



NYC Metro Area Oracle Users Group

Using Application Express  
with Fusion Middleware

Basheer Khan

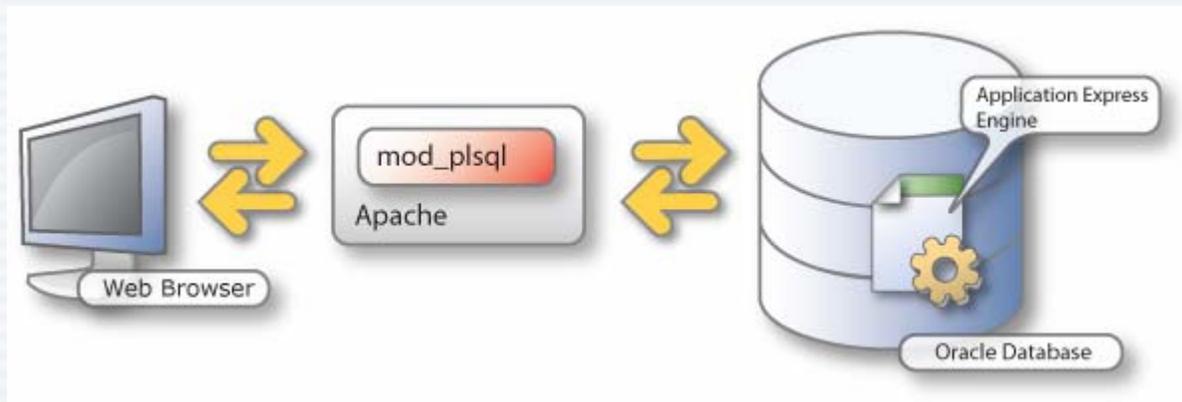
Oct 2, 2007



- Introduction
- Oracle Application Express (APEX)
- Oracle Fusion Middleware
- Oracle BI Publisher
- APEX-BI Publisher Integration
- Oracle BPEL Process Manager
- APEX-BPEL PM Integration
- Q&A

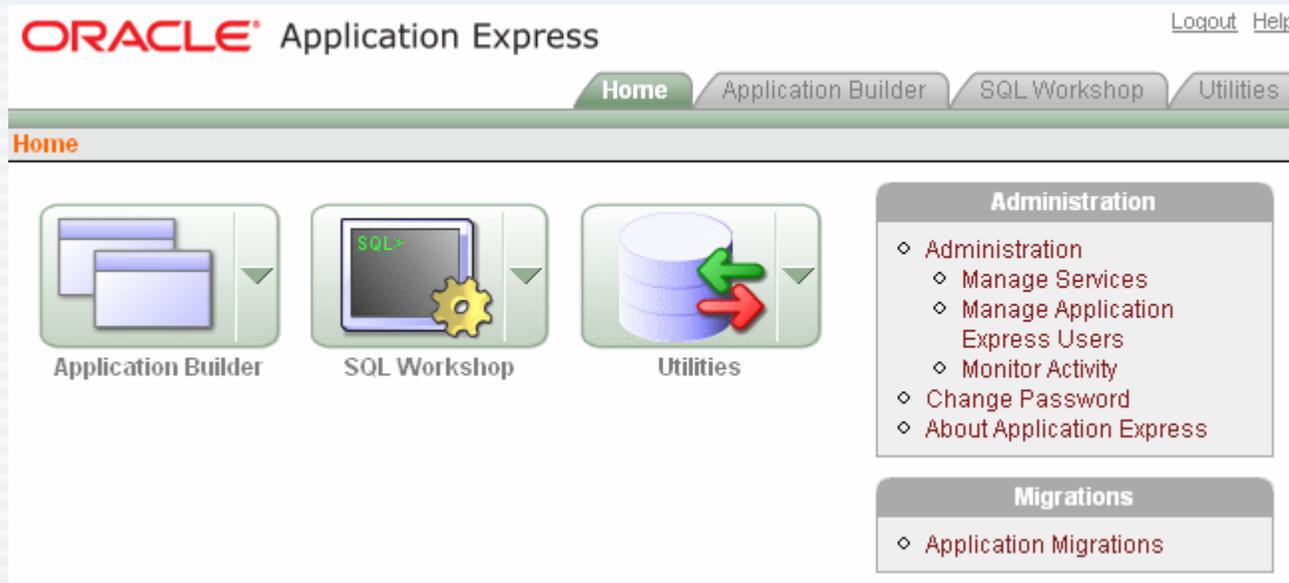
# Oracle Application Express

- Formerly called HTML DB
- Rapid web application development tool for the Oracle database
- Uses only a web browser
- With limited programming experience, you can develop and deploy professional applications that are both fast and secure
- Tool to build web-based applications and the application development environment is also conveniently web-based
- No client software is required to develop, deploy, or run applications



# Oracle Application Express

- Three primary tools:
  - Application Builder - to create dynamic database driven web applications
  - SQL Workshop - to browse your database objects, run ad-hoc SQL queries, as well as a graphical query builder
  - Utilities - allows for data to be loaded and unloaded from both flat files and spreadsheets





# Demo

# Oracle Fusion Middleware

## COLLABORATIVE ENTERPRISE PORTAL



Portals, Collaboration, Mobile, Desktop, Search

## DEVELOPMENT TOOLS



Modeling,  
Development Tools,  
Frameworks

## COMPOSITION & PROCESS ORCHESTRATION



BPM, ESB, B2B

## INFORMATION AGGREGATION & ANALYSIS



ETL, Hubs, Content Mgmt., BI, BAM

## MANAGEMENT



Systems  
Management

## ENTERPRISE APPLICATION SERVER



J2EE, WS-\*, Events, Metadata, Registry

## SECURITY



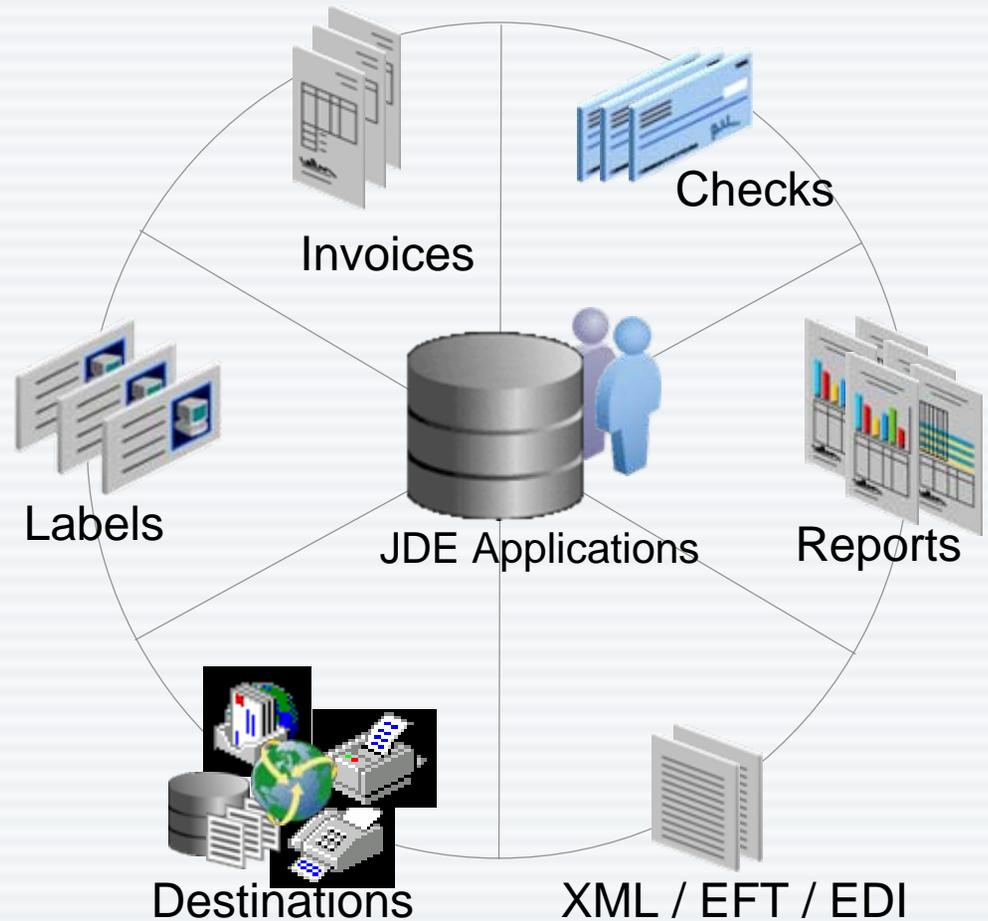
Identity, Services  
Management

## GRID COMPUTING



Clusters, Resource Management, High Availability

- Rich Formatted Reports
- Partner Reports
- Financial Statements
- Government forms
- Marketing materials
- Contracts
- Checks
- Labels
- XML / EFT / EDI
- Multiple destinations



# Reporting - Challenges

- No one system can do that
- 3<sup>rd</sup> party software and many servers required to satisfy business requirements

- ⚡ High Cost
- ⚡ Complex systems

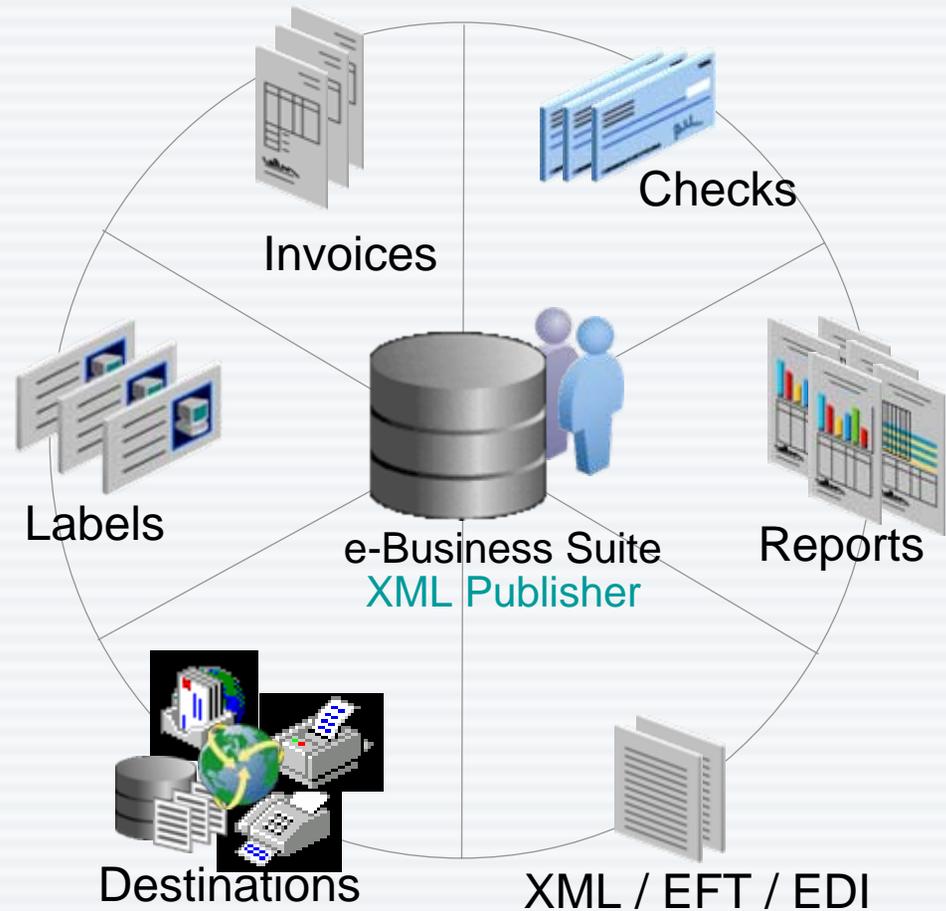
- You pay more for maintenance
- Highly skilled engineers required to maintain the 3<sup>rd</sup> party software servers

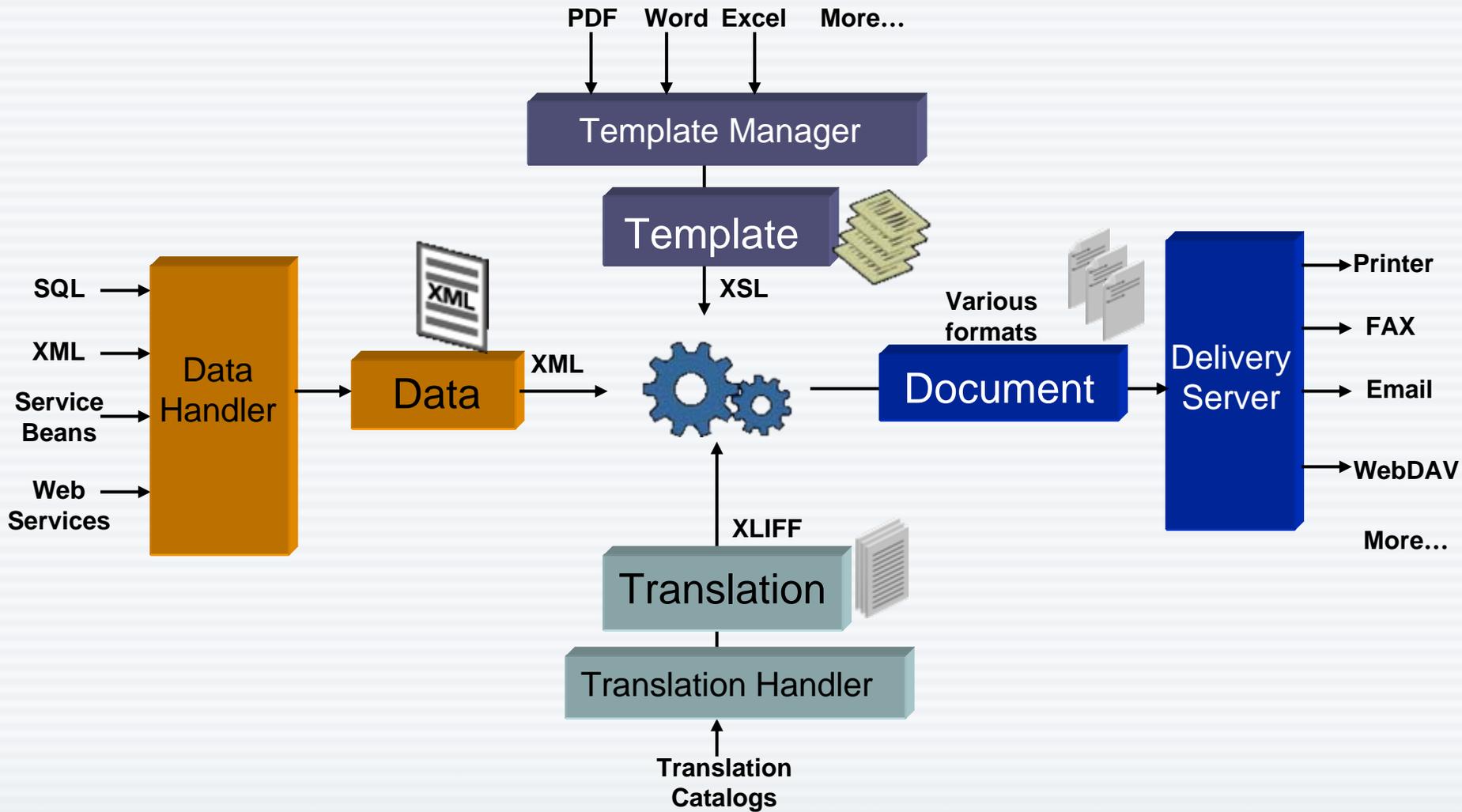
- ⚡ High Cost
- ⚡ Complex systems
- ⚡ Expensive maintenance
- ⚡ Labor Intensive



# Solution - Remove Complexity, Reduce Cost

- Utilizing Oracle BI Publisher
  - Integrated Publishing Solution
- 
- Meet Business Requirements
  - Rapid Deployment
  - Reduce Total Cost
  - Reduce Maintenance Cost





**Purchase Order Header**  
PO Number: 95032163

**Ship To Address**  
530 Hillside Blvd  
San Francisco, CA 94235

**Bill To Address**  
583 Redwood Ave  
San Jose, CA 95013

**Supplier**  
Office Supplies, Inc.

**Buyer**  
Deborah S. Swain

**Ship Via**  
UPS

**Vision Operations**  
90 Fifth Avenue  
New York, NY 10022-3422

**Supplier**  
Office Supplies, Inc.

**Buyer**  
Deborah S. Swain

**Ship Via**  
UPS

**Purchase Order**  
PO Number: 1308  
Revision: 0

**Date of Order**  
03/03

**Buyer**  
Deborah S. Swain

**Ship Via**  
UPS

**Extended Price**

000000000195740435094459  
1 To addr line1

00000000013000560094462  
Comp58 031002 EUR 2500 BelComp59 031002 EUR 3500

**Eaton Brazil Sets the ERP Standard for Eaton's Manufacturing Plants Worldwide**

*The tight integration and flexible architecture of Oracle E-Business Suite improves data consistency, eliminates duplications, runs in real time, and enables data and information reporting for decision support and day-to-day management - Orlando Lutz, Assistant Manager, Transmission Division, Eaton Brazil*

**Oracle Financials**  
Month: January 2002 - January 2002

Oracle Logo:  New Profile  Non-Profile  Available  Exempt  Limit

Taxable	Non-Taxable	Receivable	Tax	Non-Receivable	Total
0.00	5.00	130.87	0.00	794.00	
0.00	5.00	130.87	0.00	794.00	
0.00	5.00	300.00	0.00	600.00	
00.00	0.00	720.00	0.00	4,300.00	
1.00	0.00	90.24	0.00	487.44	
0.00	0.00	2.60	0.00	12.40	

**Grant Application**

Department of Health and Human Services  
Public Health Service

**Project 1**

1. RESPONSE TO SPECIFIC REQUEST FOR APPLICATIONS OR PROGRAM ANNOUNCEMENT OR SOLICITATION  YES  NO

2. PRINCIPAL INVESTIGATOR/PROGRAM DIRECTOR  
Name: John Doe

3. TITLE OF PROJECT  
Title: T101

4. HUMAN SUBJECTS RESEARCH  
 No  Yes

5. VERTEBRATE ANIMALS  
 No  Yes

6. DATES OF PROPOSED PERIOD OF SUPPORT  
From: 01/02/03 Through: 04/05/03

7. COSTS REQUESTED FOR PERIOD OF SUPPORT  
Total Cost (\$): \$12,456,789

8. COSTS REQUESTED FOR PROPOSED PERIOD OF SUPPORT  
Total Cost (\$): \$321,456,789

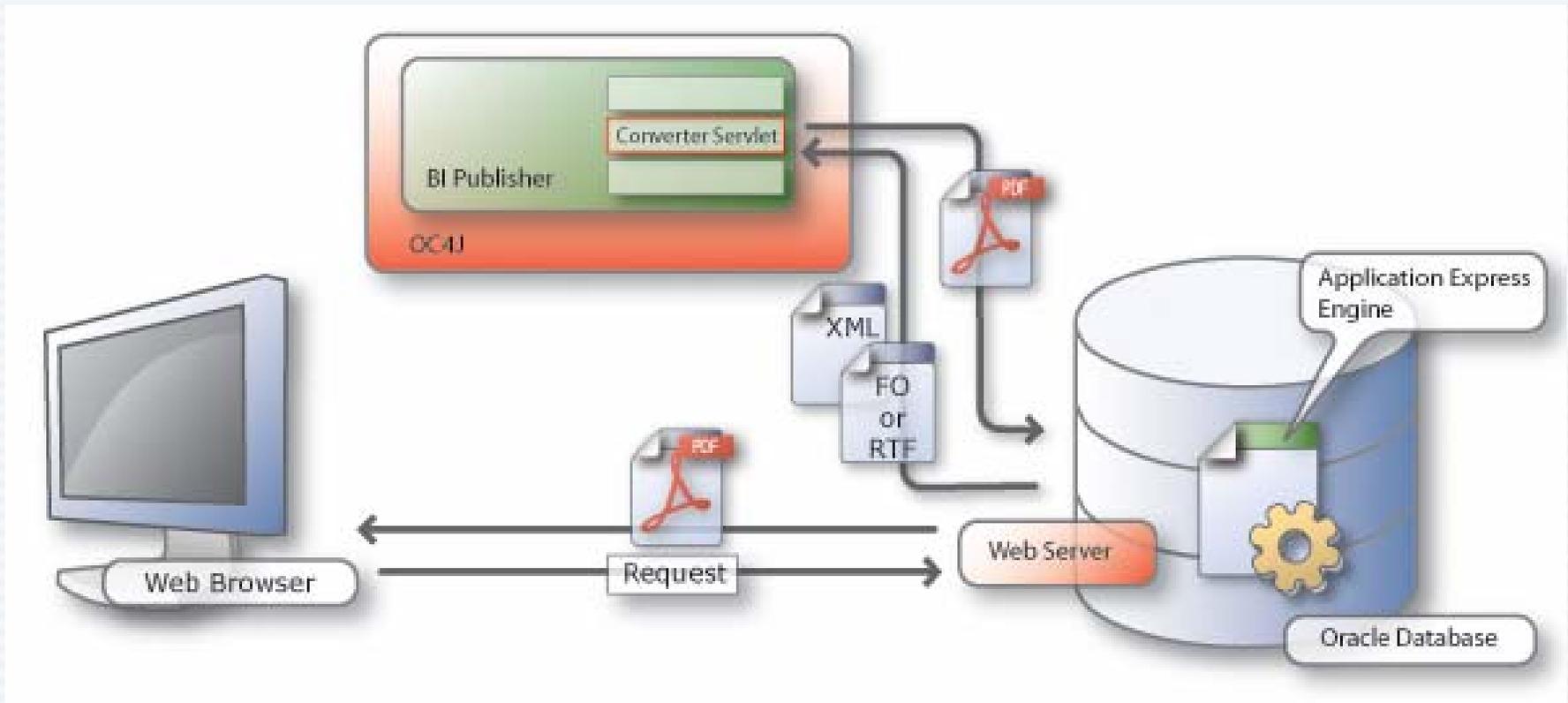
9. OFFICIAL SIGNATURE FOR APPLICANT ORGANIZATION  
Name: Jane Doe  
Title: Manager  
Address: 200 Oracle Parkway Redwood Shores, CA 94065

**Oracle BI Publisher Business View**

Bar chart showing data from 2000 to 2002.

Year	Actual	Target
2000	2,374K	2,374K
2001	3,555K	3,555K
2002	1,288K	1,288K
2003	1,488K	1,488K
2004	1,288K	1,288K
2005	1,288K	1,288K
2006	1,288K	1,288K
2007	1,288K	1,288K
2008	1,288K	1,288K
2009	1,288K	1,288K
2010	1,288K	1,288K
2011	1,288K	1,288K
2012	1,288K	1,288K
2013	1,288K	1,288K
2014	1,288K	1,288K
2015	1,288K	1,288K
2016	1,288K	1,288K
2017	1,288K	1,288K
2018	1,288K	1,288K
2019	1,288K	1,288K
2020	1,288K	1,288K
2021	1,288K	1,288K
2022	1,288K	1,288K
2023	1,288K	1,288K
2024	1,288K	1,288K
2025	1,288K	1,288K
2026	1,288K	1,288K
2027	1,288K	1,288K
2028	1,288K	1,288K
2029	1,288K	1,288K
2030	1,288K	1,288K

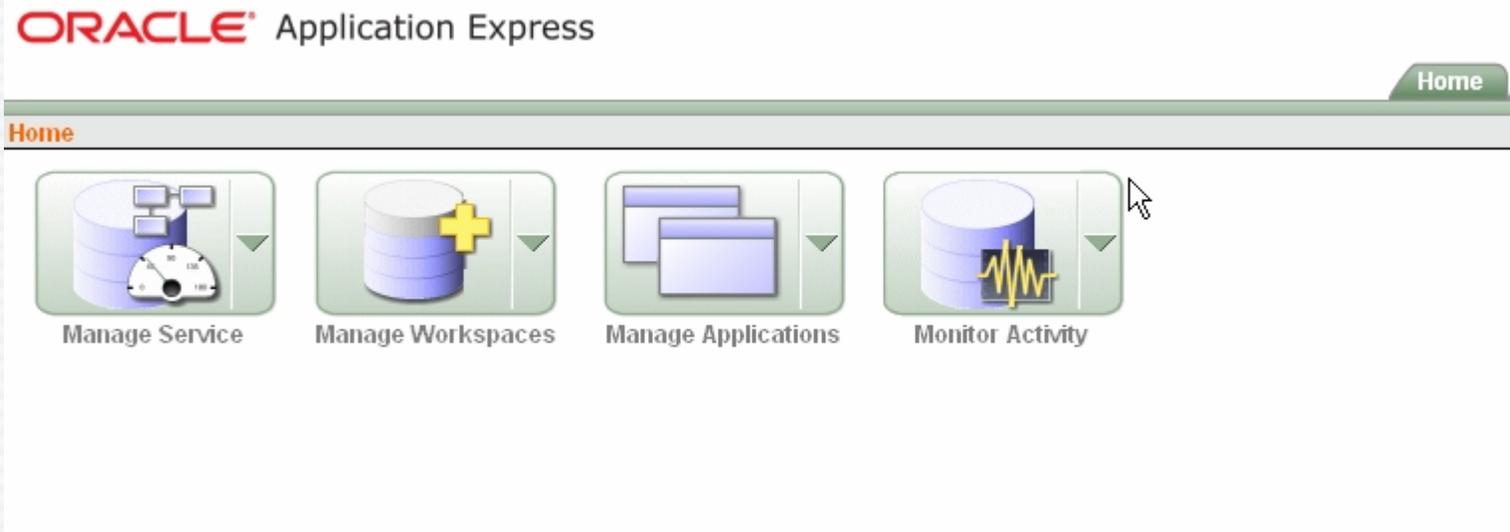
# BI Publisher Integration



Courtesy: Oracle Corporation

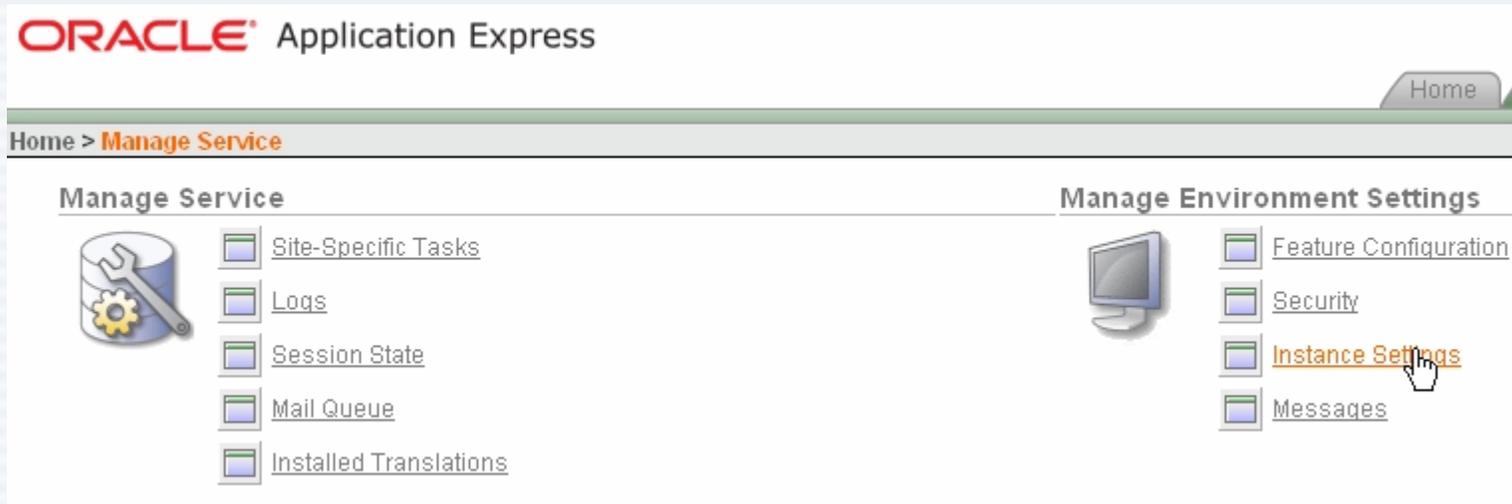
# BI Publisher Integration – Setup

- To integrate Application Express to BI Publisher, you need:
  - Access to APEX Admin pages
  - BI Publisher server name & port



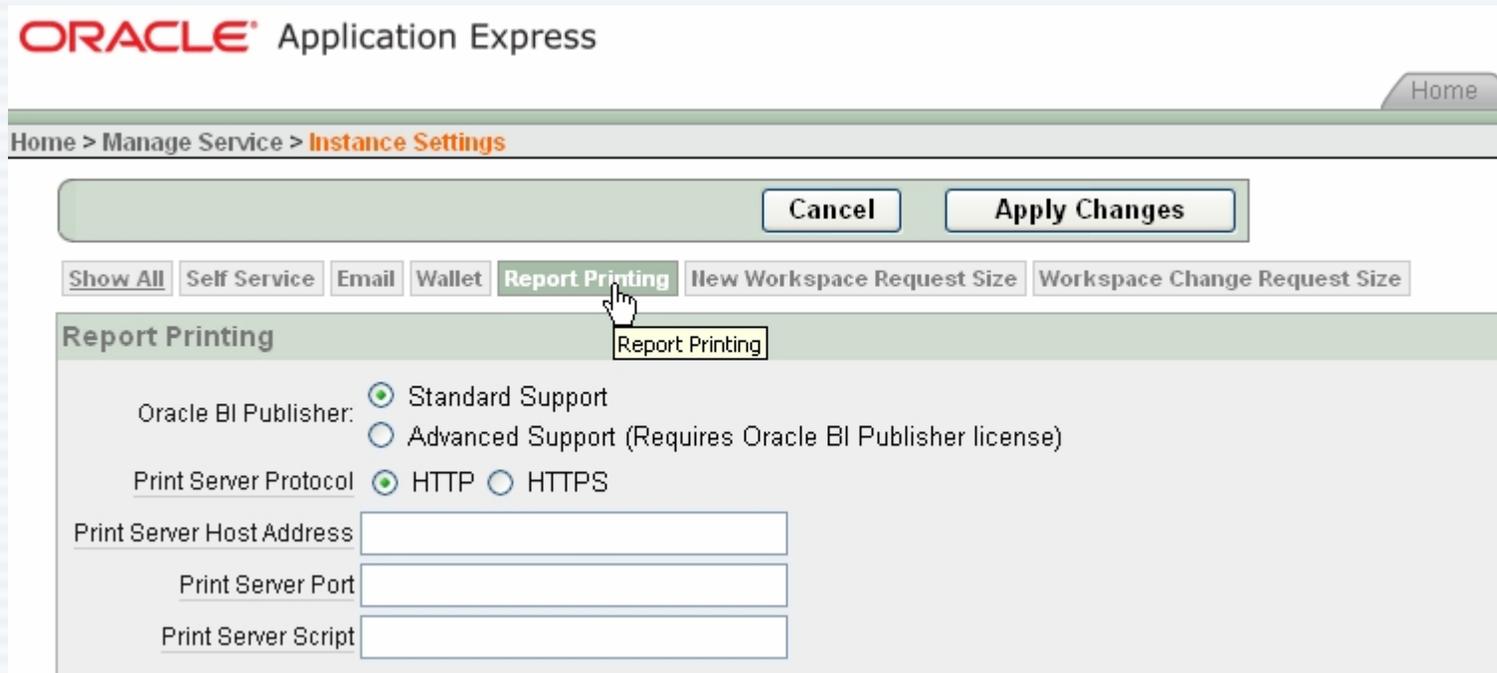
# BI Publisher Integration – Setup

- Select Manage Service and then choose Instance Settings:



# BI Publisher Integration – Setup

- Select the Report Printing section:



ORACLE Application Express

Home > Manage Service > Instance Settings

Cancel Apply Changes

Show All Self Service Email Wallet Report Printing New Workspace Request Size Workspace Change Request Size

Report Printing

Oracle BI Publisher:  Standard Support  Advanced Support (Requires Oracle BI Publisher license)

Print Server Protocol  HTTP  HTTPS

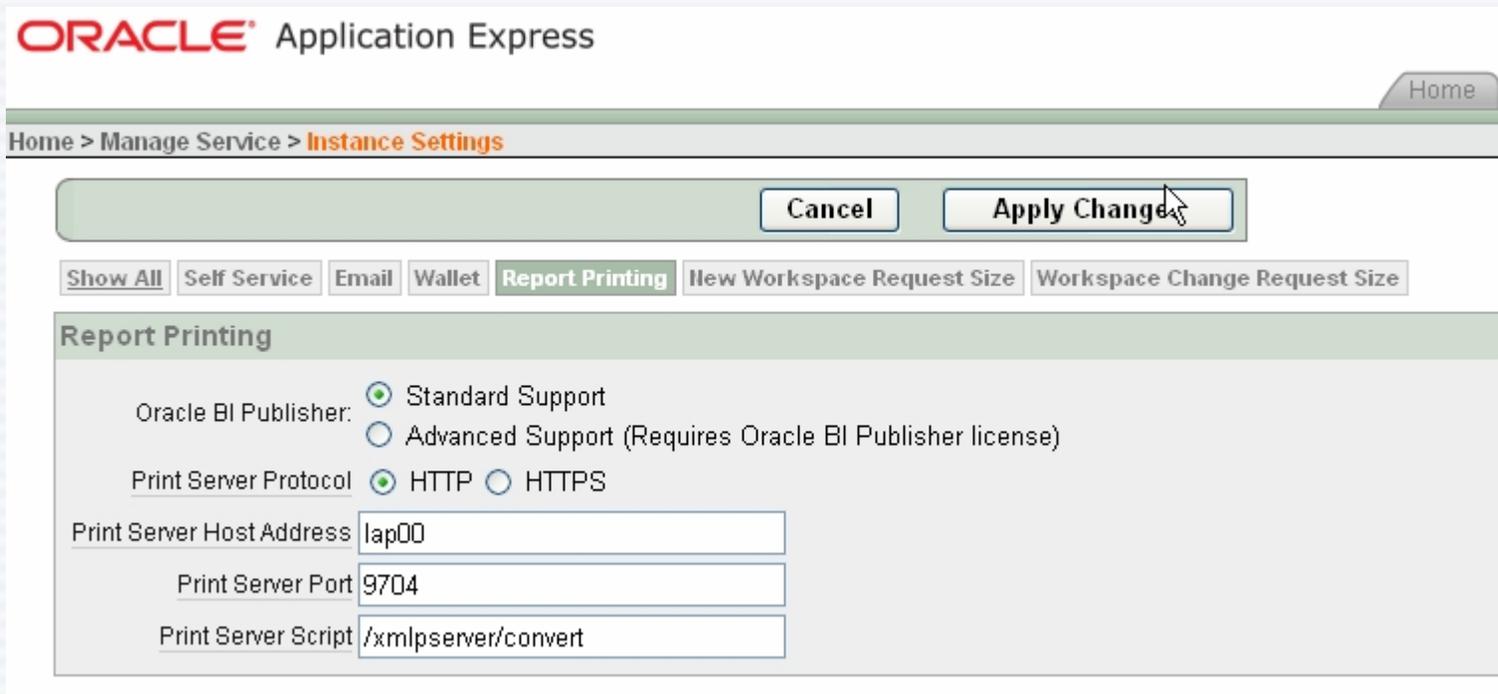
Print Server Host Address

Print Server Port

Print Server Script

# BI Publisher Integration – Setup

- Enter the host & port values
- Enter /xmlpserver/convert for Printer Server Script



ORACLE® Application Express

Home > Manage Service > Instance Settings

Cancel Apply Change

Show All Self Service Email Wallet Report Printing New Workspace Request Size Workspace Change Request Size

**Report Printing**

Oracle BI Publisher:  Standard Support  
 Advanced Support (Requires Oracle BI Publisher license)

Print Server Protocol  HTTP  HTTPS

Print Server Host Address

Print Server Port

Print Server Script

- Verify values and Apply Changes

# BI Publisher Integration – Report Creation

- Now login to Application Express
- Select Application Builder



# BI Publisher Integration – Report Creation

- In your application, select Shared Components:



- And choose Report Queries:



- Create your query & test it:

ORACLE® Application Express

Home > Application Builder > Application 101 > Shared Components > Report Queries > **Create Report Query**

Query

Test Query

Include Session State

Download XML

Confirm

Create Report Query Cancel Next >

Name

SQL Query

```
SELECT * FROM DEMO_CUSTOMERS
```

Query Builder

- Select a layout for your query:

**ORACLE** Application Express

Home > Application Builder > Application 101 > Shared Components > Report Queries > **Create Report Query**

Query  
 Test Query  
 Include Session State  
**Download XML**  
 Confirm

Create Report Query Layout Cancel < Previous Next >

Report Layout: **Use generic report layout**

**Step 1 - Download XML file**

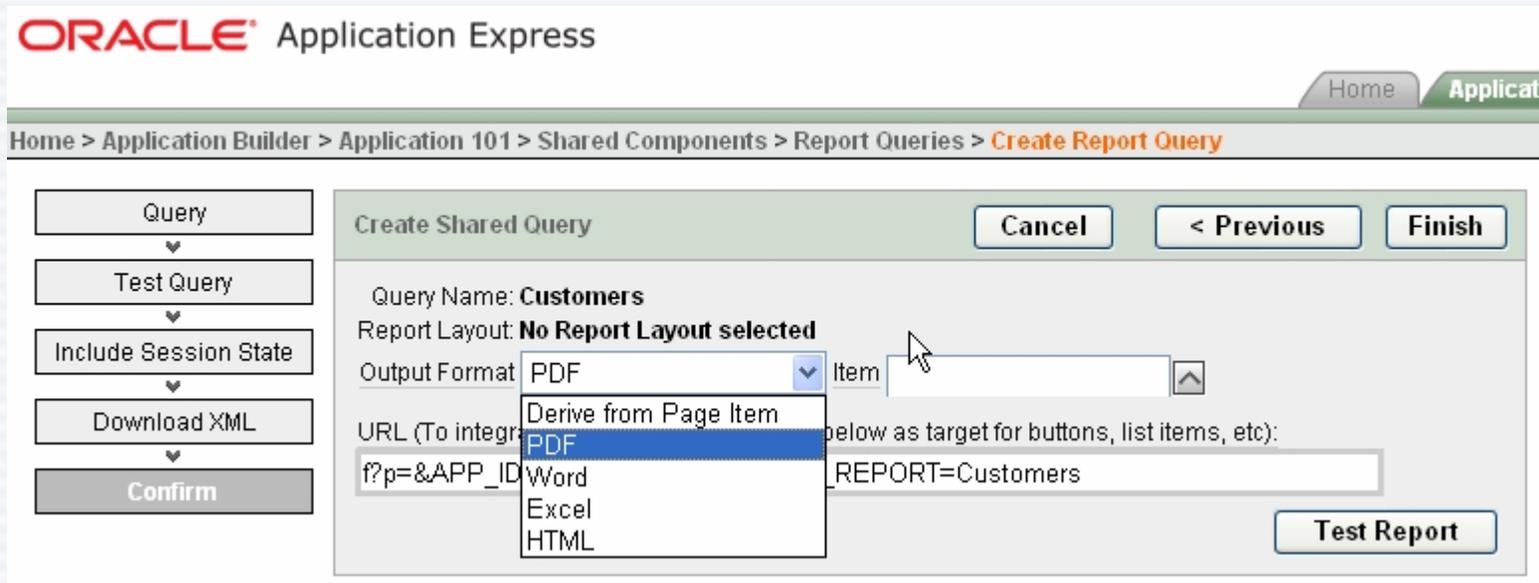
XML Structure: Standard Download XML

**Step 2 - Upload XSL-FO file**

Layout Name: Customers

RTF File: Browse...

- Choose and output format and Test Report:



**ORACLE** Application Express

Home > Application Builder > Application 101 > Shared Components > Report Queries > **Create Report Query**

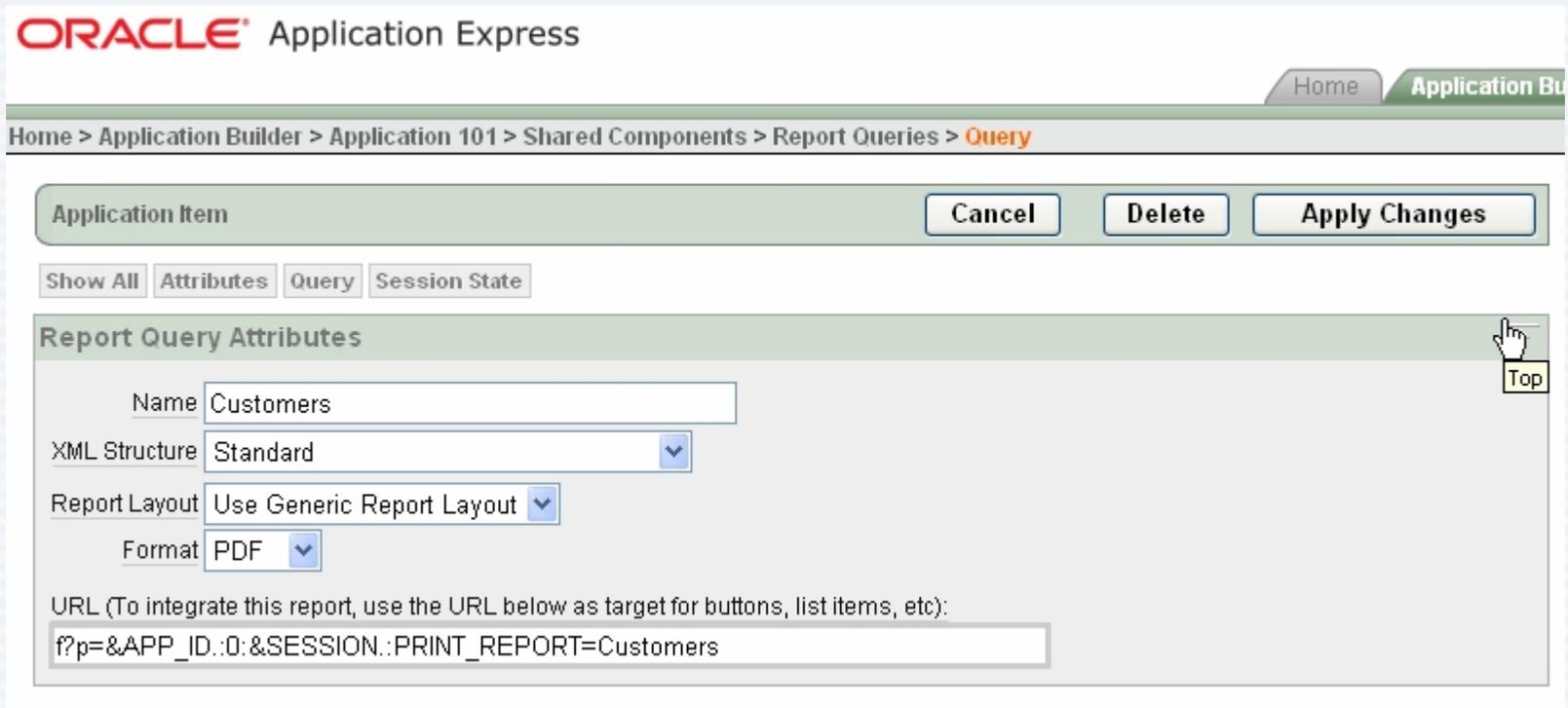
Query  
 Test Query  
 Include Session State  
 Download XML  
 Confirm

**Create Shared Query** [Cancel] [Previous] [Finish]

Query Name: **Customers**  
 Report Layout: **No Report Layout selected**  
 Output Format: PDF (dropdown menu open showing: Derive from Page Item, PDF, Word, Excel, HTML)  
 Item: [ ]  
 URL (To integrate with the report): f?p=&APP\_ID...REPORT=Customers  
 [Test Report]

- Save the query by clicking Finish

- The URL provided can be used to integrate the report:



**ORACLE** Application Express

Home > Application Builder > Application 101 > Shared Components > Report Queries > **Query**

Application Item Cancel Delete Apply Changes

Show All Attributes Query Session State

**Report Query Attributes**

Name

XML Structure  ▼

Report Layout  ▼

Format  ▼

URL (To integrate this report, use the URL below as target for buttons, list items, etc):

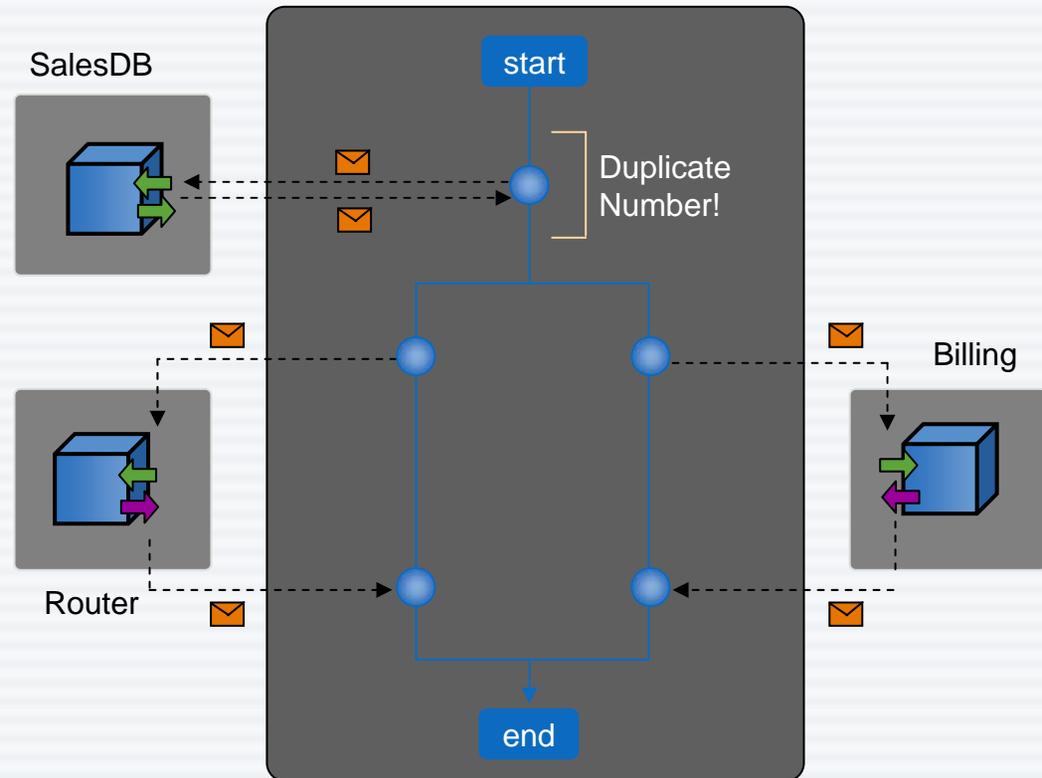
Top

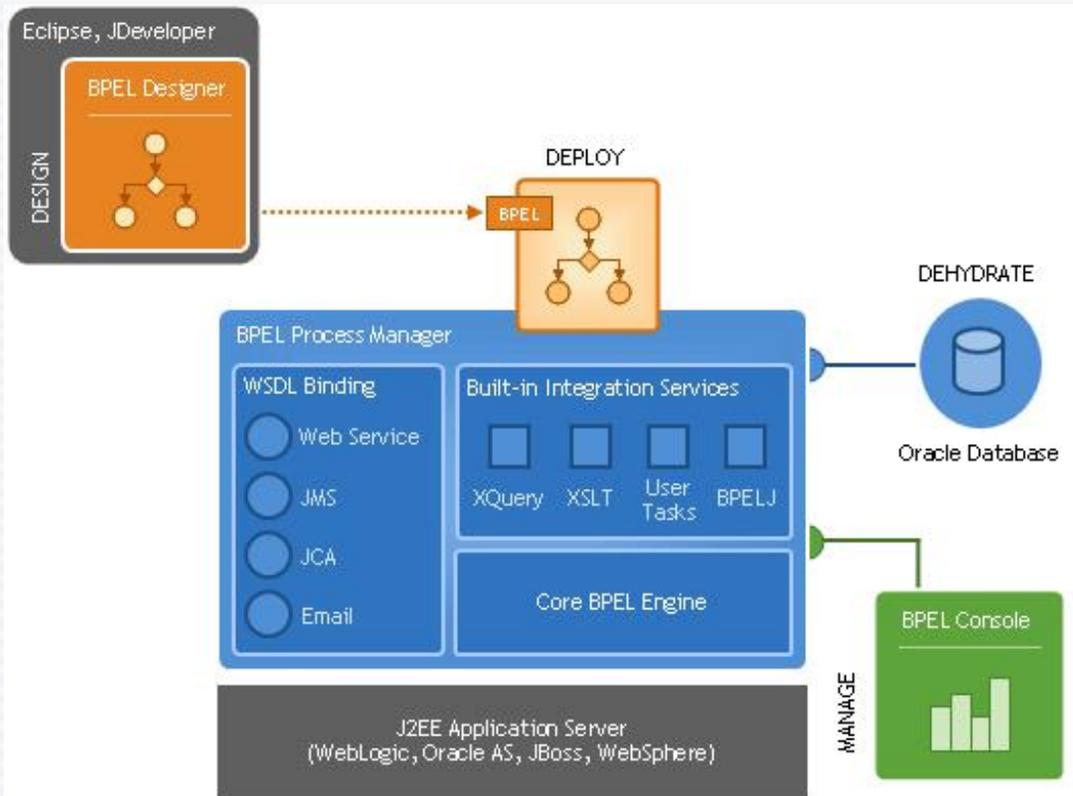


# Demo

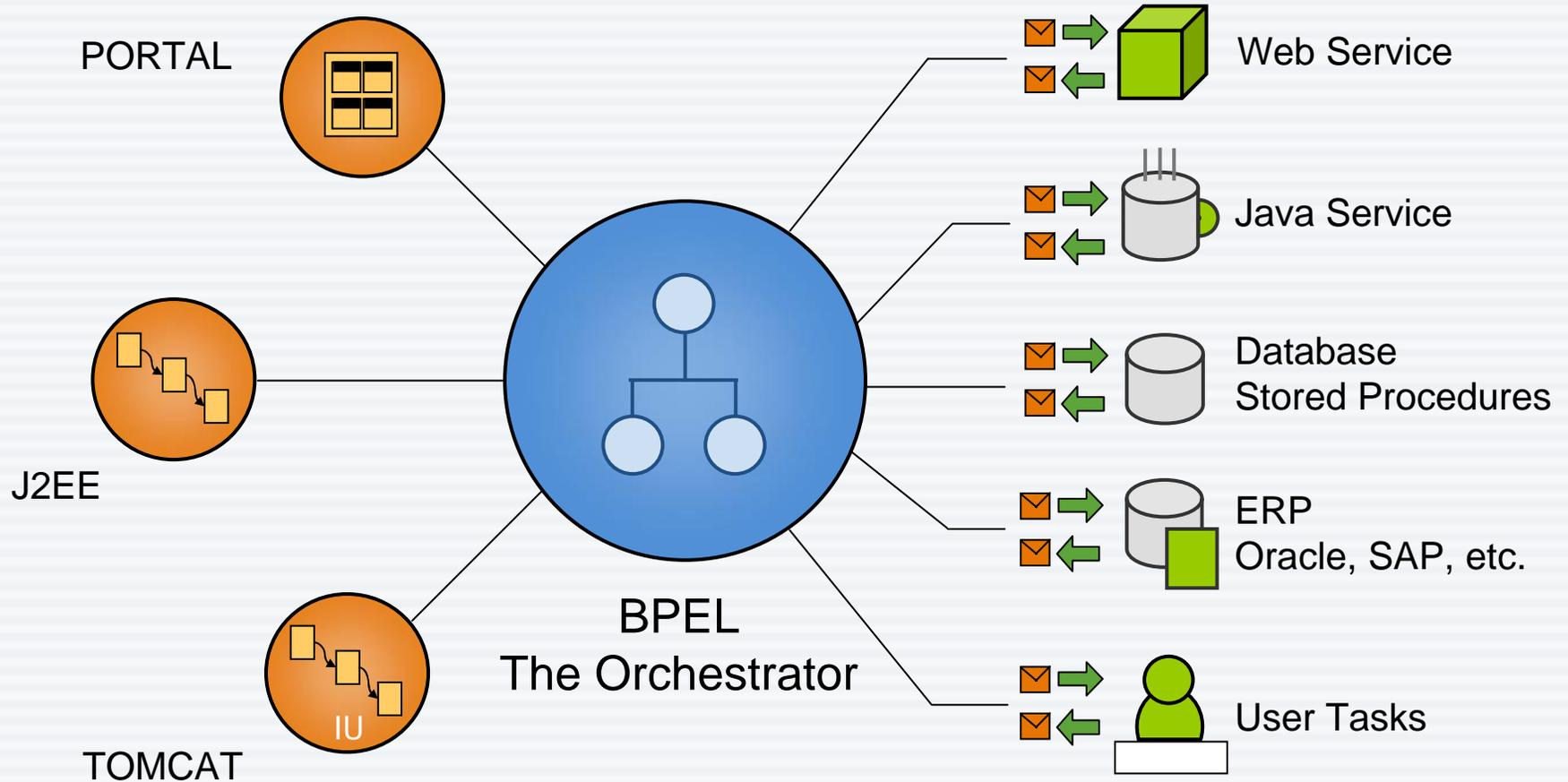
Business Process Execution Language: Markup language for composing a set of discrete services into an end-to-end process flow

- 10+ years of R&D from MSFT and IBM
- SOAP but also Java, JCA
- Rich Flow Semantics
- Optimized Bindings
- XPATH+XSLT+XQuery
- WS-Security
- A Process is a Service



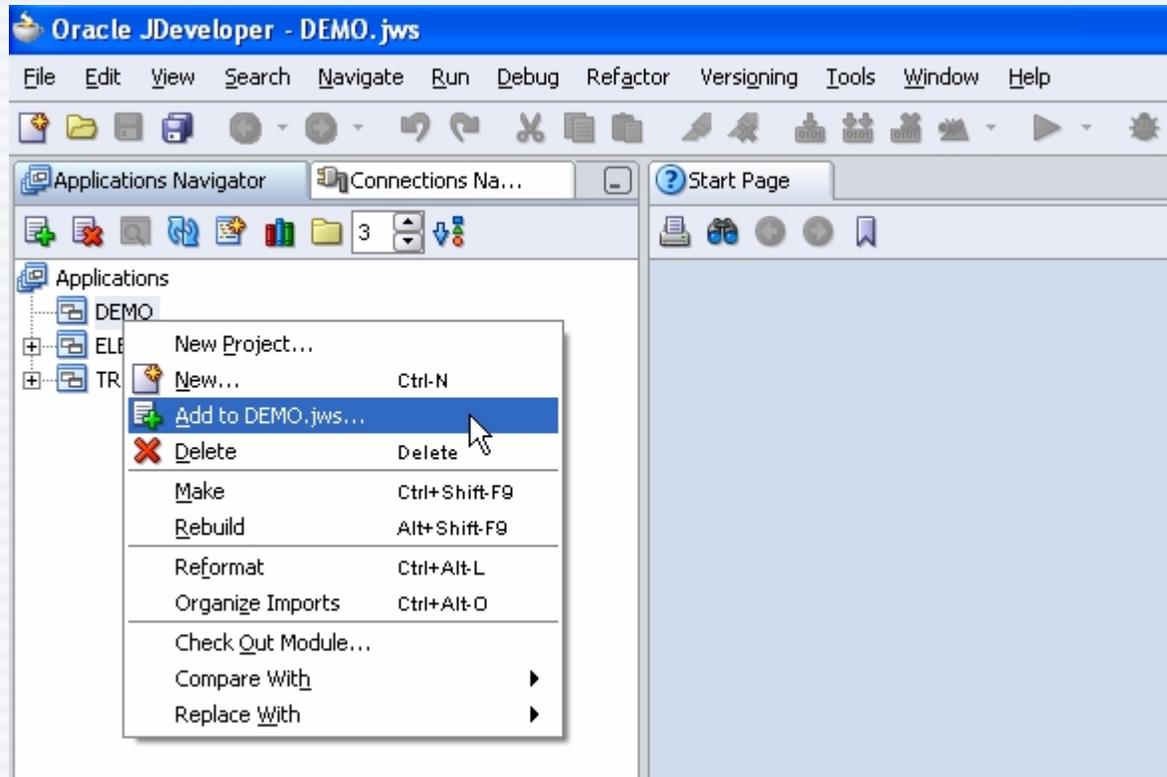


- Comprehensive and native BPEL implementation
- Easy-to-use modeling tool
- Scalable and reliable engine
- Flexible binding framework
- Rich management and monitoring
- Support for Oracle AS, WebLogic and WebSphere
- Get up and running in less than 15 minutes!



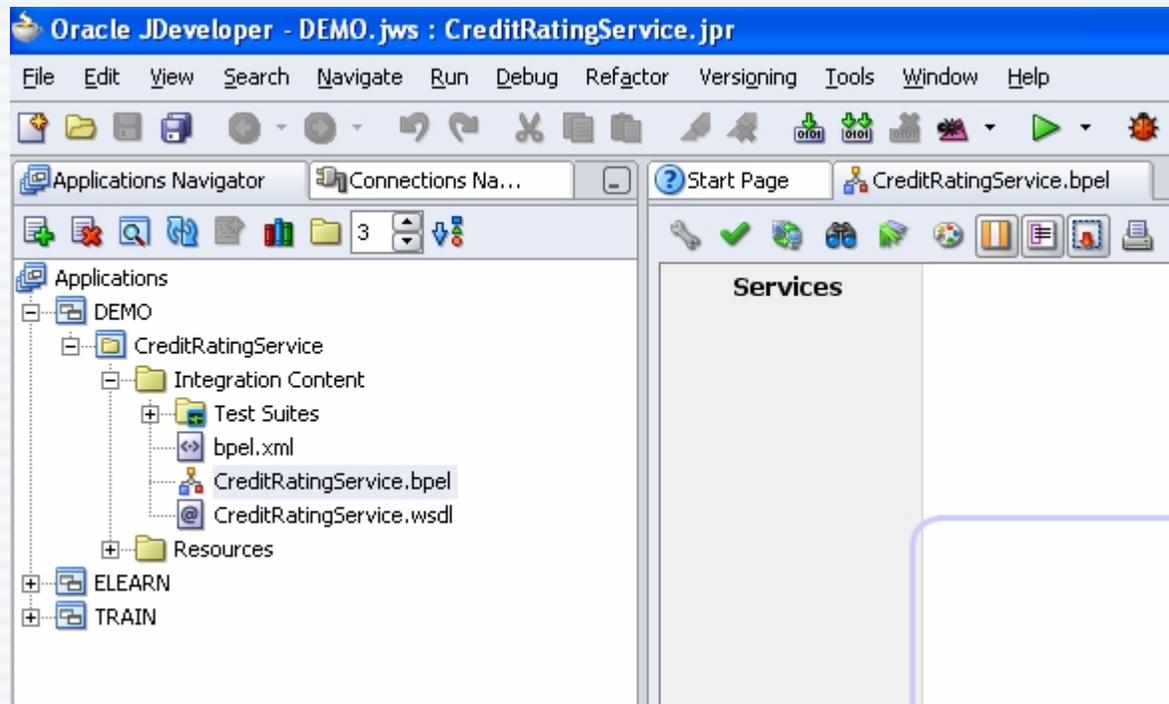
# BPEL Integration – Setup

- First identify and deploy the BPEL process that you wish to integrate with APEX.



# BPEL Integration – Setup

- For example, add the CreditRatingService.jpr file to your application from the ORACLE\_HOME\bpel\samples\utils\CreditRatingService folder



- Right click on the project name and deploy it to the default domain

# BPEL Integration – Setup

- Next, open the BPELConsole and click on the deployed CreditRatingService process link

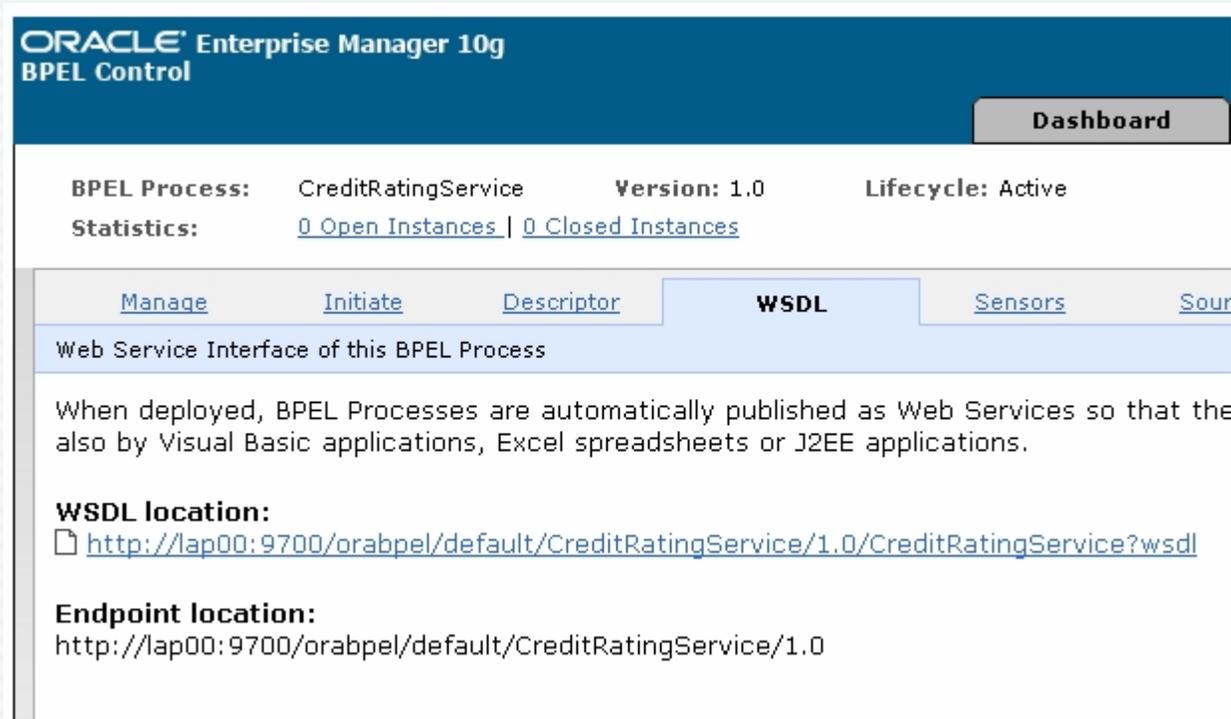


The screenshot shows the Oracle Enterprise Manager 10g BPEL Control interface. At the top, there is a blue header with the text "ORACLE Enterprise Manager 10g BPEL Control" and a "Dashboard" button on the right. Below the header is a table with two main sections: "Deployed BPEL Processes" and "In-Flight BPEL Process Instances". The "Deployed BPEL Processes" section has a sub-header "Name" and contains a single entry, "CreditRatingService", which is a blue hyperlink. A mouse cursor is pointing at this link. The "In-Flight BPEL Process Instances" section has sub-headers "Instance" and "BPEL Process" and is currently empty.

Deployed BPEL Processes	In-Flight BPEL Process Instances	
Name	Instance	BPEL Process
<a href="#">CreditRatingService</a>		

# BPEL Integration – Setup

- Copy the WSDL location of this BPEL process (this is required to setup APEX)



**ORACLE Enterprise Manager 10g**  
BPEL Control

**Dashboard**

**BPEL Process:** CreditRatingService    **Version:** 1.0    **Lifecycle:** Active

**Statistics:** [0 Open Instances](#) | [0 Closed Instances](#)

[Manage](#)   [Initiate](#)   [Descriptor](#)   **WSDL**   [Sensors](#)   [Sources](#)

Web Service Interface of this BPEL Process

When deployed, BPEL Processes are automatically published as Web Services so that they can be accessed by Visual Basic applications, Excel spreadsheets or J2EE applications.

**WSDL location:**  
 <http://lap00:9700/orabpel/default/CreditRatingService/1.0/CreditRatingService?wsdl>

**Endpoint location:**  
<http://lap00:9700/orabpel/default/CreditRatingService/1.0>

# BPEL Integration – Setup

- To integrate Application Express to BPEL, you need to setup Web Service References
- Now login to Application Express
- Select Application Builder

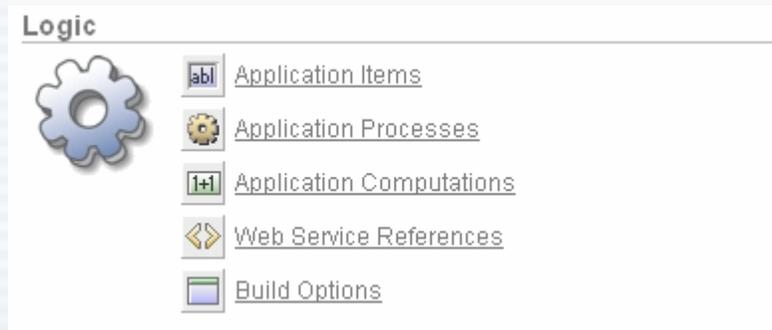


# BPEL Integration – Setup

- In your application, select Shared Components:



- And choose Web Service References:



# BPEL Integration – Setup

- Next, click on the Create button to create a new Web Service Reference
- Select No on the Search UDDI? step



ORACLE Application Express

Home > Application Builder > Application 101 > Shared Components > Web Service References > **Create Web Service Reference**

Search UDDI?

Choose tModel

WSDL Location

Web Service Details

Success

Create Web Service Reference

Do you want to search a UDDI registry to find the WSDL?  Yes  No

# BPEL Integration – Setup

- Next, paste the WSDL location that was copied from the BPEL Console

**ORACLE** Application Express

Home > Application Builder > Application 101 > Shared Components > Web Service References > **Create Web Service Reference**

WSDL Location

**Authentication**

Username

Password

# BPEL Integration – Setup

- Verify Web Service Details on the next step and click Create Reference to complete the setup

**ORACLE** Application Express

Home > Application Builder > Application 101 > Shared Components > Web Service References > **Create Web Service Reference**

Search UDDI?

Choose tModel

WSDL Location

**Web Service Details**

Success

**Web Service Details** Cancel < Previous Create Reference

Web Service Name

SOAP URL Endpoint

SOAP Style document

Basic Authentication  Yes  No

**Operations**

**Operation Name** process

➤ Input Parameters

➤ Output Parameters

- Now select Create Form on Web Service

**ORACLE** Application Express

Home > Application Builder > Application 101 > Shared Components > Web Service References > **Create Web Service Reference**

Search UDDI?

Choose tModel

WSDL Location

Web Service Details

**Success**

**Create Web Service Reference**

 Web service reference created.



View Web Service References



Create Form on Web Service



Create Form and Report on Web Service

# BPEL Integration – Form Creation

- Choose the Web Service Reference from the drop-down list, select the appropriate Operation and click Next

ORACLE® Application Express

Home > Application Builder > Application 101 > Page 1 > Create Page > **Form on Web Service**

Choose Service and Operation

Page and Region Attributes

Input Items

Output Items

Tabs

Confirm

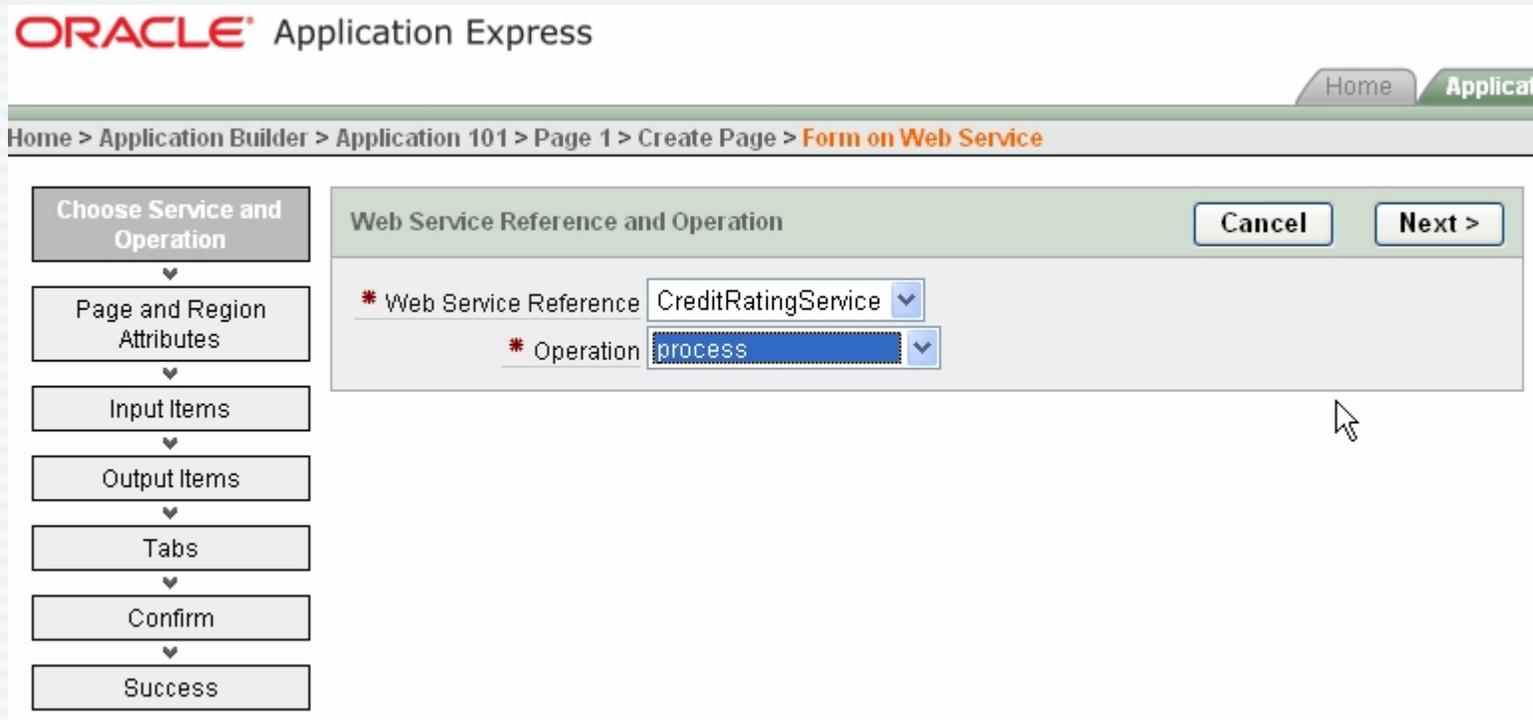
Success

Web Service Reference and Operation

\* Web Service Reference: CreditRatingService

\* Operation: process

Cancel Next >



- Change Page Number or Name (if desired) and click Next

**ORACLE** Application Express

Home > Application Builder > Application 101 > Page 1 > Create Page > **Form on Web Service**

Choose Service and Operation

**Page and Region Attributes**

Input Items

Output Items

Tabs

Confirm

Success

**Identify Page and Region Attributes** Cancel < Previous Next >

Use this page to specify page and region information.

If the page you specify does not exist, the wizard creates the page for you.

Web Service Reference: **CreditRatingService**  
 Operation: **process**

\* Page Number

\* Page Name

\* Region Title

\* Region Template

Breadcrumb

- Select the Input Items and click Next

**ORACLE** Application Express

Home > Application Builder > Application 101 > Page 1 > Create Page > **Form on Web Service**

Choose Service and Operation  
 Page and Region Attributes  
**Input Items**  
 Output Items  
 Tabs  
 Confirm  
 Success

Items for Input Parameters

Cancel < Previous Next >

Name	Type	Item Name	Item Label	Create
ssn	string	P2_SSN	SSN	Yes <input type="button" value="v"/>

- Select the Output Items and click Next

ORACLE® Application Express

Home > Application Builder > Application 101 > Page 1 > Create Page > Form on Web Service

Choose Service and Operation  
 Page and Region Attributes  
 Input Items  
**Output Items**  
 Tabs  
 Confirm  
 Success

Items for Output Parameters

Cancel < Previous Next > Finish

Name	Type	Item Name	Item Label	Create
rating	int	P2_RATING	Rating	Yes

- Optionally, select a Tab Set, enter a New Tab Label and click Next

**ORACLE** Application Express

Home > Application Builder > Application 101 > Page 1 > Create Page > **Form on Web Service**

Choose Service and Operation

Page and Region Attributes

Input Items

Output Items

**Tabs**

Confirm

Success

**Identify Tab** Cancel < Previous Next >

Page: 2

Tab Options:  Do not use tabs  
 Use an existing tab set and create a new tab within the existing tab set.  
 Use an existing tab set and reuse an existing tab within that tab set.

\* Tab Set

\* New Tab Label

> **Tabs**

# BPEL Integration – Form Creation

- Verify all selections and click Create Form to complete creation of a new form based on the Web Service Reference

ORACLE® Application Express

Home > Application Builder > Application 101 > Page 1 > Create Page > **Form on Web Service**

Form on Web Service Confirmation

Cancel < Previous Create Form

 You have requested to create a form on a Web service reference page with the following attributes. Please confirm your selections.

Application	<b>101</b>
Page	<b>2</b>
Page Name	<b>CreditRatingService</b>
Tab Set	<b>TS1</b>
Tab Label	<b>Credit Rating</b>
Region Title	<b>process</b>
Region Template	<b>Form Region</b>
Web Service Reference, Operation	<b>CreditRatingService, process</b>
Form Items	<b>P2_SSH</b>
Output Items	<b>P2_RATING</b>

Choose Service and Operation

Page and Region Attributes

Input Items

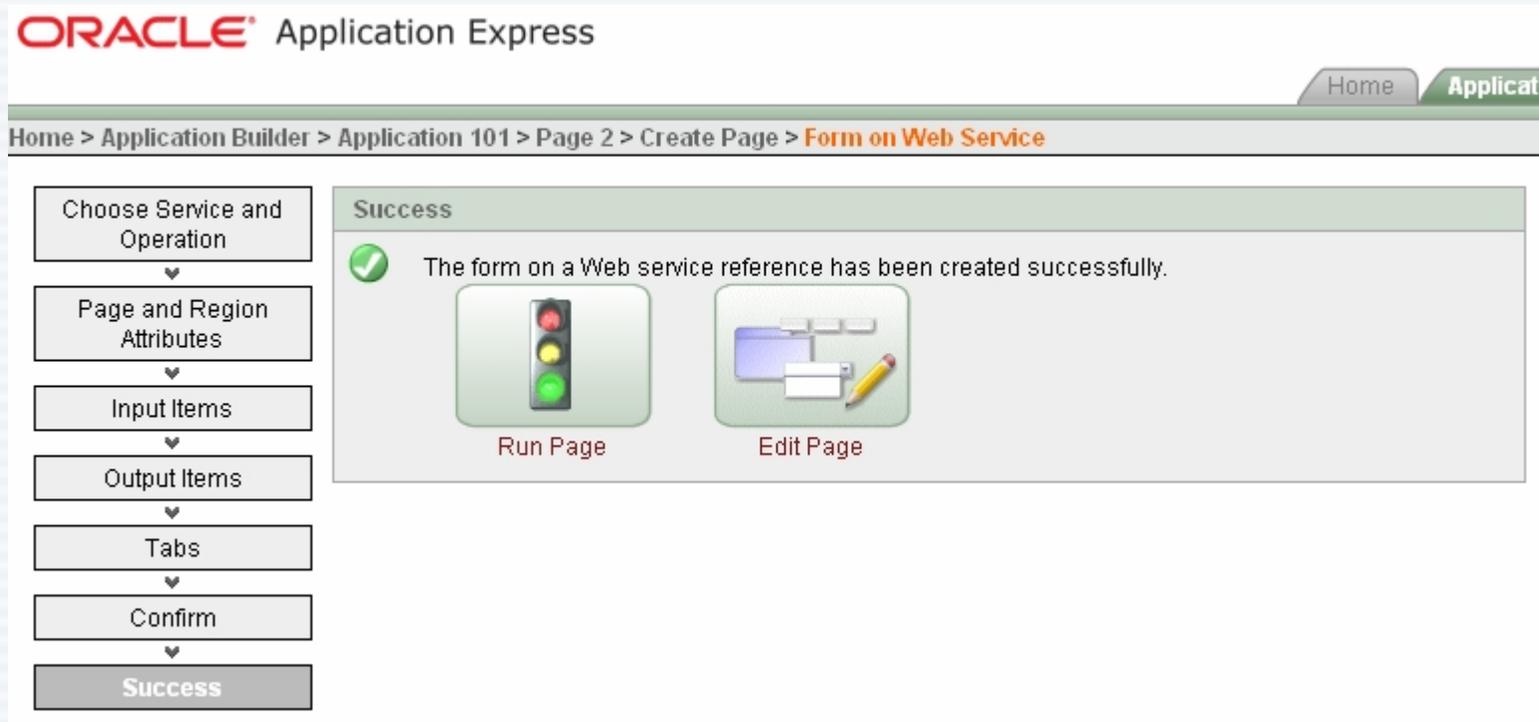
Output Items

Tabs

**Confirm**

Success

- Now, test the newly created page by clicking on Run Page



The screenshot displays the Oracle Application Express interface. At the top left, the Oracle logo is followed by the text "Application Express". On the right side of the top bar, there are two tabs: "Home" and "Applicat". Below the top bar, a breadcrumb trail reads: "Home > Application Builder > Application 101 > Page 2 > Create Page > Form on Web Service".

On the left side, there is a vertical navigation menu with the following items, each in a box with a downward arrow below it:

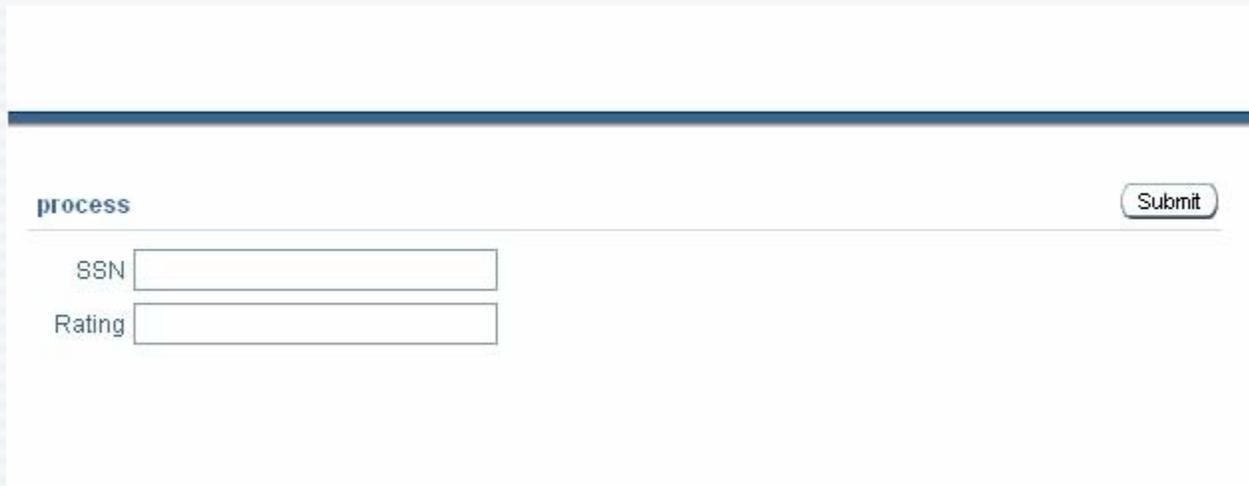
- Choose Service and Operation
- Page and Region Attributes
- Input Items
- Output Items
- Tabs
- Confirm
- Success

The main content area features a "Success" message box with a green checkmark icon. The message text is: "The form on a Web service reference has been created successfully." Below the message, there are two buttons:

- Run Page**: Represented by a traffic light icon.
- Edit Page**: Represented by an icon of a folder, a document, and a pencil.

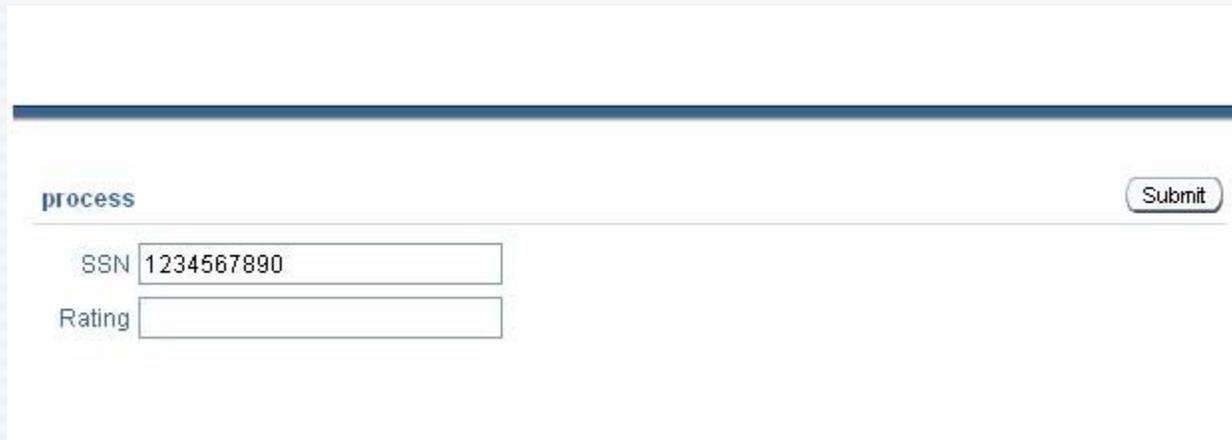
# BPEL Integration – Form Creation

- The following page will be displayed, prompting for a Social Security Number to be entered



The screenshot shows a web form with a blue header bar. Below the header, the word "process" is displayed in blue text on the left, and a "Submit" button is on the right. The form contains two input fields: "SSN" and "Rating", each with a corresponding text box.

- Type in a number and click Submit

A screenshot of a web form titled 'process'. The form has a blue header bar. Below the header, there is a 'Submit' button on the right. The form contains two input fields: 'SSN' with the value '1234567890' and 'Rating' which is empty.

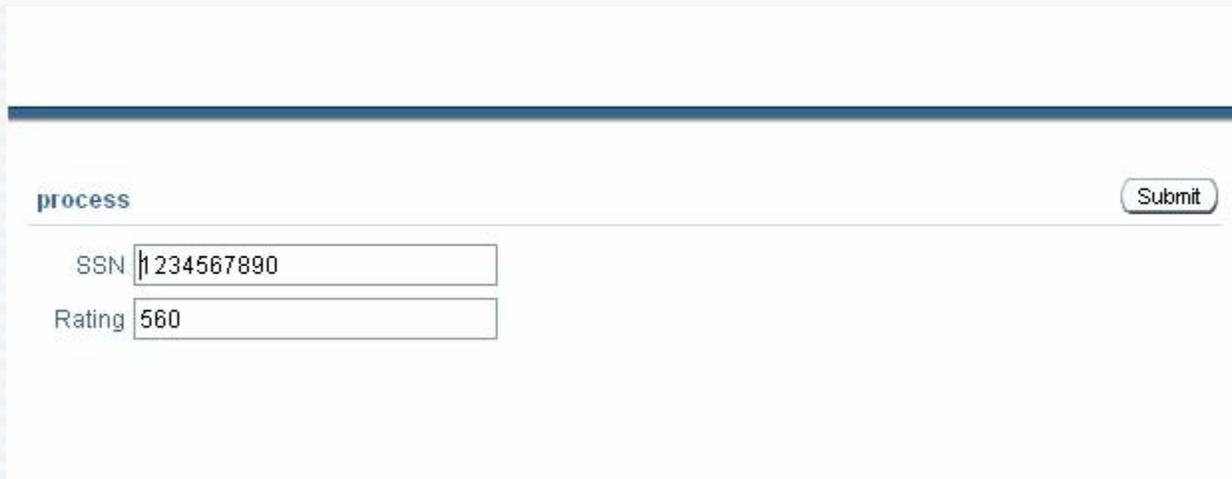
process Submit

SSN

Rating

# BPEL Integration – Form Creation

- The page will invoke the CreditRatingService BPEL process and display the rating value returned by the process



The screenshot shows a web form titled "process" with a "Submit" button. The form contains two input fields: "SSN" with the value "1234567890" and "Rating" with the value "560".

process	
SSN	1234567890
Rating	560

# Demo

- Oracle Application Express (APEX) is a web-based, rapid application development tool that leverages the Oracle database to build web-based applications
- Oracle BI Publisher is an Integrated Publishing Solution that address business reporting and publishing requirements by enabling rapid deployment at a significantly reduced cost
- Oracle BPEL Process Manager offers a comprehensive and easy-to-use infrastructure for creating, deploying and managing BPEL end-to-end business processes
- Oracle BI Publisher and Oracle BPEL Process Manager, both components of Oracle Fusion Middleware, seamlessly integrate with Oracle Application Express



# About Innowave Technology

- Technology Consulting Firm founded in 2005
- Provide unique, innovative solutions using Oracle Technology and Applications
- Expertise includes: Fusion Middleware, BPEL & Web services, BAM, Business Intelligence, Portal, Identity Management
- Implement, upgrade, and enhance Oracle E-Business Suite, PeopleSoft, JD Edwards, and Siebel Applications
- Extensive experience understanding business needs and positioning value-added FMW solutions
- Expertise managing global and local implementations across various industry verticals
- Provide clients with proven methodologies, tools, and templates specifically tailored to their requirements
- Oracle Partner & Fusion Council Steering Committee Member
- Locations
  - Irvine, CA (Headquarters)
  - Los Angeles, CA

A large, stylized blue graphic of the letters 'Q&A' in a cursive font, serving as a background for the main title text.

## QUESTIONS ANSWERS

**Basheer Khan**

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[bkhan@innwavetech.com](mailto:bkhan@innwavetech.com)