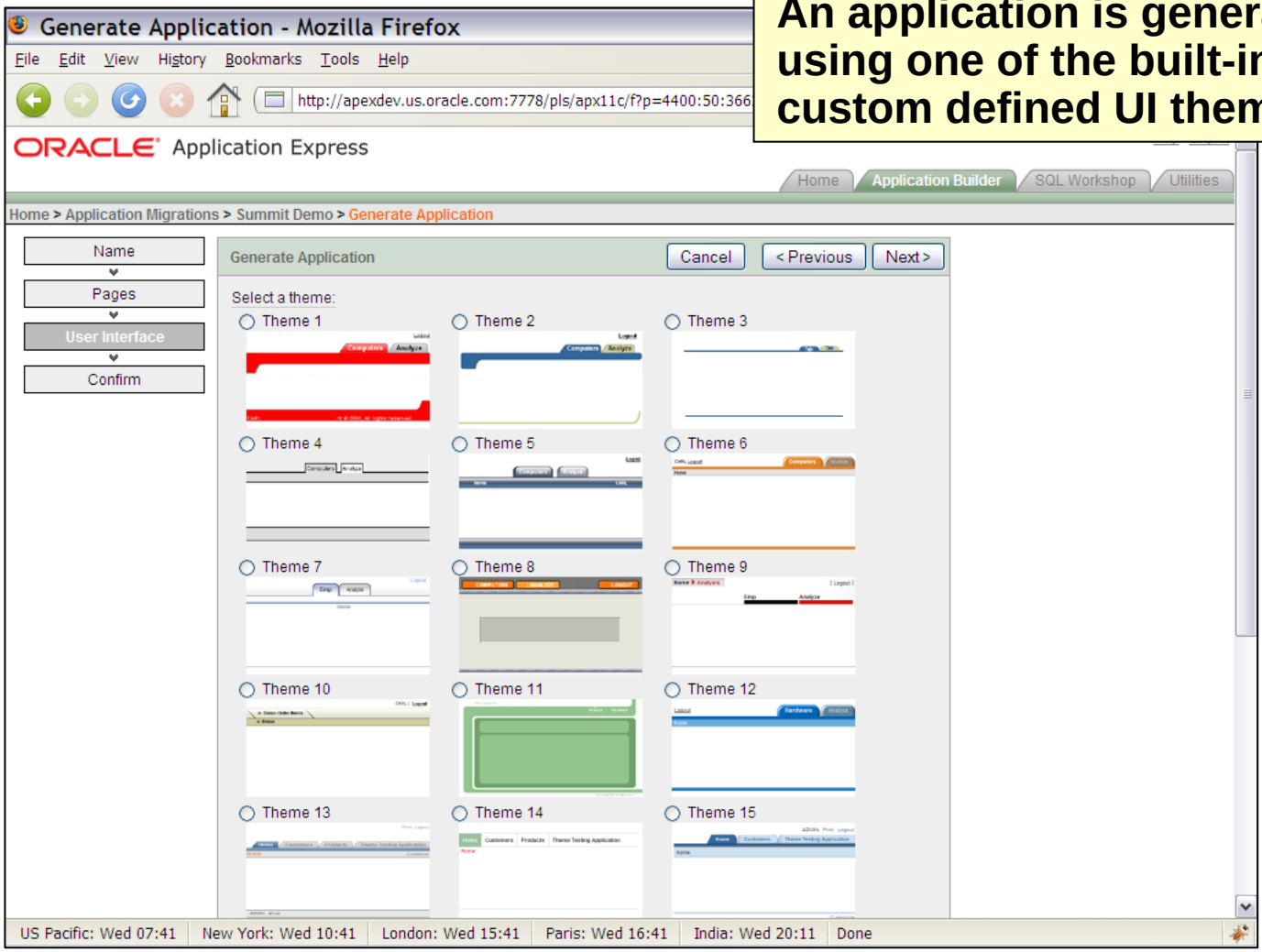
Forms to APEX Conversion Process

An application is generated using one of the built-in or custom defined UI themes.



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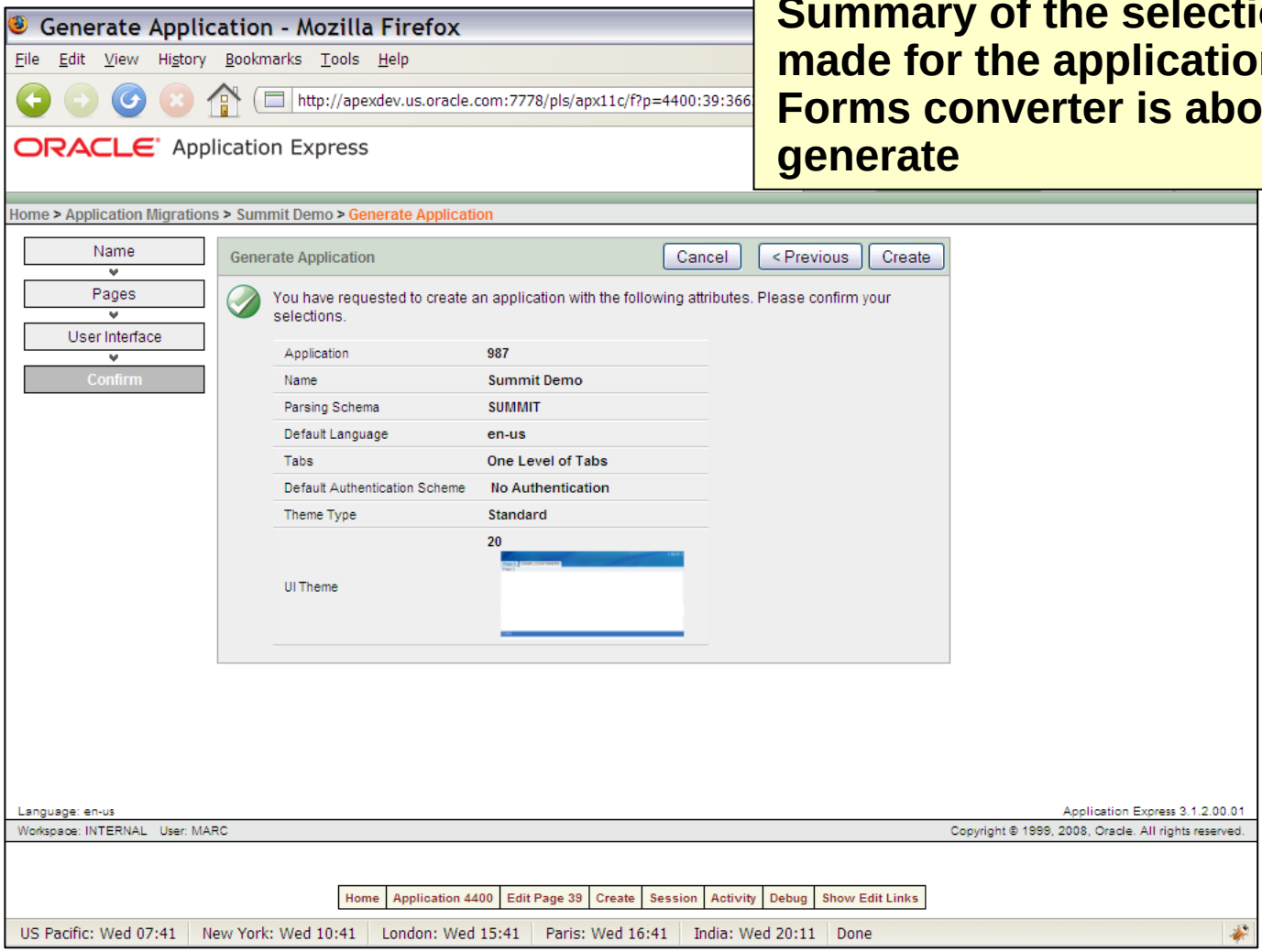
Forms to APEX Conversion Process



Summary of the selections made for the application the Forms converter is about to generate

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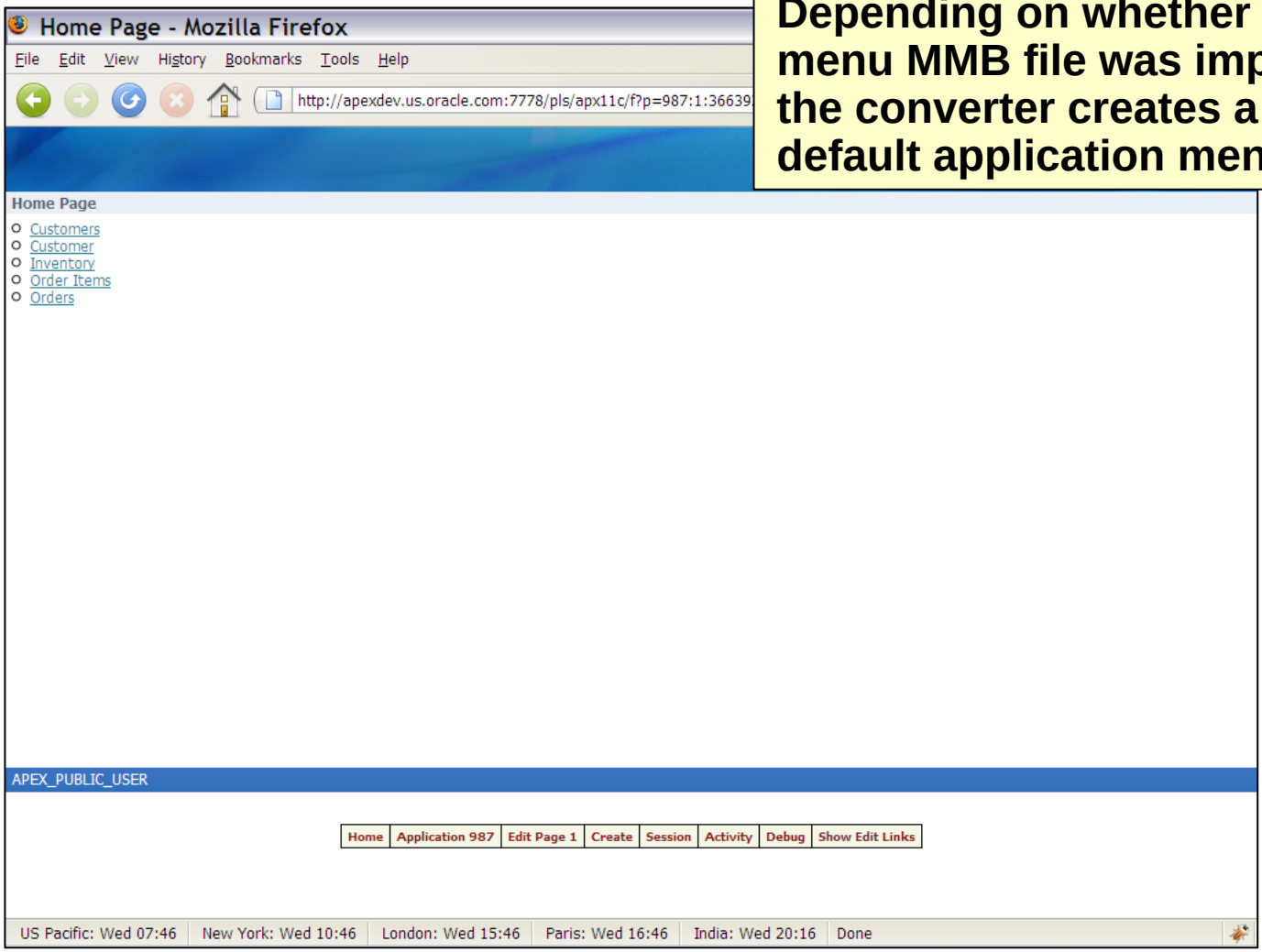
Forms to APEX Conversion Process



Depending on whether or a menu MMB file was imported, the converter creates a default application menu

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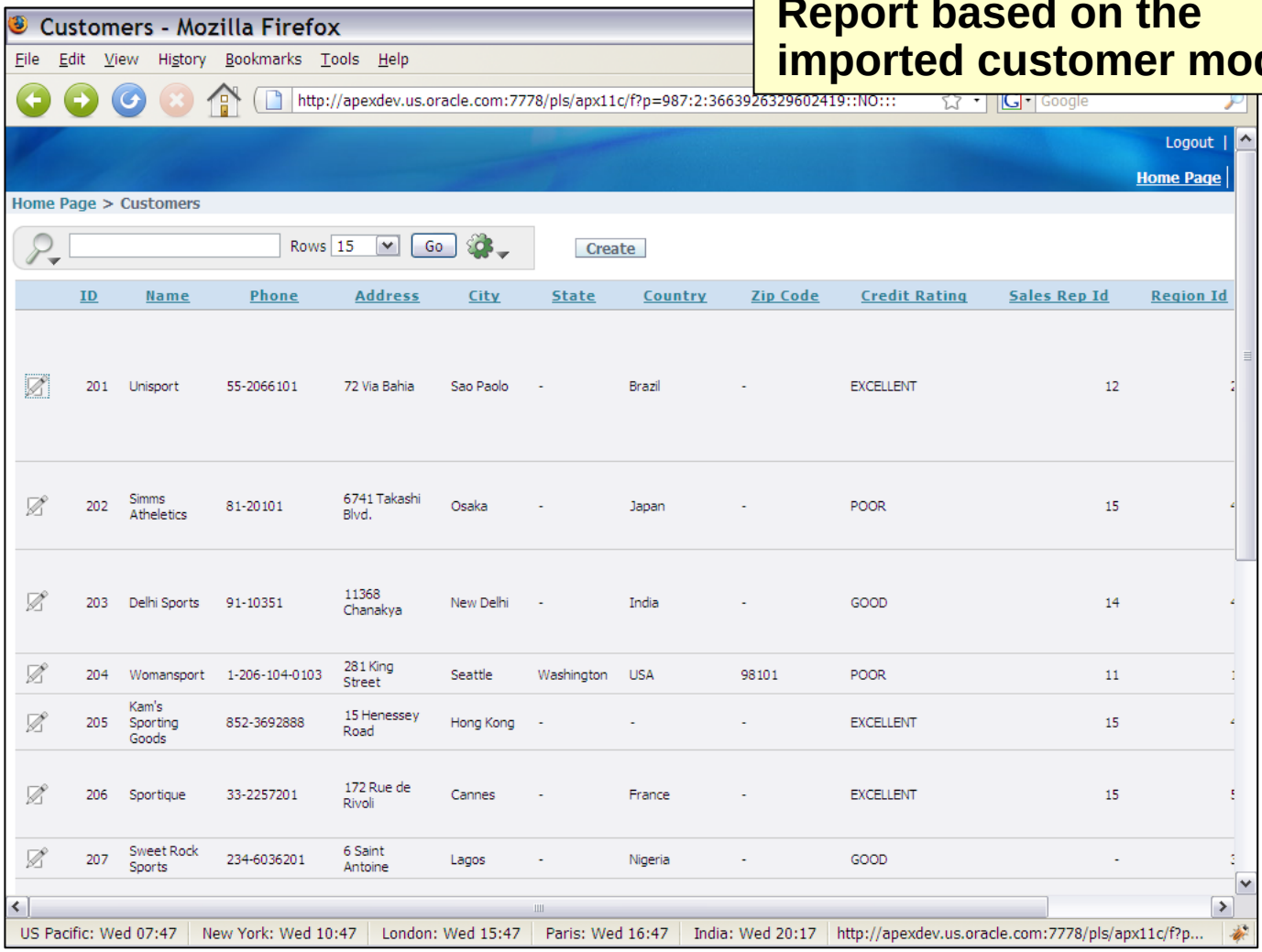
Forms to APEX Conversion Process

Report based on the imported customer module



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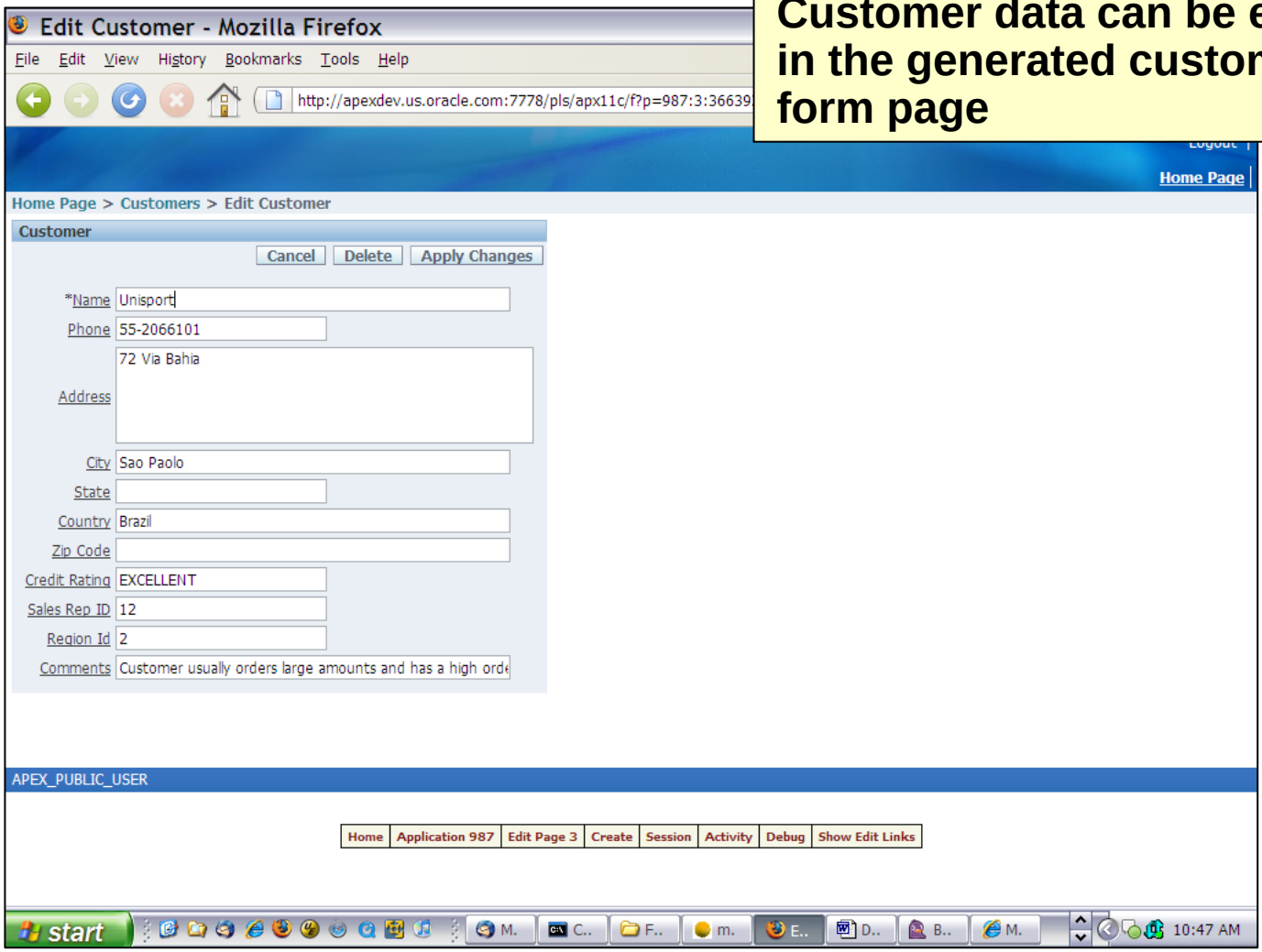
Forms to APEX Conversion Process

Customer data can be edited in the generated customer form page



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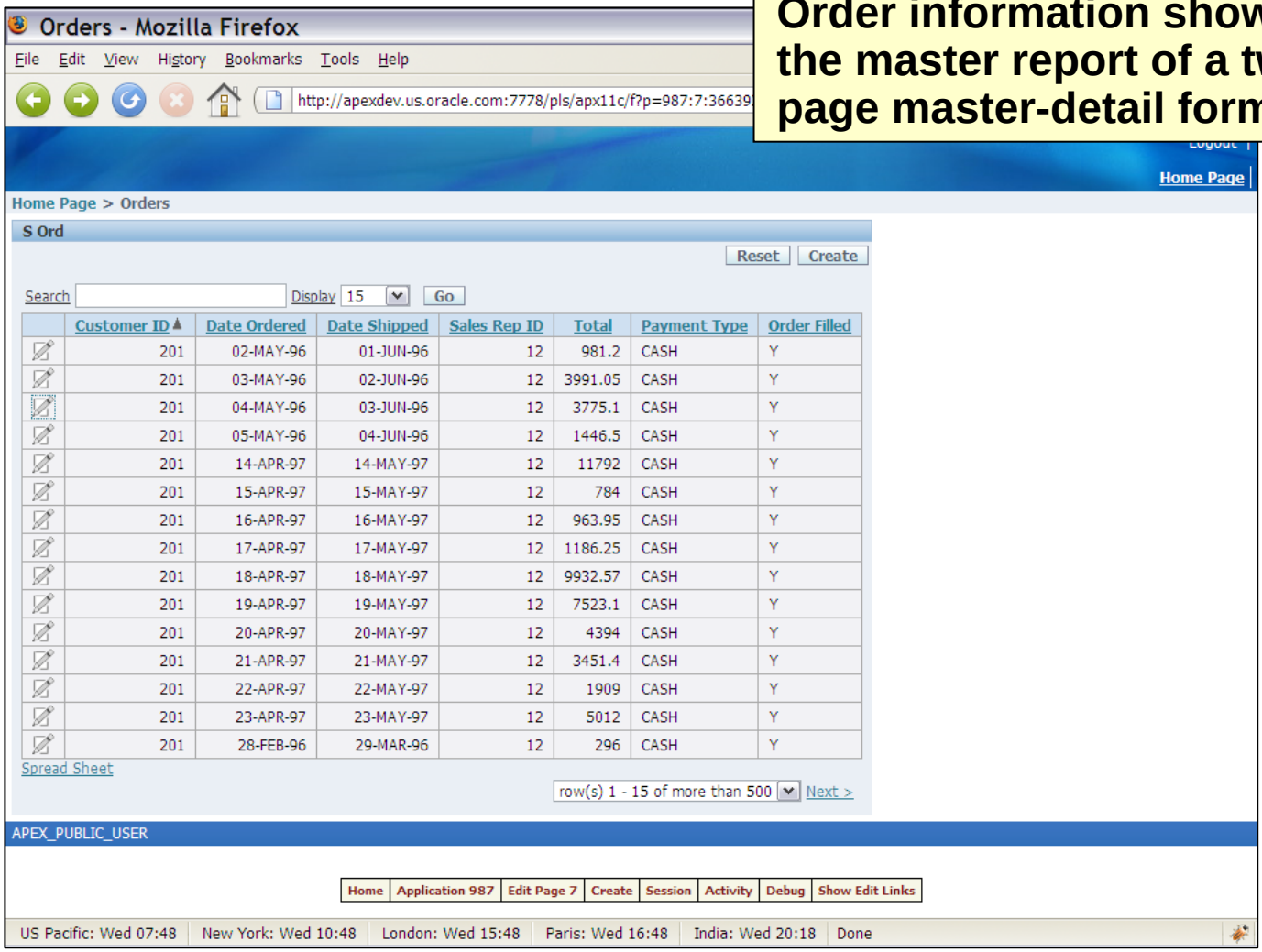
Forms to APEX Conversion Process

Order information shown in the master report of a two page master-detail form



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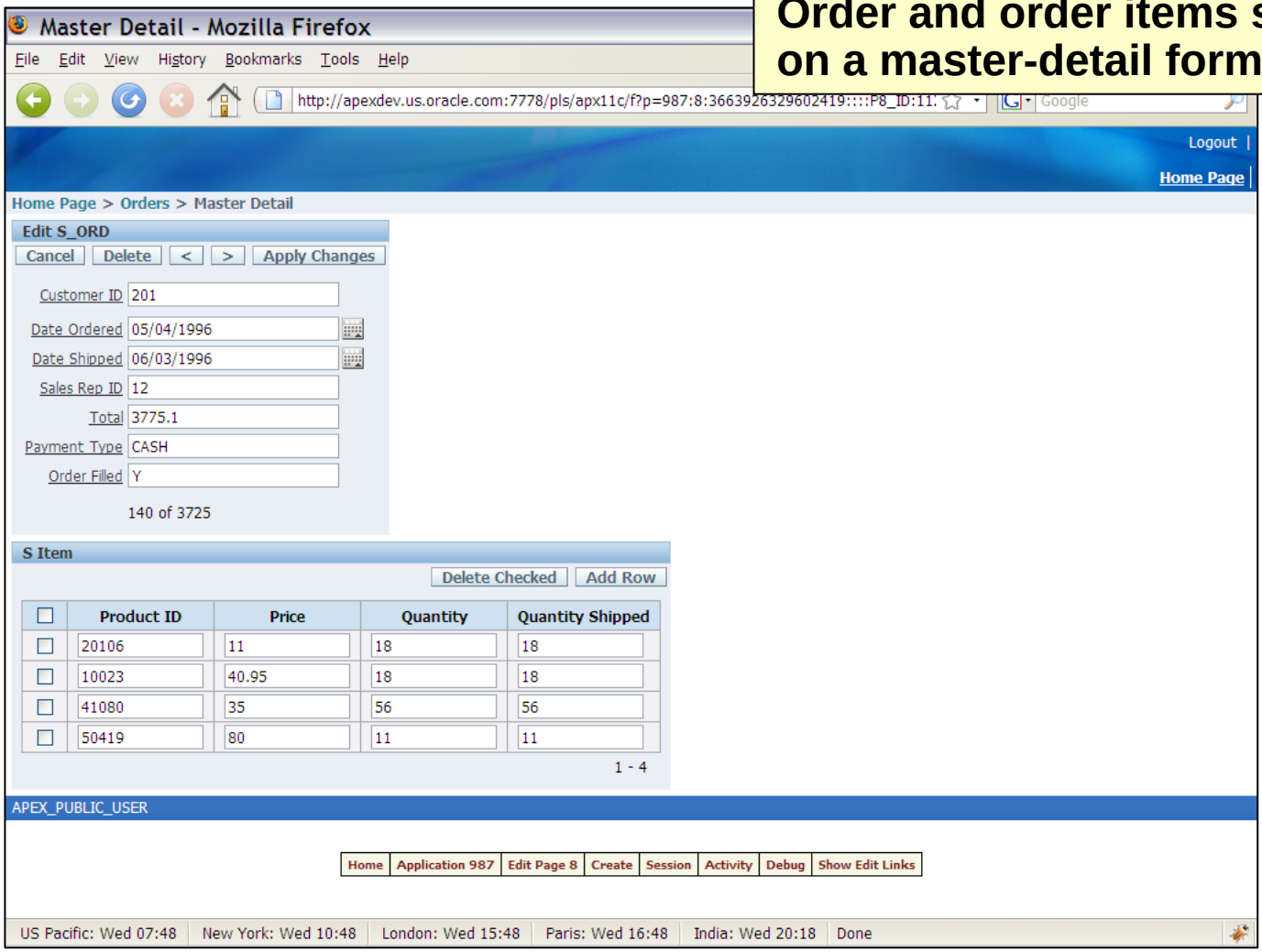
Forms to APEX Conversion Process

Order and order items shown on a master-detail form page



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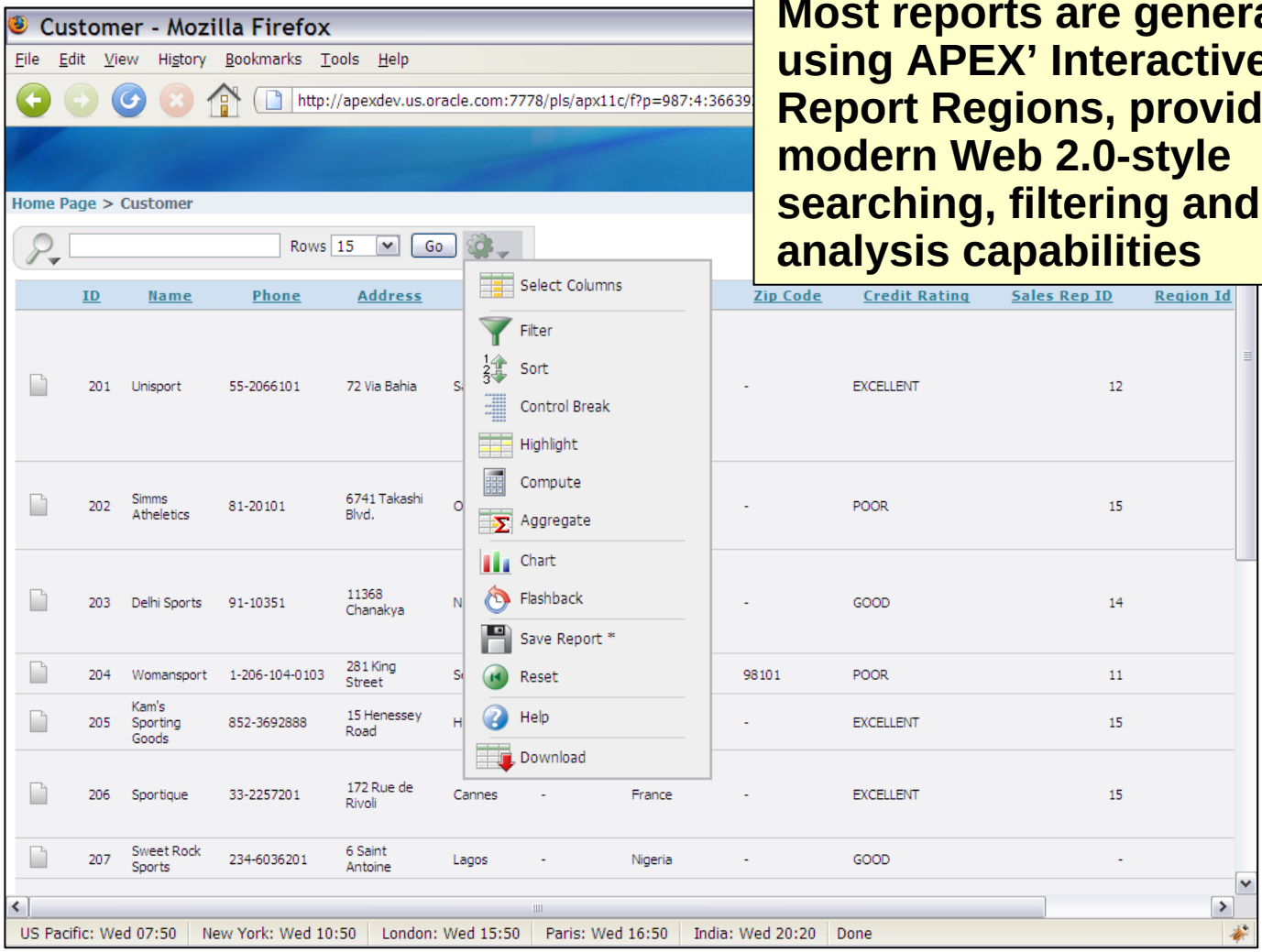
Forms to APEX Conversion Process



Most reports are generated using APEX' Interactive Report Regions, providing modern Web 2.0-style searching, filtering and analysis capabilities

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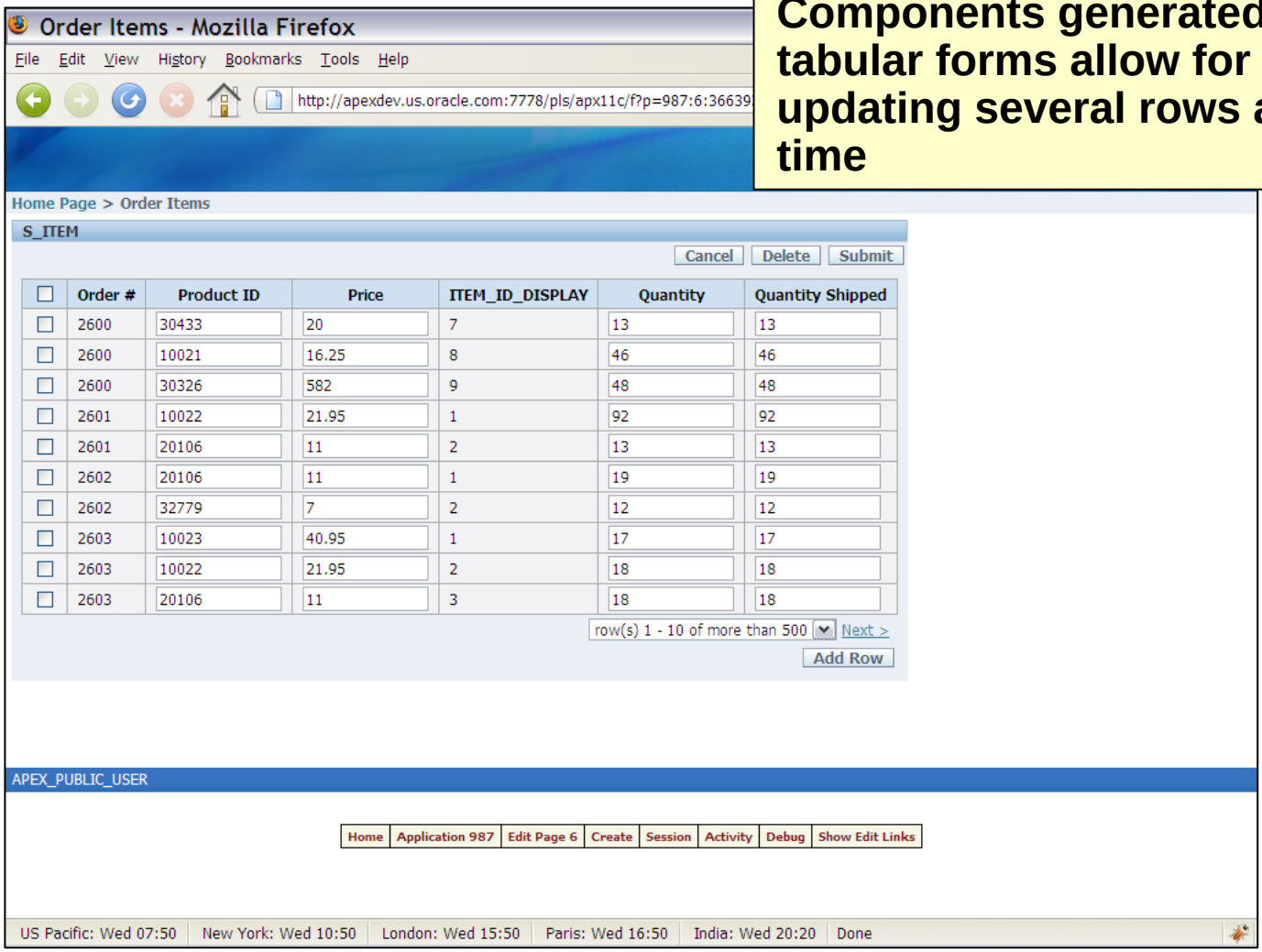
Forms to APEX Conversion Process



Components generated as tabular forms allow for bulk updating several rows at a time

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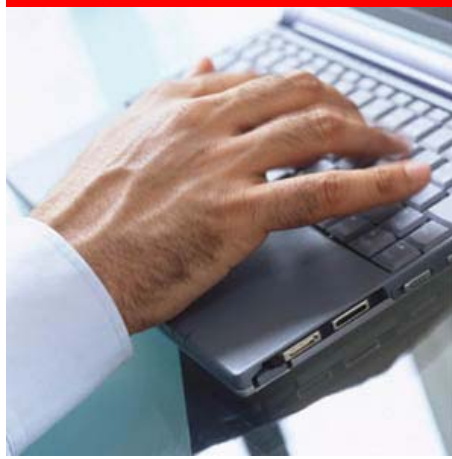
Post-Generation

Conversion Tasks



Post-Generation Conversion Tasks

- Examine triggers and program units within the conversion project
  - Record tracking details against these components
  - Manually enter equivalent code as Oracle APEX validations, computations and / or processes

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Post-Generation Conversion Tasks

- Enhance the generated Oracle APEX application
  - Review generated application pages, regions and items
  - Add conditional processing logic to regions and items based on UI behavior implemented within Forms triggers and program units
  - Review validations, computations and processes you specified within the Oracle APEX project – post-generation and update as necessary.
  - Review buttons and update URL redirection details, etc.
  - Update tracking details as appropriate

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Post-Generation Conversion Tasks

- Develop Oracle Database components
  - Identify code, which should be processed directly in the database rather than in the application.
  - Code, test, and implement Oracle Database packages, procedures and functions to replace Oracle Forms logic.
  - Update tracking details as appropriate

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Post-Generation Conversion Tasks

- Add additional Oracle APEX components
  - Add additional pages, regions, buttons, items, etc as required
  - Review and update navigational components
  - Implement specific client-side functionality using JavaScript, AJAX, DHTML, etc.
  - Update tracking details as appropriate

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Post-Generation Conversion Tasks

- System Test Oracle APEX application(s)
- Train users on Oracle APEX application(s)
- Implement Oracle APEX application(s)

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Q&A

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