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Oracle Application Express 5 New Features

20th HrOUG conference
October 16, 2015

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Brief Introduction

Vladislav Uvarov

- Software Development Manager,
  Database Server Technologies Division
- Responsible for the development of Oracle Database Cloud Services and Application Express
- Based in Reston, VA, USA
- With Oracle since 2006

@vuvarovs
#orclapex

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Agenda

1. Oracle Application Express 5.0 Overview
2. Page Designer
3. User Interface and Universal Theme
4. Mobile Enhancements
5. Functional Improvements
6. Security Enhancements

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Oracle Application Express 5.0

- In development since 2012
- Largest, most expansive and expensive release of Oracle Application Express ever. Most tested release ever.
- Two themes:
  - Developer Productivity
  - Beautiful UI, out-of-the-box

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Page Designer

Powerful browser-based IDE

- Multiple trees to view the page components
- Visualization of the page within the Grid Layout, and associated Gallery, allowing you to drag and drop components
- Update multiple attributes without leaving the page in the Property Editor
- Highly configurable user interface:
  - Customize and refine view of page specific to current focus
  - Slideable panels
  - Hide / show groupings

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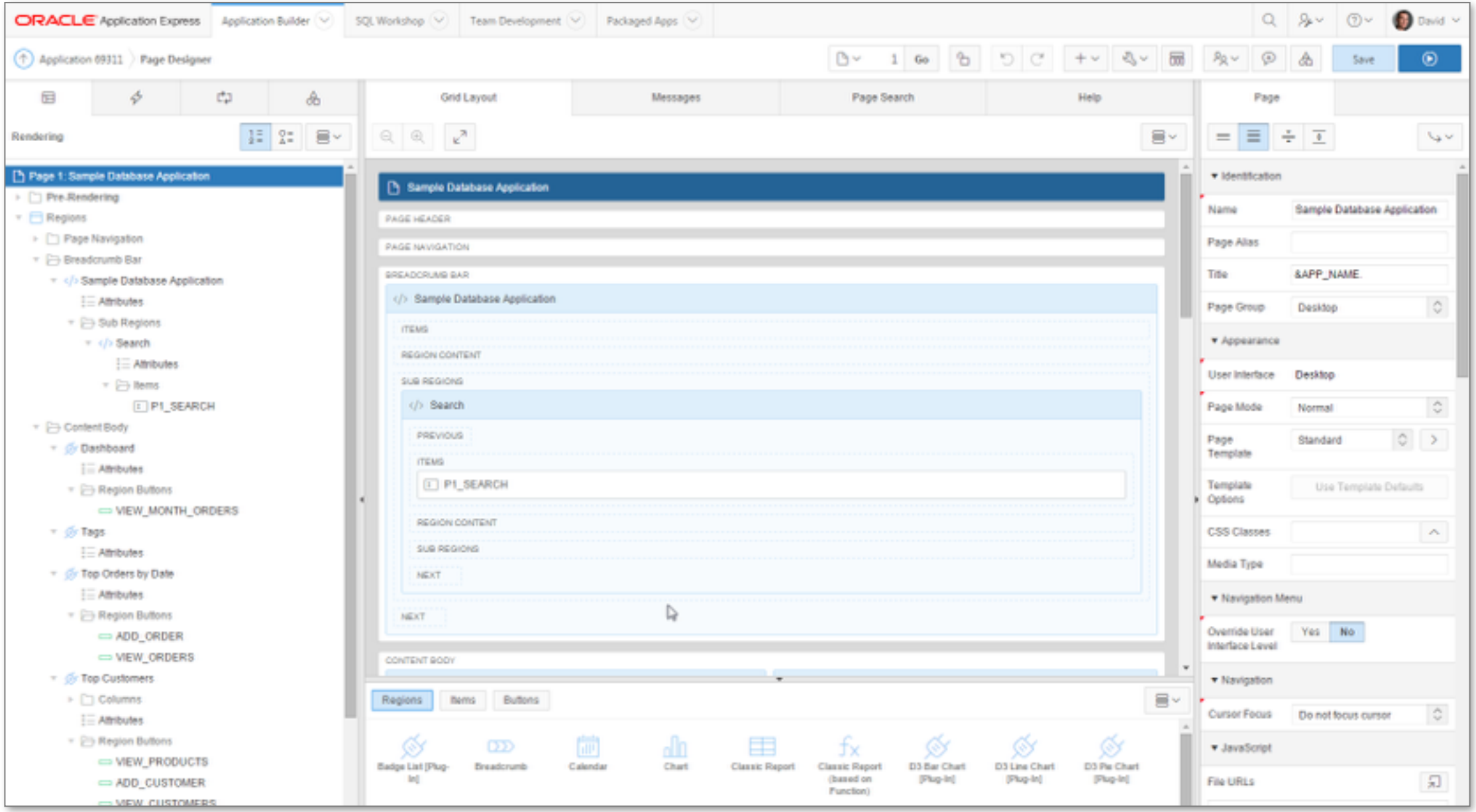

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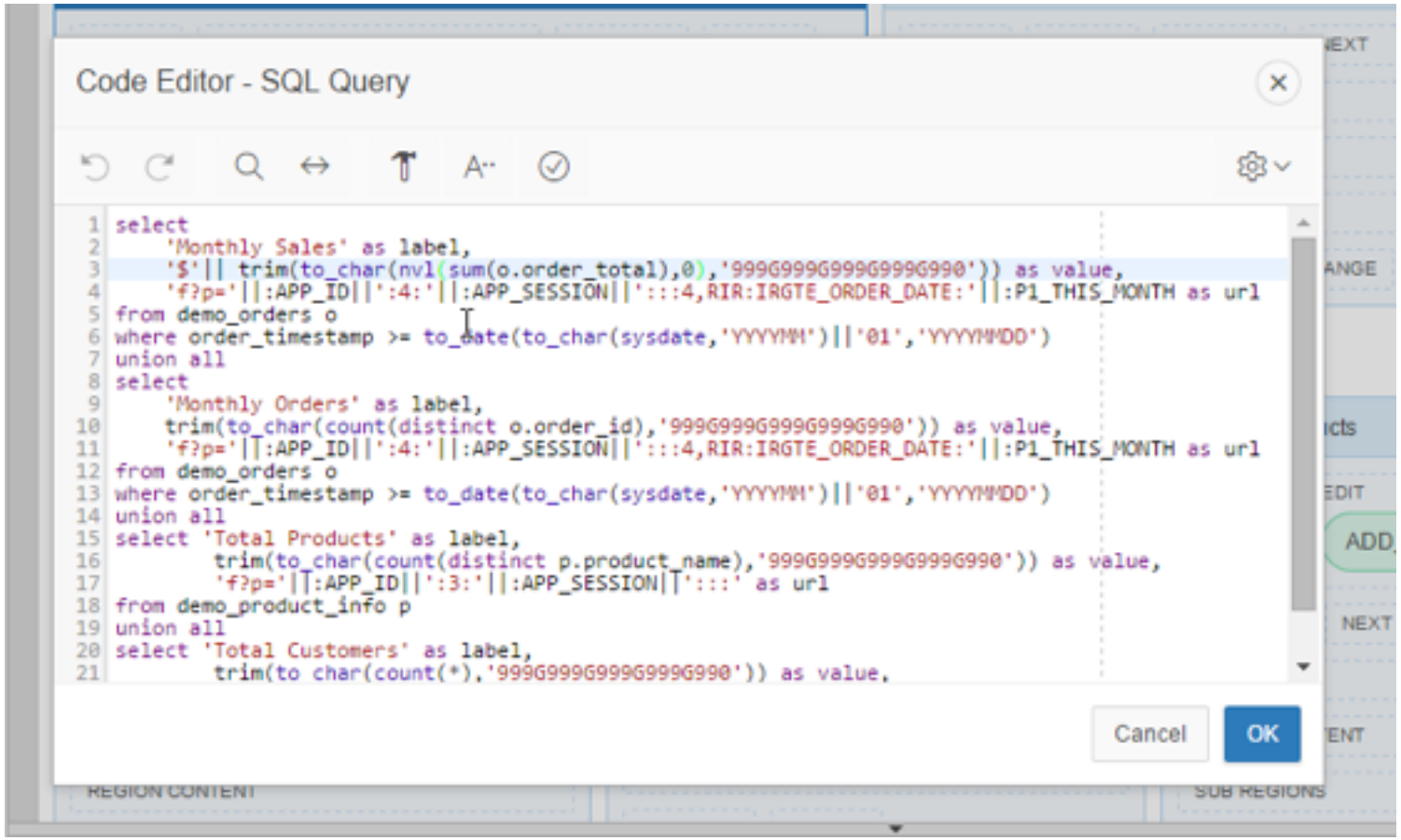
Code Editor

Available for maintaining SQL, PL/SQL, JavaScript, HTML, CSS, and large text sections

- Syntax Highlighting
- Undo / Redo
- Find/Replace
- Auto completion
- Code validation
- Used in Page Designer, Component View and SQL Workshop



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Redesigned APEX User Interface

Modern HTML5 UI

- Complete redesign of APEX UI templates, using HTML5 and grid layout
- New artwork – replacing CSS sprites with SVG based vector graphics
- Using icon fonts for most smaller icons in Page Designer, menu bars and buttons

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Universal Theme

Overview

- New default theme for APEX applications
- Uses responsive HTML5 templates
- Grid-layout for HTML forms
- Modern flat-look
- Ships with a variety of pre-built theme styles
- Older themes still available as legacy themes, and will remain part of the product for backwards compatibility

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Universal Theme
Template Options

- Declarative CSS modifiers for HTML5 templates
- Enables developers to declaratively apply styles like borders, padding, icons, colors, size, etc.
- Uses easy-to-understand, descriptive names
- Available for most template types:
  - Page, Region, Report, Breadcrumb, List, Item, Button
- Significantly reduces the number of required templates for a theme

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Universal Theme

Theme Styles and Theme Roller

- Theme Styles provide a variety of different color schemes and styles for a single theme
- Defined as CSS file that is included in addition to the theme's base CSS file
- Universal Theme includes several pre-built styles
- Additional styles can be easily generated using the built-in Theme Roller utility

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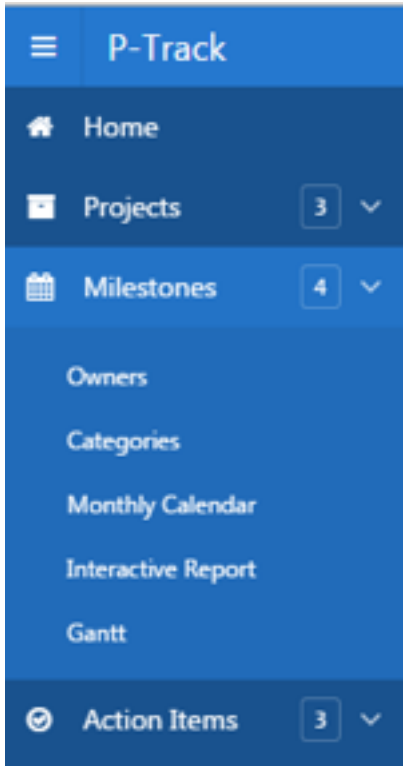
Universal Theme

List-based navigation



- Alternative to using traditional tabs
- Available as top navigation menu and side menu
- Implemented as standard APEX lists
- Supports multi-level hierarchical menu structures
- Provides accessible pull-down menus
- Type of navigation determined by themes – Universal Theme uses lists
- Migration of older one-level tabs to lists when switching themes

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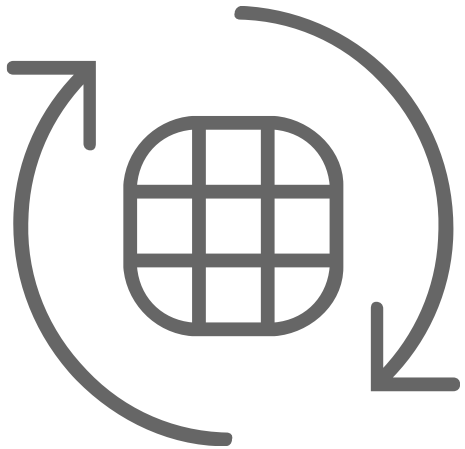
Universal Theme

Theme subscriptions



- Extends existing templates subscription model
- Subscribes all templates and template options to a master theme
- Templates are read-only in subscribing themes
- Templates can be copied within a theme – local copies are editable
- When creating new applications, themes are subscribed to the base theme by default
- Ensures upgradeability of included base-themes in the future

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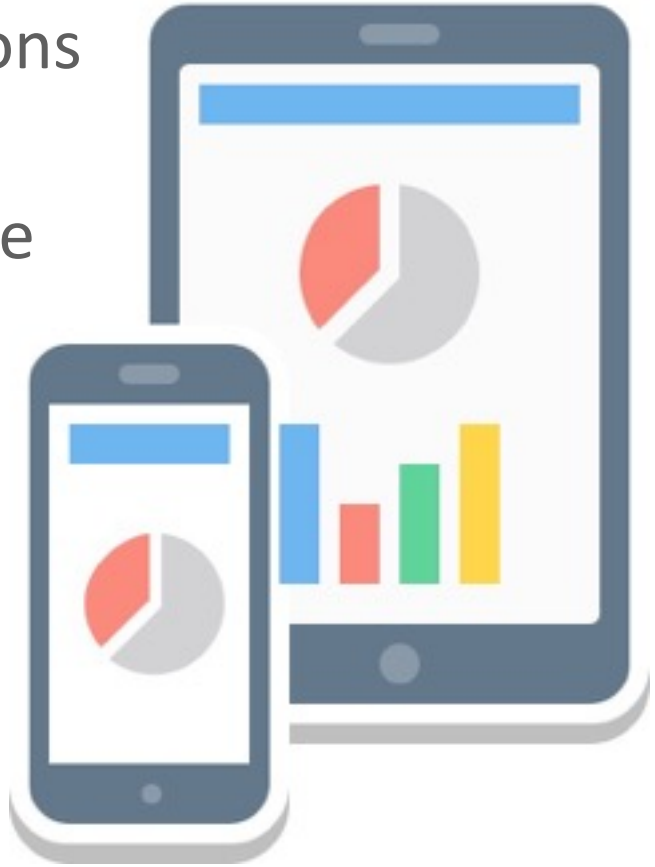
Mobile Development

Rapidly build Web-based Mobile Applications

- Declarative support for building mobile web applications
- APEX Applications support multiple user interfaces: Desktop and Smartphone; Desktop only; or just Mobile
- Mobile pages use jQuery Mobile through a jQuery Mobile based theme and templates
- Mobile Pages are lighter weight than Desktop Pages
- Can respond to touch-based events
- HTML5 charts and HTML5 item types



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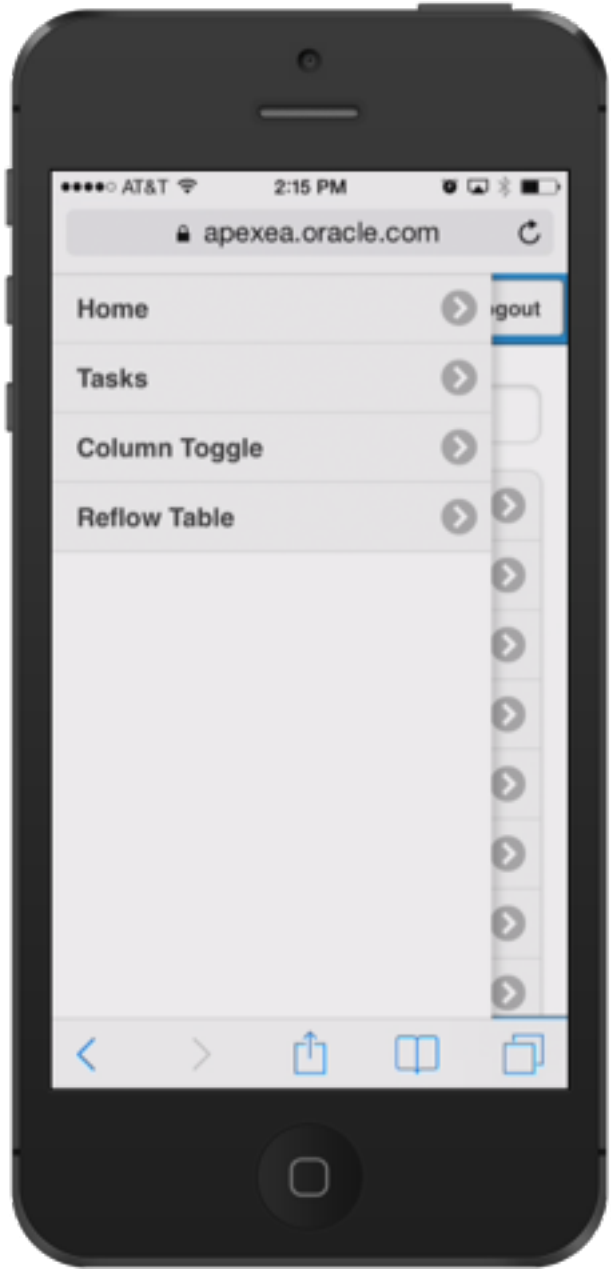
Navigation Menus and Slide Panels

- All top level pages added to Navigation List
- Navigation lists in Mobile apps are implemented as menu panels
- Shown on the left with menu button shown in top bar
- Custom panels using “Panel” region template
- Choice of display modes: Overlay, Reveal, Push
- **data-role="panel"**



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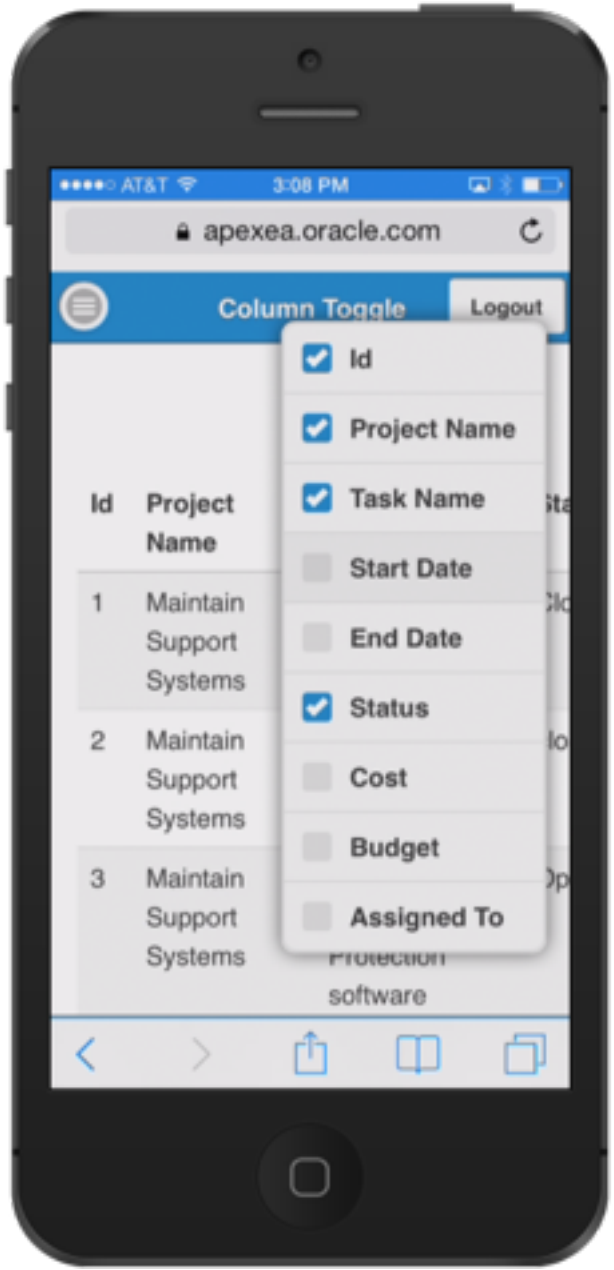
Column Toggle Report

- Selectively hides columns at narrower widths as a sensible default
- Offers a menu to let users manually control which columns they want to see
- Column Toggle Popup contains a dynamically generated list of columns based on the table markup
- Developers can set column priorities (1 – 6)



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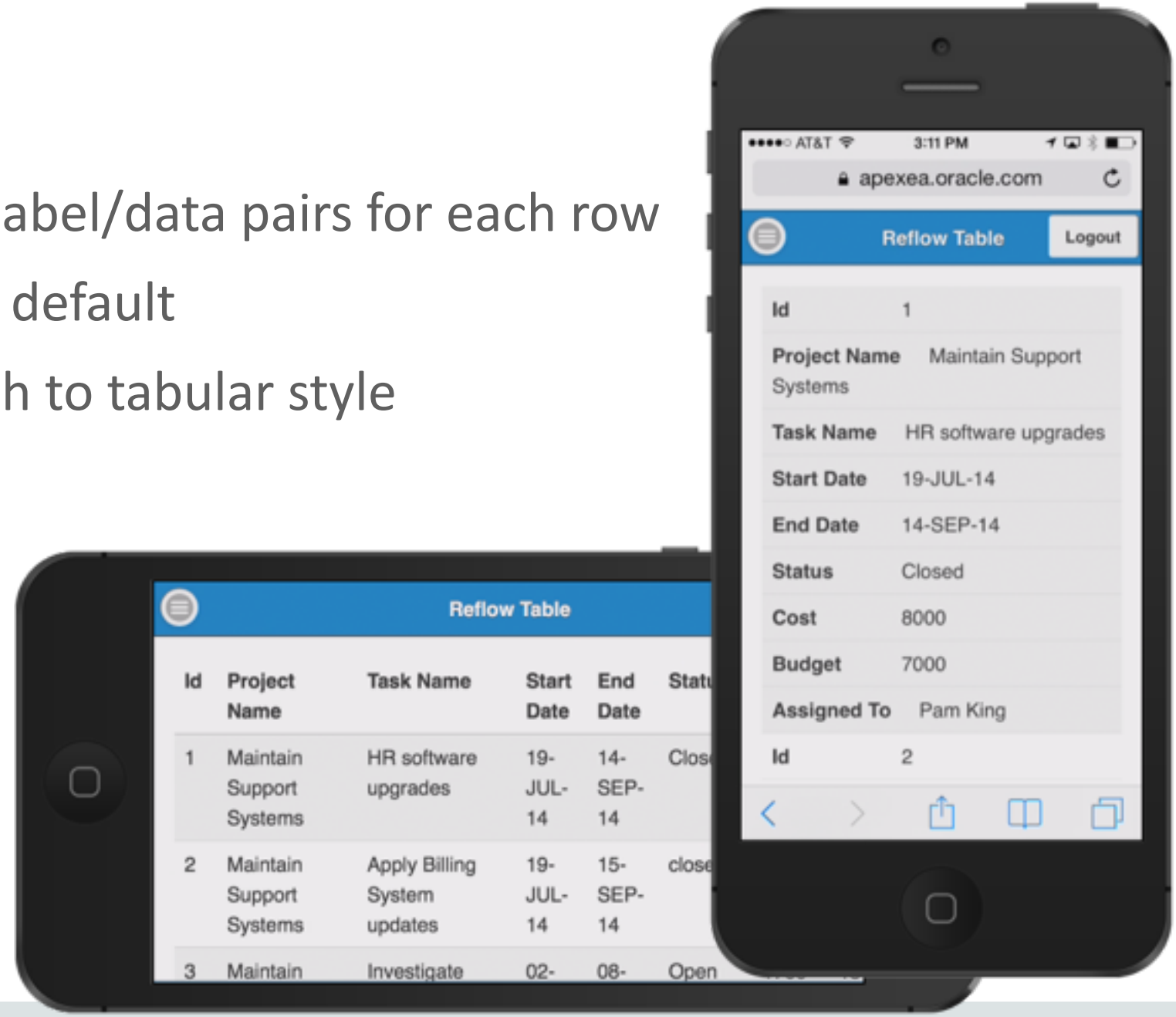
Reflow Table Report

- Collapsing table data into label/data pairs for each row
- Stacked presentation style default
- Media query used to switch to tabular style presentation above a specific screen width



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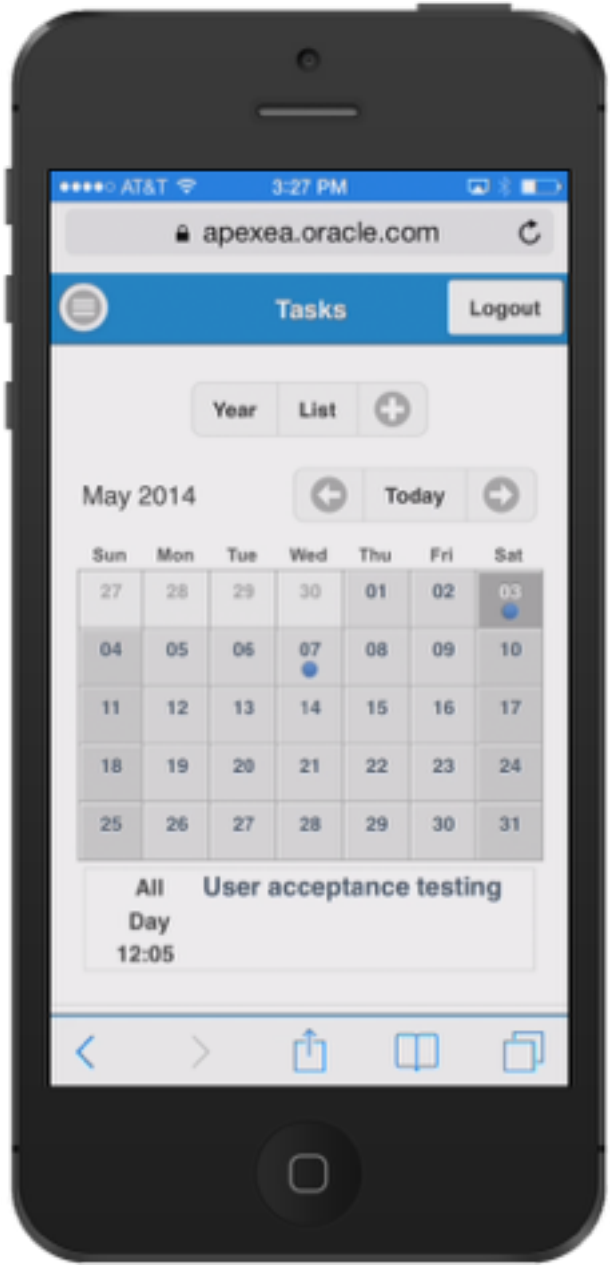
Mobile Calendar

- New Calendar Region type for Desktop and Mobile
- Monthly-, Weekly-, Daily- and List View
- Supports touch events
- Customization through CSS



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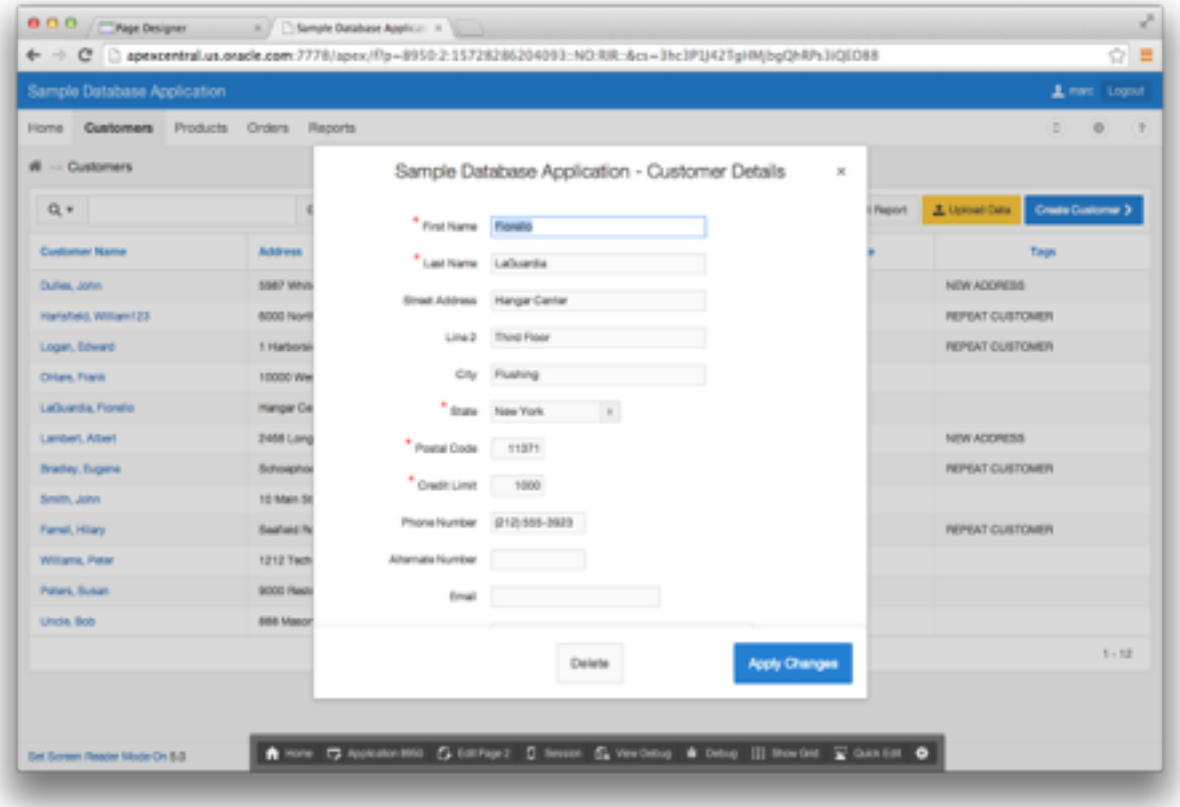
Modal Dialogs

- Replacement for Popup Windows
- A modal dialog is a stand-alone page, not a region on a page
- Any page be created as a dialog page
- Supports all the functionality of a regular page, incl. computations, validations, processes, and branches



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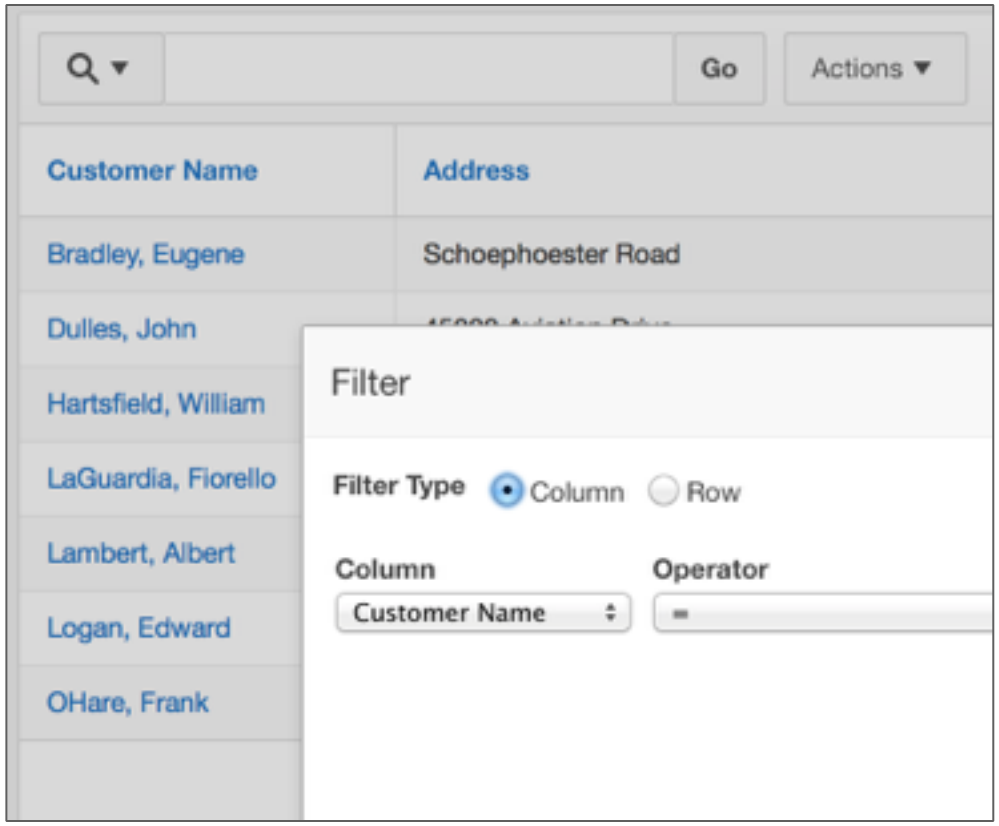
Interactive Report Enhancements

Multiple IRRs & UI Enhancements

- Create multiple Interactive Reports on a single page
- Modal dialogs replace “push-down” dialogs that were previously used for filters, formatting, save, export, etc.
- New HTML5 HTML structure – lighter weight and accessible
- Frozen filter-bar stays in place when scrolling



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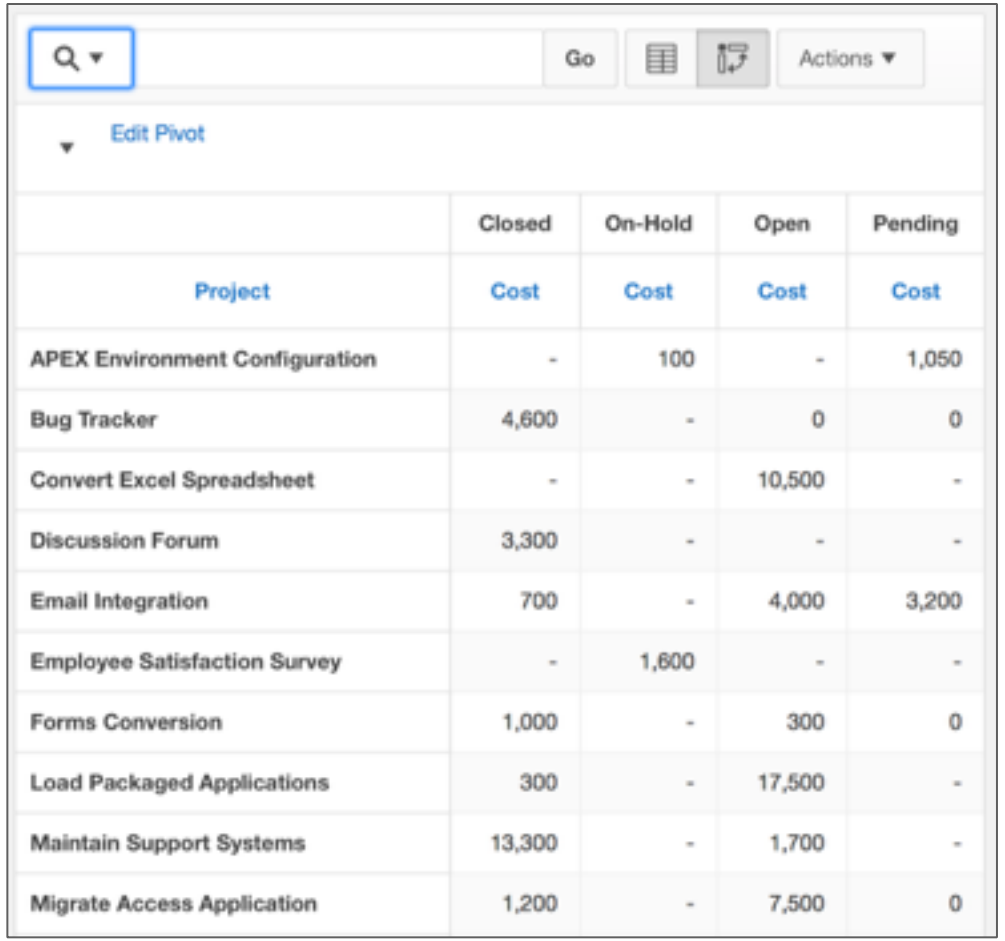
Interactive Report Enhancements

Pivot Reports

- Easy creation of pivot reports on existing data
- Select one or more columns as pivot columns and one or more columns as the row columns
- Apply aggregation functions to columns, assign labels and format masks



	Closed	On-Hold	Open	Pending
Project	Cost	Cost	Cost	Cost
APEX Environment Configuration	-	100	-	1,050
Bug Tracker	4,600	-	0	0
Convert Excel Spreadsheet	-	-	10,500	-
Discussion Forum	3,300	-	-	-
Email Integration	700	-	4,000	3,200
Employee Satisfaction Survey	-	1,600	-	-
Forms Conversion	1,000	-	300	0
Load Packaged Applications	300	-	17,500	-
Maintain Support Systems	13,300	-	1,700	-
Migrate Access Application	1,200	-	7,500	0

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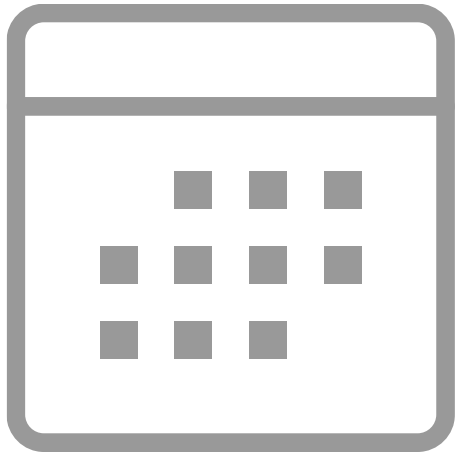
New Calendar



- New calendar region type
- Based on Full Calendar jQuery Plug-In
- Provides full-size calendar with monthly, weekly, daily and list view
- Support duration based events with start and end date
- Drag & drop capabilities allow for rescheduling of events
- Customization of look & feel through CSS

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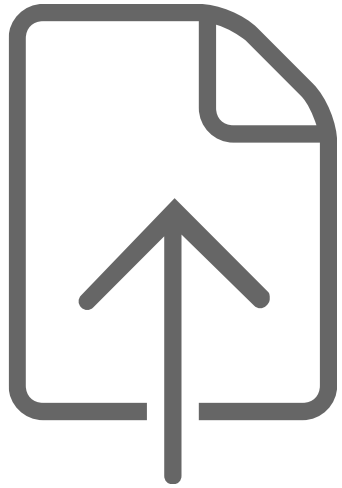
Static files / Relative URL references



- Upload application and workspace images into database
- Supports relative file URL references
- ZIP files automatically unzipped and placed in folder structure
- Supports versioning / Caching
- Can be used to store theme style CSS files and include in export

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Browser Security Options

- Browser Cache: prevent back button from showing old page content after logout (APEX 4.1)
- Embed in Frames: prevent other apps from embedding and remote controlling your application (APEX 4.1)
- Define custom HTTP headers at instance and application level (APEX 5.0)

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Authentication and Authorization

- Flexible authentication - change the authentication of the development environment itself - LDAP, SSO, HTTP Header Variable, etc. (APEX 5.0)

- Authorizations and conditions for on demand processes (APEX 4.2)
- Assign workspace groups to other groups (APEX 5.0)
- Set group membership for session on login, including external groups (APEX 5.0)
- Is In Group authorization (APEX 5.0)

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Improvements to avoid Cross-Site Scripting (XSS)

- HTML Expression attribute for report columns with substitution support instead of concatenating strings in the query (APEX 4.1)
- Restricted Characters attribute for items rejects malicious input (APEX 4.2)
- More restrictive HTML-Escaping and APEX_ESCAPE API (APEX 4.2)
- New escaping syntax, e.g. &P1_ITEM!JS. for fine grained control (APEX 5.0)

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Instance Lockdown and Workspace Isolation

- Limit emails (APEX 4.1)
- Resource manager support (APEX 4.2)
- Limit file uploads (APEX 5.0)
- Limit debug output (APEX 5.0)
- Limit concurrent requests per session and per workspace (APEX 5.0)
- Limit workspace access by hostname (APEX 5.0)

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Cryptography Improvements

- Stronger session cookie (APEX 4.2)
- SH-1/SH-2 for checksums (APEX 5.0)
- Improved hashing algorithm for workspace user passwords (APEX 5.0)
- New applications/forms are checksum protected by default (APEX 5.0)
- Support DB 12c DBFIPS_140 mode (APEX 5.0)
  - DBFIPS_140 enables Transparent Data Encryption (TDE) and DBMS_CRYPTO PL/SQL package program units to run in a mode compliant to the Federal Information Processing Standard ("FIPS mode”)

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Oracle Application Express 5 New Features

Summary

- Page Designer: Powerful intuitive browser-based IDE
- Universal Theme: Beautiful modern UI out-of-the-box
- Modal dialogs, all new calendar, multiple Interactive Reports per page
- Numerous smaller enhancements

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Useful Links

Collateral, Resources and Hosted Services

- Oracle Technology Network http://otn.oracle.com/apex
- APEX Community http://apex.oracle.com/community
- Oracle Learning Library http://www.oracle.com/oll
- Hosted evaluation site **http://apex.oracle.com**
- APEX Cloud Service http://cloud.oracle.com

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