

ORACLE®

Oracle Application Express 5 New Features

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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

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

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

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

ORACLE Application Express Application Builder SQL Workshop Team Development Packaged Apps

Application 69311 Page Designer

Rendering

Grid Layout Messages Page Search Help

Page 1: Sample Database Application

- Pre-Rendering
- Regions
 - Page Navigation
 - Breadcrumb Bar
 - Sample Database Application
 - Attributes
 - Sub Regions
 - Search
 - Attributes
 - Items
 - P1_SEARCH
 - Content Body
 - Dashboard
 - Attributes
 - Region Buttons
 - VIEW_MONTH_ORDERS
 - Tags
 - Attributes
 - Top Orders by Date
 - Attributes
 - Region Buttons
 - ADD_ORDER
 - VIEW_ORDERS
 - Top Customers
 - Columns
 - Attributes
 - Region Buttons
 - VIEW_PRODUCTS
 - ADD_CUSTOMER
 - VIEW_CUSTOMERS

Sample Database Application

PAGE HEADER

PAGE NAVIGATION

BREADCRUMB BAR

Sample Database Application

ITEMS

REGION CONTENT

SUB REGION

Search

PREVIOUS

ITEM

P1_SEARCH

REGION CONTENT

SUB REGION

NEXT

CONTENT BODY

Regions Items Buttons

Badge List (Plug-In) Breadcrumb Calendar Chart Classic Report Classic Report (based on Function) D3 Bar Chart (Plug-In) D3 Line Chart (Plug-In) D3 Pie Chart (Plug-In)

Page

Identification

Name Sample Database Application

Page Alias

Title &APP_NAME

Page Group Desktop

Appearance

User Interface Desktop

Page Mode Normal

Page Template Standard

Template Options Use Template Defaults

CSS Classes

Media Type

Navigation Menu

Override User Interface Level Yes No

Navigation

Cursor Focus Do not focus cursor

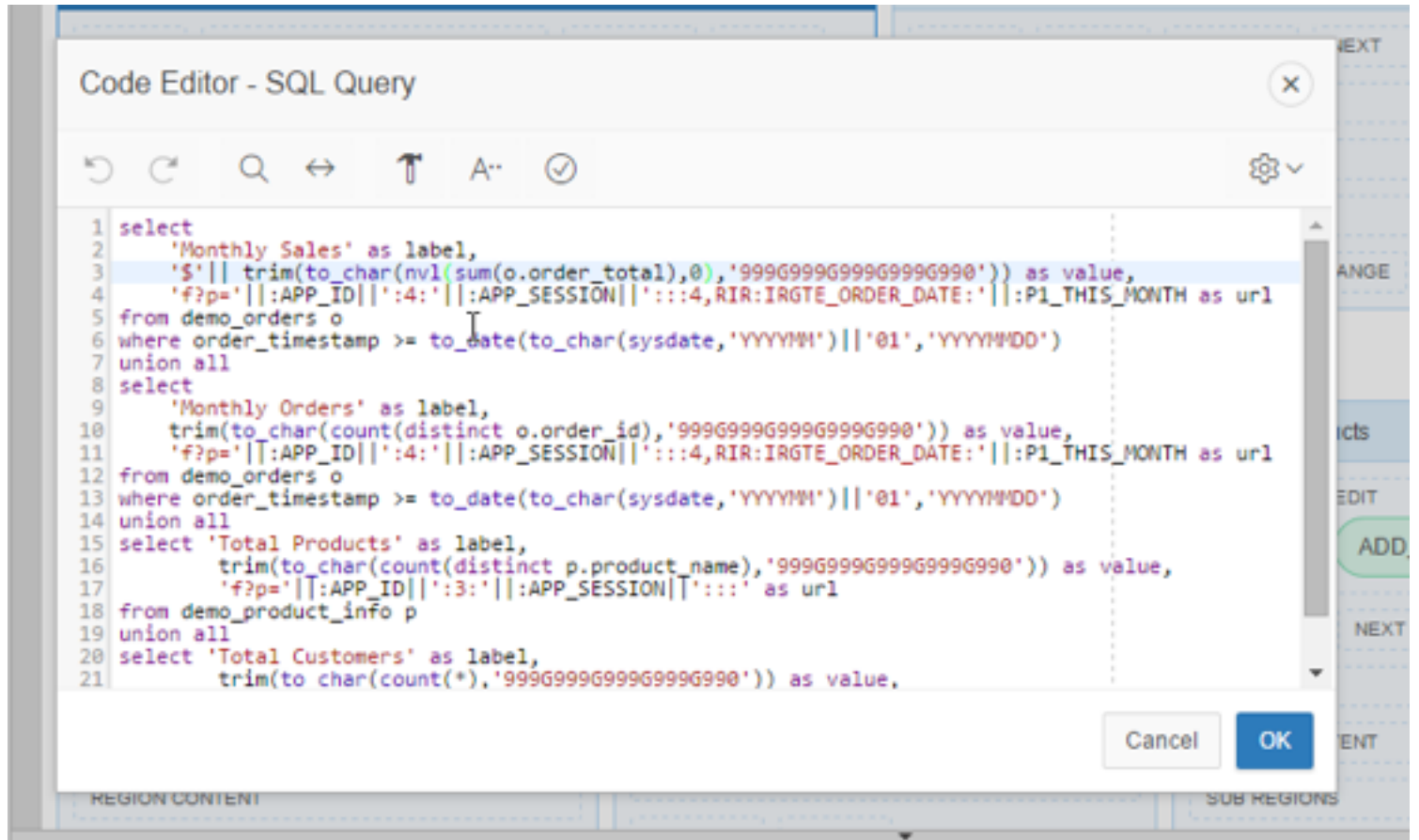
JavaScript

File URLs

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



The screenshot shows a window titled "Code Editor - SQL Query" with a close button (X) in the top right corner. Below the title bar is a toolbar with icons for undo, redo, search, undo/redo, home, and a checkmark. The main area contains an SQL query with syntax highlighting. The query is as follows:

```
1 select
2   'Monthly Sales' as label,
3   '$'|| trim(to_char(nvl(sum(o.order_total),0),'999G999G999G999G990')) as value,
4   'f?p='||:APP_ID||':4:'||:APP_SESSION||'::4,RIR:IRGTE_ORDER_DATE:'||:P1_THIS_MONTH as url
5 from demo_orders o
6 where order_timestamp >= to_date(to_char(sysdate,'YYYYMM')||'01','YYYYMMDD')
7 union all
8 select
9   'Monthly Orders' as label,
10  trim(to_char(count(distinct o.order_id),'999G999G999G999G990')) as value,
11  'f?p='||:APP_ID||':4:'||:APP_SESSION||'::4,RIR:IRGTE_ORDER_DATE:'||:P1_THIS_MONTH as url
12 from demo_orders o
13 where order_timestamp >= to_date(to_char(sysdate,'YYYYMM')||'01','YYYYMMDD')
14 union all
15 select 'Total Products' as label,
16        trim(to_char(count(distinct p.product_name),'999G999G999G999G990')) as value,
17        'f?p='||:APP_ID||':3:'||:APP_SESSION||'::3:' as url
18 from demo_product_info p
19 union all
20 select 'Total Customers' as label,
21        trim(to_char(count(*),'999G999G999G999G990')) as value,
```

At the bottom right of the editor, there are "Cancel" and "OK" buttons. The background of the slide shows a partial view of the Oracle APEX interface with labels like "REGION CONTENT" and "SUB REGIONS".

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



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



Universal Theme

Template Options

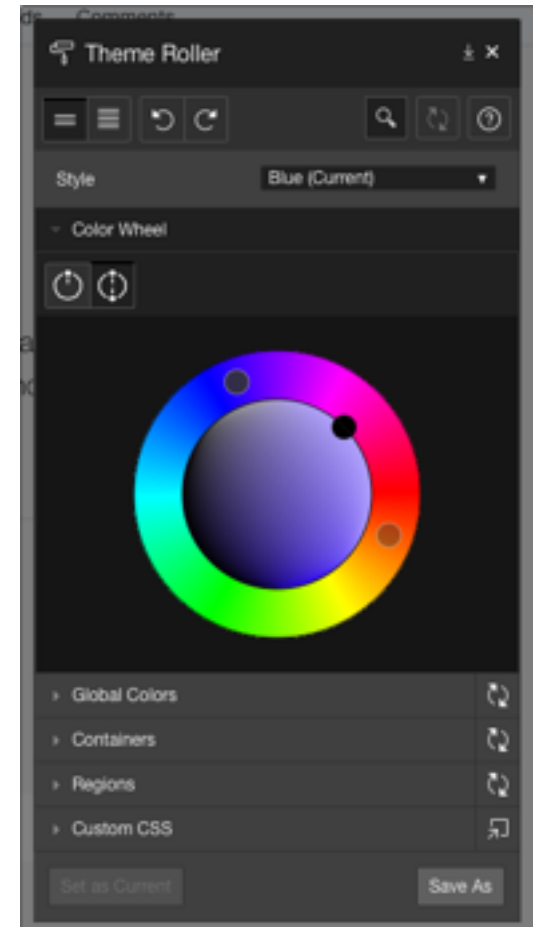
- Declarative CSS modifiers for HTML5 templates
- Enables developers to declaratively apply styles like borders, padding, icons, colors, size, etc.
- Uses easy-to-understand, descriptive names
- Available for most template types:
 - Page, Region, Report, Breadcrumb, List, Item, Button
- Significantly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



Universal Theme

Theme Styles and Theme Roller

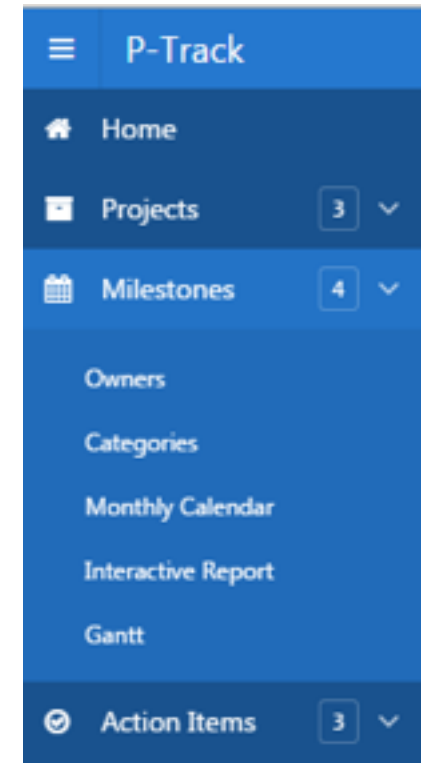
- Theme Styles provide a variety of different color schemes and styles for a single theme
- Defined as CSS file that is included in addition to the theme's base CSS file
- Universal Theme includes several pre-built styles
- Additional styles can be easily generated using the built-in Theme Roller utility



Universal Theme

List-based navigation

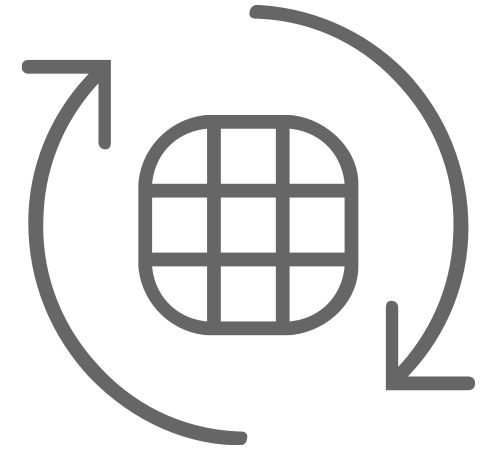
- Alternative to using traditional tabs
- Available as top navigation menu and side menu
- Implemented as standard APEX lists
- Supports multi-level hierarchical menu structures
- Provides accessible pull-down menus
- Type of navigation determined by themes – Universal Theme uses lists
- Migration of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



Universal Theme

Theme subscriptions

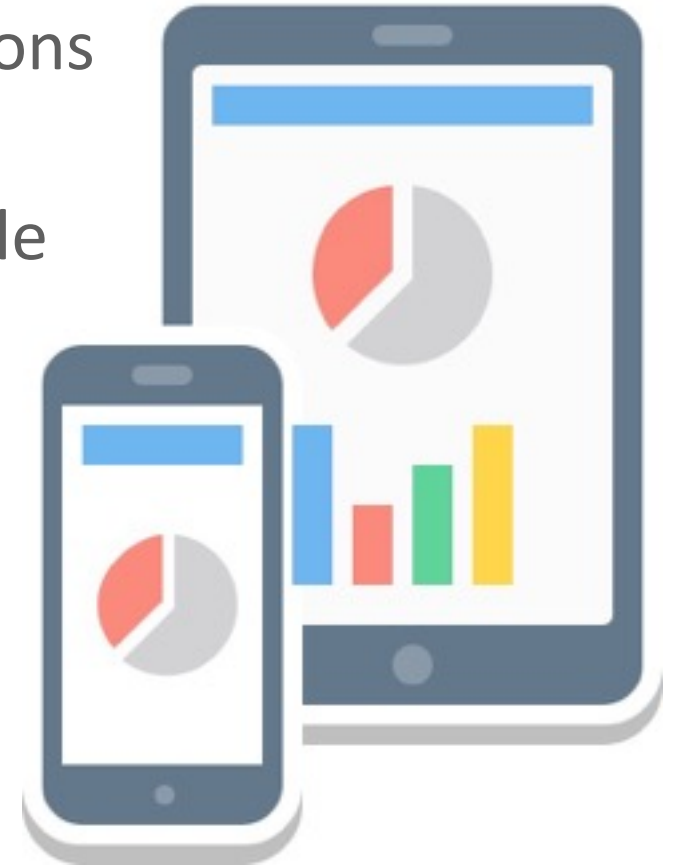
- Extends existing templates subscription model
- Subscribes all templates and template options to a master theme
- Templates are read-only in subscribing themes
- Templates can be copied within a theme – local copies are editable
- When creating new applications, themes are subscribed to the base theme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



Mobile Development

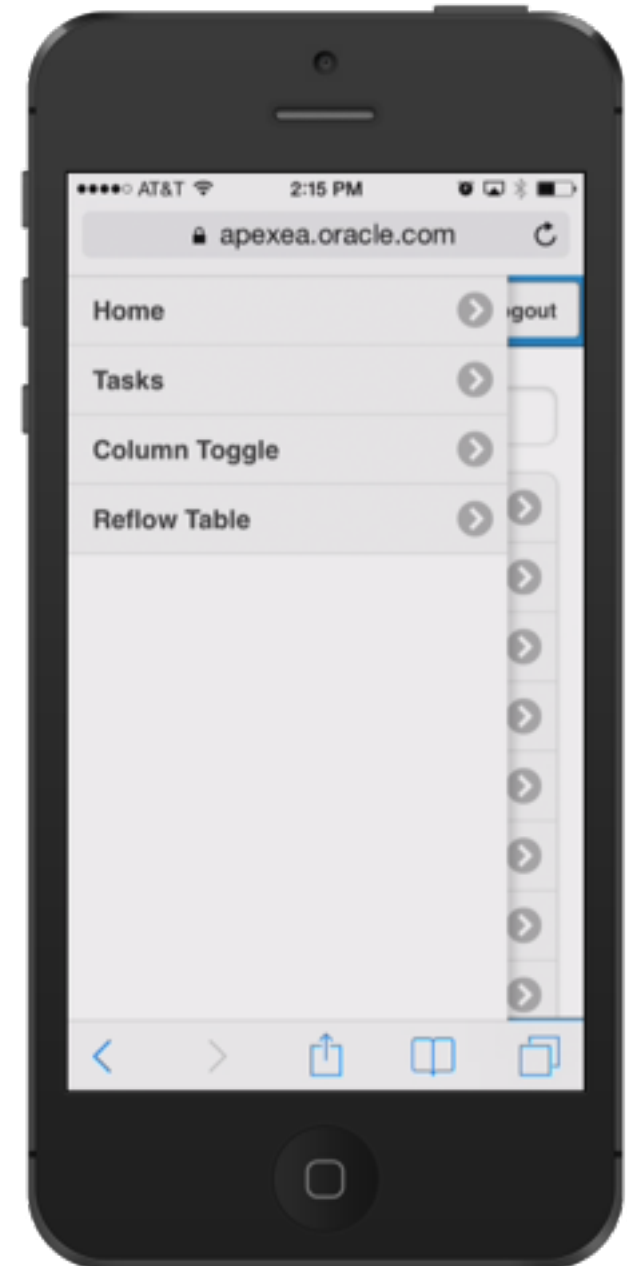
Rapidly build Web-based Mobile Applications

- 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



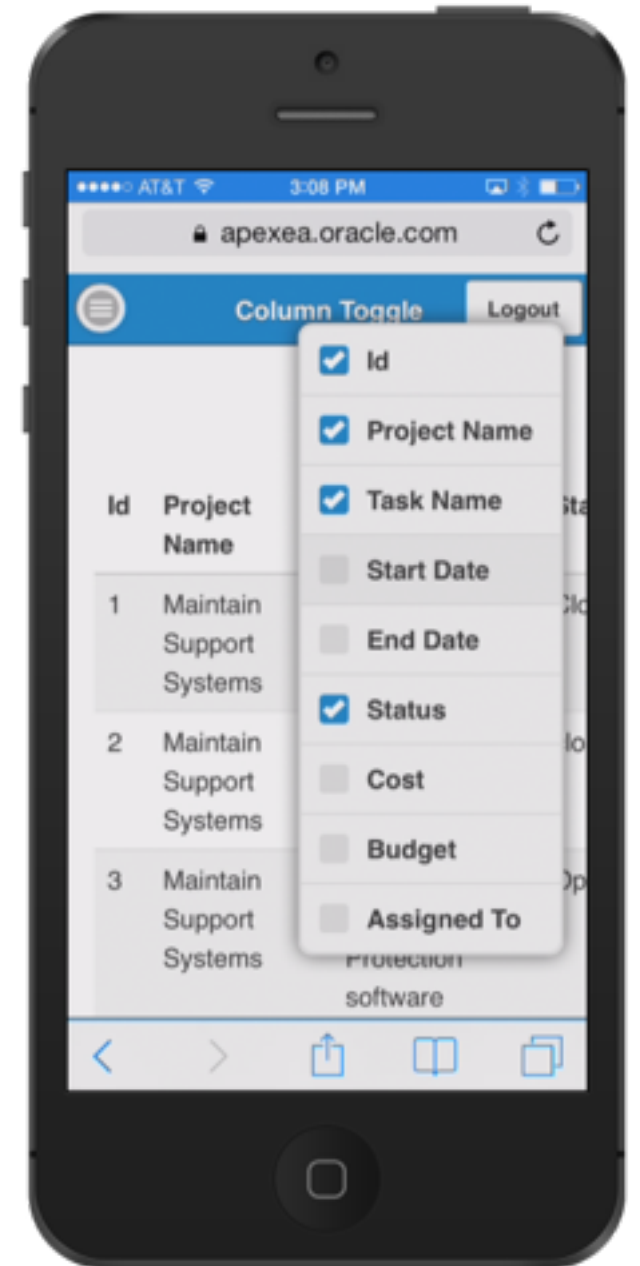
Navigation Menus and Slide Panels

- 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"**



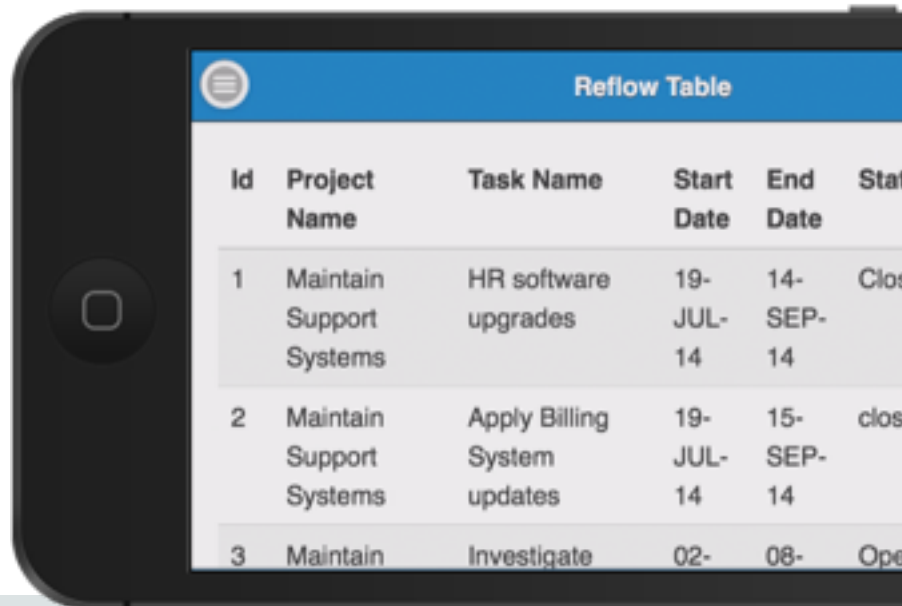
Column Toggle Report

- 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)



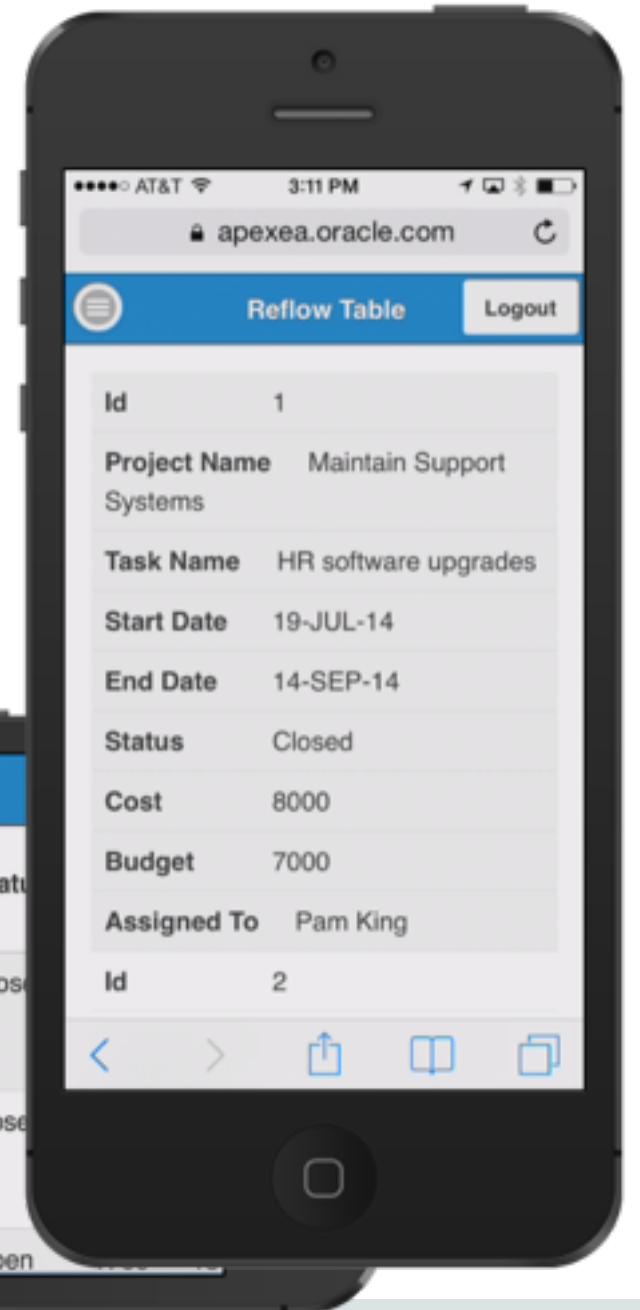
Reflow Table Report

- 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



A smartphone screen showing a 'Reflow Table' report in a tabular style. The table has six columns: Id, Project Name, Task Name, Start Date, End Date, and Status. It lists three rows of data.

Id	Project Name	Task Name	Start Date	End Date	Status
1	Maintain Support Systems	HR software upgrades	19-JUL-14	14-SEP-14	Closed
2	Maintain Support Systems	Apply Billing System updates	19-JUL-14	15-SEP-14	closed
3	Maintain	Investigate	02-	08-	Open

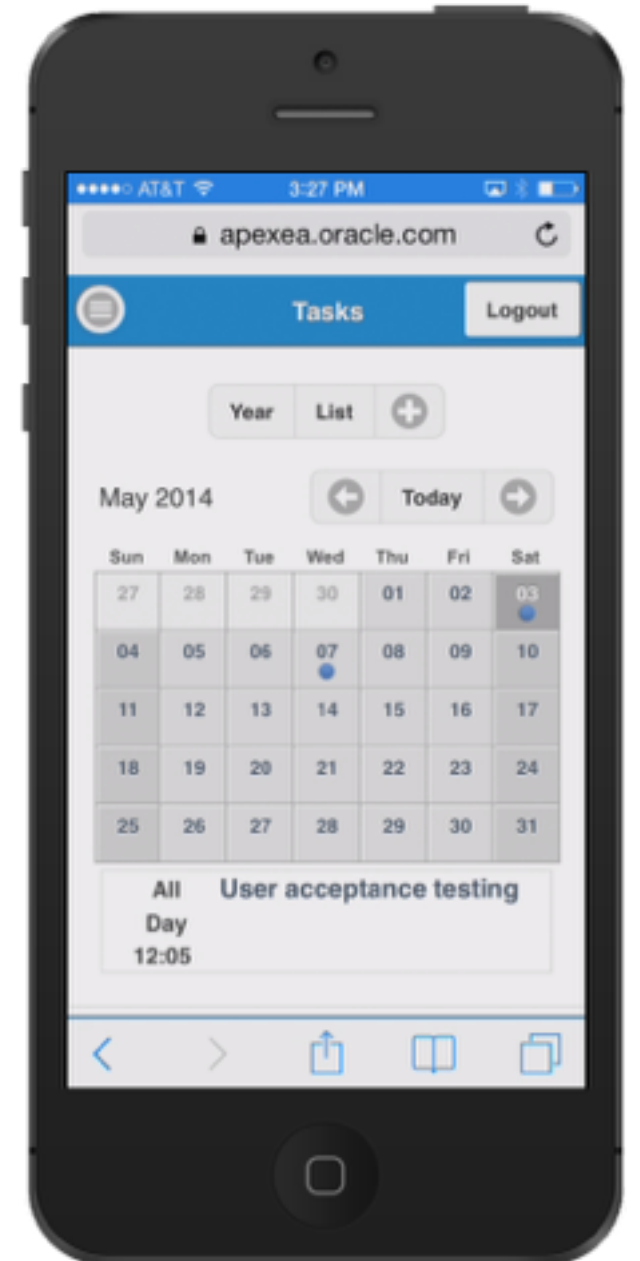


A smartphone screen showing the same 'Reflow Table' report in a collapsed, stacked presentation style. The data is organized into a series of key-value pairs for each row.

Id	1
Project Name	Maintain Support Systems
Task Name	HR software upgrades
Start Date	19-JUL-14
End Date	14-SEP-14
Status	Closed
Cost	8000
Budget	7000
Assigned To	Pam King
Id	2

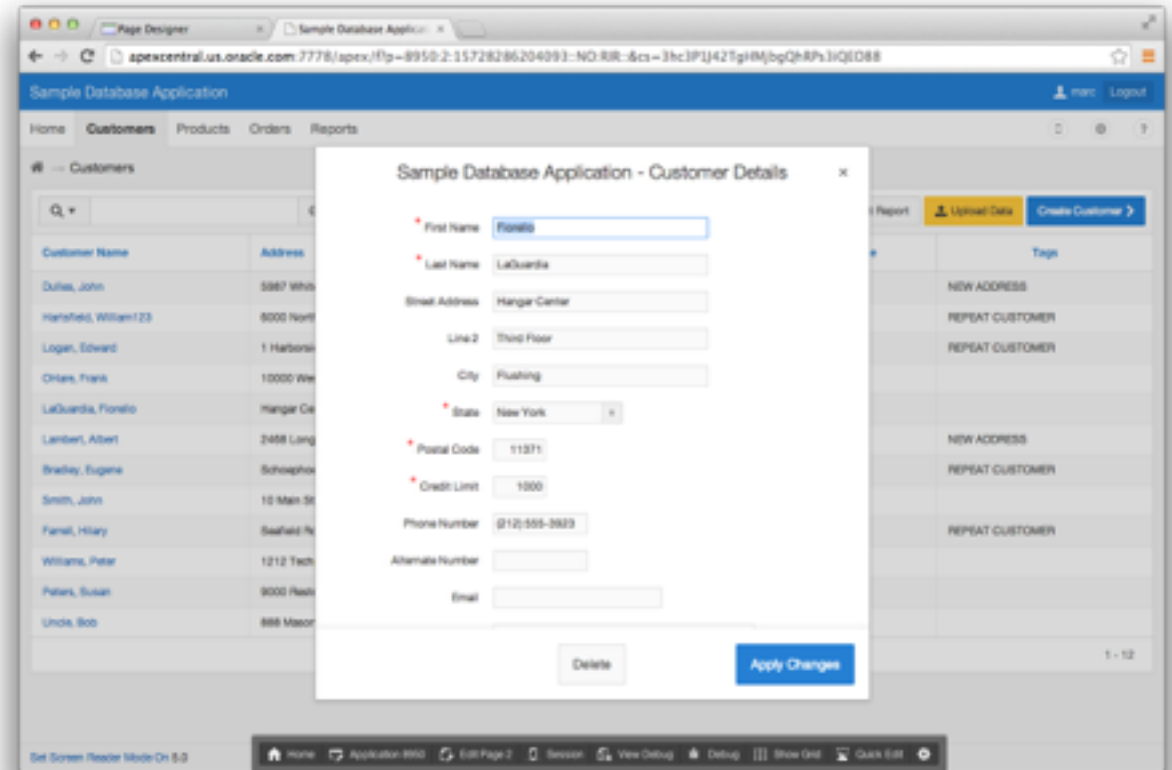
Mobile Calendar

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



Modal Dialogs

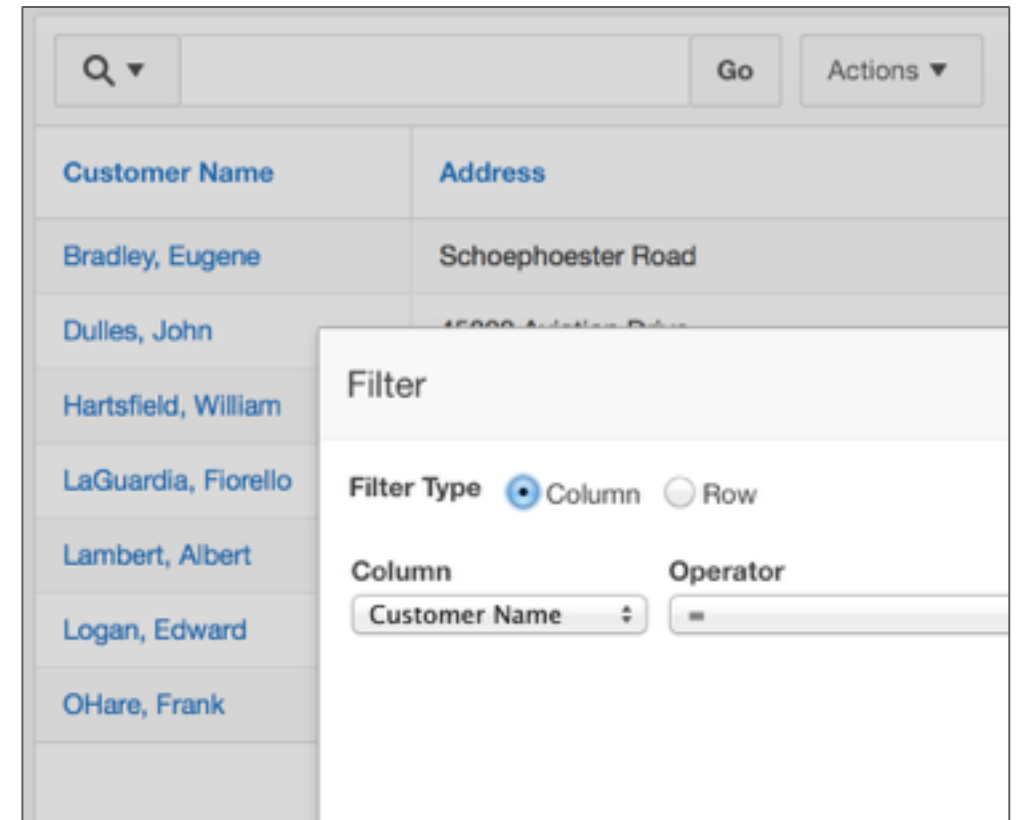
- Replacement for Popup Windows
- A modal dialog is a stand-alone page, not a region on a page
- Any page be created as a dialog page
- Supports all the functionality of a regular page, incl. computations, validations, processes, and branches



Interactive Report Enhancements

Multiple IRRs & UI Enhancements

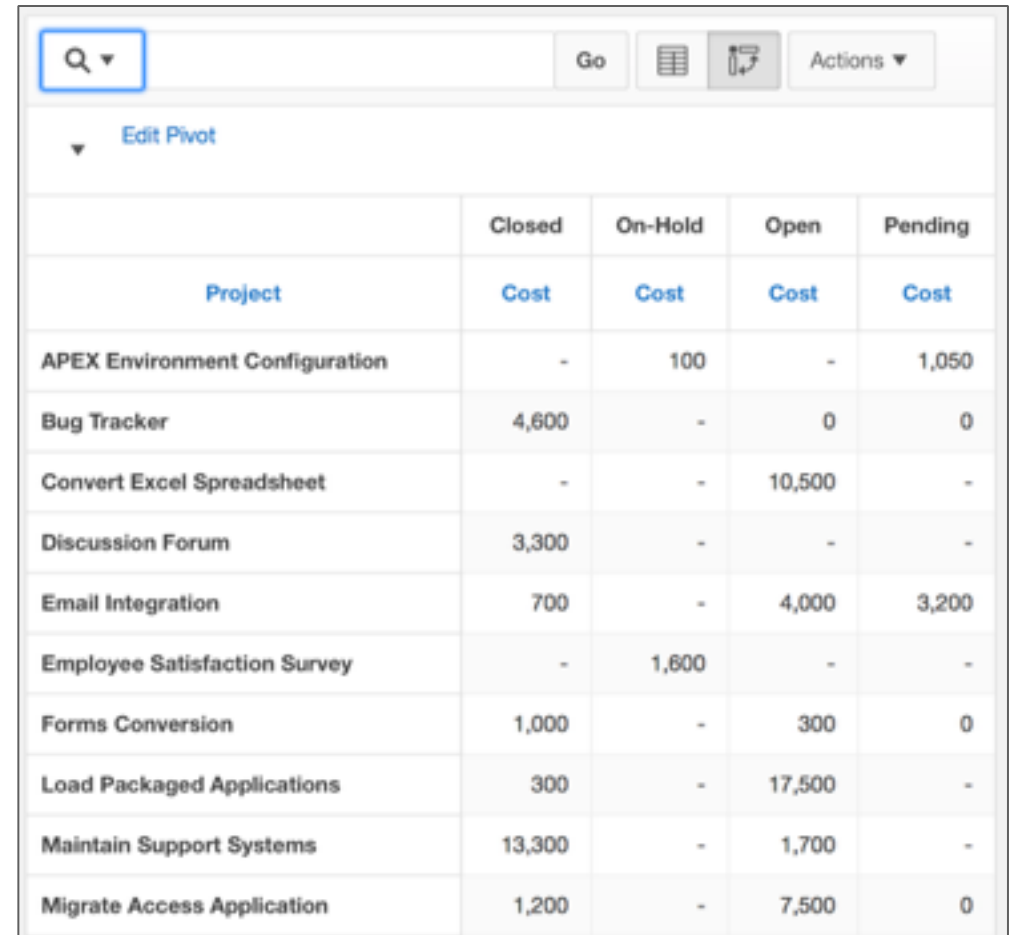
- Create multiple Interactive Reports on a single page
- Modal dialogs replace “push-down” dialogs that were previously used for filters, formatting, save, export, etc.
- New HTML5 HTML structure – lighter weight and accessible
- Frozen filter-bar stays in place when scrolling



Interactive Report Enhancements

Pivot Reports

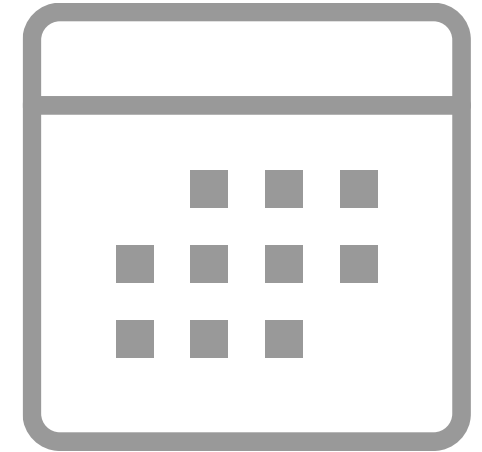
- Easy creation of pivot reports on existing data
- Select one or more columns as pivot columns and one or more columns as the row columns
- Apply aggregation functions to columns, assign labels and format masks



	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

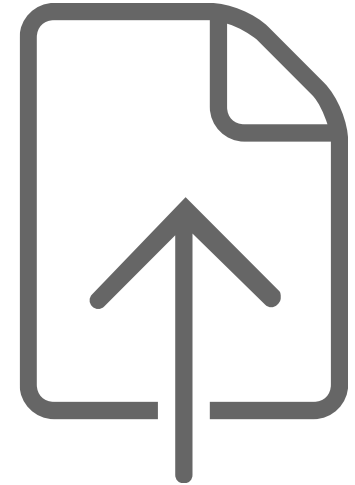
New Calendar

- 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



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



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)

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)

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)

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)

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")

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

Useful Links

Collateral, Resources and Hosted Services



- Oracle Technology Network
- APEX Community
- Oracle Learning Library
- Hosted evaluation site
- APEX Cloud Service

<http://otn.oracle.com/apex>

<http://apex.oracle.com/community>

<http://www.oracle.com/oll>

[**http://apex.oracle.com**](http://apex.oracle.com)

<http://cloud.oracle.com>



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