



COLLABORATE14

TECHNOLOGY AND APPLICATIONS FORUM
FOR THE ORACLE COMMUNITY

Extend EBS Using Applications Express

Session ID#: 15115

Prepared by:
John Peters
JRPJR, Inc
john.peters@jrpjr.com

Rev: 2/25/2014
Copyright ©2014 by John Peters



REMINDER

Check in on the
COLLABORATE mobile app

Back by Popular Demand!

#C14LV

OAUG Connection Point® — AppsTech
July 22-23, 2014
Pre-conference Training: July 21, 2014
Pittsburgh Marriott City Center
Pittsburgh, PA, USA

If you are a technologist that supports Oracle's E-Business Suite of applications, you won't want to miss this two-day seminar designed exclusively for you.



Presentation proposals are being accepted between February 19 and April 20 on the following topics:

- Applications Strategy and Service
- Applications Development
- Business Intelligence/ BI Analytics
- Database
- Middleware
- Upgrade



Submit your proposal at cp.oaug.org



COLLABORATE 14
TECHNOLOGY AND APPLICATIONS FORUM
FOR THE ORACLE COMMUNITY

Who Should Attend

- Database Administrators
- Oracle Applications Database Administrators
- System Administrators supporting Oracle E-Business Suite
- Oracle Applications Developers
- Middleware Technologists supporting Oracle E-Business Suite
- Security Officers supporting Oracle E-Business Suite

Key Dates

- •February 19, 2014: Call for presentation proposals begins
- •April 1, 2014: Registration opens
- •April 20, 2014: Deadline to submit presentation proposals



Call for Presentation Proposals

Presentation proposals relaying best practices, customer success stories and how-to, deep-dive instruction will be accepted for the following educational tracks between February 19 and April 20, 2014:

- Applications Strategy and Service
- Applications Development
- Business Intelligence/ BI Analytics
- Database
- Middleware
- Upgrade



COLLABORATE 14

TECHNOLOGY AND APPLICATIONS FORUM
FOR THE ORACLE COMMUNITY

Volunteer Your Time & Knowledge for OAUG's Geos & SIGs

- Looking for an opportunity to support your professional association – OAUG?
- Do you enjoy sharing knowledge with your fellow Oracle users?
 - Then volunteer today to support your Geographic (Geo) or Special Interest Group (SIG)
 - Share your knowledge and experience by speaking at a Geo or SIG meeting or webinar
 - Volunteer for the leadership of your Geo or SIG
- To offer your time, talents and knowledge, please contact the OAUG Geo/SIG Manager at geo-sig@oaug.com



TUNE IN to the OAUG



OAUG Membership Booth 1039

- Pick up OAUG earbuds
- Win iTunes and Google Play gift cards
- Grand prize: free registration for COLLABORATE 15.

OAUG™



About the Presenter

- John Peters, JRPJR, Inc
 - Independent Consultant based in the San Francisco Bay Area
 - Worked with Oracle EBS since 1993
 - OAUG Workflow SIG Coordinator
 - Founding board member of the Northern California OAUG GEO
 - Presented many papers at many conferences:
<http://jrpjr.com> (paper archives)
 - john.peters@jrpjr.com

- Primarily Technology Focus
 - DBA/System Administration
 - Extension/Customization Design and Development



Agenda

- Describe Applications Express (APEX)
- Show three examples of how APEX was used to extend a client's E-Business Suite environment
 - Reporting Environment
 - Reporting Environment with some EBS Update Capability
 - Completely custom data entry extension to EBS
- Installation and Integration with EBS
- General Development Steps



Applications Express



COLLABORATE14

TECHNOLOGY AND APPLICATIONS FORUM
FOR THE ORACLE COMMUNITY

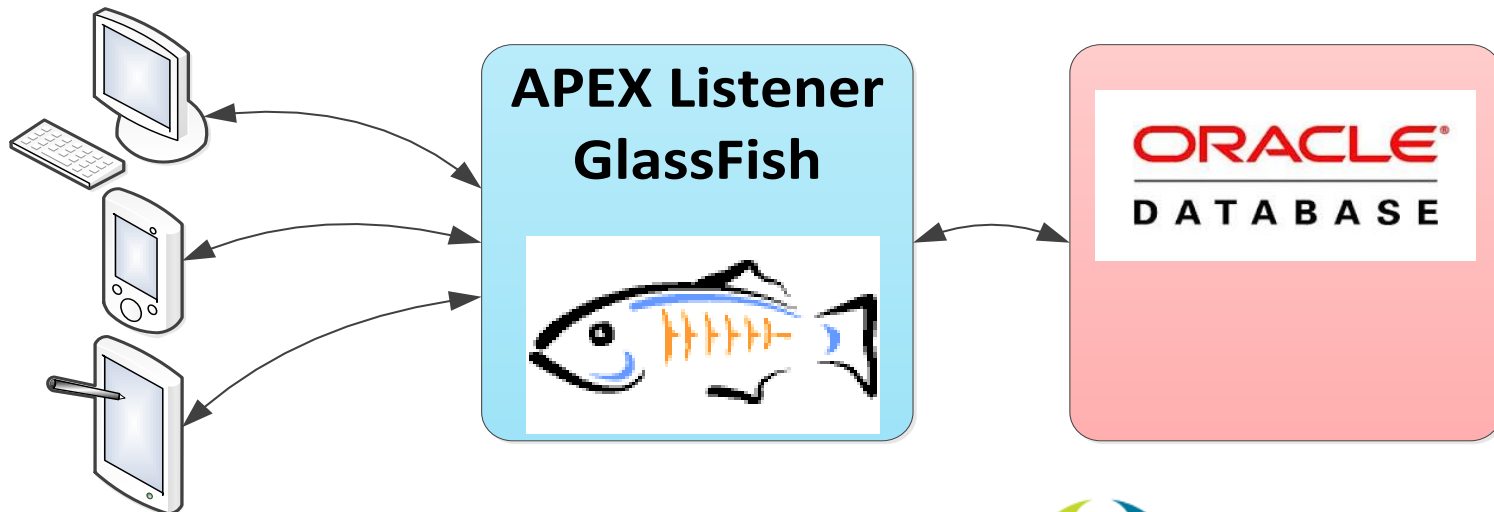
APEX - Background

- Started out in 2004 as HTML DB
- Now up to version 4.2.4, released 12/2013
- Well accepted by the EBS ATG team and encourage it's use as a lightweight extension platform
 - https://blogs.oracle.com/stevenChan/entry/new_whitepaper_upgrading_your_customizations
 - Extending Oracle E-Business Suite Release 12 using Oracle Application Express (APEX) (Doc ID 1306563.1)
 - How to Integrate APEX with Oracle eBusiness Suite and Set Up Authentication (Doc ID 373604.1)
- Best of all it is **FREE**, it is included in your Oracle DB License



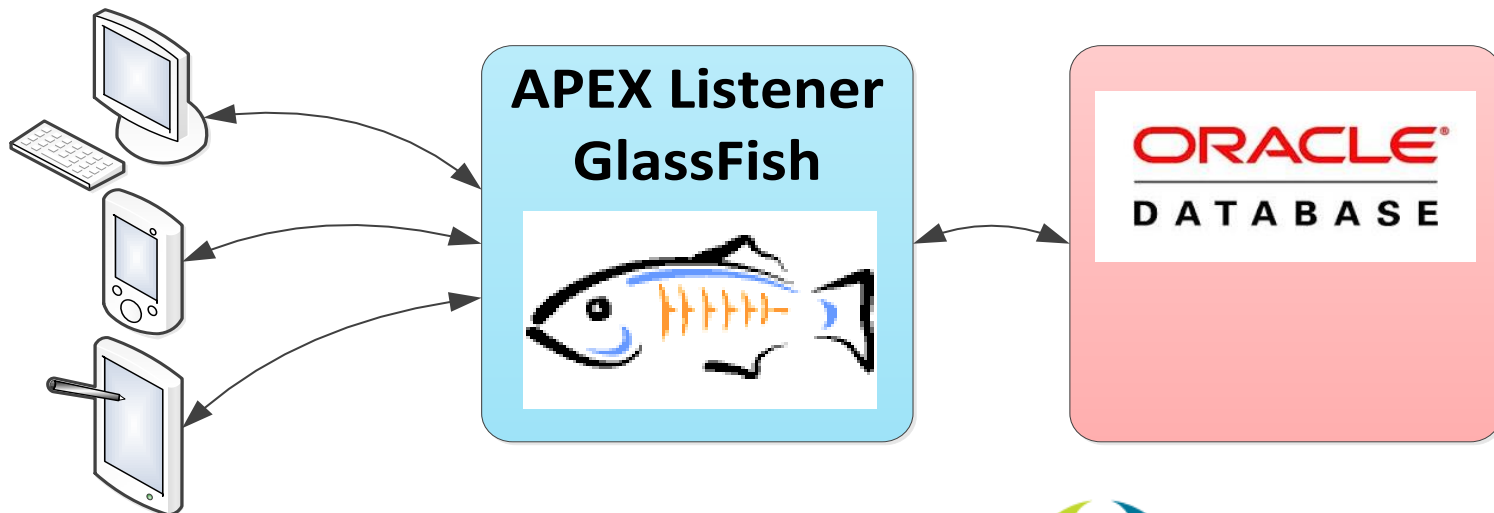
APEX - Architecture

- Applications Express is a browser based Rapid Application Development and Runtime tool
- The resulting application is a set of PL/SQL packages and Metadata in your Oracle Database
- The APEX Listener connects the user's browser to the Oracle Database, typically Oracle APEX Listener with GlassFish
- You can leverage the EBS User Authentication and Authorization scheme



APEX - Mobile Architecture

- Your resulting APEX application can run in any browser on any device: PC, SmartPhone, Tablet, etc
- An APEX application must always have a live connection to the database, there is no “offline” capability, so the mobile device will need a VPN connection



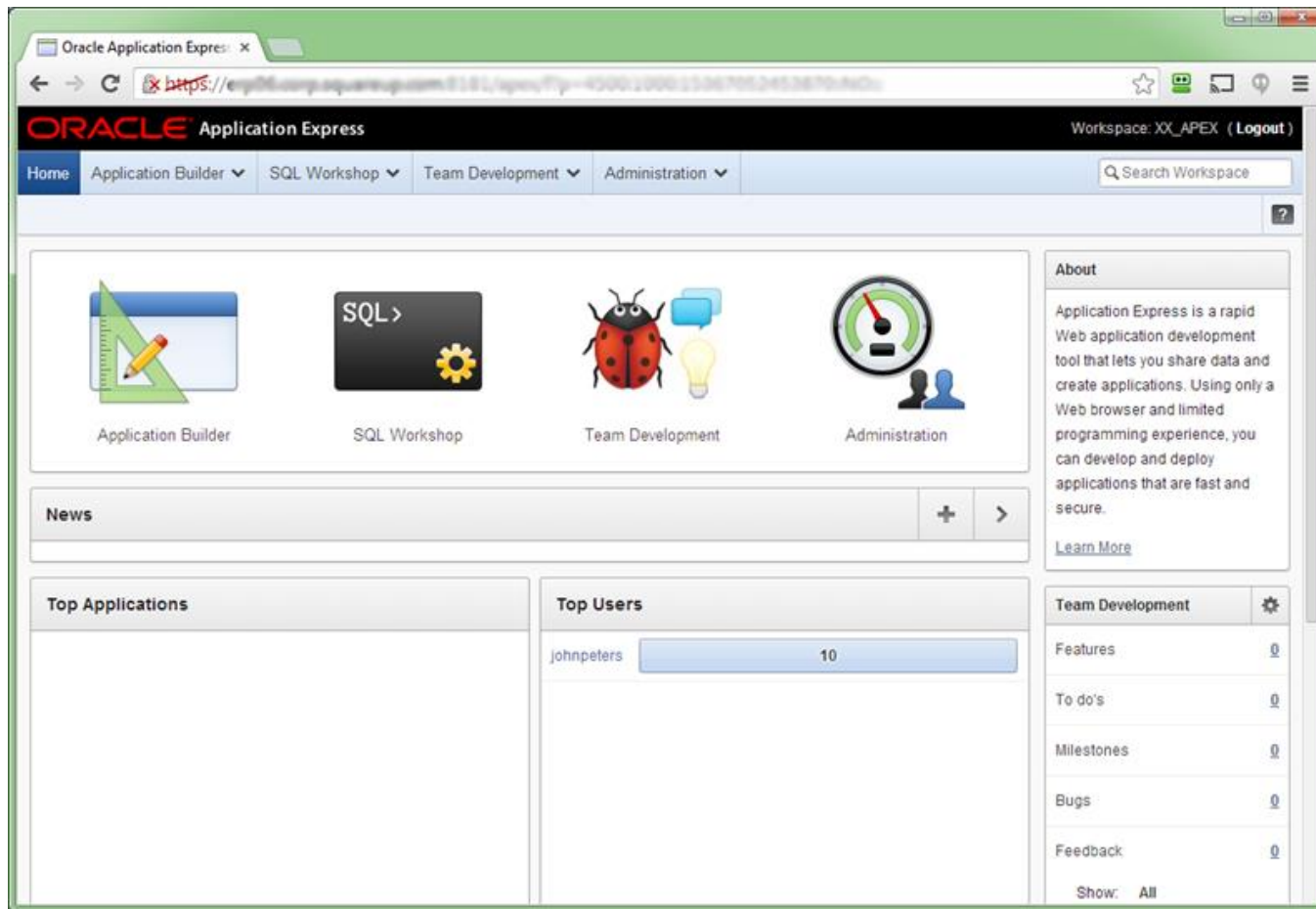
APEX - Development

- Development is done in an APEX Workspace
 - You can have an infinite number of Workspaces
 - The Workspace defines the DB user connection
 - A workspace typically defines an Application
 - You can migrate Workspaces from DB to DB
- Templated, Wizard based development
- Many sample applications available to get you started
- Expose your EBS objects as Views with select grants
- Can be reports, but you can also do updates using EBS APIs



APEX – Rapid Development Environment

Browser Based Development Environment

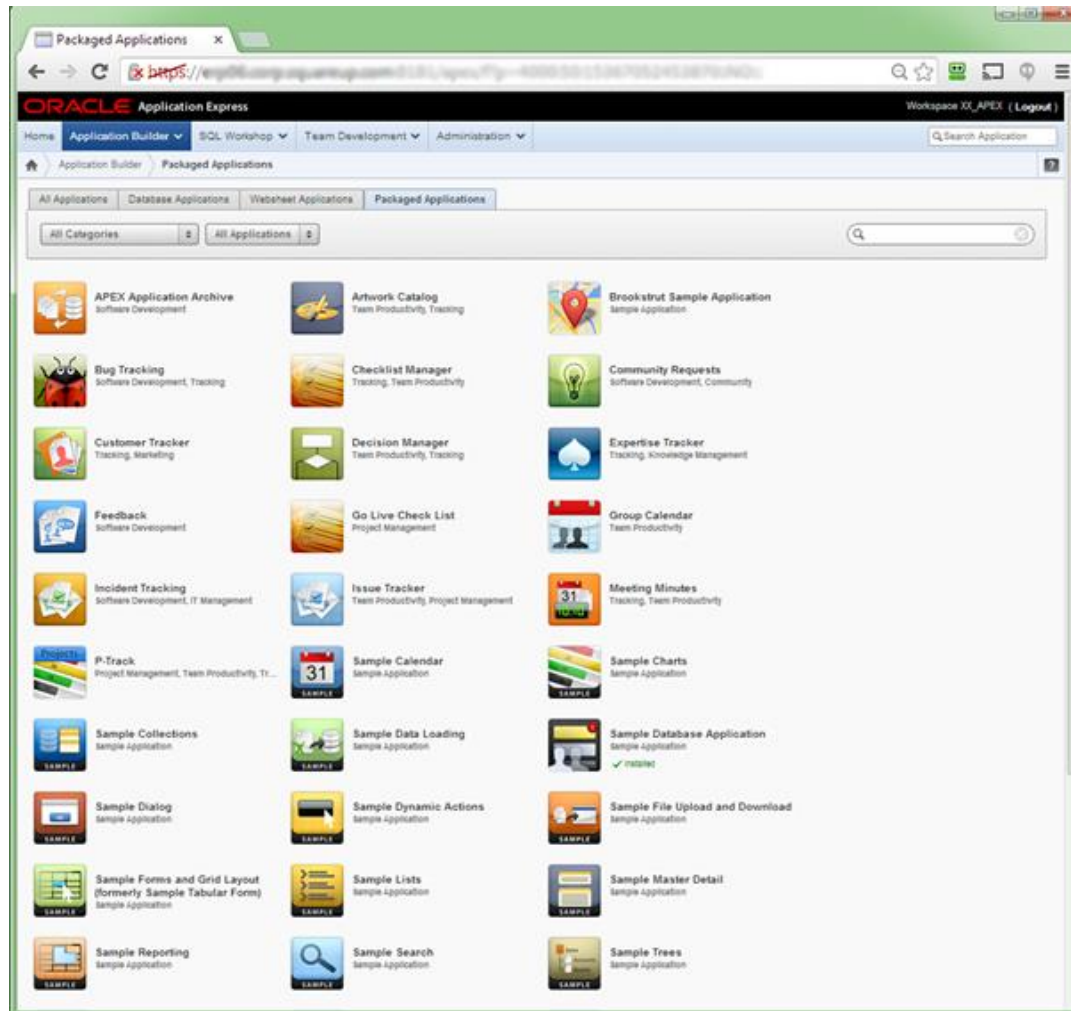


COLLABORATE 14

TECHNOLOGY AND APPLICATIONS FORUM
FOR THE ORACLE COMMUNITY

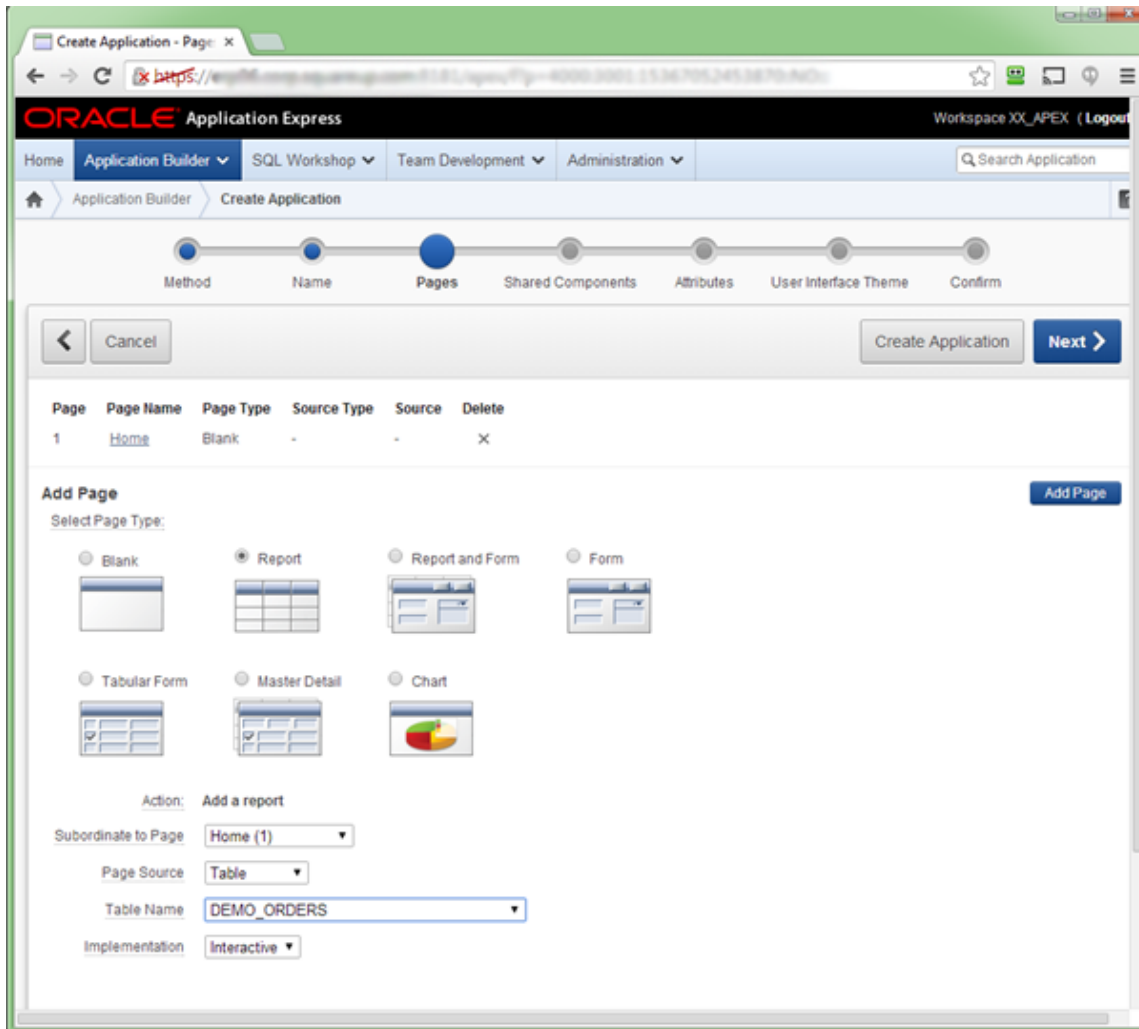
APEX – Packaged Applications

Many prebuilt sample packed applications to start and learn from



APEX – Templated Development

Template based development making it very easy to build pages



COLLABORATE 14

TECHNOLOGY AND APPLICATIONS FORUM
FOR THE ORACLE COMMUNITY

APEX – Page Oriented

- Each APEX page defines a table/query
- Pages can be stand alone reports or charts
- You can link together your pages to build an application

The screenshot displays the Oracle APEX Application Builder interface. The main workspace shows 'Application 101 - Sample Database Application' with an 'Edit Application Properties' button. Below this are five icons representing different actions: Run Application, Supporting Objects, Shared Components, Utilities, and Export / Import. A search bar and a 'Create Page' button are also visible. The main content area features a table listing application pages.

| Page | Name | Updated | Updated By | Page Type | User Interface | Group | Lock | Run |
|------|-----------------------------|---------------|------------|--------------------|----------------|---------|------|-----|
| 0 | Page Zero | 1.5 years ago | - | Global Page | Desktop | Desktop | 🔒 | ▶ |
| 1 | Sample Database Application | 10 months ago | - | Home | Desktop | Desktop | 🔒 | ▶ |
| 2 | Customers | 1.5 years ago | - | Interactive Report | Desktop | Desktop | 🔒 | ▶ |
| 3 | Products | 10 months ago | - | Interactive Report | Desktop | Desktop | 🔒 | ▶ |
| 4 | Orders | 10 months ago | - | Interactive Report | Desktop | Desktop | 🔒 | ▶ |
| 5 | Sales by Category / Month | 1.2 years ago | - | Chart | Desktop | Desktop | 🔒 | ▶ |

On the right side, there is an 'About' section with text explaining that applications are made up of pages and that controls are called shared components. Below that is a 'Tasks' section with options like 'Delete this Application', 'Copy this Application', and 'Hide Icons'. At the bottom right, there is a 'Recently Edited Pages' section listing pages like '4. Orders', '20. Product Info', '12. Enter New Order', '1. Sample Database Application', '1001. Login Page', and '216. Create Order'.



APEX – Develop a Query

- Develop a Query in TOAD, SQL*Developer, or even APEX's own SQL Workshop

The screenshot shows the Oracle SQL Workshop interface in a browser window. The browser title is "SQL Workshop" and the address bar shows a URL starting with "https://". The page header includes the Oracle logo and "Application Express" text, along with a workspace name "Workspace: XX_APEX (Logout)". The main navigation bar has tabs for "Home", "Application Builder", "SQL Workshop", "Team Development", and "Administration". The "SQL Workshop" tab is active.

The main content area features five icons: "Object Browser", "SQL Commands", "SQL Scripts", "Utilities", and "RESTful Services". Below these icons are two panels: "Recently Created Tables" and "Recent SQL Commands".

| Table Name | Time |
|------------------------|-------------|
| DEMO_TAGS_TYPE_SUM | 8 hours ago |
| DEMO_TAGS_SUM | 8 hours ago |
| DEMO_TAGS | 8 hours ago |
| DEMO_STATES | 8 hours ago |
| DEMO_CONSTRAINT_LOOKUP | 8 hours ago |
| DEMO_ORDER_ITEMS | 8 hours ago |
| DEMO_ORDERS | 8 hours ago |

The "Recent SQL Commands" panel shows "No SQL commands found". On the right side, there is an "About" section with text explaining the SQL Workshop's purpose and a "Learn more..." link. Below that is a "Preference" section with a "Schema" dropdown menu set to "XX_APEX" and a "Set" button. At the bottom right, there is a "Tasks" section with a "Create Database Object" button.



APEX is Just a Development Tool

- APEX is just a tool, we need to provide the Framework that provides:
 - **Authentication**
Verifying who a user is when they login to your APEX Application
 - **Authorization**
Determining what that specific user is able to see and do in your APEX Application



APEX – Integration with EBS

■ Authentication

We can use EBS Authentication to ensure the person is who they say they are. This uses the standard EBS Userid/Passwords. You can also integrate with EBS supported SSO mechanisms.

■ Authorization

We can also use EBS Responsibilities to identify what APEX screens they can access.

- You can even register APEX pages as EBS Form Functions allowing you to put APEX page links in EBS Menus, more on that later.



Example #1

Reporting Application



APEX – A Sample Framework

The screenshot shows an APEX Reporting application interface. The browser address bar displays a URL starting with 'https://apexGL.org'. The page title is 'APEX Reporting'. The user is logged in as 'Johnpeters'.

Key components highlighted with red boxes:

- Navigation Menu:** A horizontal menu with tabs labeled 'AP', 'AR', 'FA', 'GL', 'IT', and 'Fixed Assets'.
- Find a Report:** A search section with a search box, a 'Go' button, and a table of reports.
- Session Information:** A section displaying user and session details.
- Tab Security:** A section titled 'Tab Security (why can't I access a tab?)' showing a list of tabs and their required responsibilities.
- Your Responsibilities:** A table listing the user's assigned responsibilities.

| Report | Type | Tab |
|-----------------------------------|--------|--------------------|
| AP Invoice Lines | Report | Fixed Assets |
| COA List | Report | General Ledger |
| COA Parent Children | Report | General Ledger |
| Cash Operating Expenses | Report | Cash Management |
| GL Drill Down 1 - Accounts | Report | General Ledger |
| GL Drill Down 1 - Detail Balances | Report | General Ledger |
| GL Interface List | Report | General Ledger |
| L2 - Payables Journal | Report | Fixed Transactions |
| L2 - Payables Journal > Journal | Report | Fixed Transactions |
| L2 - Payables Source | Report | Fixed Transactions |

| | |
|-------------------------|-------------------------------|
| Environment | 8006V |
| Environment Description | Stuans LAMP on 8006V 02/03/14 |
| User | JOHNPETERS |
| Session | 8063859010366 |

| Tab | Required Responsibilities |
|------------------------|---------------------------|
| Accounts Payable | Accounts Payable |
| Accounts Receivable | Accounts Receivable |
| Cash Management | Cash Management |
| Fixed Assets | Fixed Assets |
| General Ledger | General Ledger |
| Information Technology | Information Technology |

| User | Responsibility | End Date | User id |
|------------|--------------------------|-------------|---------|
| JOHNPETERS | Application Developer | 01-Jan-9999 | 1112 |
| JOHNPETERS | System Administrator | 01-Jan-9999 | 1112 |
| JOHNPETERS | Inventory | 01-Jan-9999 | 1112 |
| JOHNPETERS | Functional Administrator | 01-Jan-9999 | 1112 |
| JOHNPETERS | Functional Developer | 01-Jan-9999 | 1112 |
| JOHNPETERS | GL Super User - Fixed | 01-Jan-9999 | 1112 |
| JOHNPETERS | Application Diagnostics | 01-Jan-9999 | 1112 |
| JOHNPETERS | Fixed SuperUser | 01-Jan-9999 | 1112 |
| JOHNPETERS | GL Super User - 8006V | 01-Jan-9999 | 1112 |

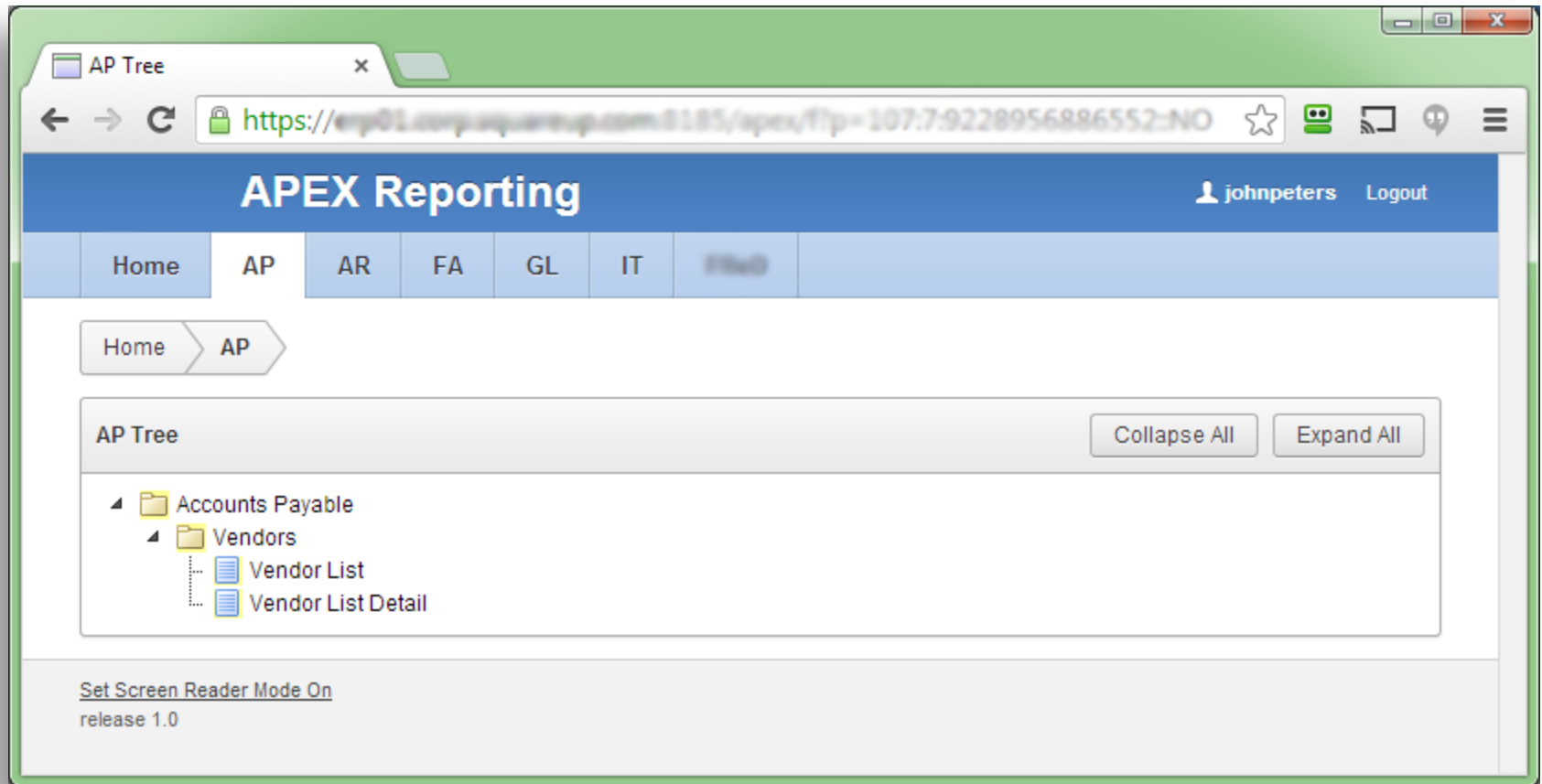


APEX – Framework Organization

- In this example the client organized reporting areas as tabs
- Authentication is tied to EBS FND_USER logins/passwords
- Authorization is tied to EBS Responsibilities assigned to the user
- Sets of responsibilities link to report area tabs
- The following are examples of reports under each tab



APEX – AP Tab



APEX – GL Tab

The screenshot displays the APEX Reporting interface in a web browser. The browser's address bar shows the URL: <https://erp01.corp.squareup.com:8185/apex/f?p=107:13:9228956886552:NO>. The page title is "APEX Reporting" and the user is logged in as "johnpeters".

The navigation menu includes tabs for Home, AP, AR, FA, GL, IT, and FNo. The "GL" tab is currently selected. Below the navigation menu, there are two breadcrumb-style buttons: "Home" and "GL".

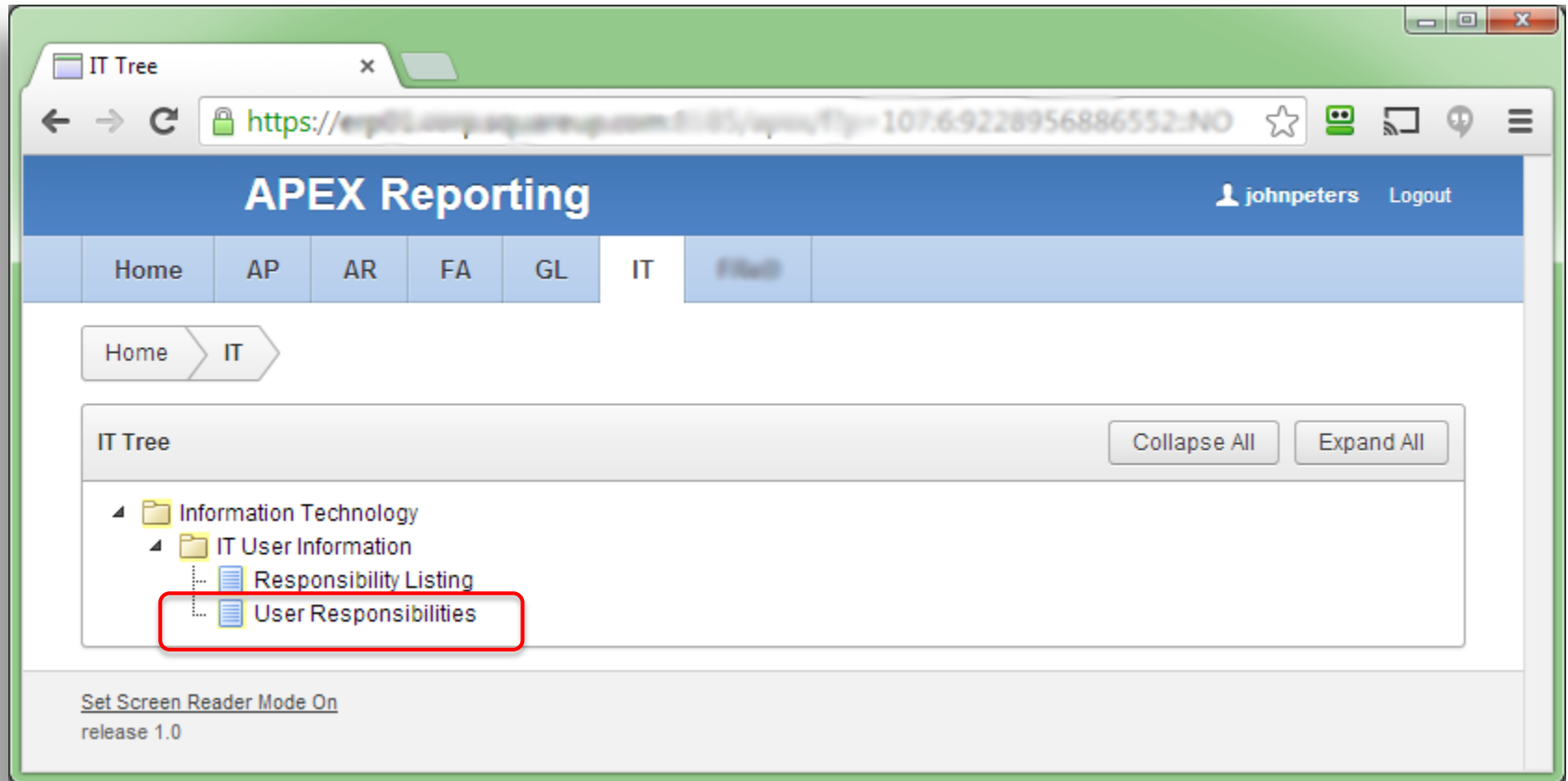
The main content area is titled "GL Tree" and contains a tree view of the General Ledger structure. The tree is expanded to show the following items:

- General Ledger
 - GL COA
 - COA List
 - COA Parent Children
 - GL Drill Down
 - GL Drill Down 1 - Accounts
 - GL Drill Down 1 - Detail Balances
 - GL Interface
 - GL Interface List

Buttons for "Collapse All" and "Expand All" are located to the right of the tree view. At the bottom left of the page, there is a link: [Set Screen Reader Mode On](#) release 1.0.



APEX – IT Tab



APEX - Run User Responsibility Report

The screenshot shows a web browser window with the title 'User Responsibilities'. The address bar contains a URL starting with 'https://'. The page header includes 'APEX Reporting' and a user profile for 'Johnpeters' with a 'Logout' link. A navigation menu contains tabs for 'Home', 'AP', 'AR', 'FA', 'GL', 'CM', 'IT', and 'Misc'. Below the menu is a breadcrumb trail: 'Home > IT > User Responsibilities'. A search bar with a magnifying glass icon and a 'Go' button is present, along with an 'Actions' dropdown menu. The main content area displays a table with the following data:

| | User Id | Responsibility Id | Application Id | User Name | Responsibility Name | Application Name |
|--|---------|-------------------|----------------|-----------|-------------------------|----------------------------|
| | 1120 | 50871 | 200 | ALEXANDER | AP Invoice Processor | Payables |
| | 1120 | 50838 | 200 | ALEXANDER | AP Manager | Payables |
| | 1120 | 50854 | 200 | ALEXANDER | AP Payment Processor | Payables |
| | 1120 | 50869 | 200 | ALEXANDER | AP Supplier Maintenance | Payables |
| | 1010 | 50571 | 0 | ASGADM | Application Diagnostics | Application Object Library |
| | 1010 | 20420 | 1 | ASGADM | System Administrator | System Administration |
| | 1131 | 50874 | 101 | CHESTER | GL Close | General Ledger |
| | 1131 | 50863 | 101 | CHESTER | GL Inquiry & Reporting | General Ledger |



APEX - Add a filter

The screenshot shows an APEX Reporting interface. At the top, there's a navigation bar with 'APEX Reporting' and a user profile 'Johnpeters Logout'. Below that are tabs for 'Home', 'AP', 'AR', 'FA', 'GL', 'CM', 'IT', and 'Misc'. The current view is 'User Responsibilities' under the 'IT' tab. A search bar contains 'Q-' and an 'Actions' dropdown. A filter is applied: 'Row text contains System Administrator'. Below the filter is a table with 7 columns: 'User Id', 'Responsibility Id', 'Application Id', 'User Name', 'Responsibility Name', and 'Application Name'. The table contains 5 rows of data.

| | User Id | Responsibility Id | Application Id | User Name | Responsibility Name | Application Name |
|--|---------|-------------------|----------------|-----------|----------------------|-----------------------|
| | 1010 | 20420 | 1 | ASGADM | System Administrator | System Administration |
| | 1118 | 20420 | 1 | CIAR... | System Administrator | System Administration |
| | 1117 | 20420 | 1 | CR... | System Administrator | System Administration |
| | 1112 | 20420 | 1 | JOHN... | System Administrator | System Administration |
| | 1113 | 20420 | 1 | LYNNE... | System Administrator | System Administration |



APEX – Actions and Downloading

The screenshot shows an Oracle APEX Reporting interface. At the top, there's a navigation bar with 'APEX Reporting' and a user profile 'Johnpeters'. Below that, a breadcrumb trail shows 'Home > IT > User Responsibilities'. A search bar is present with a 'Go' button and an 'Actions' dropdown menu. The 'Actions' menu is open, showing options: 'Select Columns', 'Filter', 'Rows Per Page', 'Format', 'Flashback', 'Save Report', 'Reset', 'Help', and 'Download'. The 'Download' option is highlighted in blue. A red arrow points to the 'Download' option in the menu. Another red arrow points to the 'Filter' option. A third red arrow points to the 'Save Report' option. A fourth red arrow points to the 'Reset' option. A fifth red arrow points to the 'Download' button on the table. The table below has columns: 'User Id', 'Responsibility Id', 'Application Id', 'User Name', and 'Application Name'. The table contains several rows of data, including one for 'System Administration'.

| User Id | Responsibility Id | Application Id | User Name | Application Name |
|---------|-------------------|----------------|---------------|-----------------------|
| 1010 | 20420 | 1 | Administrator | System Administration |
| 1118 | 20420 | 1 | Administrator | System Administration |
| 1117 | 20420 | 1 | Administrator | System Administration |
| 1112 | 20420 | 1 | Administrator | System Administration |
| 1113 | 20420 | 1 | Administrator | System Administration |

javascript:gReport.dialog2('SHOW_DOWNLOAD');



APEX – Download Format

The screenshot shows the APEX Reporting interface in a browser window. The page title is "APEX Reporting" and the user is logged in as "Johnpeters". The breadcrumb trail is "Home > IT > User Responsibilities". A search bar contains "Q-" and there is a "Go" button and an "Actions" dropdown menu. Below the search bar, a "Download" section is active, showing the prompt "Choose report download format:". Three options are presented: "CSV" (with a green checkmark icon), "HTML" (with a grid icon), and "Email" (with an envelope icon). A "Cancel" button is located below these options. Below the download section, a filter is applied: "Row text contains 'System Administrator'". A table with the following data is visible:

| User Id | Responsibility Id | Application Id | User Name | Responsibility Name | Application Name |
|---------|-------------------|----------------|-----------|----------------------|-----------------------|
| 1010 | 20420 | 1 | ASO... | System Administrator | System Administration |

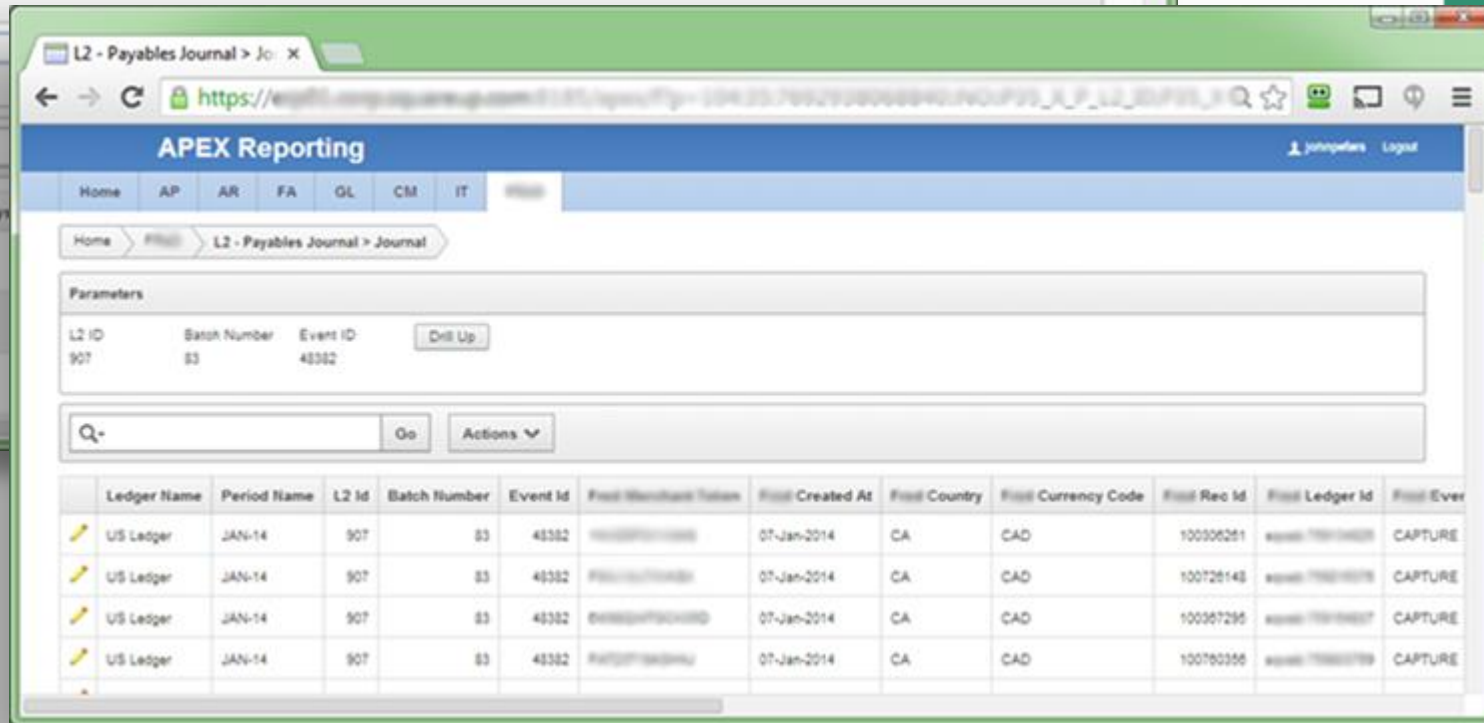
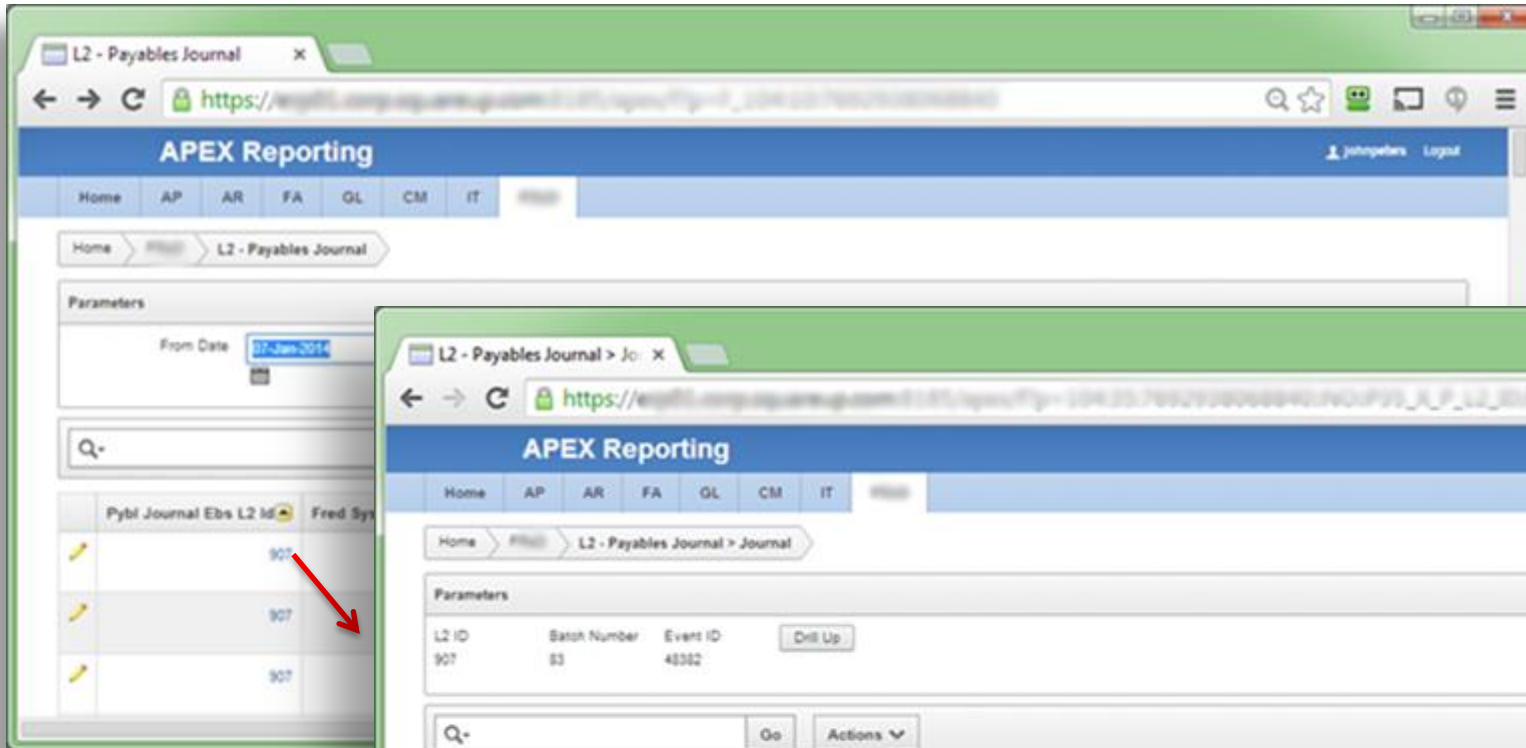


APEX – Downloaded to Excel

| | A | B | C | D | E | F |
|----|---------|-------------------|----------------|-------------|--------------------------|-----------------------|
| 1 | User Id | Responsibility Id | Application Id | User Name | Responsibility Name | Application Name |
| 2 | 1010 | 20420 | 1 | ASC... | System Administrator | System Administration |
| 3 | 1118 | 20420 | 1 | CIA... | System Administrator | System Administration |
| 4 | 1117 | 20420 | 1 | CR... | System Administrator | System Administration |
| 5 | 1112 | 20420 | 1 | JOHN... | System Administrator | System Administration |
| 6 | 1113 | 20420 | 1 | LYNN... | System Administrator | System Administration |
| 7 | 1110 | 20420 | 1 | MARKM... | System Administrator | System Administration |
| 8 | 1011 | 20420 | 1 | MOBILEADM | System Administrator | System Administration |
| 9 | 1111 | 20420 | 1 | MOHAN... | System Administrator | System Administration |
| 10 | 1005 | 21704 | 535 | OP_SYSADMIN | SFM System Administrator | Provisioning |
| 11 | 0 | 20420 | 1 | SYSADMIN | System Administrator | System Administration |
| 12 | 1124 | 20420 | 1 | TEDM... | System Administrator | System Administration |



APEX – Summary and Detail Drill Down



Example #2

Reporting Application With Updating Capability



Customer 360 Degree View

- Everything you wanted to know about a customer in one page
- Notice the difference in the Framework

The screenshot shows a web application interface for a Customer 360 Degree View. At the top is a green navigation bar with links: Home, Customers, Items, Orders, Invoices, Renewals, AP, GL, Fixed Assets, Acquisition, Setups, and Sys Admin. Below this is a breadcrumb trail: Customer Reports > Customers > Customer Details. The main content area is titled 'Customer 293.7*' and includes a sidebar on the left with a 'Summary' section highlighted in blue. The sidebar also lists: Sites, Orders & Renewals, Annualized Value, Invoices, Tax Exemptions, Receipts, AR Balances, Assets, Where Used, Notes, SF Opportunities, Support Cases, and View All Sections. The main content is divided into several summary sections, each highlighted with a red rounded rectangle:

- Customer Summary:** A table with fields: Cust Num (103859), Party Num (5215), Parent Cust Name (blurred), SF Parent Cust ID (00 000000pc), Channel (ISV), Classification (COMMUNICATIONS), BI Pub Language (American English), Terms (blurred), # Contacts (18), # Sites (5 (4 Active)), Brands (blurred), Last Refresh Date (18-SEP-13 18:27:50), and Summary Data Last Refresh (0 hr 1 min ago).
- Bill To Invoicing Summary:** A table with fields: AR Balance (0.00), Invoicing Total (1,930,188.61), DACR LTD (43), Invoices (433), Current Year (0.00), DACR Current Year (0), Last Invoice (13-DEC-13), Last Year (754,373.30), and DACR Last Year (9).
- Order Summary:** A table with field: Count Orders (34 (102 Lines)).
- Renewal Summary:** A table with fields: Entered Contracts (131), Active Contracts (129), Next Renewal (01-NOV-13), and Asset Count (138 (111 Active)).

Customer 360 Degree View

Customer Orders

Home Customers Items Orders Invoices Renewals AP GL Fixed Assets Acquisition Setups Sys Admin

Customer Reports Customers Customer Details

Customer 293.7*

- Summary
- Sites
- Orders & Renewals**
- Annualized Value
- Invoices
- Tax Exemptions
- Receipts
- AR Balances
- Assets
- Where Used
- Notes
- SF Opportunities
- Support Cases
- View All Sections

Customer Summary Edit Customer Attributes

Cust Num: 103859 Party Num: 5215 Parent Cust Name: [REDACTED] SF Parent Cust ID: 00 000000

Channel: ISV Classification: COMMUNICATIONS BI Pub Language: American English Terms: [REDACTED]

Orders

Orders.csv

row(s) 1 - 15 of 34 Next

| ORG_NAME | ORDER_NUMBER | ORDERED_DATE | PO_NUMBER | SF_QUOTE_ID | OPEN_FLAG | ORDER_STATUS | SALES_REP_NAME | AMT | CURRENCY_CD |
|----------|--------------|--------------|-------------------|-------------|-----------|--------------|----------------|-----------|-------------|
| RS INC | 10102300 | 12-DEC-2013 | | 00026410 | N | CLOSED | [REDACTED] | 12,000.00 | USD |
| RS INC | 10101856 | 06-SEP-2013 | Signed Order Form | 00024046 | N | CLOSED | [REDACTED] | 4,200.00 | USD |
| RS INC | 0101833 | 30-AUG-2013 | | 00024204 | N | CLOSED | [REDACTED] | 14,307.30 | USD |
| RS INC | 0101830 | 30-AUG-2013 | | 00024168 | N | CLOSED | [REDACTED] | 2,916.00 | USD |
| RS INC | 10101743 | 14-AUG-2013 | | 00023794 | N | CLOSED | [REDACTED] | 1,450.00 | USD |
| RS INC | 0101742 | 14-AUG-2013 | | 00023792 | N | CLOSED | [REDACTED] | 1,450.00 | USD |
| RS INC | 0101741 | 14-AUG-2013 | | 00023796 | N | CLOSED | [REDACTED] | 1,450.00 | USD |
| RS INC | 10101476 | 14-JUN-2013 | | 00021130 | N | CLOSED | [REDACTED] | 36,000.00 | USD |
| RS INC | 10101393 | 24-MAY-2013 | | 00021015 | N | CLOSED | [REDACTED] | 1,450.00 | USD |
| RS INC | 10101392 | 24-MAY-2013 | | 00021016 | N | CLOSED | [REDACTED] | 1,450.00 | USD |
| RS INC | 10101391 | 24-MAY-2013 | | 00021014 | N | CLOSED | [REDACTED] | 1,450.00 | USD |
| RS INC | 10100975 | 28-FEB-2013 | | 00017353 | N | CLOSED | [REDACTED] | 3,834.00 | USD |
| RS INC | 10100567 | 04-DEC-2012 | N/A | 00015123 | N | CLOSED | [REDACTED] | 1,600.00 | USD |
| RS INC | 01000560 | 30-NOV-2012 | N/A | 00015112 | N | CLOSED | [REDACTED] | 1,450.00 | USD |
| RS INC | 01000559 | 30-NOV-2012 | N/A | 00015111 | N | CLOSED | [REDACTED] | 1,450.00 | USD |

row(s) 1 - 15 of 34 Next

Orders.csv

Service Contracts

src_contracts.csv

row(s) 1 - 25 of more than 500 Next

| Org Name | Contract Num | Status | Start Date | End Date | Est Amt Lcl | Currency Code | Contract Grp | Description | Known As |
|----------|----------------------------|---------|-------------|-------------|-------------|---------------|--------------|-------------|----------|
| RS INC | 0002586-02-DEC-13 17:10:35 | Entered | 01-JAN-2015 | 31-DEC-2015 | 8,051.00 | USD | [REDACTED] | [REDACTED] | - |
| RS INC | 0007710-12-DEC-13 10:58:30 | Entered | 12-DEC-2014 | 11-DEC-2015 | 2,000.00 | USD | [REDACTED] | [REDACTED] | - |
| RS INC | 002478-03-OCT-13 18:44:03 | Entered | 01-DEC-2014 | 30-NOV-2015 | 900.00 | USD | [REDACTED] | [REDACTED] | N |

Customer 360 Degree View AR Invoices

Home Customers Items Orders Invoices Renewals AP GL Fixed Assets Acquisition Setups Sys Admin

Customer Reports Customers Customer Details

Customer 293.7*

Summary
Sites
Orders & Renewals
Annualized Value
Invoices
Tax Exemptions
Receipts
AR Balances
Assets
Where Used
Notes
SF Opportunities
Support Cases
View All Sections

Customer Summary Edit Customer Attributes

Cust Num 103859 Party Num 5215 Parent Cust Name [REDACTED] SF Parent Cust ID 000000

Channel ISV Classification COMMUNICATIONS BI Pub Language American English Terms

Invoices

Invoices.csv
row(s) 1 - 15 of 433 Next

| Org Name | Inv Num | Inv Date | Po Num | Src Doc Num | Inv Amt | Curr Cd | PDF | Note | Src |
|----------|----------|-------------|------------|-------------|-----------|---------|----------------------------------|----------------------------|---------------|
| INC | 0000551 | 13-DEC-2013 | [REDACTED] | 3453 | -5,450.00 | USD | View Invoice PDF | View Notes | IMPORTED |
| NC | 10111414 | 13-DEC-2013 | [REDACTED] | 3453 | 5,450.00 | USD | View Invoice PDF | View Notes | IMPORTED |
| NC | 10111380 | 12-DEC-2013 | [REDACTED] | 10102300 | 12,000.00 | USD | View Invoice PDF | View Notes | ORDER ENTRY |
| NC | 10111392 | 12-DEC-2013 | [REDACTED] | 8010 | 311.82 | USD | View Invoice PDF | View Notes | IMPORTED |
| NC | 10111081 | 06-DEC-2013 | [REDACTED] | 0003647 | 42.77 | USD | View Invoice PDF | View Notes | OKS CONTRACTS |
| INC | 10111082 | 06-DEC-2013 | [REDACTED] | 0003648 | 42.77 | USD | View Invoice PDF | View Notes | OKS CONTRACTS |
| INC | 10111083 | 06-DEC-2013 | [REDACTED] | 0003649 | 2.77 | USD | View Invoice PDF | View Notes | OKS CONTRACTS |

ARL_103859_10111414.pdf

Create | 1 / 1 | 136% | Tools | Comment | Share

| | | | | |
|-------------------|--------------|--------------|-------------------|---------------------|
| Account Executive | Batch Number | Quote Number | End Customer Name | Delivered Via |
| [REDACTED] | L38453 | | [REDACTED] | Electronic Delivery |

| Line | Item Number/Description | QTY | UOM | Tax | Ext Amount |
|------|---|-----|----------|-----|------------|
| 1 | F6LL Coverage from 01-DEC-2013 to 30-NOV-2014 | 40 | Con Sesn | N | 5,450.00 |

If your organization is tax exempt and has been charged sales tax, please email a copy of your tax exemption certificate to [REDACTED] or fax to [REDACTED]

| SUMMARY | |
|-----------|--------------|
| Subtotal | 5,450.00 |
| Tax Total | 0.00 |
| Total Due | USD 5,450.00 |



How was that done?

- AR Invoice Print Program uses BI Publisher
- Bursting and Delivery Manager Run
 - Save PDF file in a specific directory with a specific filename
 - <DOC_TYPE>_<CUST_NUMBER>_<DOC_NUMBER>
- Periodic program scans directories for new files
 - Loads files into a BLOB in the DB
 - Metadata also updated with Invoice Details linking to EBS data
- APEX just needs to query the custom table build HTML link
- If user clicks on link, PDF opens up



Customer 360 Degree View Adding a Customer Contact

Home Customers Items Orders Invoices Renewals AP GL Fixed Assets Acquisition Setups Sys Admin

Customer Reports Customers Customer Details Customer Site Details

Customer Site 257.4°
Summary
Enabled Orgs
Contacts
Orders & Renewals
Invoices
Receipts
AR Balances
Assets
Where Used
View All Sections

Customer Site
Customer Number
103859
Address

Home Customers Items Orders Invoices Renewals AP GL Fixed Assets Acquisition Setups Sys Admin

Customer Reports Customers Customer Details Customer Site Details **Update Contact**

Update Contact

Cancel Submit

First Name

Last Name

Job Title

Status
Active

Contact Points

Add Email Add Phone Add Fax

| Contact Point Type | Status | Primary Flag | Email Address | Phone Line Type | Phone Country Code | Phone Number | Edit |
|--------------------|--------|--------------|---------------|-----------------|--------------------|--------------|------|
| EMAIL | A | Y | | - | - | - | |

1 - 1



Customer 360 Degree View Adding a Customer Contact

The screenshot displays the Oracle Customer 360 interface. At the top, a green navigation bar contains menu items: Home, Customers, Items, Orders, Invoices, Renewals, AP, GL, Fixed Assets, Acquisition, Setups, and Sys Admin. Below this, a breadcrumb trail shows: Customer Reports > Customers > Customer Details > Customer Site Details. The main content area is divided into two sections. The top section, titled 'Customer Site Summary - 626712', includes a table with the following data:

| Customer Num | Site Num | Site Name |
|--------------|----------|------------|
| 103859 | 626712 | [Redacted] |

The bottom section, titled 'Registered Orgs', contains an 'Add to New Org' button. A red arrow points from this button to a modal dialog box titled 'Add Customer Site to Org'. This dialog box has a breadcrumb trail: Customer Reports > Customers > Customer Details > Customer Site Details > Add Customer Site to Org. It features a text input field for 'Org Name' and two buttons: 'Cancel' and 'Submit'.

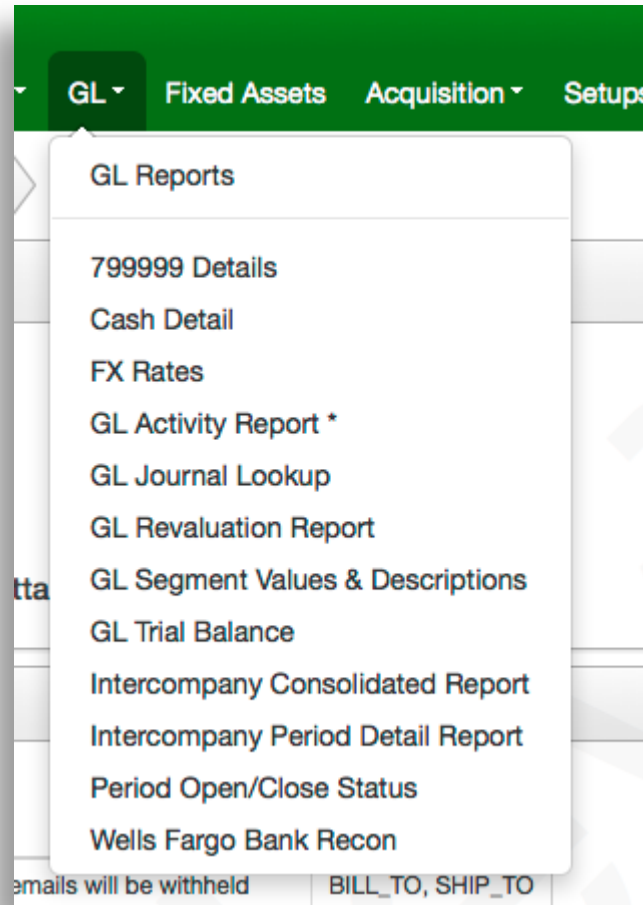
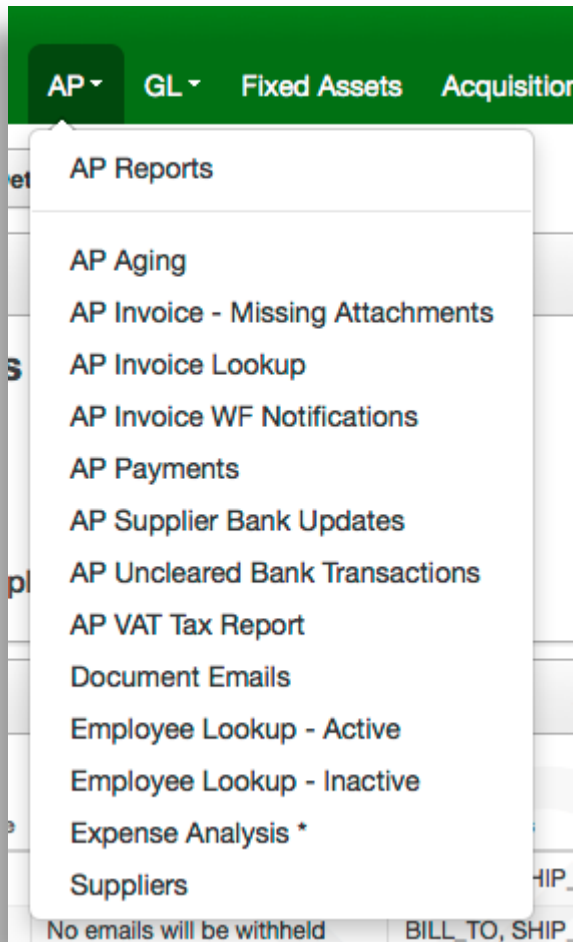


How was that done?

- Call the TCA PL/SQL API's to add a contact record.
- Call the TCA PL/SQL API's to enable a site in a different OU.
- You have to grant execute to your APEX DB user on the PL/SQL API's.
- Isn't that a lot easier than navigating down in the clunky customer form in EBS.



Additional Reports



Simplified EBS User Administration

Sys Admin Reports > Oracle User > **User Details**

User Details

First Name ▾ Last Name User Name Employee Number Last Logon Date

| | | | | |
|--|--|--|--|-------------------|
| | | | | 19-DEC-2013 17:06 |
|--|--|--|--|-------------------|

row(s) 1 - 1 of 1

User Responsibilities

Org: All Orgs ▾

App Name: All Applications ▾

Resp Type: All Types ▾

row(s) 1 - 20 of 20

| Responsibility Name ▾ | Start Date | End Date | Remove |
|-----------------------|-------------|----------|--------|
| OKS User | 11-JUN-2012 | | Remove |
| M User | 11-JUN-2012 | | Remove |
| S OKS User | 11-JUN-2012 | | Remove |
| A US OM User | 11-JUN-2012 | | Remove |
| AR APEX Security | 08-MAR-2013 | | Remove |
| OKS User | 11-JUN-2012 | | Remove |
| OM User | 11-JUN-2012 | | Remove |
| OKS User | 03-DEC-2012 | | Remove |
| OM User | 03-DEC-2012 | | Remove |
| OKS User | 11-JUN-2012 | | Remove |
| OM User | 11-JUN-2012 | | Remove |
| OKS User | 11-JUN-2012 | | Remove |
| OM User | 11-JUN-2012 | | Remove |

Copy Privs From

From User:

Copy Privs to:

Add User Responsibilities

Org: All Orgs ▾

App Name: All Applications ▾

Resp Type: All Types ▾

row(s) 1 - 786 of 786

| Responsibility Name ▾ | Add Resp |
|-----------------------|---------------|
| AP APEX Security | Grant to User |
| AP Manager | Grant to User |
| AP SME | Grant to User |
| AP Super User | Grant to User |
| AP Supplier Entry | Grant to User |
| AP User | Grant to User |
| AR APEX Security | Grant to User |
| AR Customer Entry | Grant to User |



Example #3

Simplified Data Entry into EBS



Rental Order Control Center Business Background

- Industrial equipment rental business
- Uses Inventory to hold Rental Assets, All Trx's are Serialized
- Uses Order Management for Customer Rental Orders
- Custom Rental Billing Extension to generate periodic Rental AR Invoices



Rental Order Control Center EBS Challenge

- Everything in EBS worked fine except that Order Management Shipping and Return was a very cumbersome process
 - Picking, Packing, Shipping Confirm
 - Return Line Creation, RMA Receipt
 - Plus Rental Assets leave Inventory when they are really still owned by the company



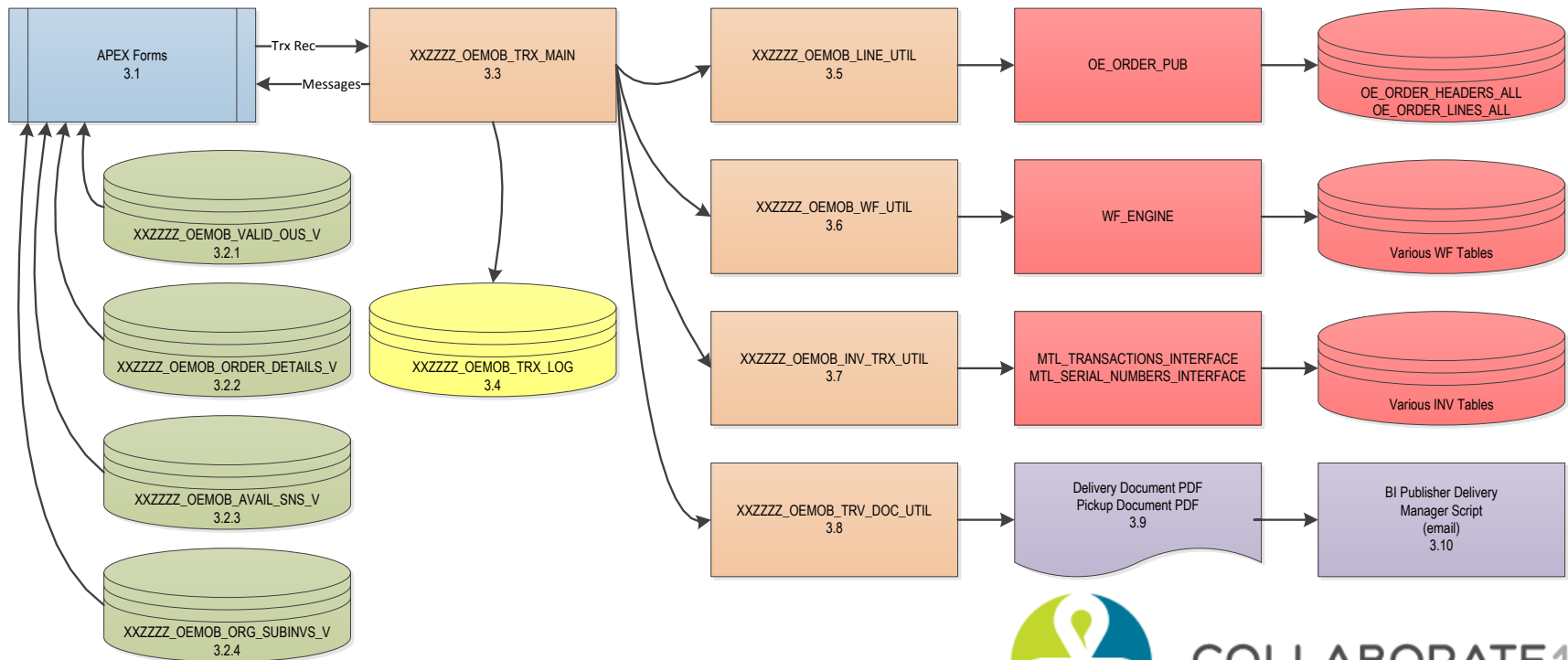
Rental Order Control Center Solution

- Simplified Shipping Entry Form Implemented in APEX
 - Mobilization of Assets (SubInv Transfer)
 - DeMobilization of Assets (SubInv Transfer)
 - Entry of Rental Related Service Charges
- APEX Pages can be displayed in anything that runs a browser
 - PC
 - Tablet
 - Smart Phone
- Rather than Forms or OA Framework Pages



Solution Details

- 4 – APEX Forms
- 1 – Custom Table
- 4 – Custom Views
- 1 – Custom OM Header and Line Workflow
- 5 – Custom PL/SQL Packages



ROCC – Order Lookup

- Users use this screen to ship for the Orders they want to Mobilize or DeMobilize
- Default filter criteria, which users can override

Rental Order Control Center

Order Lookup

Current Inventory Org: 003 (PO/INV). Click [HERE](#) to view another inventory org.

Q- Go Reports 1. Primary Report Rows 100 Actions

Demobilization Completed contains 'N'

Mobilization Completed contains 'N'

The maximum row count for this report is 500 rows. Please apply a filter to reduce the number of records in your query.

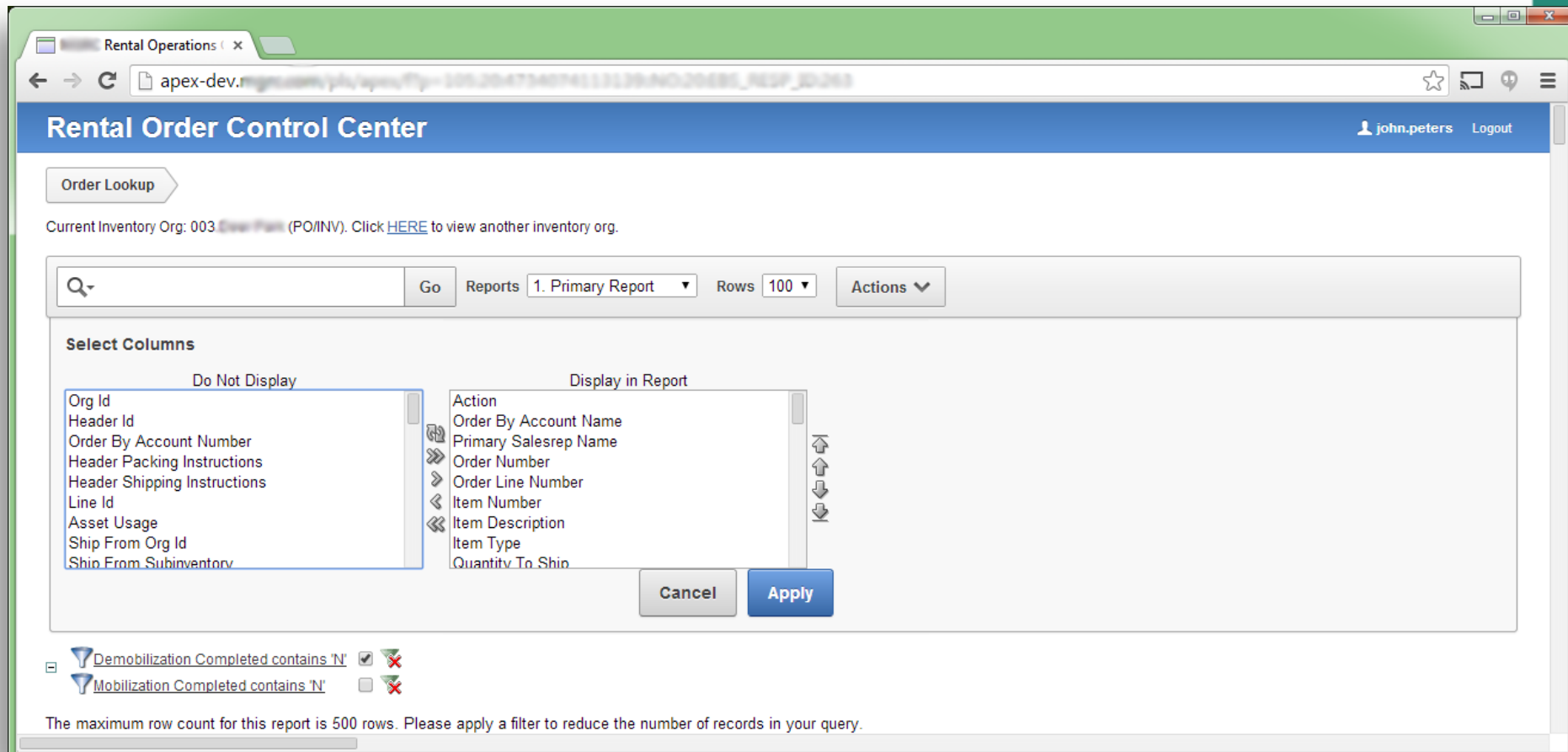
1 - 100

| Action | Order By Account Name | Primary Salesrep Name | Order Number | Order Line Number | Item Number | Item Description | Item Type | Quantity To Ship | Shipped Serial Num |
|---------------------------------------|-----------------------|-----------------------|--------------|-------------------|-------------|--------------------------|-----------|------------------|--------------------|
| Mobilize DeMobilize Mob - Nolnv | Willy Wainwright | Jason Green | 100831 | 1.1.1 | AT1001-A | 21K Gal Frac Tank | Asset | | A5802 |
| Mobilize DeMobilize Mob - Nolnv | Willy Wainwright | Jason Green | 100830 | 1.1.1 | AT2020-A | 20/25/30 Yd Roll Top Box | Asset | | RT284 |
| Mobilize DeMobilize Mob - Nolnv | Willy Wainwright | Jason Green | 100829 | 1.1.1 | AT1001-A | 21K Gal Frac Tank | Asset | | A4794 |



ROCC – Order Lookup

- Users can customize the columns they want to see
- Users can add filter criteria



Rental Operations

apex-dev.

Rental Order Control Center

john.peters Logout

Order Lookup

Current Inventory Org: 003 [View Page](#) (PO/INV). Click [HERE](#) to view another inventory org.

Go Reports 1. Primary Report Rows 100 Actions

Select Columns

| Do Not Display | Display in Report |
|------------------------------|-----------------------|
| Org Id | Action |
| Header Id | Order By Account Name |
| Order By Account Number | Primary Salesrep Name |
| Header Packing Instructions | Order Number |
| Header Shipping Instructions | Order Line Number |
| Line Id | Item Number |
| Asset Usage | Item Description |
| Ship From Org Id | Item Type |
| Ship From Subinventory | Quantity To Ship |

Cancel Apply

Demobilization Completed contains 'N'

Mobilization Completed contains 'N'

The maximum row count for this report is 500 rows. Please apply a filter to reduce the number of records in your query.



Mobilization Screen

- Follows EBS conventions for UI
- Very simplified data entry, just the min. information required
- Second row of data per line using HTML in result output

The screenshot shows the 'Rental Order Control Center' interface. The 'Mobilization Form' tab is active, displaying header details and a table of mobilization lines. The header details include Sales Order Number 100831, Customer Name, Sales Rep Jason, and a 'Del Doc to Printer' dropdown set to 'noprint'. The table below shows two lines of data for '21K Gal Frac Tank - Rent'.

| Line Numb | Qty Required | Qty Shipped | Qty To Mob | UOM | Req Start Date | Scheduled Ship Date | Ship Date Actual | Shipped Serial Number | Ok To Bill | Ok To Start Rent Date | Start Rent Date | Invoice Comments | Del Doc |
|-----------|--------------|-------------|------------|-----|----------------|---------------------|------------------|-----------------------|--------------------------|-----------------------|-----------------|------------------|--------------------------|
| 1.1 | 1.00 | 1.00 | | Day | 30-OCT-13 | 14-SEP-13 | 01-SEP-13 | A5802 | <input type="checkbox"/> | On Rent | 04-SEP-12 | JP Test | <input type="checkbox"/> |
| 1.1.1 | 1.00 | 1.00 | | EA | 30-OCT-13 | 14-SEP-13 | 01-SEP-13 | A5802 | <input type="checkbox"/> | On Rent | | | <input type="checkbox"/> |



Ship To Details

- Often not required so it was a separate pop-up window
- Minimize UI clutter

The screenshot shows a web browser window titled 'Rental Operations' with a URL starting with 'apex-dev'. The main content area is 'Rental Order Control Center' with a user profile for 'john.peters'. There are two tabs: 'Order Lookup' and 'Mobilization Form'. The 'Header Details' section shows 'Sales Order Number: 100831', 'Customer Name: Kelly Morris', and 'Sales Rep: Jason Green'. Below this is a 'Mobilization Form' section with a table of items. A 'Shipping Information' pop-up window is overlaid on the table, showing details for '100831 Line: 1.1' including customer name and address. A red arrow points from the 'Ship To Details' link in the background table to the pop-up window.

| Line Numb | Qty Required | Qty Shipped | Qty To Mob | UOM |
|-----------|--------------|-------------|------------|-----|
| 1.1 | 1.00 | 1.00 | | Day |
| 1.1.1 | 1.00 | 1.00 | | EA |

| Sales Order | Customer | Contact |
|------------------|--|---------|
| 100831 Line: 1.1 | Kelly Morris 16000 Market Street Channahon, IL 61018 | |



DeMobilization Screen

- Very simplified data entry, just the min. information required

Rental Order Control Center | john.peters Logout

Order Lookup | **DeMobilization Form**

Header Details

Sales Order Number: 100831
Customer Name: Kitty Moore
Sales Rep: Jason Green

Pickup Document to Email:
Pickup Doc to Printer: noprint

DeMobilization Form | Hide Completed Lines | Cancel | Submit

| Row2 | Line Num | Pickup/Call Off Date | Qty Required | Qty Shipped | Qty Returned | Qty To Return | Return To Subinventory | UOM | Actual Return Date | Serial Number | Ok To Bill | Start Rent Date | Stop Rent Date | Invoice Comment | Pup Doc |
|------|----------|----------------------------------|--------------|-------------|--------------|---------------|------------------------|-----|--------------------|---------------|--------------------------|-----------------|----------------|-----------------|---------|
| | 1.1 | AT1001: 21K Gal Frac Tank - Rent | 1.00 | 1.00 | | | G-OES | Day | | A5802 | <input type="checkbox"/> | 04-08-12 | | JP Test | |
| | 1.1.1 | AT1001-A: 21K Gal Frac Tank | 1.00 | 1.00 | | | G-OES | EA | | A5802 | <input type="checkbox"/> | | | | |

1 - 2

release 1.0

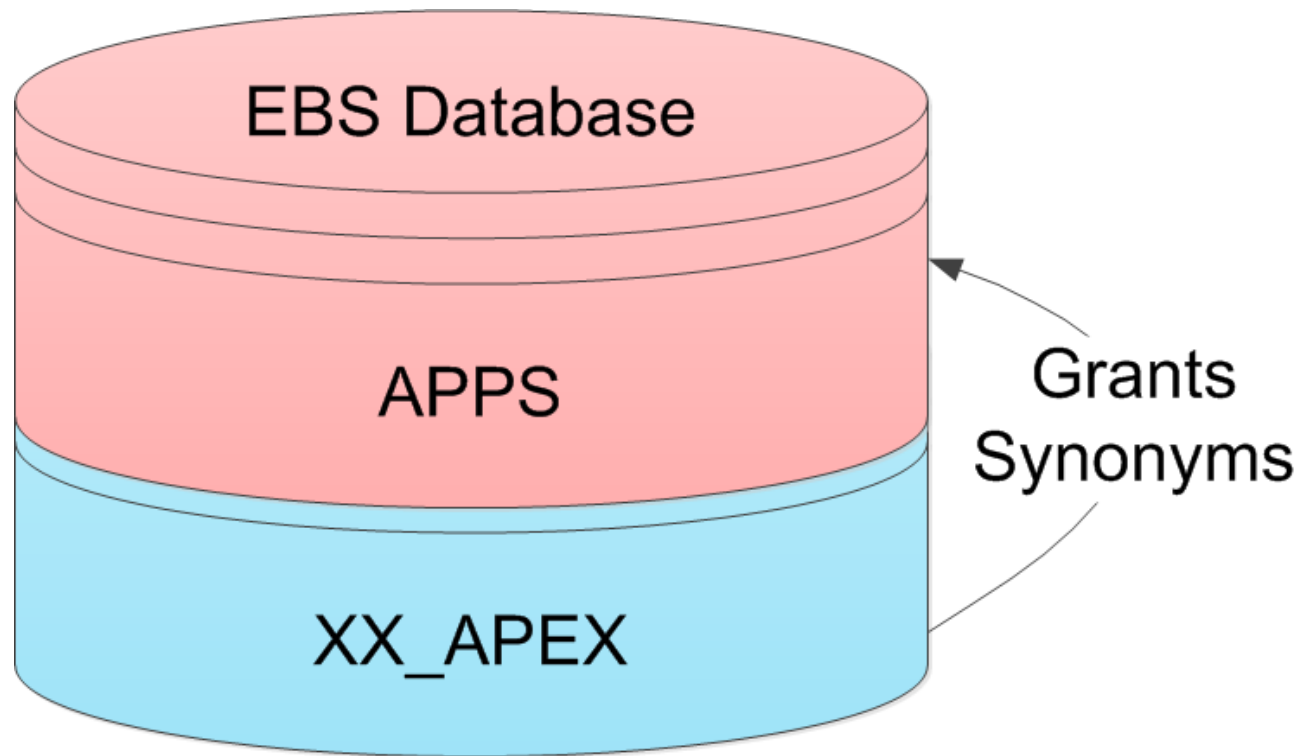


Installation and Integration with EBS



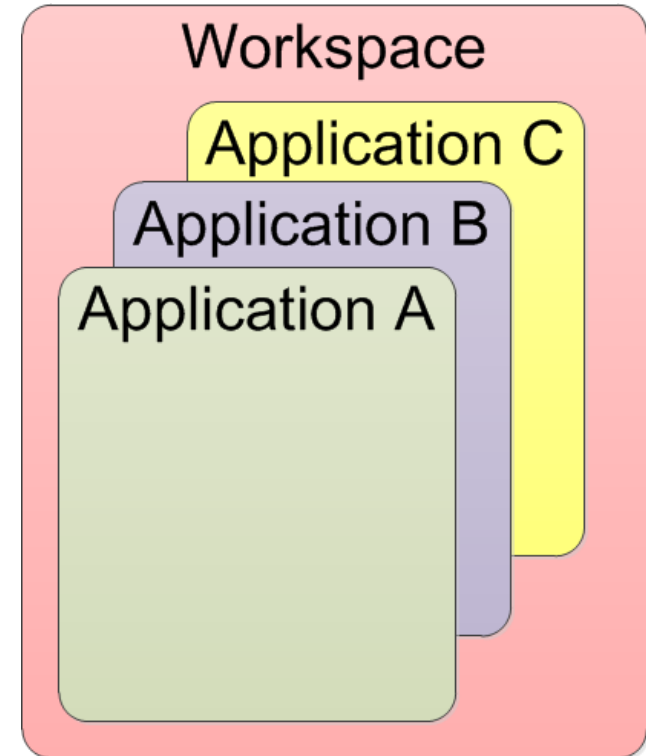
Concepts – Grants and Synonyms

- Create a new DB User XX_APEX
- XX_APEX has Grants and Synonyms to EBS APPS Objects



Concepts – Workspaces & Applications

- **Workspace**
 - Contains one or more applications
 - Level you control Developer Access
 - Linked to a primary DB User (XX_APEX)
- **Application**
 - A group of related pages that meet a functional requirement
 - Level that can export/import to migrate changes between instances



Install your own or use Hosted Instance

- For EBS Development you will want to install into your EBS Instance.
- If you are just curious about APEX you can get **FREE** access from Oracle:
<http://apex.oracle.com>
 - You can create your own Workspace and Applications
 - Make sure you export you application to save a copy



Install APEX into your EBS Instance

- Oracle® Application Express, Installation Guide, Release 4.2 E35123-05
- Install this into your EBS Database.
- If you try to install in a separate DB you will have to use Database Links to access your data.
 - This complicates development
 - Query performance is sub-optimal
- I have always used the APEX Listener with Glassfish



APEX Integration with SSO

- I would typically leave this for a later step, but you can integrate with Oracle Access Manager.
- You can initially use APEX's built in Authentication mechanism.

- Master Note for Oracle Application Express (APEX) Authentication (Doc ID 1094413.1)

- Integrating APEX 4.1.1 with Oracle Access Manager 11g Using the APEX Listener with Weblogic Server (Doc ID 1480284.1)



EBS Integration

- If you are not using SSO and want to Authenticate using EBS users and passwords
 - How to Integrate APEX with Oracle eBusiness Suite and Set Up Authentication (Doc ID 373604.1)
 - This at a high level explains one way to do this but you must wrap `fnd_web_sec.validate_login` in a procedure/function run owned by APPS.
- Extending Oracle E-Business Suite Release 12 using Oracle Application Express (APEX) (Doc ID 1306563.1)
 - This one describes the use of `fnd_user_pkg.validate_login`, which still must be wrapped in a procedure/function run owned by APPS.



You can also integrate with EBS Menus

- You can create a menu item that when clicked will open an APEX page
 - Setup Profile Option
 - FND: APEX URL
 - Create an EBS Form Function
 - Type JSP
 - Add your custom Form Function to a Menu

- This is documented in detail in:
Extending Oracle E-Business Suite Release 12 using Oracle Application Express (APEX) (Doc ID 1306563.1)



Development Steps



This is Only a Brief Set of Steps

- There are copious tutorials and examples on Oracle's Web Site.
 - <http://apex.oracle.com>
 - Oracle® Database, 2 Day + Application Express Developer's Guide, Release 4.2, E35122-05
 - Each APEX install has sample pre-packaged applications so you can examine "How they did that?". This is also a great way to kickstart your application development with a prebuilt foundation.
- The paper I mentioned earlier also steps through the development of a custom APEX page.
 - Extending Oracle E-Business Suite Release 12 using Oracle Application Express (APEX) (Doc ID 1306563.1)



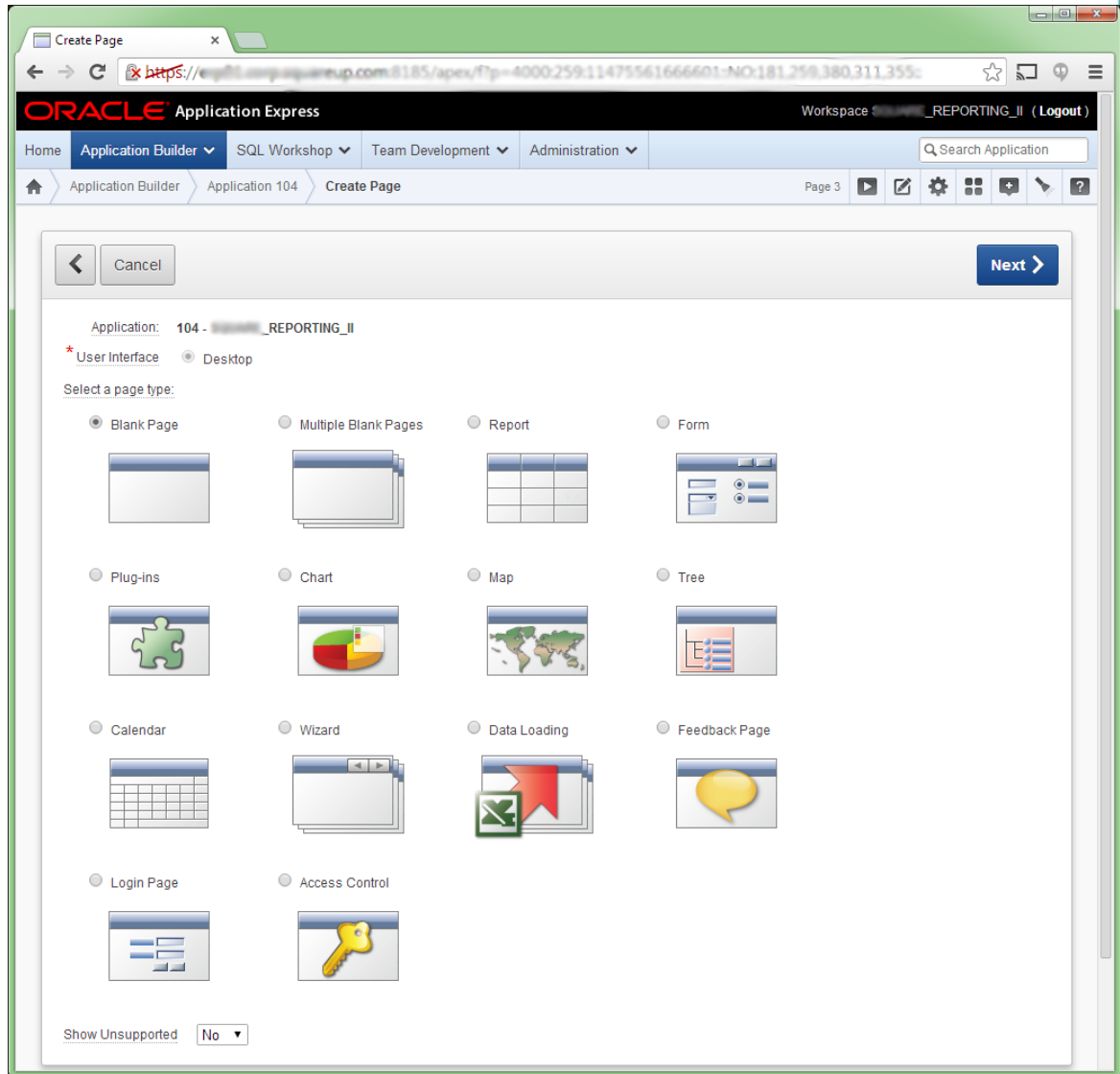
General Development Steps

- 1) Determine the general page flow
Everything is just a page from Login through Logout.
The Framework is also just pages.
- 2) Create your views off of your tables, Grant them to your DB User (XX_APEX) and create Synonyms.



General Development Steps

- 3) Create your APEX Pages using the provided templates and wizards



General Development Steps

4) Optionally edit the Page if needed

Oracle Application Express Workspace: **REPORTING_II (Logout)**

Home Application Builder SQL Workshop Team Development Administration Search Application

Application Builder Application 104 Page 3 Edit Region Page 3

Region Definition Report Attributes Saved Reports Print Attributes

Region: 2 of 2 Name: User Responsibilities Cancel Delete Apply Changes < >

Show All Identification Source User Interface Grid Layout Attributes Header and Footer Conditions Read Only Security Conf

Identification

Page: 3 User Responsibilities

* Title: User Responsibilities exclude title from translation

Type: Interactive Report

Source

```
select
  user_id,
  responsibility_id,
  application_id,
  user_name,
  responsibility_name,
  application_name,
  rownum id
from <app>_APEX_USER_RESP_V
order by user_name, responsibility_name;
```

Page Region

Use this page to edit region attributes. A region is an area on a page that serves as a container for content.

Return to Page

Tasks

Undo region source

Page Items

Page has no items



APEX – Additional Information

- The one stop starting point
 - <http://www.oracle.com/technetwork/developer-tools/apex/overview/index.html>

- APEX Hosting
 - <http://apex.oracle.com/i/index.html> to get your own test Workspace to try it out for free
 - Oracle Database Cloud Service
 - Amazon Cloud Services
 - Many smaller 3rd party hosting companies



Please complete the session evaluation

We appreciate your feedback and insight

You may complete the session evaluation either on paper or online via the mobile app



COLLABORATE14

TECHNOLOGY AND APPLICATIONS FORUM
FOR THE ORACLE COMMUNITY