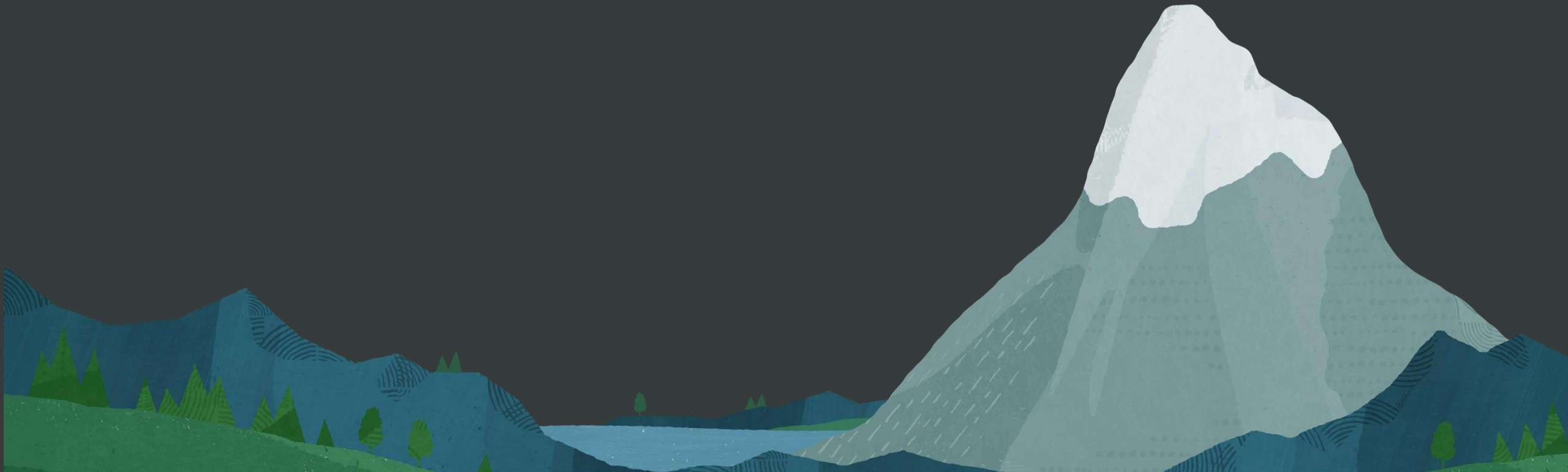


ORACLE | APEX

Oracle APEX

Build Scalable and Secure Low-Code Apps



Safe harbor statement

The following is intended to outline our general product direction. It is intended for information purposes only, and may not be incorporated into any contract. It is not a commitment to deliver any material, code, or functionality, and should not be relied upon in making purchasing decisions. The development, release, timing, and pricing of any features or functionality described for Oracle's products may change and remains at the sole discretion of Oracle Corporation.

What is a Low-Code Application Platform?

What is a Low-Code Application Platform?

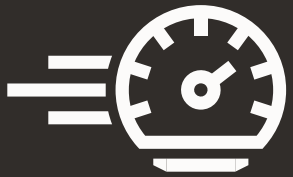
Low-Code application platform (**LCAP**) is used to rapidly develop and deploy custom applications by abstracting and minimizing hand coding.

At a minimum, an LCAP must include low-code capabilities (such as a model-driven or graphical programming approach with scripting) to develop a complete application consisting of user interfaces, business logic, workflow, and data services.

- Gartner



Why low code?



Speed

- Easy to learn
- Faster development



Innovation

- More time to focus on making better apps

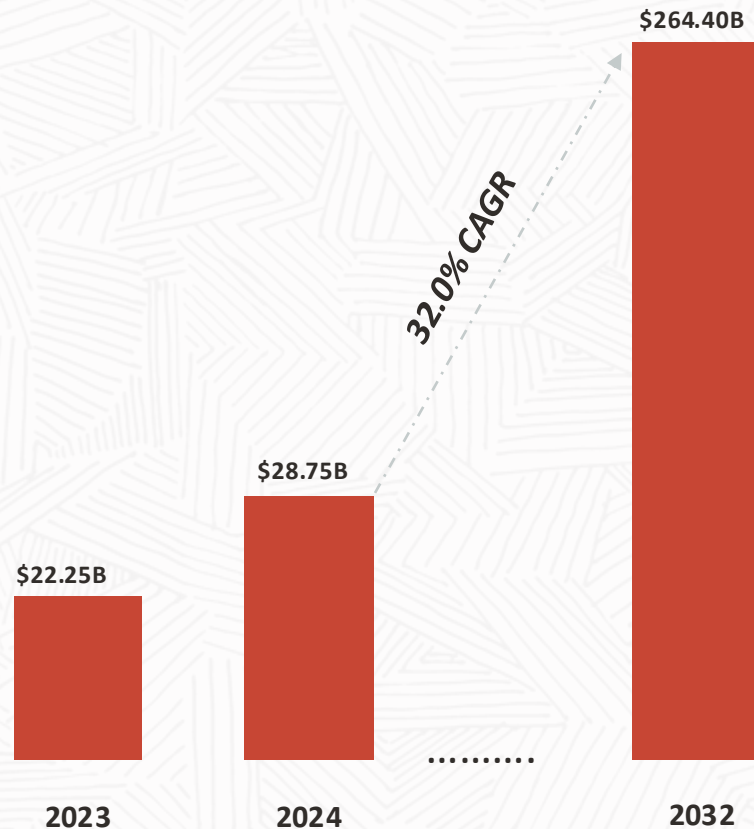


Agility

- Respond to user requests more quickly

Low-Code Application Platform (LCAP) Market

Large and fast-growing market



Low-Code Dev Platform Market Size

Source: Fortune Business Insights – “Low Code Development Market Share, 2024-2032”, May 2024

- The global low code development platform market size was valued at USD 22.25 billion in 2023 and is projected to grow from USD 28.75 billion in 2024 to USD 264.40 billion by 2032, exhibiting a CAGR of 32.0% during the forecast period (2024-2032).

Source: Fortune Business Insights – “Low Code Development Market Share, 2024-2032”, May 2024

- “By 2025, **70%** of new applications developed by enterprises will use low-code or no-code technologies, up from less than 25% in 2020.”

Source: Gartner, September 2021

What is Oracle APEX?





“As a developer and someone who writes SQL every day, I know how challenging it can be to remember table names, column names, and syntax I don't frequently use. Having an AI assistant to determine column names contextually, JOINS, and generate complex syntax is a real game changer.”

Michael Hichwa

Senior Vice President



What is Oracle APEX?

Oracle's Strategic Low-Code Application Platform

APEX is the **world's most popular** enterprise **low-code** application platform.

It enables you to build scalable and secure enterprise apps with world-class features **20X** faster with **100X** less code.

Oracle APEX delivers the most productive way to develop and deploy **Mobile, Web, and Desktop** apps everywhere - cloud and on-premises.



ā'pěks
(#orclapex)

21 Million +

apps created till date

7,000+

APEX apps created daily

850,000+

APEX developers worldwide

100,000+

customers across 150 countries

90%

of Fortune 500 use Oracle APEX



The Oracle APEX Advantage



Quickly create apps that meet business objectives

Focus on the intent of the app – not how to code it, and spend less time on maintenance going forward



Add AI to your apps

Add AI capabilities to apps even if you're not an AI expert – giving users flexible options for using apps, and shortening their learning curve



Build enterprise-ready applications

Get the security, scalability, performance and reliability of Oracle Database.

APEX is included with Oracle Database at no extra cost

Oracle APEX

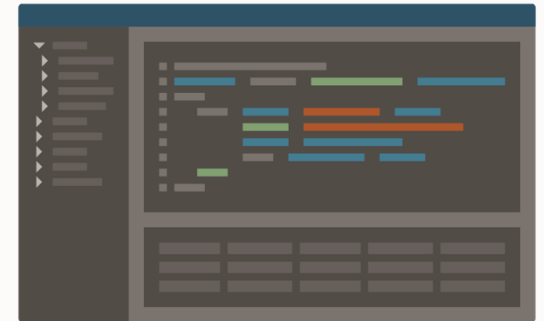
Database-centric web application development framework



Develop desktop and mobile web apps

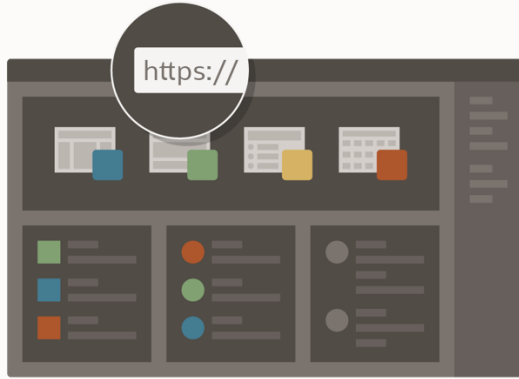


Visualize and maintain database data



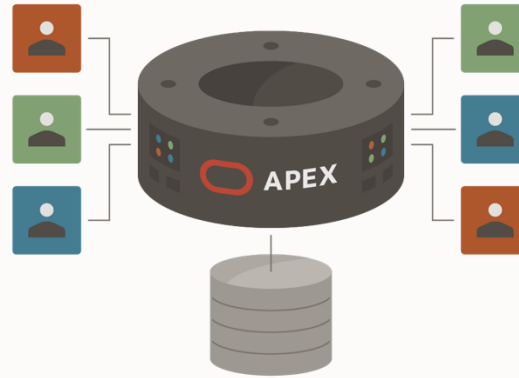
Leverage SQL Skills and database capabilities

Distinguishing Characteristics



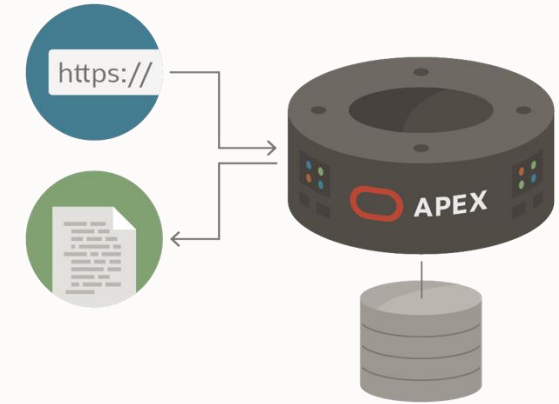
App Development IDE is a web browser

No client software needed



App Definitions are stored in the database as meta data

Declarative – No code generation



Page generation is efficient with only one request and one response

Data processing done in the Database

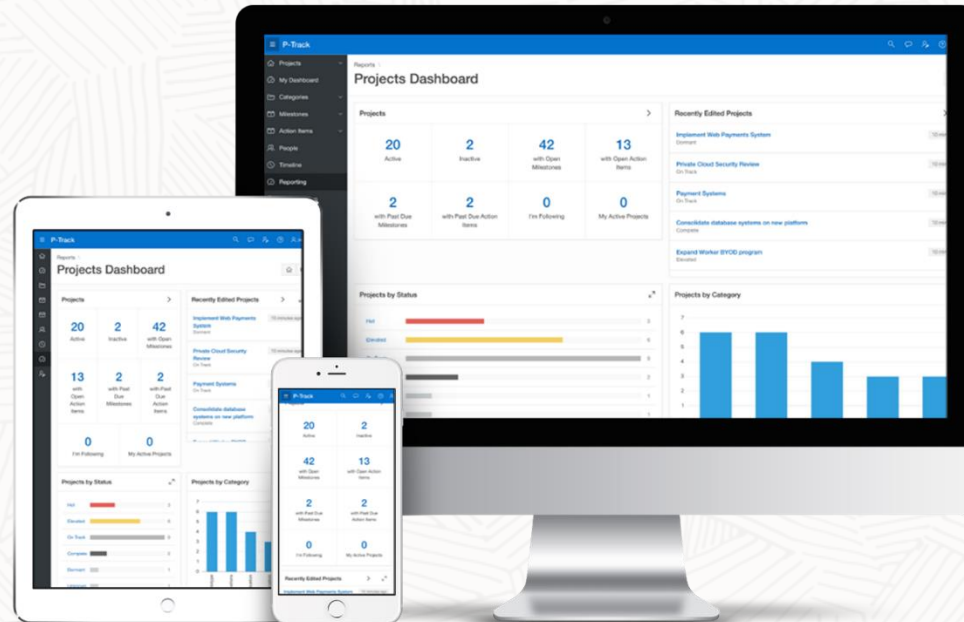
Oracle APEX

Comprehensive Low-Code Platform



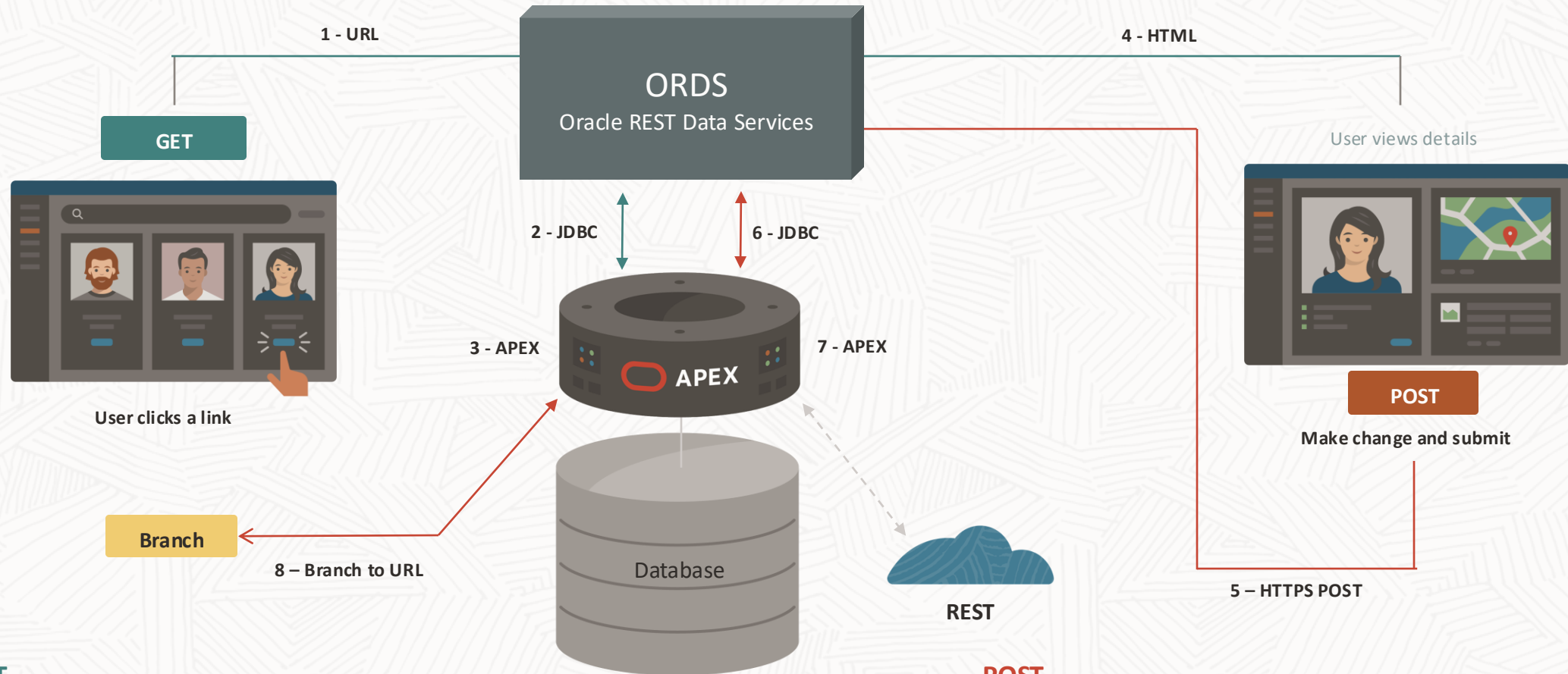
- **Build** powerful cloud and mobile apps using a web browser
- **Generate** Applications using AI
- **Import/export** data
- Publish **REST APIs**
- **Integrate** local and remote data
- **Automate & Integrate** processes and apps

User Interface for Any Device



**Modern, intuitive, accessible UI for any device
fully customizable and responsive apps**

APEX Architecture



GET

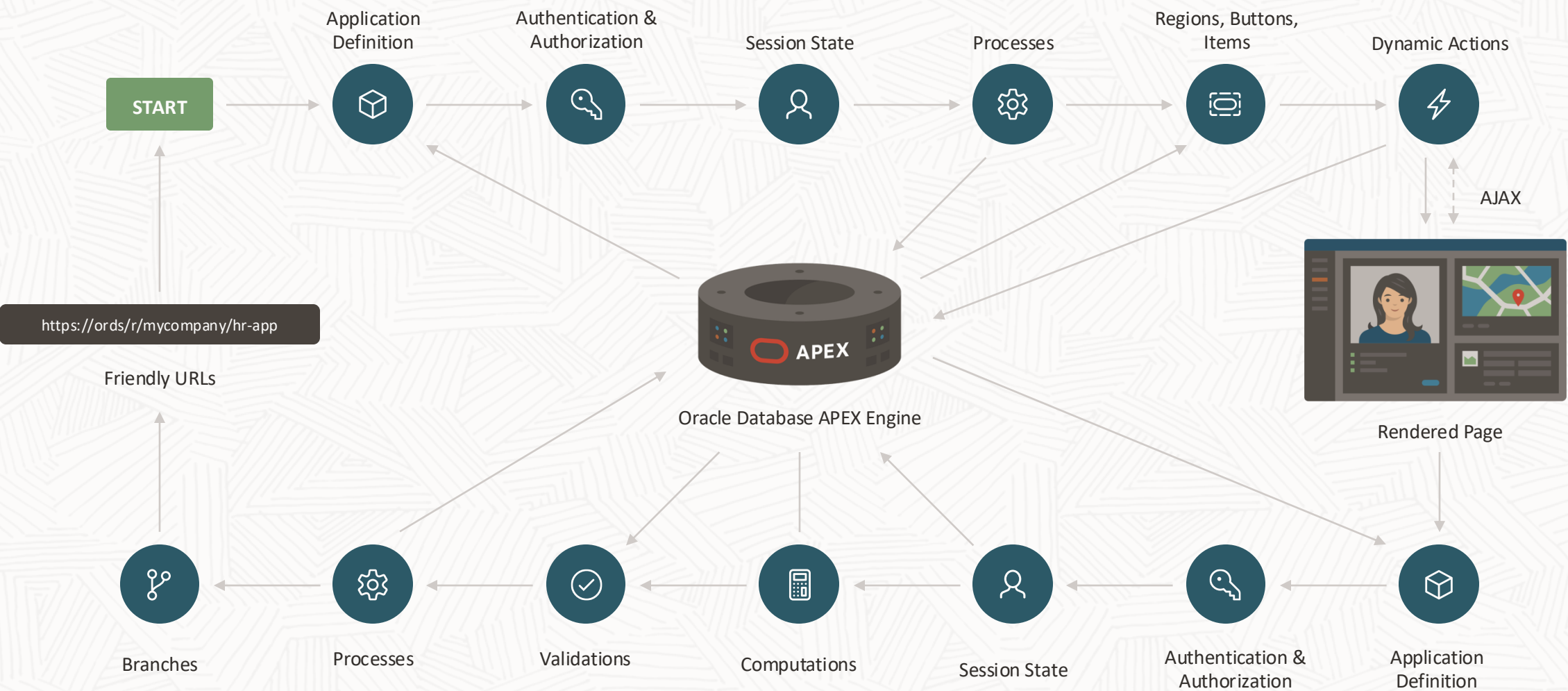
1. User clicks a link which sends HTTPS GET request to ORDS
2. ORDS makes a database JDBC call to the APEX Engine
3. APEX generates HTML page (full page or partial)
4. ORDS returns the generated HTML back to the browser

POST

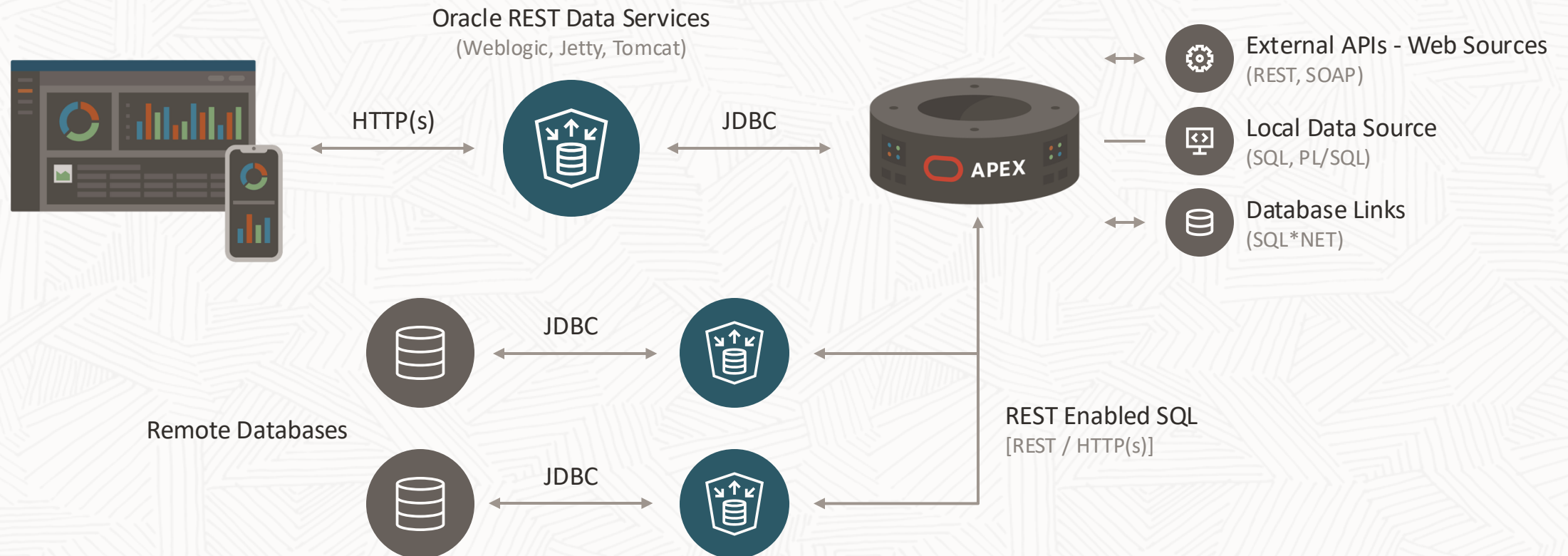
5. User clicks a button which does an HTTP POST to ORDS
6. ORDS makes a database JDBC call to the APEX Engine
7. APEX processes the request
8. APEX determines URL and branches

Browser Requests

Detailed processing from URL entered to page response



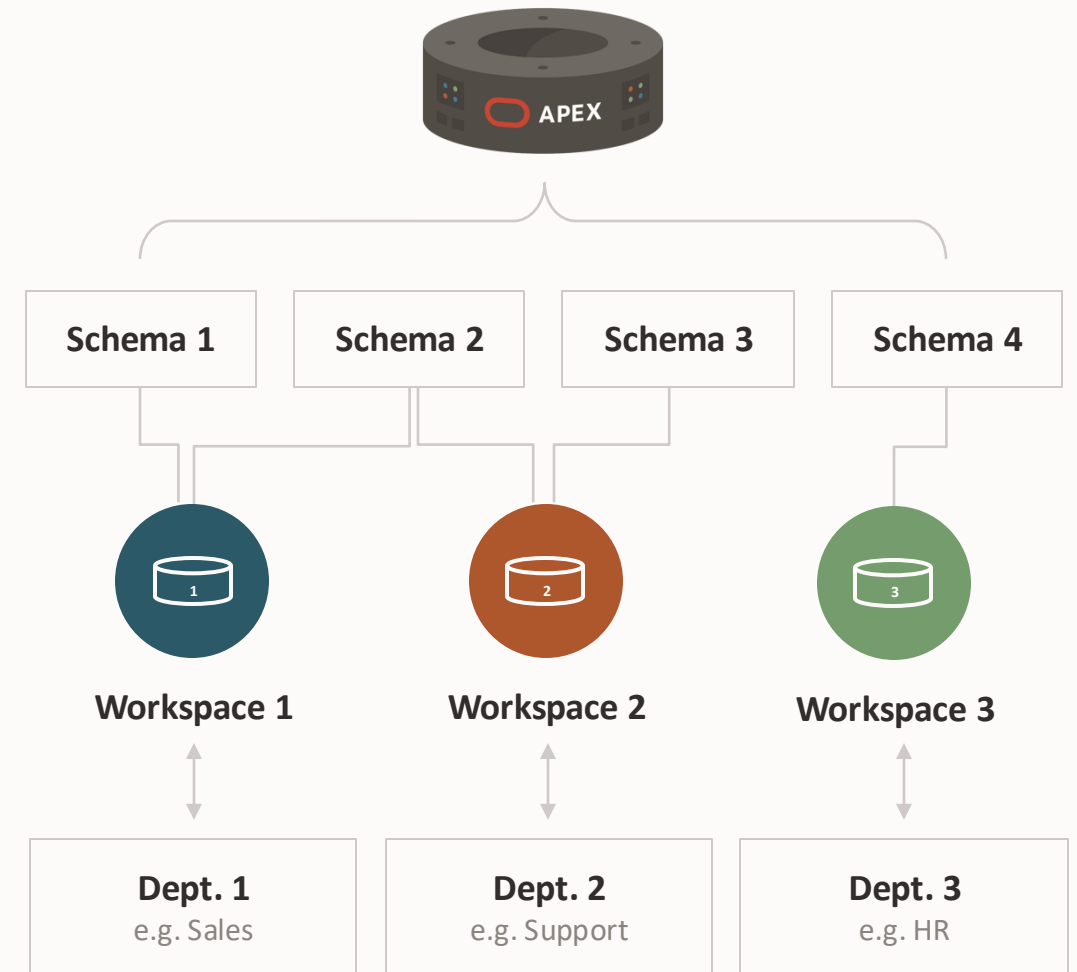
APEX Data Sources



Single Database Instance and Multiple Workspaces

Oracle Database with APEX

- Workspaces used to define application definitions / Schemas hold data
- The many-to-many relationship between Workspaces and Schemas
- Instance Administrators manage the environment and schema access
- Departments can request more space and access to a new schema
- For example, Oracle's internal-only service <https://apex.oraclecorp.com/en/> has over 9000 Workspaces, covering every line of business in Oracle



Product Timeline

Oracle APEX Release History – 5-Year Review

APEX 20.1

April 23, 2020

- APEX + Redwood
- Friendly URLs
- Native PDF Printing

APEX 21.1

May 12, 2021

- Maps Region
- New Application Data Loading
- Native Markdown Support

APEX 22.1

May 3, 2022

- Approvals & Unified Task List
- Simplified Page Creation
- Readable Application Export in JSON or YAML
- PWA Service Worker Customization

APEX 23.1

May 17, 2023

- Template Components
- PWA Push Notifications
- Modernized Object Browser

APEX 24.1

June 17, 2024

- AI-Assisted Development
- Document Generator Integration
- Workflow and Approval Enhancements
- Working Copy Enhancements

APEX 20.2

October 21, 2020

- Cards Region
- Automations
- REST Data Source Synchronization

APEX 21.2

November 4, 2021

- Smart Filters
- Progressive Web Apps
- Geocoding and Map Items

APEX 22.2

November 10, 2022

- Application Search
- Invoke API Processes
- New and Updated Components
- PWA, and Mobile Updates

APEX 23.2

November 14, 2023

- Application Working Copies
- Workflows
- New Page Items
- Custom Map Backgrounds

APEX 24.2

Jan 15, 2025

- AI Configurations and RAG Sources
- Integrating with Fusion Applications
- JSON Data Sources
- Workflow and Approval Enhancements



Oracle APEX is Available Everywhere

Oracle Cloud

- APEX Service
- All workload types of Autonomous Database
- Oracle Base Database Service
- Oracle Exadata Cloud Service
- Always Free APEX Service
- Always Free Autonomous Database

On-Premises

- All Oracle editions
- Oracle Exadata
- Oracle Database Free

Other Clouds

- Autonomous Database on Azure
- Amazon RDS for Oracle Database
- All other major clouds via VM

Oracle APEX is a **fully supported no-cost feature** of Oracle Autonomous Database and all Oracle Database editions.



Oracle APEX on OCI

Oracle APEX on ADBS: Workload-Optimized Instances

Oracle Autonomous Database Serverless with APEX



Data Warehouse (ADW)

Full ADBS service optimized for **data warehousing** and **analytic** workloads



Transaction Processing (ATP)

Full ADBS service optimized for **transactional** and **mixed** workloads

One-click, data-preserving operation:



= **Workload Type Conversion**



JSON Database

Specialized JSON service,
limited relational storage,
low price



APEX Service

Specialized APEX service,
no SQL*Net connectivity,
low price



Oracle APEX Application Development Service

Easy to use, fully managed, enterprise-class service on Oracle Cloud



APEX Application Development
& Deployment

+



Oracle Autonomous Database

+



Exadata Cloud Infrastructure

**Best low-code environment on best cloud database on best
database infrastructure**

Oracle APEX Application Development Service

Fully managed, mission-critical stack for as low as \$122.39/month

- \$120.08 for 2 ECPUs and \$2.31 for 20 GB per month



Automatically scales up and down - supports dozens to millions of users

- Automatically Scales Compute and Storage
- Supports hundreds of thousands of page views per hour

Try APEX Service on Oracle Cloud Free Tier!

- Lower costs
- Pay-per-use subscription model
- All-inclusive pricing—no per application, per user fees
- The free version you can use for an unlimited time

Development / Deployment Options



Local

- Install on stand-alone laptops using Oracle Express Edition (XE) or the full database version
- Simply upgrade APEX to the required version
- Can work completely disconnected



On-Premise

- Typically run by the IT Department
- IT generally both production operations service, and a service provider
- Departments responsible for application development



Cloud

- Deploy Internet applications
- Leveraged for fast application development, user acceptance, and training
- Prototyping & Proof-of-Concept
- Consulting companies develop for deployment on customer premise

Browser based application development framework enables efficient development & deployment

Shoot someone a URL – Check this out – Application Development

What does APEX do for you?



- User Interface
- Data Access
- Visualization
- Security
- Globalization
- Performance

AI-Assisted Development

Generative AI Service

The screenshot shows the 'Generative AI Service OpenAI Search' configuration page in Oracle APEX. The page is divided into several sections: Identification, Settings, Credentials, and Advanced. The 'Identification' section includes fields for 'AI Provider' (Open AI), 'Name' (Open AI), and 'Static ID' (open_ai). The 'Settings' section has a 'Used by App Builder' toggle switch. The 'Credentials' section includes a 'Base URL' (https://api.openai.com/v1) and a 'Credential' dropdown (credentials_for_openai_search). The 'Advanced' section includes fields for 'AI Model' (gpt-4o), 'HTTP Headers', and 'Comments'. On the right side, there is a 'Generative AI Service' information box and buttons for 'Test Connection' and 'Additional Attributes'. The page footer shows the user 'roopesh' and the version 'Oracle APEX 24.2.0'.

- An abstraction to popular commercial **Generative AI products** like OCI Generative AI, Open AI, and Cohere
- Authenticates using **Web Credentials** in Oracle APEX
- Users can **Validate Information** before setting up a connection
- Used by **App Builder, AI Assistant & APEX_AI PL/SQL API**
- Can be enabled/disabled on APEX at **Instance** and **Workspace** levels

Create a Data Model from a Prompt

APEX Assistant

Create a data model with the prefix PM to manage projects, milestones, tasks, task to-dos, task links, and comments, including multiple rows of data for each table.

Certainly! Here's an optimized data model for managing projects, milestones, tasks, task to-dos, task links, and comments, along with constraints, sequences, and trigger definitions. The multiple rows of data inserts will be added to provide sample data for each table.

```
sql
-- create projects table
create table pm_projects (
  id                number                generated by default on null as identity
                                constraint pm_projects_pk primary key,
  name              varchar2(255) not null,
  description        varchar2(4000),
  created_on         date                not null,
  created_by         varchar2(255) not null,
  updated_on         date                not null,
  updated_by         varchar2(255) not null,
  row_version        integer             not null )
/
```

I have created the tables with appropriate relationships, constraints, and triggers for the data model. Each table also has multiple rows of sample data inserted.

1. Do you need any additional attributes for any specific entity?
2. Any specific integrity constraints or business rules you want to implement in this data model?

Create SQL Script


Type your message here

SQL Format **Oracle SQL** Quick SQL


- Create your **Own Schemas** from a Prompt
- Generate scripts either in **Oracle SQL** or **Quick SQL format**
- Build a **Data Model** and generate **Sample Data**

Create App from a Prompt

APEX Assistant

 Let's create an app together. Describe the app you want to create, including the data or tables it will use.

Build an app on project tasks, project status, project milestones, project task todos, and projects, that includes pages for a smart filters, classic report, chart, and interactive report. RT

 Sure, I can create an application called **Project Management Suite** with the following pages:

- Smart Filters on Projects (Smart Filters on `EBA_PROJECTS`)
- Smart Filters on Project Milestones (Smart Filters on `EBA_PROJECT_MILESTONES`)
- Project Milestones Report (Classic Report on `EBA_PROJECT_MILESTONES`)
- Projects Status Chart (Chart on `EBA_PROJECTS`)
- Interactive Projects Report (Interactive Report on `EBA_PROJECTS`)

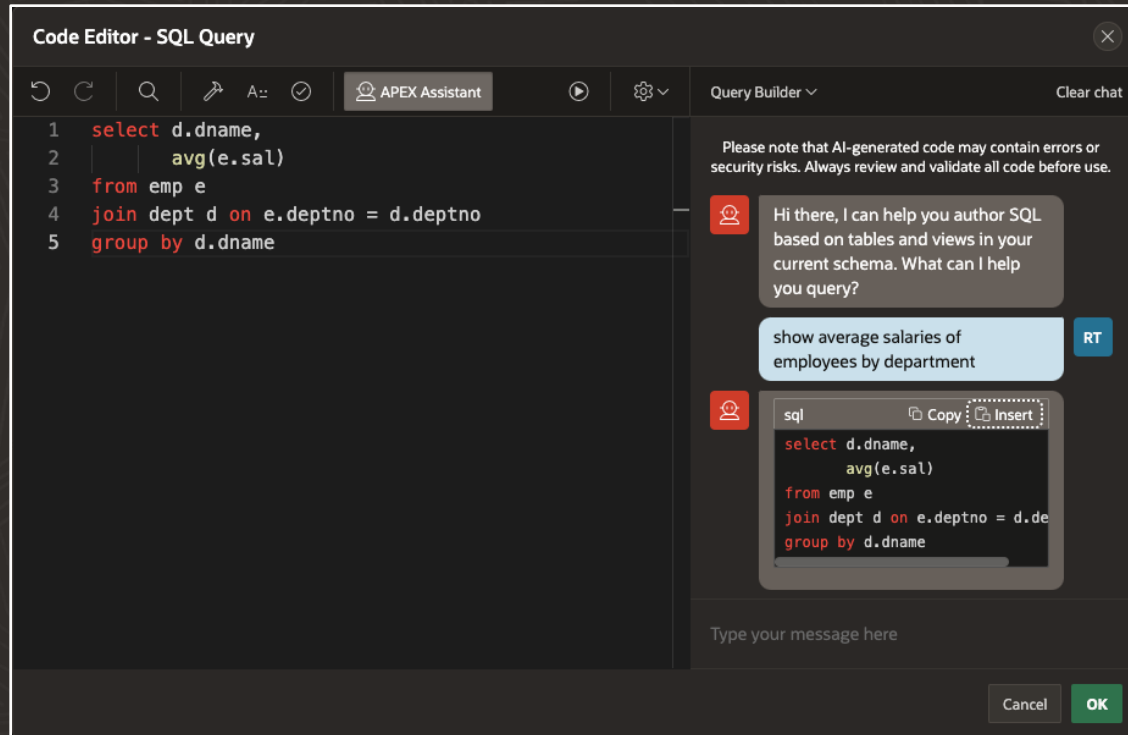
With the following features enabled: **Install Progressive Web App, Push Notifications.**
Would you like to create the application now? Or, if you have any changes, just let me know below!

Create Application

Type your message here

- Generate **Application Blueprint** based on a Prompt
- Leverages **APEX Dictionary Cache** to identify relevant tables.
- Further, **enhance the generated blueprint** with additional instructions

APEX Assistant in Code Editors



- APEX Assistant in Code Editors leverage **Generative AI Services**
- Leverages **APEX Dictionary Cache** to identify relevant tables
- **Generate SQL Queries** for form and report regions using the Query Builder mode
- **Generate PL/SQL, JavaScript, HTML, and CSS Code** using the General Assistance mode
- **Improve & Explain** Quick Actions help improve and understand the selected code

What are AI Configurations?

The screenshot shows the 'Generative AI Configuration' page in APEX. The breadcrumb trail is 'Application 124 \ Shared Components \ Generative AI Configurations \ Create / Edit'. The page has tabs for 'Show All', 'Identification', 'Subscription', 'Generative AI', 'RAG Sources', 'Advanced', and 'Comments'. The 'Identification' tab is active, showing fields for 'Name' (Summarize Project Details) and 'Static ID' (summarize_project_details). The 'Subscription' section has a 'Subscribe From' dropdown. A note states: 'This is the "master" copy of this Generative AI Configuration. No Generative AI Configuration subscribed to this configuration.' The 'Generative AI' section has a 'Service' dropdown set to 'Application Default'. The 'System Prompt' section shows a text area with the prompt: '1 Analyze the provided information and generate a concise summary in a single paragraph.' The top right of the form has 'Cancel', 'Delete', and 'Apply Changes' buttons.

- **AI Configurations** centralize key Generative AI settings.
- Customizable **System Prompt**, **Welcome Message**, and **RAG Sources**.
- Use it in both the **Show AI Assistant** and **Generate Text with AI** Dynamic Actions
- Accessible via the **APEX_AI PL/SQL API** for seamless integration.

RAG Sources - Overview

RAG Source [Cancel] [Delete] [Apply Changes]

Show All Identification Description Source Advanced Server-Side Condition Security Configuration Comments

Identification

Name: Project Details RAG Source

Description

Description:

Source

Type: SQL Query

SQL Query

```

1 SELECT
2   'Project Name : '
3   || PROJECT_NAME
4   || CHR(10)
5   || CHR(13)
6   || 'Milestone Title : '
7   || MILESTONE_TITLE
8   || CHR(10)
9   || CHR(13)
10  || 'Task Name : '
11  || TASK_NAME
12  || CHR(10)
13  || CHR(13)
14  || 'Task Status : '
15  || TASK_STATUS

```

Advanced

Maximum Tokens:

- Use **RAG Sources** to enrich AI conversations with application-specific data.
- Can include **SQL Queries**, **Function Bodies Returning CLOB**, or **Static Text**.
- Use **Authorization Schemes** or **Server-side Conditions** to control which RAG data is included.
- Use **APEX\$AI_ALL_USER_PROMPTS** and **APEX\$AI_LAST_USER_PROMPT** bind variables for custom RAG logic
- Utilize the **AI Configuration** in **Show AI Assistant** and **Generate Text with AI Dynamic Actions**

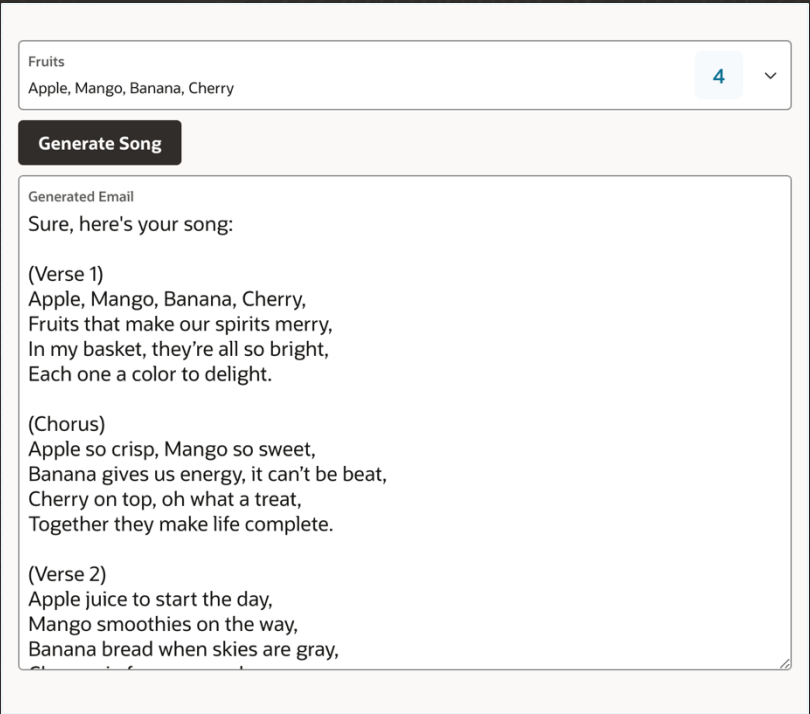
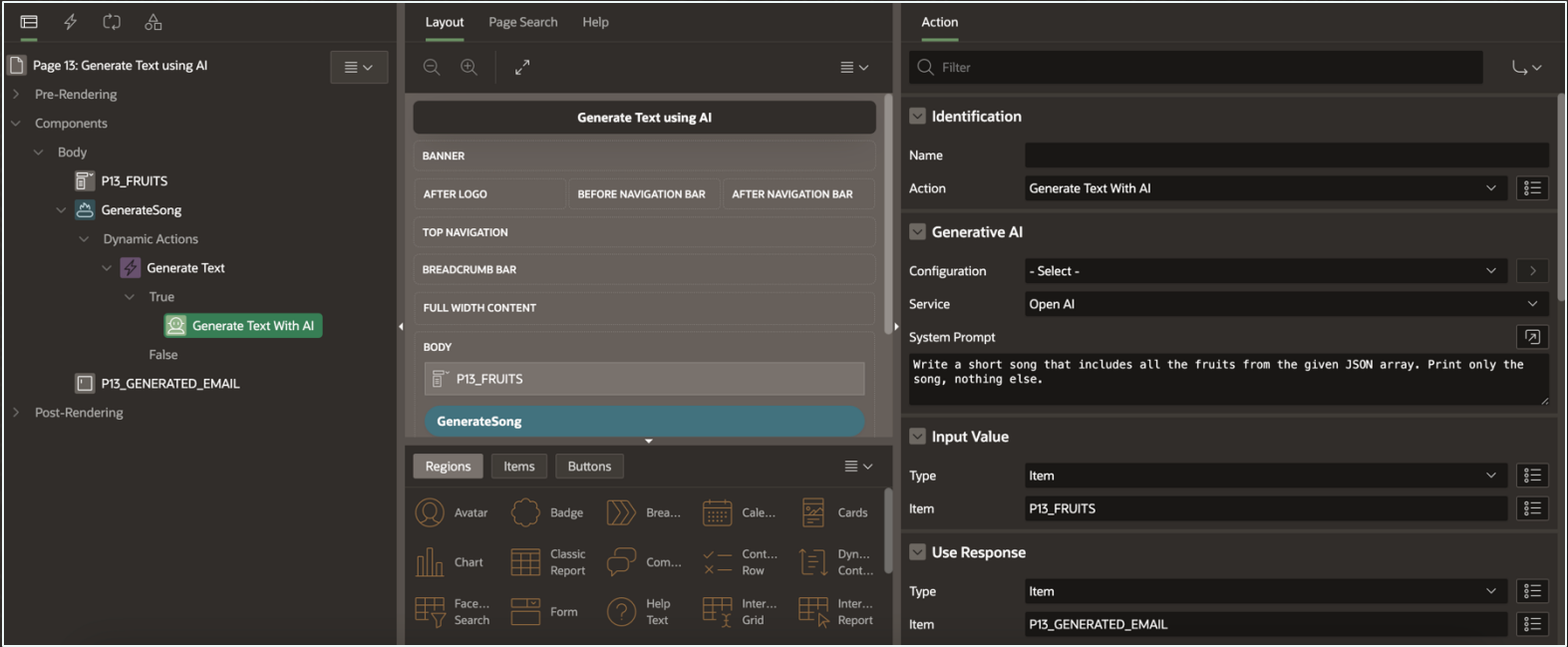
Generate Text with AI - Overview

Generate a **one-time response** based on user content

Leverages **Generative AI services**

Can also leverage centralized settings defined in **AI Configurations**

Configurable **System Prompt**, **Input Value**, and **Use Response** attributes



Show AI Assistant Dynamic Action - Overview

A **Native Dynamic Action** in Oracle APEX which opens an AI Chat User Interface

Leverages **Generative AI Services** configured under Workspace Utilities

Leverages **Generative AI Services** configured under Workspace Utilities

Rendered **Inline** or as a **Dialog**

Configurable **System Prompt** and **Welcome Message**

The screenshot displays the Oracle APEX workspace interface. On the left, the 'Page 1: Project Dashboard' is shown with a tree view of components. The 'Show AI Assistant' dynamic action is highlighted in the 'Dynamic Actions' section. The main workspace area shows the configuration for the 'Show AI Assistant' dynamic action. The configuration includes:

- Identification:** Name (empty), Action (Show AI Assistant).
- Generative AI:** Configuration (Analyze Projects with AI).
- Appearance:** Display As (Dialog), Title (empty).
- Initial Prompt:** (empty).
- Use Response:** (empty).
- Quick Actions:** Message 1 (Open Tasks), Message 2 (Closed Tasks).

On the right, a preview of the AI chat interface is shown. The chat window is titled 'Assistant' and contains the following messages:

- Message 1:** Here are the open tasks from the provided information:
 - 1. **Project Name:** Project Alpha
 - Milestone Title:** Milestone Alpha 1
 - Task Name:** Task Alpha 1
 - Task Status:** pending
 - 2. **Project Name:** Project Alpha
 - Milestone Title:** Milestone Alpha 2
 - Task Name:** Task Beta 1
 - Task Status:** in progress
- Message 2:** What is the status of Project Beta?
- Message 3:** There is no specific task status mentioned for Project Beta in the provided information.
 - Project Beta details:**
 - Milestone Title:** Milestone Beta 1

The chat window also includes a 'Type your message here' input field at the bottom.

What are Vector Providers?

The screenshot shows the 'Vector Provider DB ONNX Model' configuration page in Oracle APEX. The breadcrumb trail at the top is 'Workspace Utilities > Vector Providers > Vector Provider Details'. The page title is 'Vector Provider DB ONNX Model' with buttons for 'Cancel', 'Delete', and 'Apply Changes'. There are two tabs: 'Show All' and 'Identification', with 'Identification' being the active tab. The 'Identification' section contains a dropdown for 'Provider Type' with options: '- Select -', 'Database ONNX Model' (selected), 'Generative AI Service', and 'Custom PL/SQL'. Below this is a text field for 'Name' and a text field for 'Static ID' containing 'db_onnx_model'. The 'Local Embedding' section contains a dropdown for 'ONNX Model Owner' with 'ROOPESH' selected and a dropdown for 'ONNX Model Name' with 'DOC_MODEL' selected. Each field has a help icon (question mark) to its right.

- A **Vector Provider** enables you to convert text into an embedding
- Available **Provider Types**: Database ONNX Model, Generative AI Service, Custom PL/SQL
- Vector Providers are stored at the **Workspace level**
- Use **APEX_AI.GET_VECTOR_EMBEDDINGS** PL/SQL API to generate embeddings
- Available exclusively on **Oracle Database 23ai**

Vector Search Support in Search Configurations - Overview

Search Configuration: Search Movies - Vector Cancel Delete Apply Changes

[Show All](#) [Settings](#) [Subscription](#) [Source](#) [Column Mapping](#) [Icon and Display](#) [Link](#) [Server-Side Condition](#) [Advanced](#)

Vector Attributes

Provider: ONNX Model ⓘ

* Column Name: OVERVIEW_V (Vector) ⓘ

Search Type: Exact ⓘ

Distance Metric: Cosine ⓘ

Column Mapping

* Primary Key Column ⓘ: ID (Number) ⓘ Primary Key Column 2 ⓘ: - Select Column - ⓘ

* Title Column ⓘ: TITLE (Varchar2) ⓘ Subtitle Column ⓘ: - Select Column - ⓘ Description Column ⓘ: OVERVIEW (Varchar2) ⓘ

Custom Column 1 ⓘ: - Select Column - ⓘ Custom Column 2 ⓘ: - Select Column - ⓘ Custom Column 3 ⓘ: - Select Column - ⓘ

Badge Column ⓘ: - Select Column - ⓘ Score Column ⓘ: - Select Column - ⓘ Last Modified Column ⓘ: - Select Column - ⓘ

Icon and Display

Icon Source: Initials ⓘ

- Available exclusively on **Oracle Database 23ai**
- Create **Search Configurations** on the table with Vector Data type columns
- Configure **Index Usage**, **Distance Metrics**, **Max Vector Distance**, and **Max Results**
- Results are returned based on **Vector Similarity**

APEX + AI Video Links

Build AI-Powered Enterprise Apps Faster with Oracle APEX

apex.oracle.com/go/apex241-launch

Create and Maintain SQL Using Natural Language with APEX AI Assistant: Demo

apex.oracle.com/go/apex-assistant-video

Power Semantic Search with Oracle APEX and AI Vector Search: Demo

apex.oracle.com/go/apex-vs-video

Security

Oracle APEX – Security

Oracle APEX is designed to build highly secure web apps out of the box. A new instance admin security parameter enables the use of database credentials instance-wide.

In a world of constantly changing web standards and increasingly resourceful attackers finding new ways to hack sites, our focus on security means that your applications stay protected.

- Authentication and Authorization
- Session Management
- Secure by Default
- Support for SSO
- APEX Advisor



Authentication and Authorization

Authentication is the process of identifying who is accessing the application, while Authorization defines whether the user has permission to use an application or parts of it.

Authentication Schemes

Oracle APEX comes with a comprehensive set of built-in authentication schemes that make it simple to integrate .

Authorization Schemes

Define access to your application, pages and page components with authorization schemes. Use the built-in Application Access Control to manage users and roles. Authorization can be applied to Items, Regions, Pages, process, etc.,

Extensibility

Developers can easily extend Oracle APEX by writing custom authentication and authorization schemes in SQL and PL/SQL.



Session Management

Server-side session management is used for a user's interactions with an application. This is linked to a secure session cookie, which is an intrinsic part of Oracle APEX.

Session Control

Sessions are defined by a browser cookie value and an ID in the URL, which are long random values that an attacker can not guess to take over a user's session. Built-in timeouts guarantee that the session automatically terminates when a user is away for too long.

Item Session State

Application and page items save their values in the session state, optionally in an encrypted form. Developers can access and manipulate the values in SQL and PL/SQL via bind variable syntax, which prevents SQL Injection.

Collections

Oracle APEX Collections are non-scalar, multi-row, and multi-column session data. Developers can manage collections via PL/SQL APIs and views.



Secure by Default

While providing developers with full control, Oracle APEX generates applications with highly secure settings right out of the box.

Parameter Tampering Protection

Oracle APEX uses checksums to prevent users from manipulating parameters in the URL and when saving changes.

XSS Prevention

Cross-site scripting (XSS) occurs when attackers save malicious data on a website and the site renders this data as code that executes in the user's browser.

Oracle APEX components escape all output by default to prevent this class of attacks.

Advisor and other tools

Developers can run the Oracle APEX Advisor to check their applications for settings that make them less secure or inconsistencies that attackers could exploit.



Use Cases

Transform Your Spreadsheets to Web Apps in Minutes

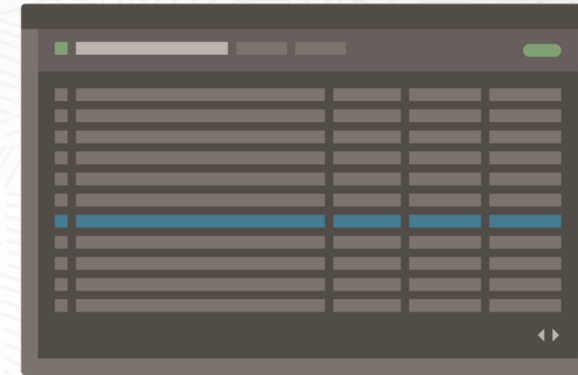
Upload your spreadsheet and convert it into a cloud application with a few clicks!

★ Features

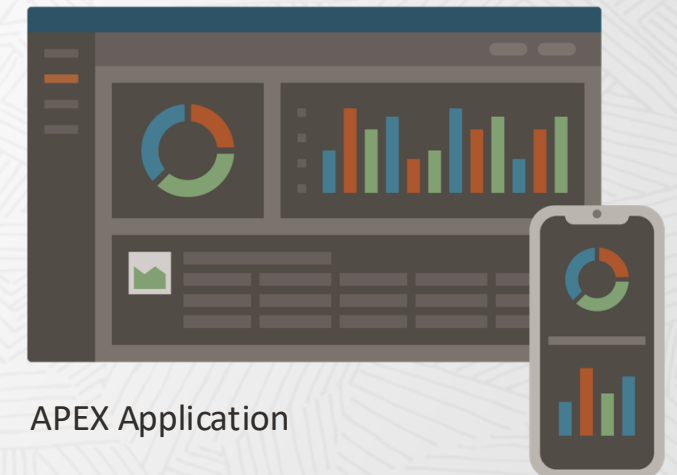
- Drag and Drop an XLS, CSV, XML, or JSON file
- Create a table in the Autonomous Database
- Upload data into the new table
- Create an App based on the new table

✓ Solutions

- Single source-of-truth
- Send out a URL, not a file
- Secure, scalable, multi-user app
- Extend with Charts, Calendars, Validations, and more



Spreadsheet



APEX Application

Rapid Application Development

Build new business and productivity apps

★ Features

- Build apps in days/weeks not months/years
- Use powerful wizards to create fully featured apps
- Easily modify to meet changing requirements
- Rapidly iterate to a production-ready app
- Low-code capabilities allow non-IT professionals to also build or help build apps

✓ Solutions

- Opportunistic
- Simplistic, tactical apps to meet immediate need
- Webify paper processes
- Generally developed by one or two people



Modernizing Oracle Forms

Evolve your Forms Apps to APEX apps and unlock limitless possibilities!

★ Features

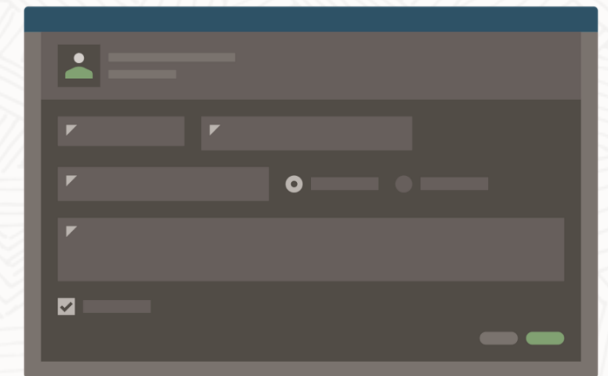
- APEX is the natural evolution of Forms
- Both are based on SQL and PL / SQL
- Re-use DB packages, procedures, functions
- Easily train Forms Developers into developing with APEX

✓ Solutions

- Proof-of-concept using the subset of Forms apps
- Organization-wide apps, rather than back-office
- External apps for customers/partners
- Mobile-first apps
- Net new requirements



Forms App



APEX Application

Extending Enterprise Systems

Enhance your existing apps by building APEX apps!

★ Features

- Extend ERPs and other enterprise software
- Provide organization-specific dashboards
- Improved workflows
- Fill gaps

✓ Solutions

- Meet non-standard requirements
- Optimize common business functions
- Enhance data capture
- Integrate disparate data sources

See: Extend E-Business Suite using APEX
[Official Technical paper](#)



Mission Critical Enterprise Systems

★ Features

- Quickly build custom mission-critical apps
- Corporate data reporting and maintenance
- Merge separate data silos
- Build organization-wide self-reporting apps

✓ Solutions

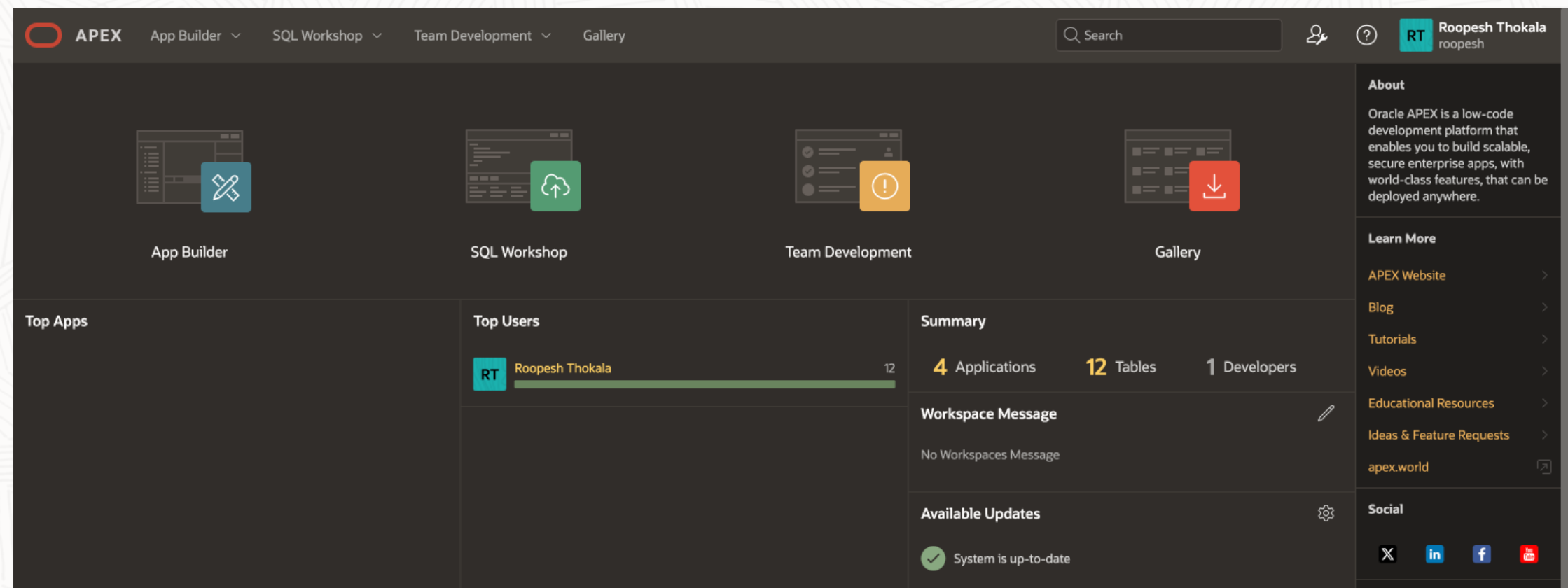
- Simple deployment
- Single installation runs any number of apps
- Scale to hundreds of thousands of users
- Leverages enterprise features of Oracle Autonomous



Product Components

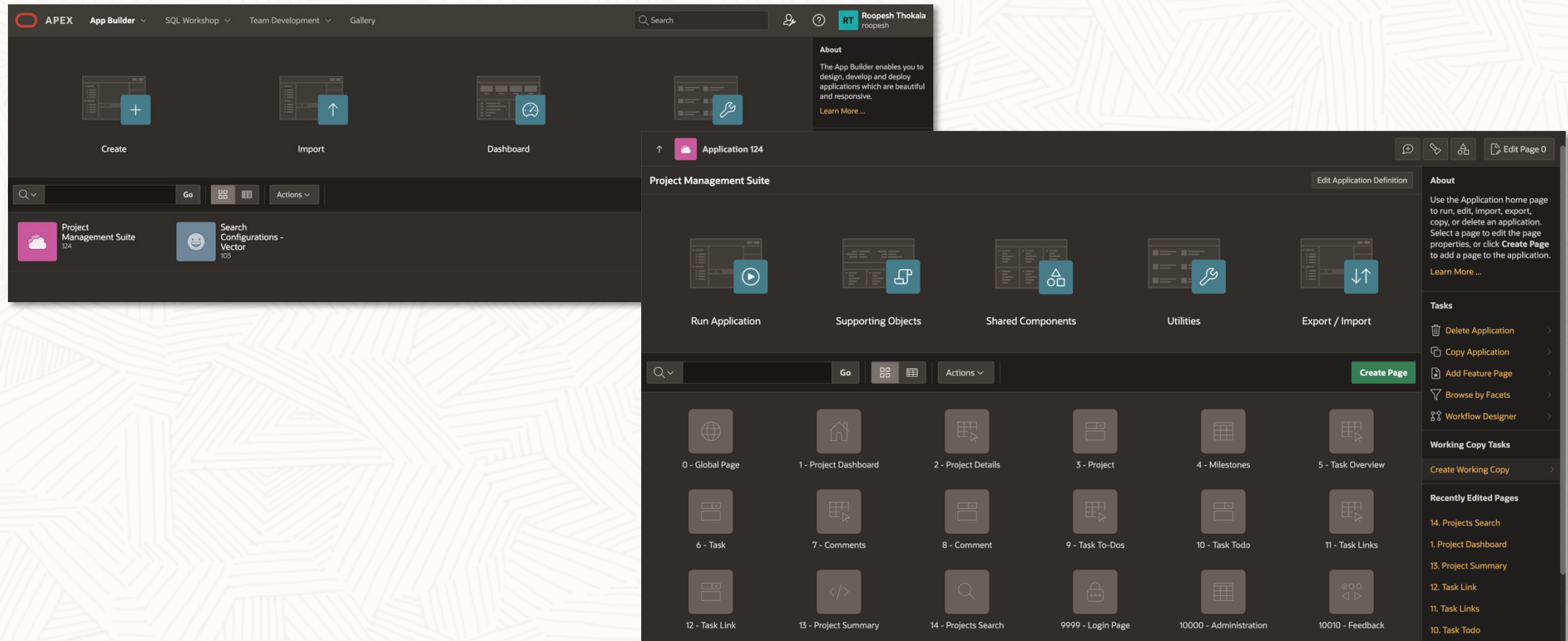
Home Page

Comprehensive Development IDE, Web Application Development, and SQL Database Development



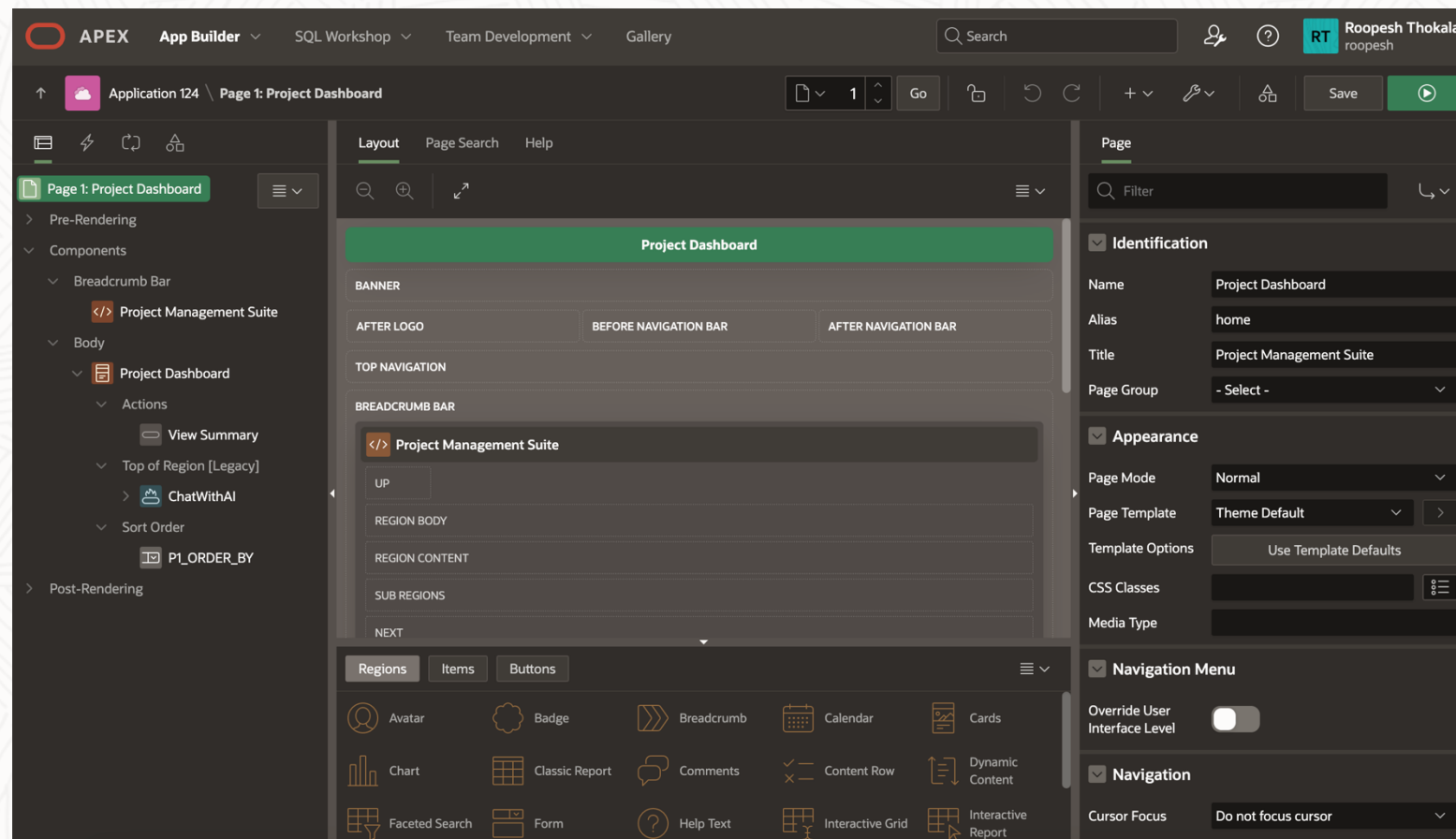
App Builder

Integrated Development Environment (IDE) with Application Development, and Graphical "Page Designer" Features tight SQL and PL/SQL integration



App Builder – Page Designer

Page Designer is a comprehensive Integrated Development Environment (IDE) equipped with a toolbar and multiple panes, offering a full range of features for efficient development.

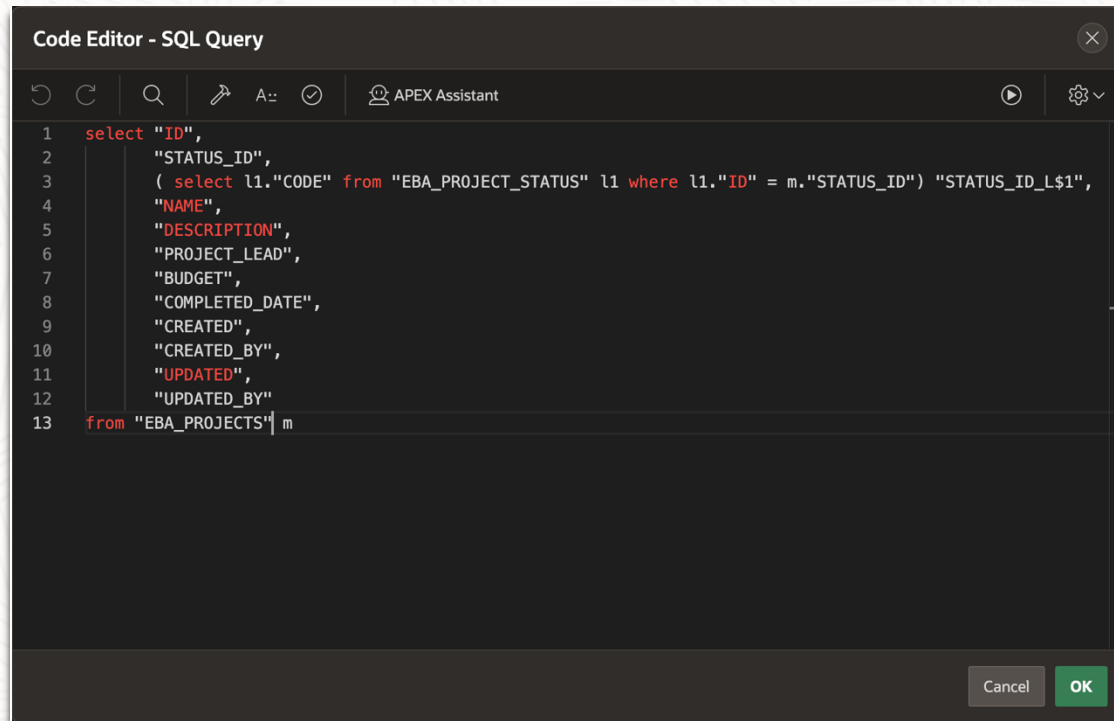


App Builder – Page Designer

- 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
- Advanced Code Editor for defining SQL, HTML, CSS, and text sections
- Highly configurable user interface:
 - Customize and refine the view of the page specific to the current focus
 - Slideable panels
 - Drag and drop tabs

App Builder – Code Editor

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



```
1 select "ID",
2       "STATUS_ID",
3       ( select l1."CODE" from "EBA_PROJECT_STATUS" l1 where l1."ID" = m."STATUS_ID") "STATUS_ID_L$1",
4       "NAME",
5       "DESCRIPTION",
6       "PROJECT_LEAD",
7       "BUDGET",
8       "COMPLETED_DATE",
9       "CREATED",
10      "CREATED_BY",
11      "UPDATED",
12      "UPDATED_BY"
13 from "EBA_PROJECTS" m
```

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

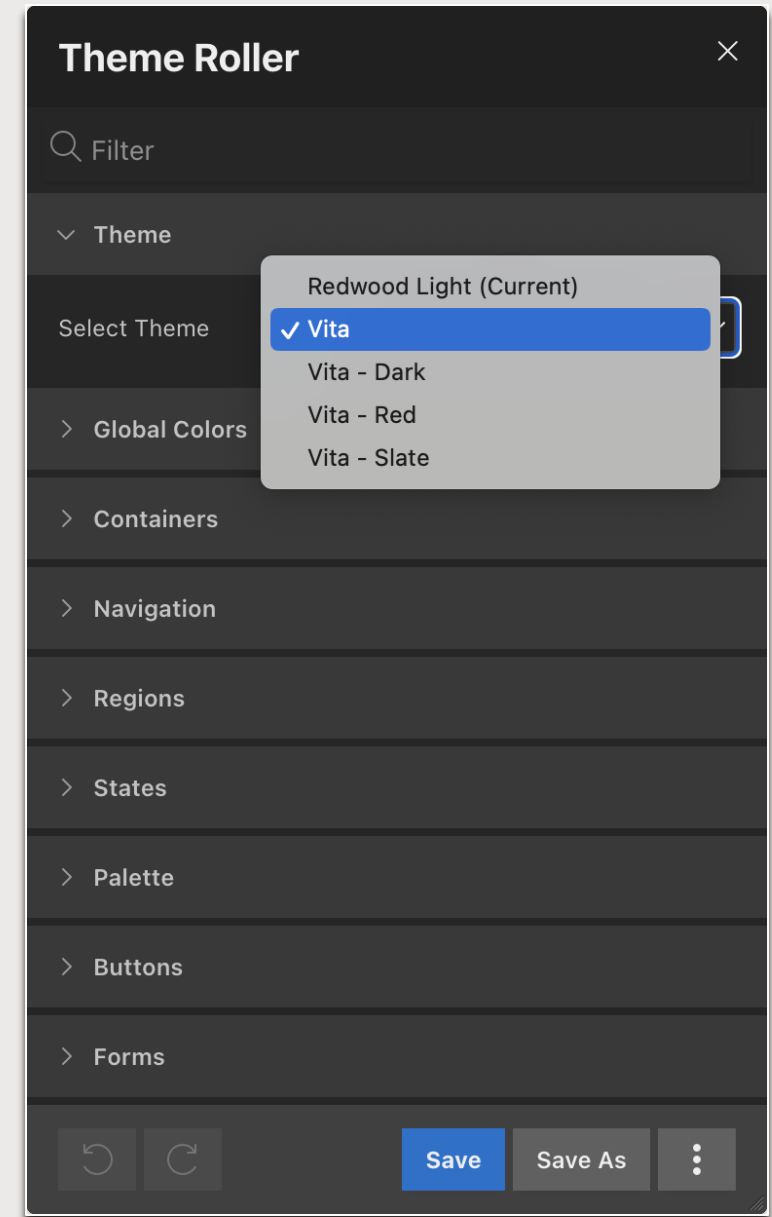
App Builder – Universal Theme

- The default theme for Oracle APEX applications
- Uses responsive HTML5 templates
- Grid-layout for HTML forms
- Modern flat-look
- Ships with a variety of pre-built theme styles
- jQuery Mobile Apps can be transitioned to Universal Theme

App Builder – Universal Theme

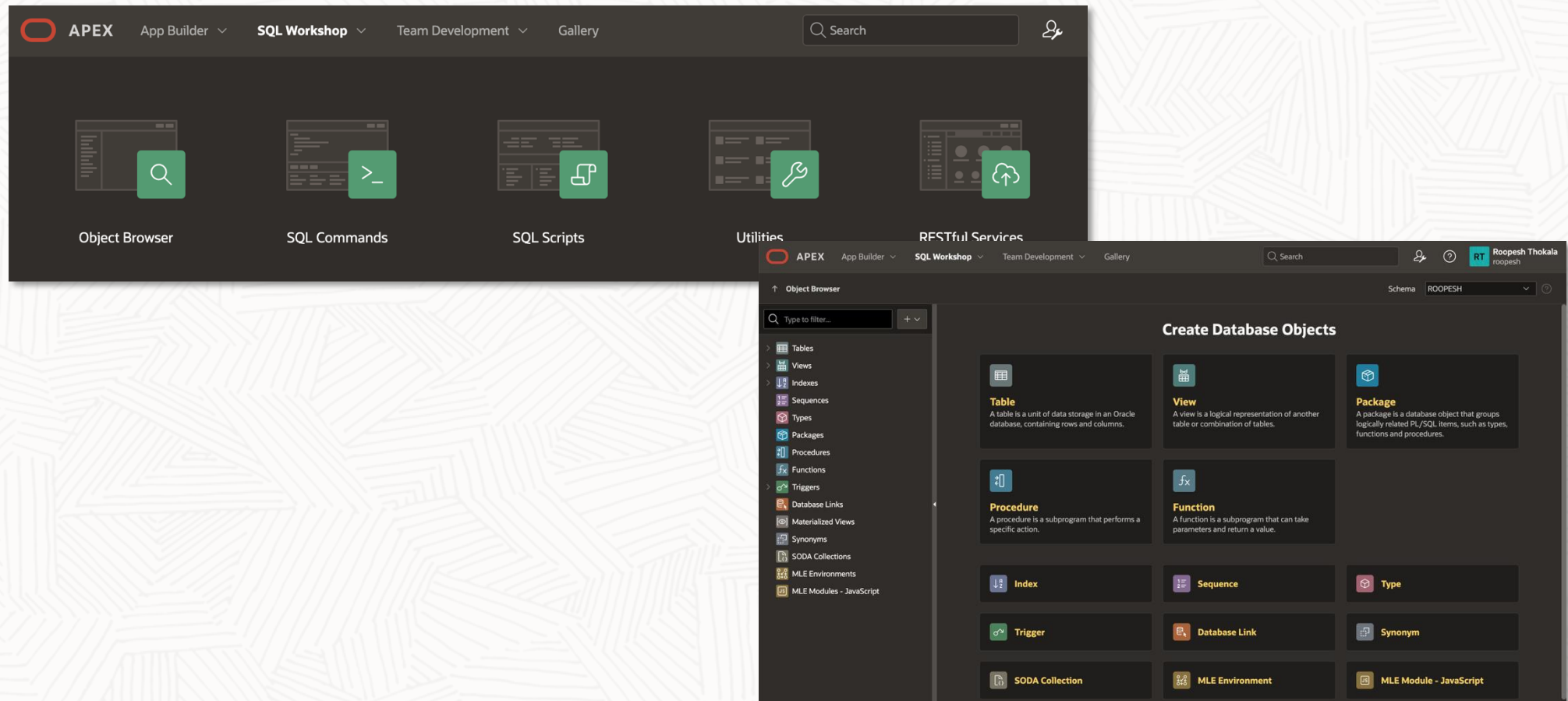
Theme Styles and Theme Roller

- 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



SQL Workshop

Browser-based maintenance of database objects and data
Designed to meet application developers' needs, especially in hosted environments



SQL Workshop – Quick SQL

Rapidly design and prototype data models using a markdown-like shorthand syntax that expands to standards-based Oracle SQL.

```
1 departments /insert 4
2   name /nn
3   location
4   country
5 employees /insert 14
6   name /nn vc50
7   email /lower
8   cost center num
9   date hired
10  job vc255
11
12 view emp_v departments employees
```

```
1 -- create tables
2
3 create table departments (
4   id          number generated by default on null as identity
5   |          | constraint departments_id_pk primary key,
6   name        varchar2(255 char) not null,
7   location    varchar2(4000 char),
8   country     varchar2(4000 char)
9 );
10
11
12 create table employees (
13   id          number generated by default on null as identity
14   |          | constraint employees_id_pk primary key,
15   department_id number          constraint employees_department_id_fk
16   |          | references departments,
17   name        varchar2(50 char) not null,
18   email       varchar2(255 char),
19   cost_center  number,
20   date_hired  date,
21   job        varchar2(255 char)
22 );
23
24 -- table index
25 create index employees_i1 on employees (department_id);
26
27
28
29
30 -- triggers
31 create or replace trigger employees_biu
32   before insert or update
33   on employees
```



Team Development

Team Development has been reimagined as a new and more flexible way to collaborate with peers/teammates and track tasks, features, bugs, and feedback.

App Builder

SQL Workshop

Team Development

Gallery

Search

RT

Roopesh Thokala

roopesh

Issues

Issue Details

Jump to...

New Issue

Welcome to Team Development in Oracle APEX!

#1 Opened 77 seconds ago by Roopesh Thokala · 0 comments

Jump to Latest

Actions

RT

Roopesh Thokala

Created this issue 77 seconds ago

Hi there!

This is your very first issue! You can create issues to keep track of tasks, features, bugs, and feedback for all of your APEX projects! You can add labels to issues, add assignees, set milestones, and even apply formatting using Markdown shorthand!

Below is a quick sample of what you can do with Markdown:

Orionis bellica Stygias partes

Solibus an rutilis cornu

Lorem markdownum formosae. Est medio et illi adunca? Miserum Phaethon, Editus, abrupta colonos; Aeeta annum; facere pruniceum domat, discussisque saevo, Tereo. Quid noctis adhuc, nisi nemo dignos, aures sonus mentae conspecta?

```
device_intranet_cloud(page_disk);
if (81 >= scanner + realityHoneypot + intellectual_heuristic) {
  ataDataWeb -= fileWormCamera + hypertext;
  hdtv(-3 - 2);
  folder(controlHtml, model - 5);
}
```

Consortia dum mea aethere Deionidenque vixque est

Forma duris igne duritiem Minervaetransformabantur, moriemur manibusque nulla eripienda est rima grave tu. Illis succedat fit. Ter amo quod plurima, non ab

About

Issue Details enables you to manage the life of an issue. On the main page you'll see the issue timeline showing all events and comments in order of occurrence. On the right you'll see the options that help classify the issue.

[Learn More ...](#)

Assignees

No Users Assigned

Labels

No Labels Assigned

Milestones

No Milestones Assigned

Notifications

Subscribe

☐

Attachments

View Attachments



APEX

App Builder ▾ SQL Workshop ▾ Team Development ▾ Gallery

Q Search

? RT

Q Search Apps

Sample AppsStarter AppsUtility AppsCustom Apps

Oracle Cloud Apps REST Data Source Explorer

Oracle

This application shows all Oracle Cloud Applications REST Data Sources in the apps in your workspace and helps you retrieve useful, searchable reference info about them including business object attributes and child objects available. It also lets you discover what other REST endpoints are available for use. Easily copy REST endpoint URLs for List of Values, child objects, and other available services to the clipboard for use in the APEX Builder's Create REST Data Source wizard.

24.1.0

⋮

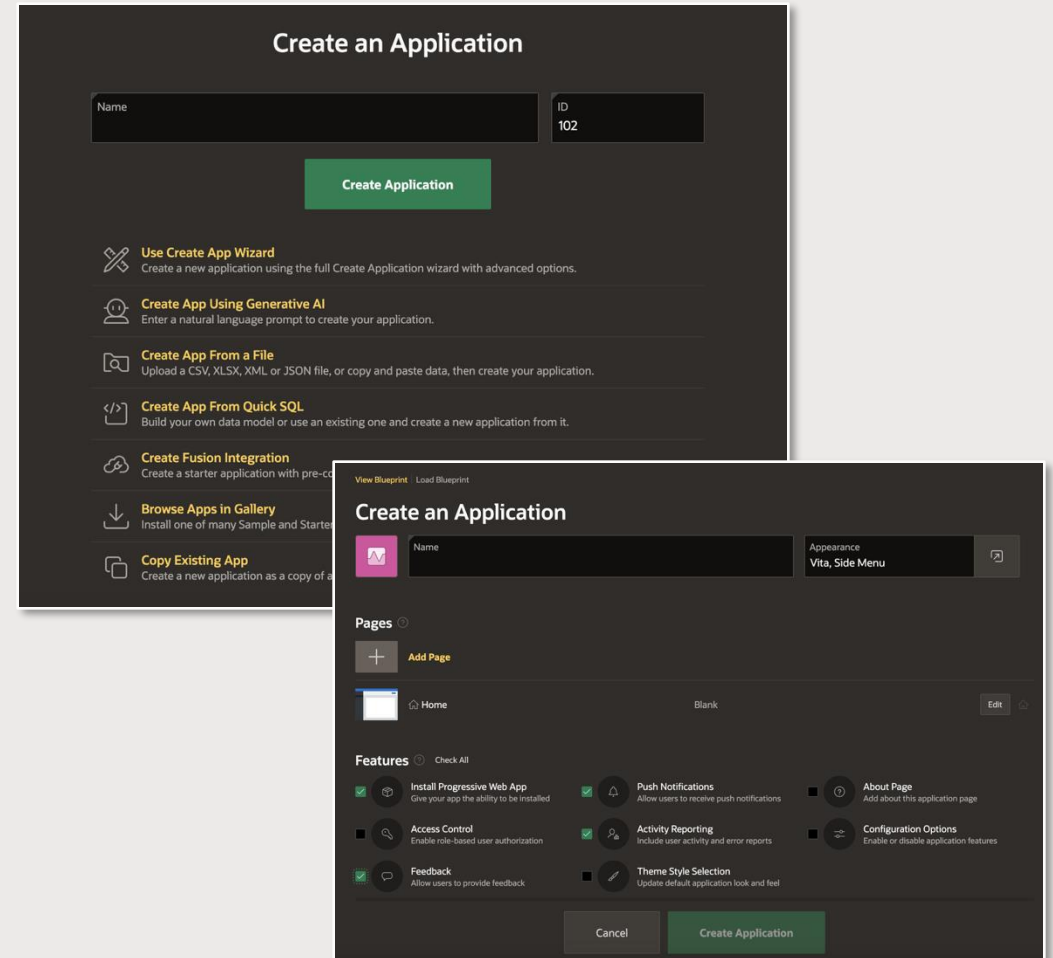
Install



Features

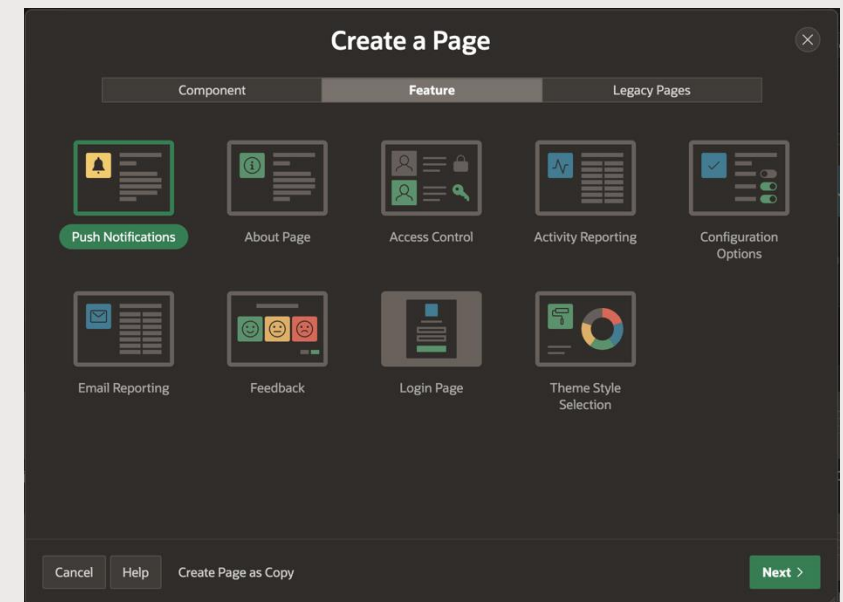
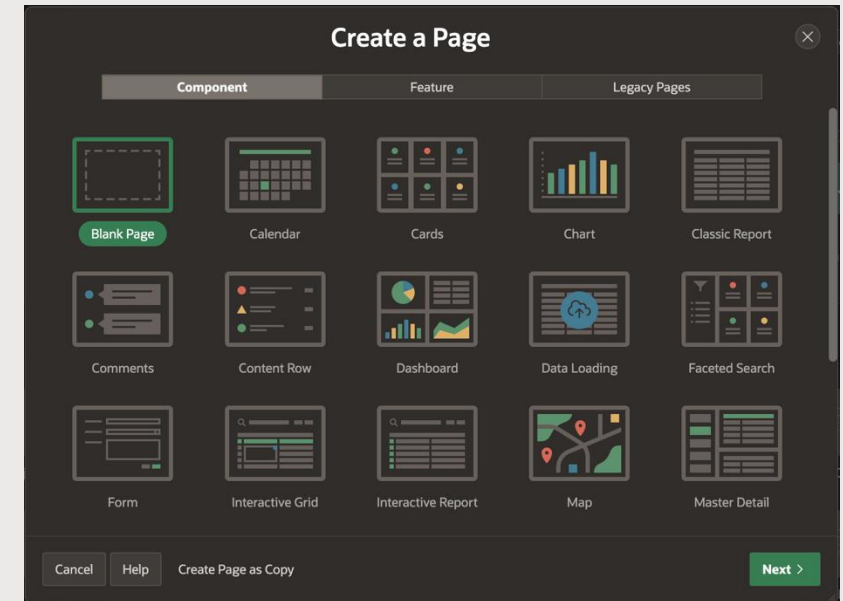
Create Application Wizard

- Simple, modern wizard for creating pages.
- Allows creation of numerous page types including Dashboards, Master-Detail, etc.
- Supports adding common frameworks or "Features" when creating an application such as access control, activity reporting, theme selection, and more
- Customize user interface options such as Theme Style, application icon, and page icons



Create Page Wizard

- Simple, modern wizard for creating individual pages in an existing app.
- It allows the creation of more advanced pages, such as Dashboards, additional Master-Detail page types, List Views, mobile-first reports, and more.
- Supports adding common frameworks or "Features" to an existing application such as access control, activity reporting, theme selection, and more



Interactive Reports

Powerful Reporting capabilities → End-user customizable

Interactive Report

Q

Go

1. Primary Report

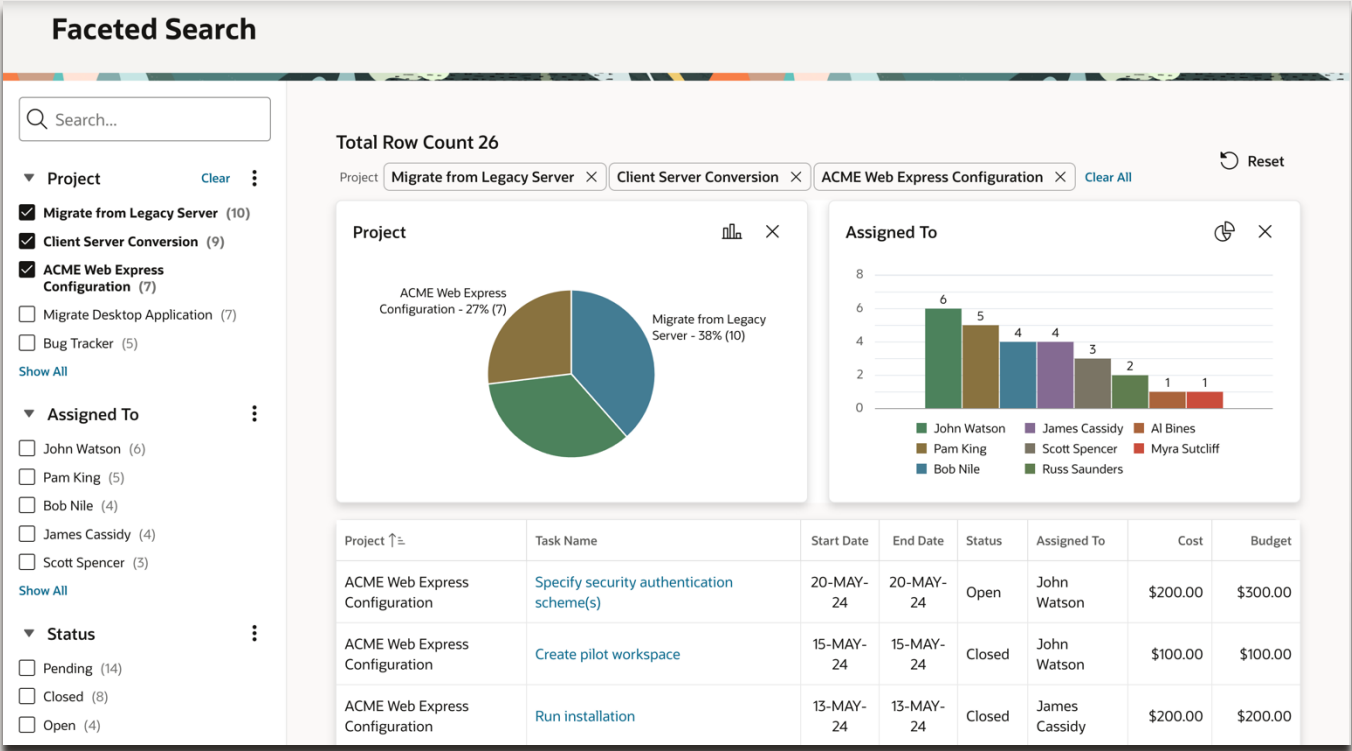
Actions

	Project	Task Name	Start Date	End Date	Status	Assigned To	Cost	Budget	Available Budget
	Bug Tracker	Document quality assurance procedures	24-MAR-24	27-MAR-24	Closed	Myra Sutcliff	3,000	2,000	-1,000
	Bug Tracker	Review automated testing tools	28-MAR-24	30-MAR-24	Closed	Myra Sutcliff	750	1,500	750
	Bug Tracker	Implement bug tracking software	12-APR-24	12-APR-24	Closed	Myra Sutcliff	100	100	0
	Discussion Forum	Identify owners	13-APR-24	13-APR-24	Closed	Hank Davis	250	300	50
	Maintain Support Systems	HR software upgrades	16-APR-24	19-APR-24	Closed	Pam King	8,000	7,000	-1,000
	Discussion Forum	Install ACME Web Express application on internet server	19-APR-24	19-APR-24	Closed	Hank Davis	100	100	0
	Bug Tracker	Train developers on tracking bugs	19-APR-24	24-APR-24	On-Hold	Myra Sutcliff	1,000	2,000	1,000
	Maintain Support Systems	Apply Billing System updates	20-APR-24	22-APR-24	Closed	Russ Saunders	9,500	7,000	-2,500
	Public Website	Determine host server	23-APR-24	23-APR-24	Closed	Tiger Scott	200	200	0
	Public Website	Check software licenses	23-APR-24	23-APR-24	Closed	Tom Suess	100	100	0



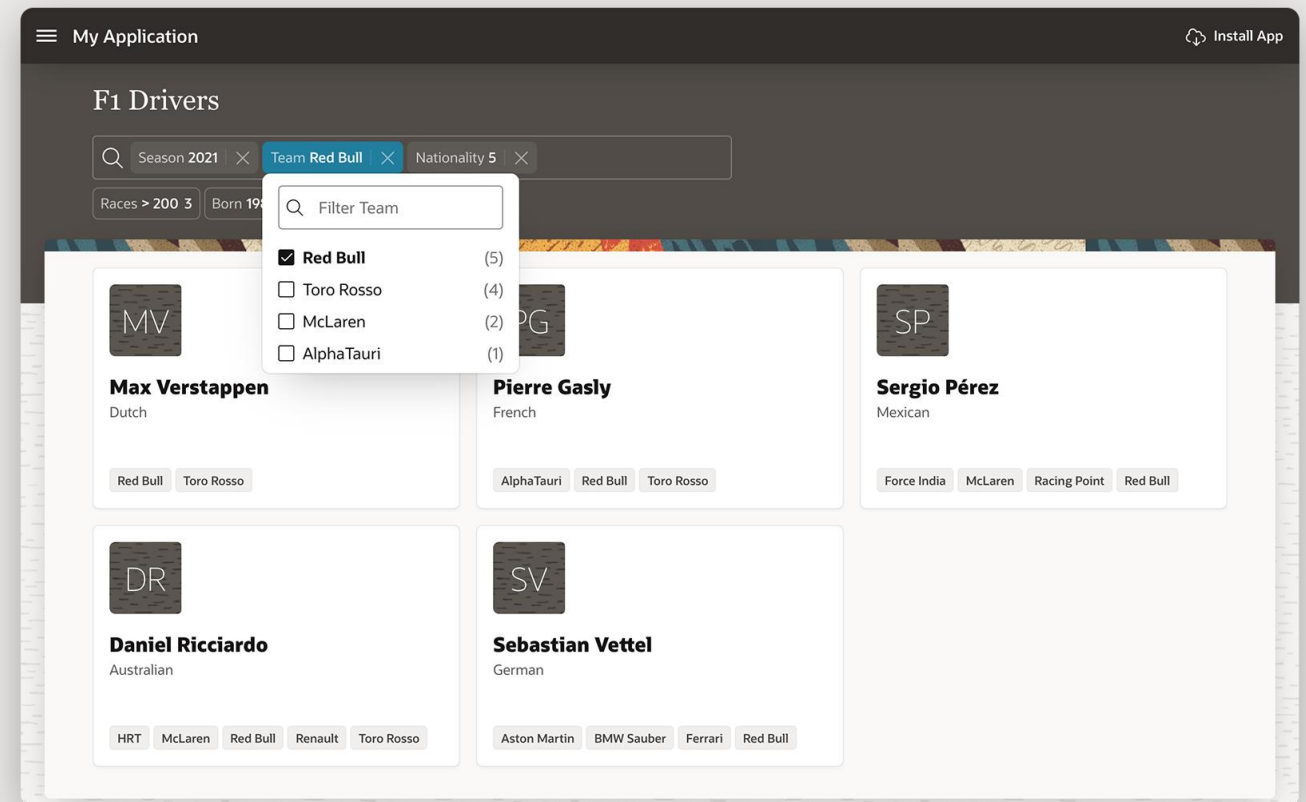
Faceted Search

- A powerful way to filter and display your data.
- Faceted Search will make it easier for your users to find the data they want.



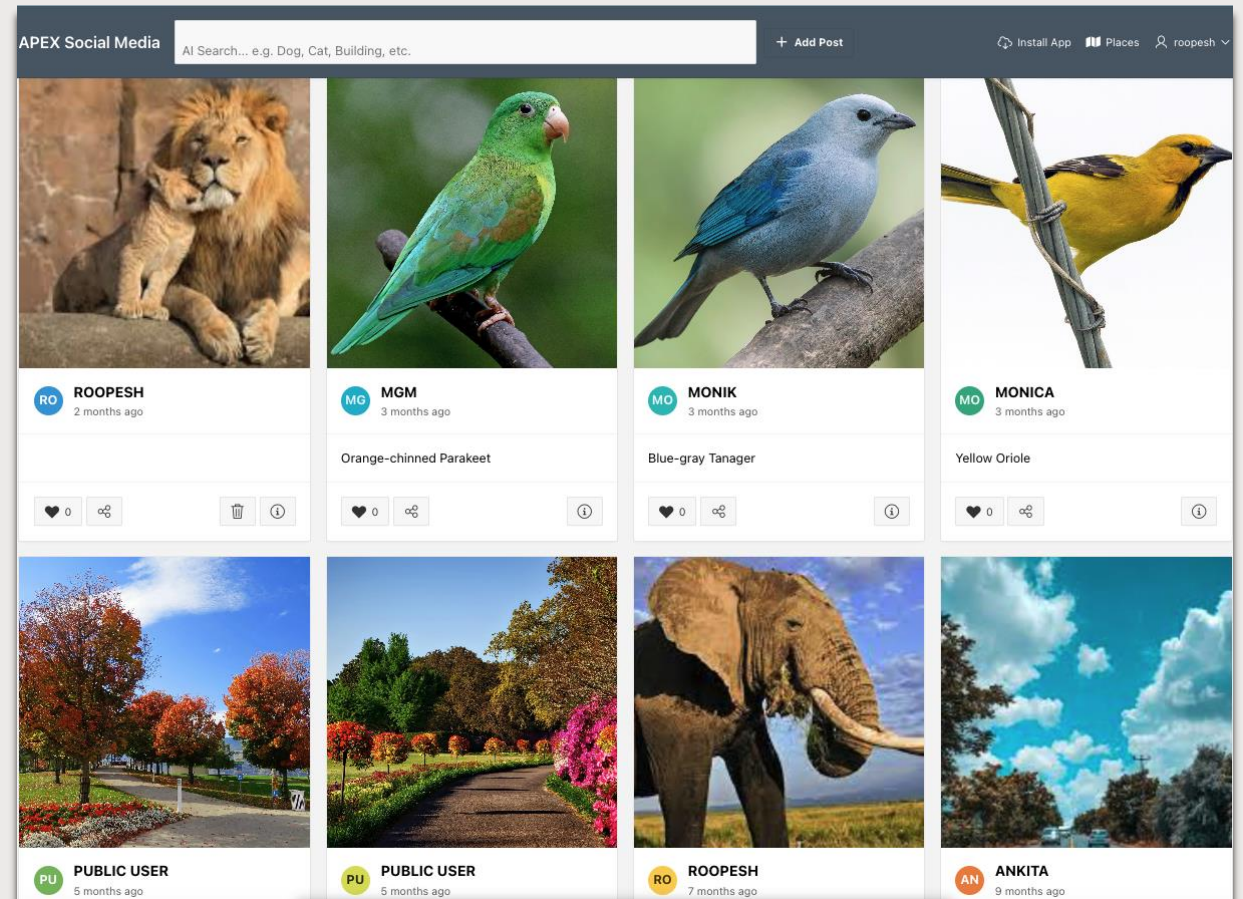
Smart Filters

- A new search component that allows users to quickly narrow data down with filter suggestions or search terms
- Features a powerful Search Bar that provides built-in auto-complete for your filters, supports searching for multiple terms, and provides easy keyboard navigation.
- Filters are evaluated against your data and displayed below the search bar as chips



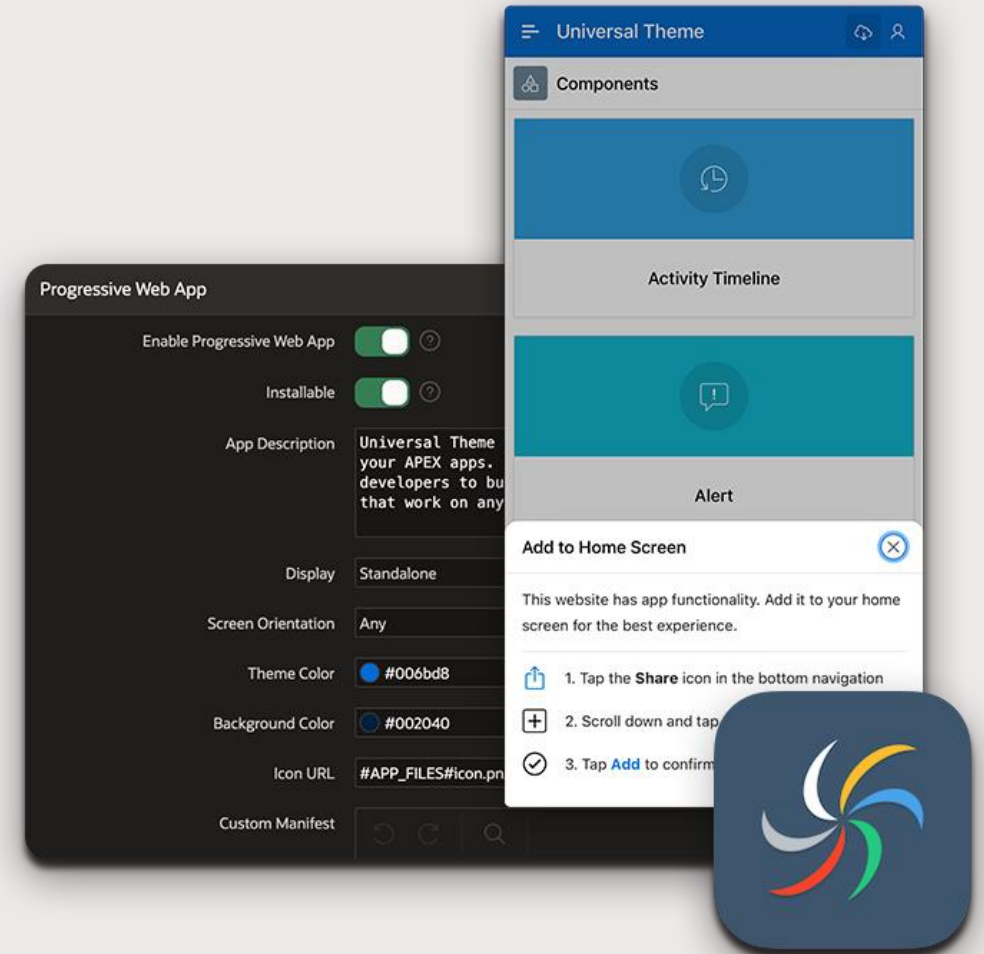
Cards

- Create cards as a native region type and control the layout declaratively.
- Provides entry to more detailed information and you can include a number of actions declaratively.



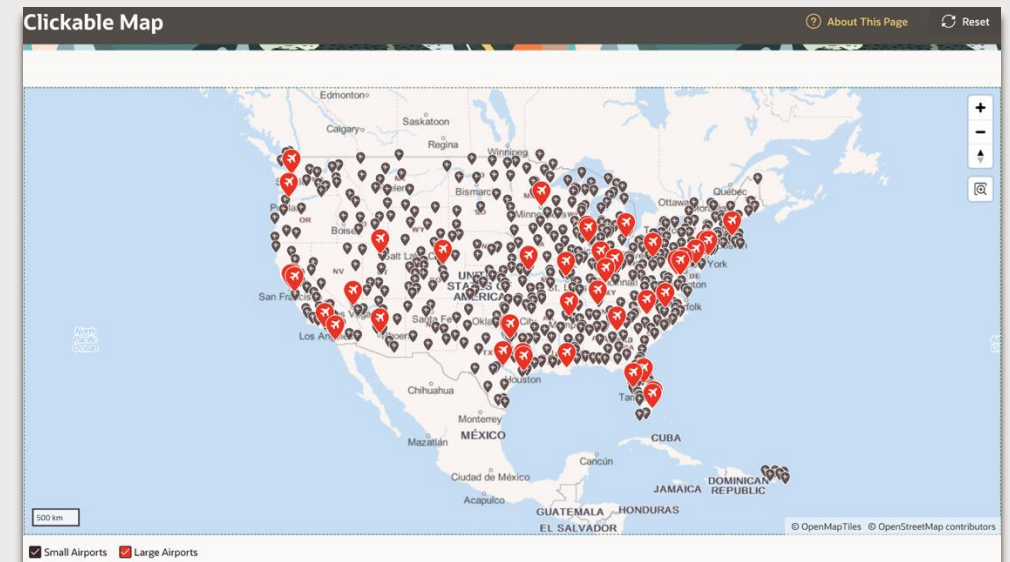
Progressive Web Applications (PWA)

- Ability to install an APEX app as a Progressive Web App (PWA)
- Serves a customizable offline page when users are offline and can't request the network
- Improves page load rendering time with a new browser cache architecture for static files (APEX core files and APEX app files)
- Easily send notifications to other devices with real-time updates
- Send notifications, fetch geolocation, share APEX data with other apps, access the camera, and more.
- Customize your app's appearance, including home screen icons, color schemes, logos, and more.



Maps

- The native Map component allows you to add powerful, feature-rich, and interactive maps.
- It is powered by Oracle e-Location Service, so it is ready to use; no API Key is required.
- Create maps with layers for points, lines, polygons, 3D polygons, and heat maps.
- Maps now support custom background tiles enabling you to visualize your spatial data in more ways than ever before.
- Map Backgrounds can be defined as Raster, Vector, and OGC WMS tile layers.



Interactive Grid

- Modern, rich & interactive multi-row editing component
- Use of existing Item types
- Declarative support for Cascading LOVs and Dynamic Actions
- Upgrade utility for Tabular Forms
- Master Detail / Detail

Interactive Grid

Q v		Search: All Text Columns		Go	Primary Report ▾		Actions ▾		Edit	Save	Add Row		Reset	
<input type="checkbox"/>	☰	Project	Task n	Start date ↑	End date	Status	Assigned to	Cost	Budget	Available Budget				
<input checked="" type="checkbox"/>	☰	Bug Tracker	D...	24-MAR-24	27-MAR-24	Closed	Myra Sutcliff	\$3,00...	\$2,000.00	-\$1,000.00				
<input type="checkbox"/>	☰	Bug Tracker	R...	28-MAR-24	30-MAR-24	Closed	Myra Sutcliff	\$750.00	\$1,500.00	\$750.00				
<input type="checkbox"/>	☰	Bug Tracker	I...	12-APR-24	12-APR-24	Closed	Myra Sutcliff	\$100.00	\$100.00	\$0.00				
<input type="checkbox"/>	☰	Discussion Forum	Id...	13-APR-24	13-APR-24	Closed	Hank Davis	\$250.00	\$300.00	\$50.00				
<input type="checkbox"/>	☰	Maintain Support Systems	H...	16-APR-24	19-APR-24	Closed	Pam King	\$8,00...	\$7,000.00	-\$1,000.00				
<input type="checkbox"/>	☰	Bug Tracker	Tr...	19-APR-24	24-APR-24	On-Hold	Myra Sutcliff	\$1,000...	\$2,000.00	\$1,000.00				
<input type="checkbox"/>	☰	Discussion Forum	In...	19-APR-24	19-APR-24	Closed	Hank Davis	\$100.00	\$100.00	\$0.00				
<input type="checkbox"/>	☰	Maintain Support Systems	A...	20-APR-24	22-APR-24	Closed	Russ Saunders	\$9,500...	\$7,000.00	-\$2,500.00				
<input type="checkbox"/>	☰	Employee Satisfaction Survey	C...	23-APR-24	24-APR-24	Closed	Irene Jones	\$1,200...	\$800.00	-\$400.00				
<input type="checkbox"/>	☰	Public Website	D...	23-APR-24	23-APR-24	Closed	Tiger Scott	\$200.00	\$200.00	\$0.00				
<input type="checkbox"/>	☰	Public Website	C...	23-APR-24	23-APR-24	Closed	Tom Suess	\$100.00	\$100.00	\$0.00				

Interactive Grid

Master Detail Layout – N-levels wide or deep



Modal Dialogs

Readily switch between normal, modal, and non-modal page mode

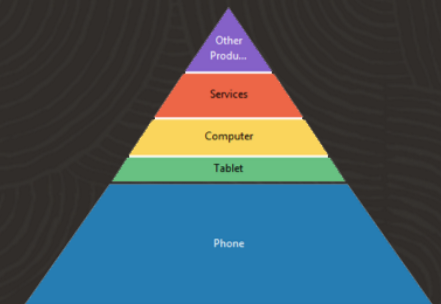
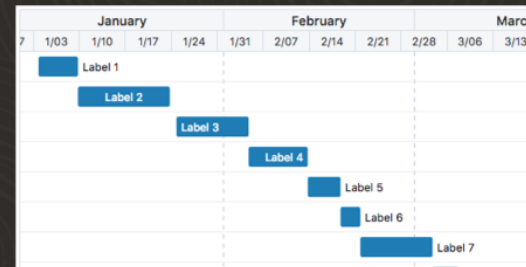
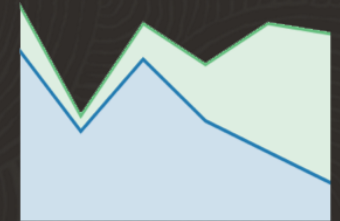
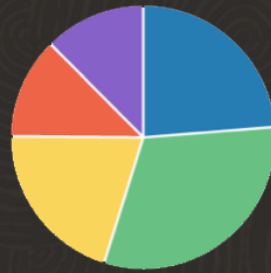
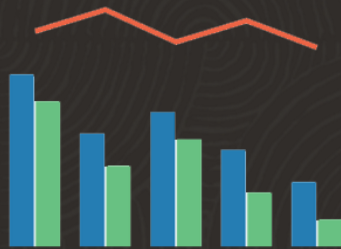
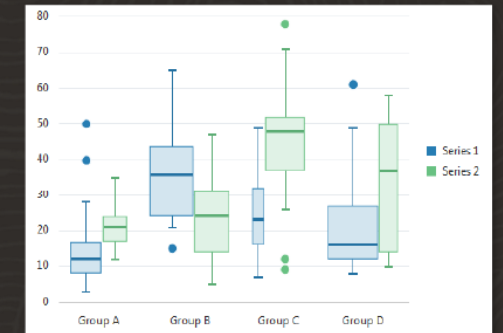
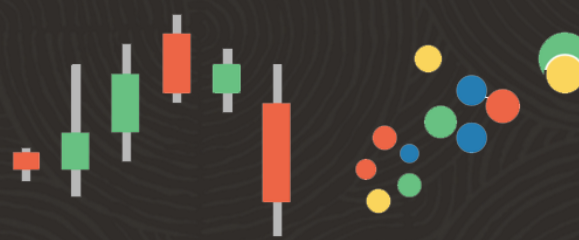
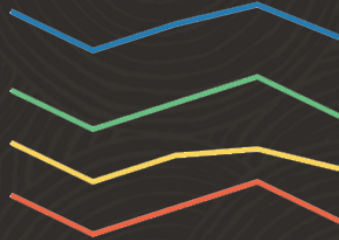
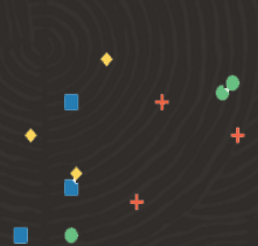
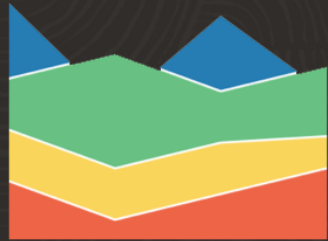
- A modal dialog is a stand-alone page, not a region on a page
- Any page be created as a dialog page
- Supports all the functionality of a regular page, including computations, validations, processes, and branches

The screenshot shows an Oracle APEX application interface. A modal dialog titled "Maintain Project" is open, allowing users to edit project details. The background shows a table with project information, including columns for Project, Task, Cost, Budget, and Available Budget. The dialog contains the following fields and values:

- Project: Bug Tracker (dropdown)
- Task Name: Document quality assurance procedures (text input)
- Start Date: 24-MAR-24 (calendar icon)
- End Date: 27-MAR-24 (calendar icon)
- Status: Closed (dropdown)
- Assigned To: Myra Sutcliffe (text input)
- Cost: 3000 (text input)

At the bottom of the dialog, there are three buttons: "Cancel", "Delete", and "Apply Changes".

Charting Engine



Charting Engine

Easy to use, fully managed, enterprise-class service on Oracle Cloud

- Based on Oracle JET Data Visualization Components
- Oracle JET (JavaScript Extension Toolkit) is open source
- The JavaScript-based solution, data being provided in JSON format
- Highly Customizable
- Using 'JavaScript code' to provide function to be called when the chart is initialized
- Using Dynamic Actions to add interactive behavior
- Built-in Accessibility Support
- Built-in Responsive Design Support



Calendar

Different views, drag and drop capability

- All Projects -

< > today

May 2024

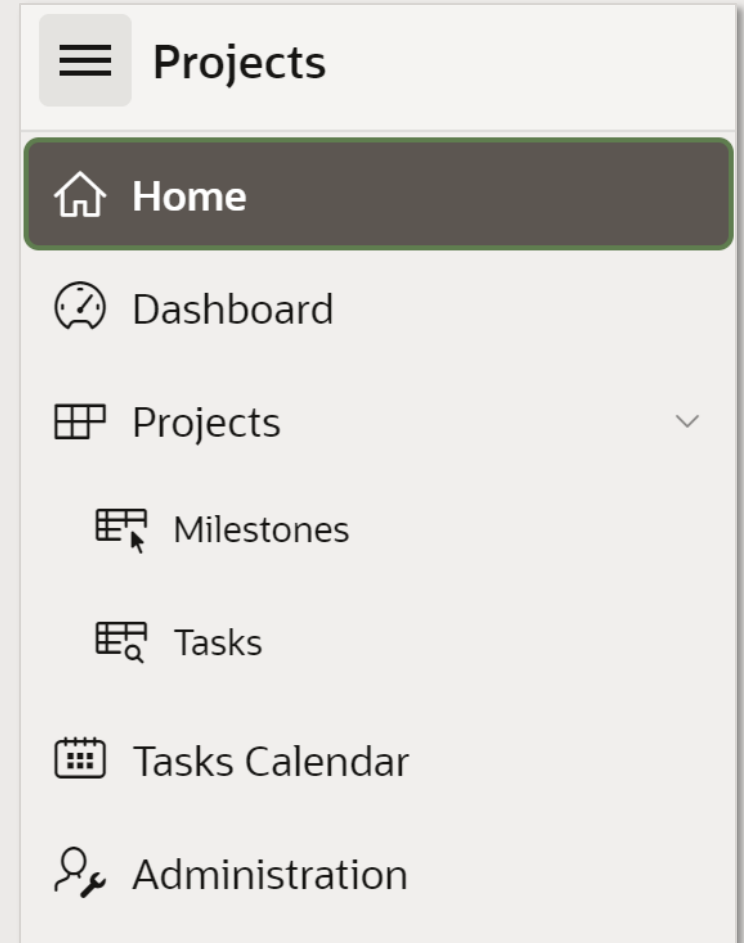
month week day list

Sun	Mon	Tue	Wed	Thu	Fri	Sat
28	29	30	1	2	3	4
Identify pilot desktop ap		Complete plan Migrate pilot applications to ACME Web Express			Check software licenses	Plan migration schedule
		Measure effectiveness o				
5	6	7	8	9	10	11
Create training workspace Identify pilot Client Serv		Migrate pilot Client Server to ACME Web Express Collect mission-critical spreadsheets +3 more		Identify server requiremer	Determine Web listener Lock spreadsheets	Customize solutions Post-migration review
12	13	14	15	16	17	18
Customize solutions	Run installation	Implement in Productior Plan migration schedule	Create pilot workspace	Conduct project kickoff Train Administrators of I	Get RFPs for new server	Create ACME Web Express
19	20	21	22	23	24	25
Create ACME Web Express applications from spreadsheets Migrate Client Server applications +2 more			Plan rollout schedule	Load current tasks and e	Select servers for Development, Test, Production Test migrated applications	
26	27	28	29	30	31	1
Select servers for Develop	Migrate desktop applications					
		User acceptance testing				



List-based Navigation Menus

- Available as the top navigation menu and side menu
- Implemented as standard APEX lists
- Supports multi-level hierarchical menu structures
- Provides accessible pull-down menus
- Alternative to using traditional tabs



Dynamic Actions

Declaratively define rich client-side interactivity without writing JavaScript or AJAX

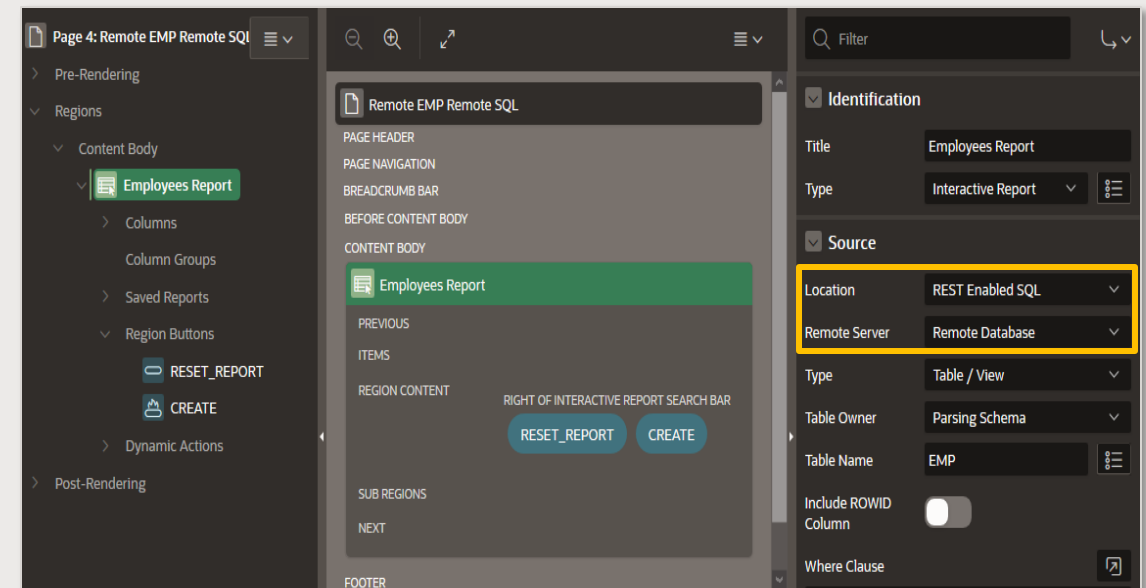
- Use Dynamic Actions to create complex client-side behaviours without JavaScript
- Set conditions for when actions occur and determine which elements are affected and how they are impacted
- Create or use existing page components (items, buttons, regions) that trigger the dynamic action
- Dynamic Actions also mean that Oracle maintains the code and security assessment of the JavaScript

The screenshot displays the Oracle APEX 'Sample Dynamic Actions' interface. The left sidebar contains a navigation menu with options: Home, Simple, Style, Server Side, Execute PL/SQL Code, Set Values (SQL), Set Values (PL/SQL), Timer, Refresh, Filter and Refresh, Shuttle Refresh, Complex, and Administration. The main content area is titled 'Disable/Enable Edit' and includes a 'Cancel' button and an 'Apply Changes' button. The form contains the following fields:

Field	Value
Employee Number	7839
Name	KING
Job	PRESIDENT
Manager	
Hire date	17-NOV-1981
Salary	5000
Commission	
Department	ACCOUNTING

REST Enabled SQL Support

- Create and maintain References to REST Enabled SQL Instances (Oracle REST Data Services) in Shared Components: A name, Endpoint URL, and Authentication information
- Use a REST Enabled SQL Service and therefore a remote Oracle database as the Data Source for Oracle APEX components like:
 - Classic Reports, Interactive Reports
 - Reflow Report, Toggle Columns Report
 - Tree Region, JET Charts
 - CSS Calendar
 - PL/SQL Process



REST Enabled SQL Support

- REST Data Sources are a declarative method to define references to external REST APIs and generic JSON data feeds.
- REST Data Sources store additional metadata about how to parse response data and map it as a virtual table with rows and columns.
- A module can contain one or many operations which are the references to a concrete external web service.
- Create and maintain REST Data Sources in Shared Components.

The screenshot shows the 'REST Data Source' configuration page in Oracle APEX. The breadcrumb trail at the top is 'Application 38147 \ Shared Components \ REST Data Sources \ Sample Application - Github Repository Commits'. The page has tabs for 'Show All', 'REST Data Source' (selected), 'Settings', 'Authentication', 'Data Profile', 'Operations', 'Parameters', 'Subscription', 'Open API', and 'Advanced'. The 'REST Data Source' section contains the following fields:

- Name: Sample Application - Github Repository Commits
- REST Data Source Type: Simple HTTP
- Remote Server: Sample Application - Github Repositories
- Base URL: https://api.github.com/
- URL Path Prefix: repos/oracle/:repo/commits

The 'Settings' section has 'Pagination Type' set to 'No Pagination'. The 'Authentication' section has 'Credentials' set to '- Select -'. The 'Data Profile' section has an 'Edit Data Profile' button. Below these sections is a table showing the data profile:

JSON	Table	53	9	0
Response Format	Returns	Columns	Visible	Derived

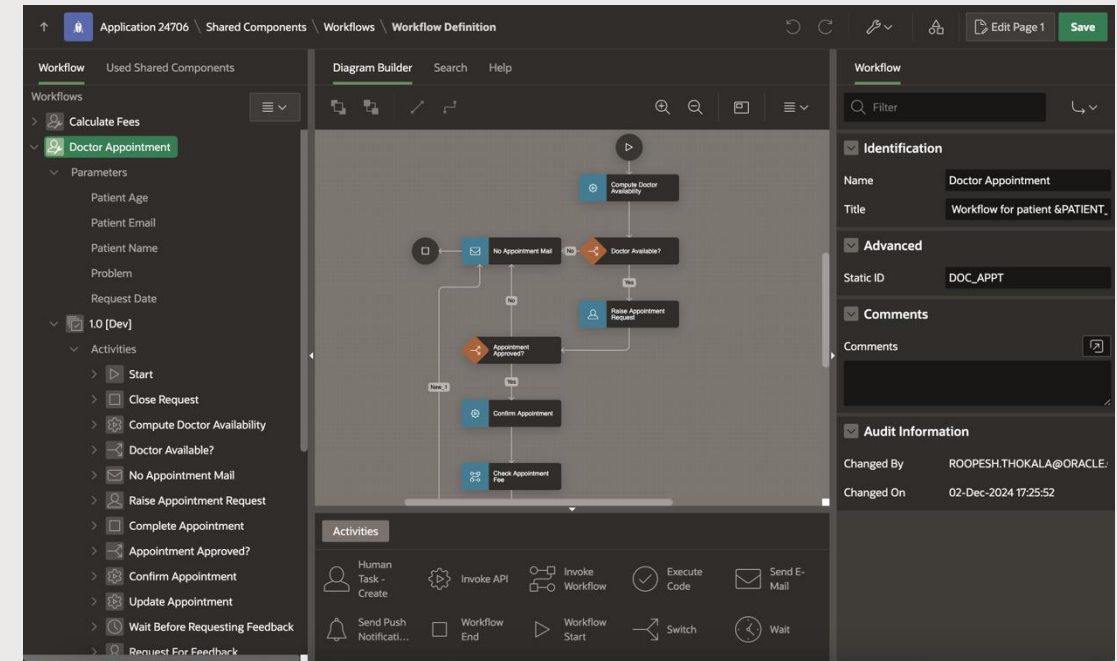
Consuming External REST APIs

- Use as data sources for Oracle APEX components such as:
 - Interactive Report, Classic Report
 - JET Chart, CSS Calendar
 - Tree Region, Reflow Report, Toggle Column Report
- Post Processing SQL modifies data before being processed by an Oracle APEX component:
 - Apply SQL functions, aggregations, join to local tables, etc.
 - Avoid unnecessary HTTP requests by using Caching

Native Digital Process Automation & Human Workflow Capabilities

Workflows are the automation of business processes, where documents, information, or tasks are passed from one participant to another for action according to a set of rules

- End-to-end business process automation:
 - System to system
 - Human workflow & approvals
- Key features:
 - **Visual workflow designer** to create workflows
 - **Workflow runtime engine** to execute workflows
 - **Workflow console** to monitor and administer workflows
 - Use the **Invoke Workflow** feature to reuse workflows and break down complex tasks into smaller, manageable units
 - **Copy** a Workflow definition from one application to another
 - Integration via **REST APIs**



The screenshot shows the 'Task Definition: Laptop Approval' form. It includes fields for Name, Static ID, Type (Approval Task), Initiator Can Complete (toggle), Subject, Priority, Task Details Page URL, Actions Source (SQL Query), and Actions SQL Query. The SQL query is as follows:

```

1 select ename,
2       case laptop_type when 'MAC' then 'MacBook Pro' when 'WIN' then 'Lenovo T490' and as laptop_typ
3       apex_app_setting.get_value('DEMO_NOTIFICATION_EMAIL') as demo_notification_email
4 from eba_demo_appr_laptop_requests lr
5 left outer join eba_demo_appr_emp e on e.employee_id = lr.employee_id

```

The form also includes a Deadline section with a Due On Type and Scheduler Expression.

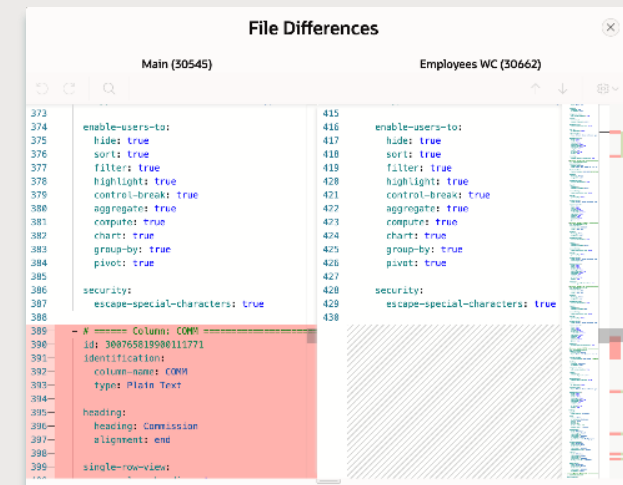
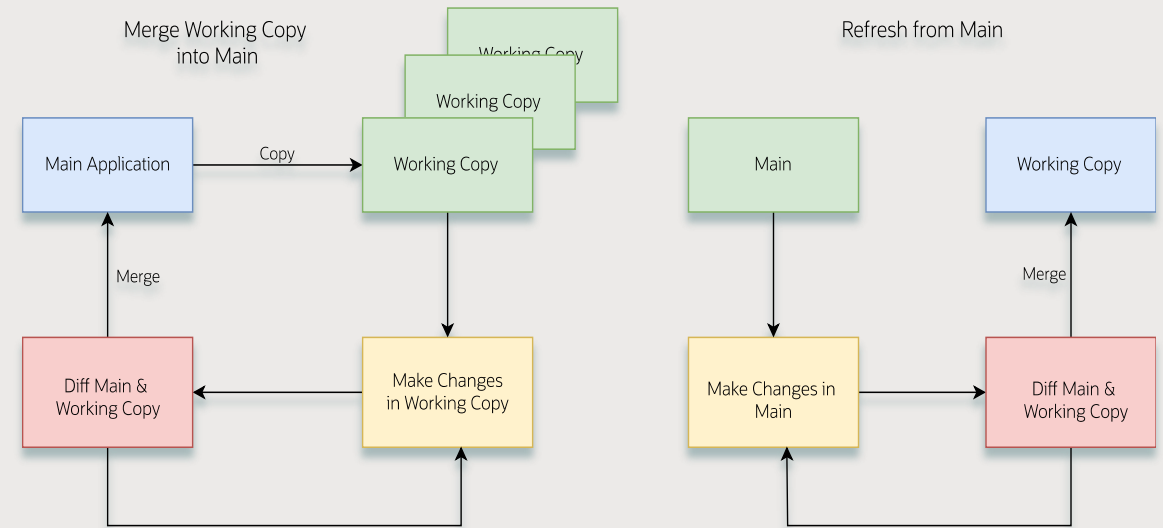
Integrating with Fusion Applications

- Quickly start Fusion Applications projects with the new **Fusion Integration** option, featuring pre-configured SSO, identity propagation, and testable REST setups.
- Easily build APEX apps using any **Fusion REST APIs**, including the latest **/api/boss** endpoints.
- Automatically discover supported **API operations** and **data profiles**.
- Optimize performance by delegating tasks like filtering and sorting to APIs, transferring only necessary data.



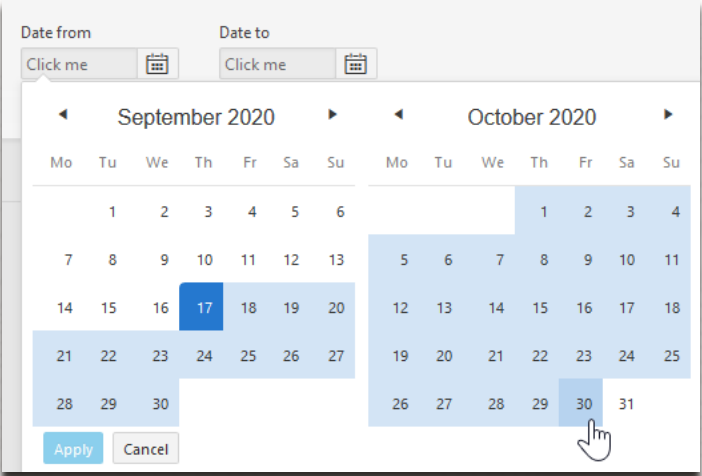
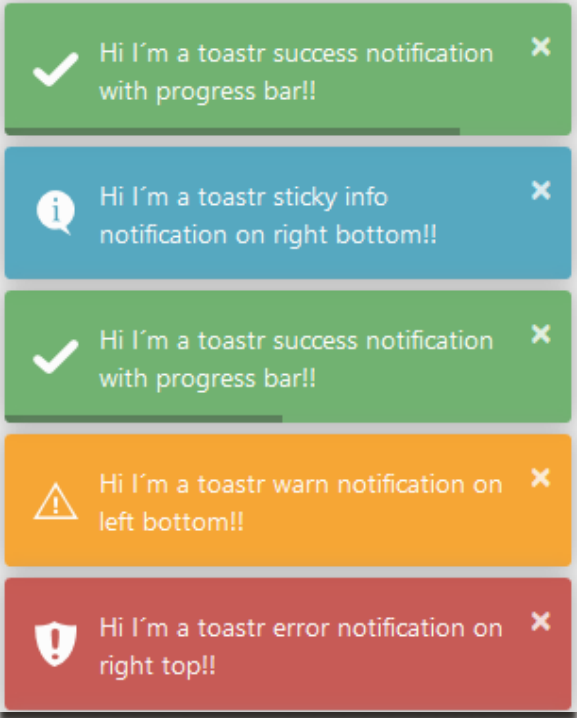
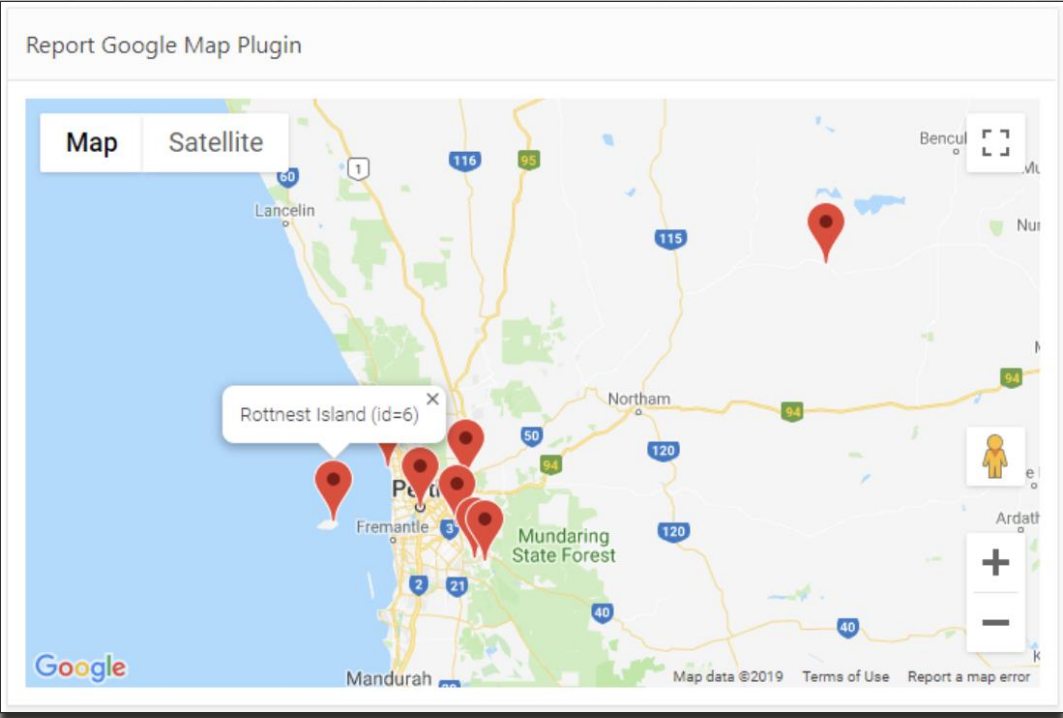
Working Copy

- Allows developers to create a working copy of an existing app, diff changes between the copy and main app, and then merge changes back into the main app
- Enables multiple developers to work on different features in isolation of each other on the same app
- Comparison of changes is done by performing a split YAML export of both applications



Plug-Ins

Extend applications with custom components such as items and regions



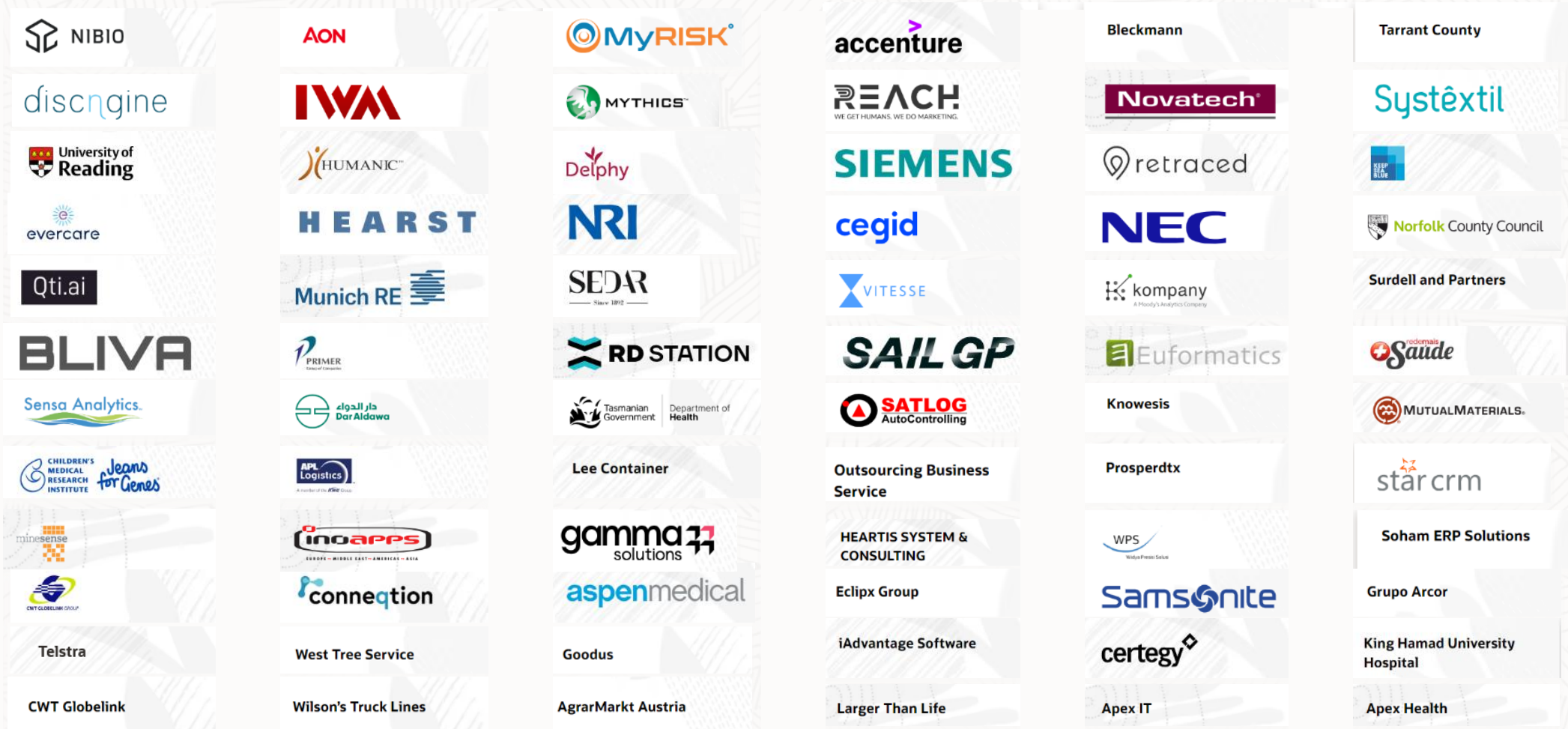
apex.world/ords/f?p=100:700



Customer Stories



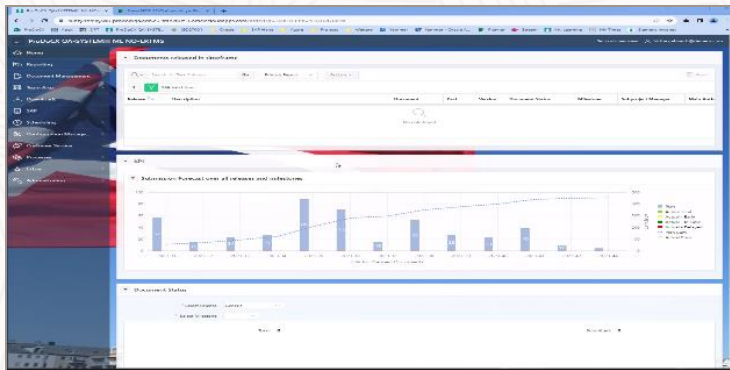
Oracle APEX: World's Most Popular Enterprise, Low-Code Platform



Source: <https://www.oracle.com/customers/?search=APEX>

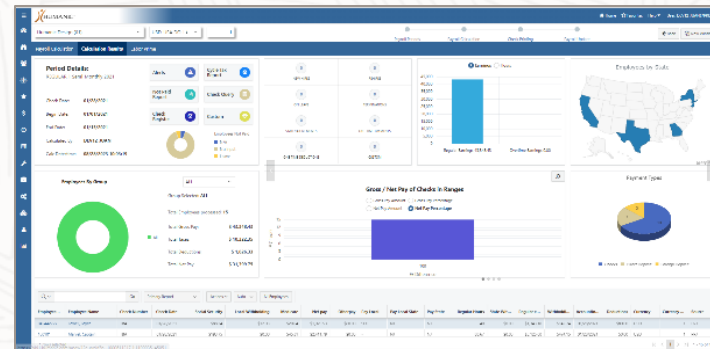
APEX Customer Examples

Siemens Mobility



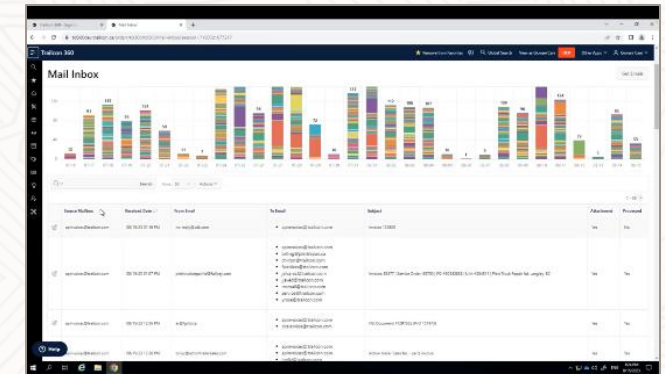
- Leader in transportation solutions
- Built an integrated project mgmt platform with APEX. Integrates 14+ systems – SAP, Snowflake
- Runs on OCI
- Built by 3 devs in <3 months

Humanic



- Leader in international payroll solutions
- Modernized 300+ legacy forms with APEX
- Runs APEX on-prem; moving to APEX on OCI
- Built by 4 devs in <90 days

Trailcon

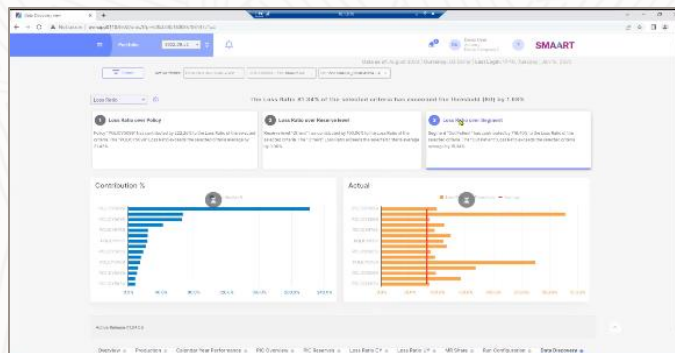


- Leader in transportation leasing
- Automated invoice processing with AI and APEX
- Uses OCI AI services, Email and Object Storage
- Built by 4 devs in <3 months



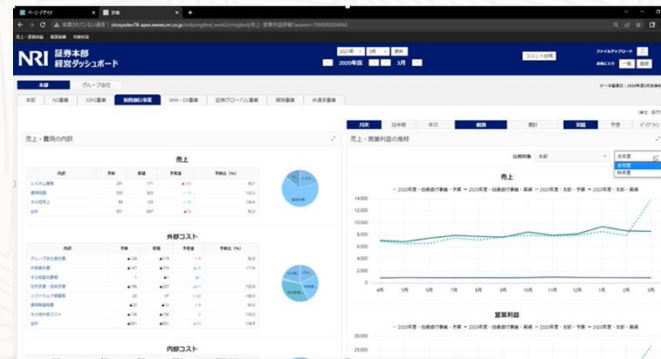
APEX Customer Examples

Munich RE HealthTech



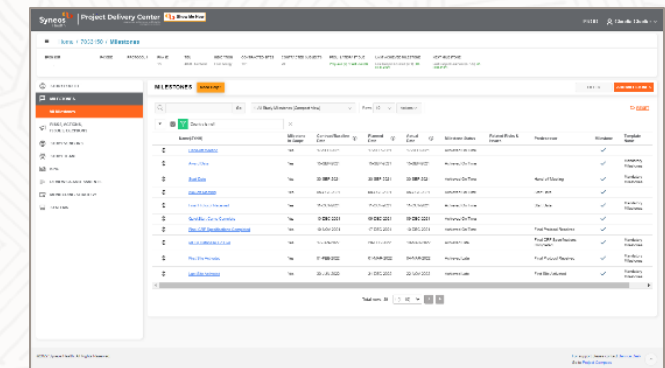
- Leader in digital solutions for the Health Insurance Industry
- Built multi-tenant SaaS app supporting data sovereignty in 10+ countries with APEX
- Runs APEX on AWS and OCI
- Built by 4 devs in <2 months

Nomura Research Institute



- First and largest consulting firm in Japan
- Built apps for fraud detection, GRC, and exec dashboards with APEX
- Runs OCI Dedicated Region
- 1st app was built by 2 devs in <2 weeks

Syneos Health



- Leader in biopharmaceutical solutions
- Built clinical trial oversight system with AI and APEX
- Runs on a hybrid environment of on-prem and OCI
- Built by 4 devs in <3 months





NEC boosts productivity and app development with Oracle APEX

“Being on Oracle Cloud Infrastructure, we can develop applications much quicker compared to a traditional development environment. Our US-based colleagues were impressed with the number of applications we’ve built using Oracle Autonomous Database with APEX with just three developers over the past years.”

Frank Krul

Manager IT Business Applications, NEC Enterprise Solutions

Business Challenge:

NEC Enterprise Solutions is an IT service provider, headquartered in Japan. They needed to revamp its business applications environment to improve partner and customer experiences and boost sales productivity.

Results:

- ✓ After evaluating several providers for data-driven, low-code environments, including OutSystems and Mendix, NEC chose Oracle Autonomous Transaction Processing with Oracle APEX on Oracle Cloud Infrastructure based on cost efficiency, ease of use, and the integrated development capabilities.
- ✓ APEX low-code development tools helped IT team cut administrative and maintenance efforts
- ✓ OCI improved end user access and compliance with guidelines for data governance

Products Used:

Oracle Cloud Infrastructure

Oracle Autonomous Database

Oracle APEX

Oracle Identity Cloud Service



NIBIO analyzes massive amounts of data with ML models and APEX

- Norwegian Institute of Bioeconomy Research (NIBIO) balances conservation efforts with the demands of logging
- OCI Data Science, APEX, and Autonomous Data Warehouse enables scientists to analyze a broad range of sensor data from drones, tree planting hardware, and other sources
- Quality data used to build and train AI models that improves efficiency of forest operations and support decisions

**Hundreds
of years**

Lifespan of trees
and forests
managed

3D snapshots

Help researchers
understand forest
environment



[NIBIO story](#), [Watch video](#)



SATLOG modernizes fleet management at scale

“SATLOG achieves better integration and performance making fleets more productive with Oracle Autonomous Transaction Processing and its included Spatial, APEX, and JSON services on Oracle Cloud Infrastructure.”

Juergen Stausberg

CEO, SATLOG

Business Challenge:

Germany-based SATLOG helps increase the productivity of fleets across a variety of industries with various delivery requirements. It needed to focus more on higher value development of telematics dashboards based on data volumes growing at rapid rates rather than maintain aging on-prem hardware.

Results:

- ✓ APEX and Oracle Spatial enabled low-code, easy to use data visualization
- ✓ Machine learning automated provisioning, tuning, scaling, patching, and encrypting that reduces costs, time, and risk
- ✓ Delivers key business metrics to measure, compare, and optimize costs for order processing, proof of delivery, routes, tour planning, and idle times

Products Used:

Oracle Autonomous Transaction Processing

Oracle APEX

Oracle Spatial Analysis

Implementation Partners: HERE Technologies;
MEKRATronics; Continental Tire Pressure System CPC

Read [story](#)





Rapid innovation for thousands of customers

“Oracle APEX and Oracle Cloud Infrastructure meant we were able to turn that application from a concept to an application in a 12-hour timespan.”

Rich Mutell

Cofounder and CEO, Apex Health Innovations

Business Challenge:

Building applications for the healthcare and biotech/pharma industries, with their myriad regulations and privacy concerns, requires a deep understanding of how those businesses work, plus proven data security and HIPAA-compliance chops. Apex Health Innovations had that expertise, but what it needed was a cloud infrastructure and development platform on which to build and deliver those applications rapidly.

Results:

- ✓ The team at Apex Health Innovations has realized numerous successes by building and launching powerful, flexible, HIPAA-compliant applications on Oracle Cloud Infrastructure. These include an application that is being used by two of the largest kidney dialysis organizations in the US at more than 3,000 dialysis clinics, and applications that are helping some of the world's largest pharmaceutical companies plan and execute the development of new therapies.
- ✓ Recently, built an application overnight using Oracle APEX that filled the reporting gap between COVID-19 testing labs and organ procurement networks across the US. The quick work helped researchers at Columbia and The Cleveland Clinic assess the prevalence of COVID-19 across the donor population.

Products Used:

Oracle Cloud Compute

Oracle Cloud Infrastructure

Oracle APEX





Samsonite Europe scales luggage-damage service with Oracle

“Bagsupport, our luggage-as-a-service application, will take off as a multi-airline service and expand globally, thanks to consistent uptime and the ability to scale with Oracle’s elastic compute infrastructure and global data center network.”

Dirk de Smyter

IT Director for Europe, Samsonite International

Business Challenge:

Samsonite International is the world’s largest manufacturer of travel luggage and accessories, with globally recognized brands. The company operates multiple cloud platforms, including Oracle Retail, for integrating online and in-store channels.

Historically, airlines worldwide have relied on thousands of local baggage-repair partners to resolve customer claims, resulting in complex invoice handling. Belgium-based Samsonite Europe began testing a new offering called Bagsupport, with the objective of saving airlines time and money by handling passenger claims and repairs for damaged luggage.

Results:

- ✓ Moving Bagsupport to Oracle Cloud Infrastructure eliminated the downtime Samsonite had experienced managing the app in its own data center.
- ✓ As part of its OCI implementation, Samsonite deployed Oracle Database Backup Cloud Service and Oracle Infrastructure Monitoring Cloud Service and acquired 24/7 access to Oracle support engineers.
- ✓ Samsonite also reduced its software and hardware costs while gaining the scalability needed to expand its luggage-as-a-service offering to airlines worldwide.
- ✓ Samsonite also reasoned that because Oracle partners iAdvise and Exitas built the Bagsupport app on the Oracle APEX—which runs on Oracle Standard Database Service—that tight integration would ensure smooth enhancements to the app as more airlines come onboard.

Products Used:

Oracle Cloud Infrastructure

Oracle APEX

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Learn more at apex.oracle.com



Star CRM lifts productivity by 40% and reduces costs by 30%

“In terms of cost, we've definitely noticed savings of anywhere between 25% to 30% without any impact on speed or performance moving Oracle APEX to Oracle Database Cloud.”

Sharada Qureshi

COO, Star CRM

“Oracle APEX on OCI has allowed us to reduce development time and costs. This has increased our development team's productivity by 40%.”

Kareem Qureshi

Founder and CEO, Star CRM

Business Challenge:

Headquartered in Singapore, the company was initially focused solely on enterprise clients. However, about five years ago, it started targeting SMEs and now intends to scale that business very rapidly in the next 24 months.

Star CRM realized that without a cost-effective cloud it's very difficult to deliver its solutions to smaller clients. Hence, the company moved its workloads from local data centers in Kuala Lumpur, Malaysia, to Amazon EC2.

As an alternative to AWS, the company tried Oracle and APEX on managed third-party APEX hosting providers.

Star CRM had to make sure that its cloud infrastructure costs did not go through the roof. It quickly needed a solution to address the ability to scale.

Results:

- ✓ Star CRM moved its APEX workloads on-premises to Oracle Database Cloud Service on Oracle Cloud Infrastructure (OCI), to have the latest APEX and ORDS installed, managed, and upgraded by Oracle.
- ✓ It has eliminated many business issues associated with licensing and scalability on AWS and third-party APEX hosting providers.
- ✓ The features and functionalities provided by Oracle APEX on OCI have allowed Star CRM to complete more complex projects for clients, besides reducing development time and costs. This has increased the development team's productivity by as much as 40%.

Products Used:

Oracle Cloud Infrastructure

Oracle Database Cloud Service

Oracle APEX

Read [story](#)

Learn more at apex.oracle.com

Soham ERP builds new app using Oracle Cloud

“Our more than 100 enterprise customers are thrilled with the performance of OCI. With Oracle APEX and Database Cloud Service, we have faster time to market to build and deploy plus data security. And Oracle Consulting helped us seamlessly convert our existing forms and reports and trained our current staff.”

Suketu Shah
Director, Soham ERP Solutions

Business Challenge:

Based in Gujarat, India, the IT company, the Soham ERP Solutions offers several products for its 2,000-plus customers, ranging from ERPs to salesforce automation systems to barcode tools. As the pharmaceutical industry grew, Soham ERP's customers expected improvements in software functionality, experience, and efficiency. Additionally, customers who had adopted the company's on-premises software wanted help with growth challenges, such as costs associated with server upgrades, database licenses, and investments in IT staff to manage on-premises infrastructure.

The company decided to migrate to Oracle Cloud Infrastructure (OCI) and low code platform, APEX, paving the way for a more modern approach to application development. However, the decision to choose Oracle was not a foregone conclusion.

Results:

- ✓ Soham ERP was able to develop a new application, PharmaCloud, using Oracle APEX with Oracle Database Cloud Service on Oracle Cloud Infrastructure. PharmaCloud supports about 100 of Soham's customers, equivalent to roughly 1,200 concurrent users.
- ✓ Before the transition to the cloud, customers would need to invest about \$100,000 for on-premises hardware, licensing, and maintenance. Now, that initial cost has dropped to about \$20,000, which better aligns costs with benefits.
- ✓ Thanks to OCI, Soham has seen a 25% improvement in application performance—leading to faster turnaround time for complex processes—while reducing costs by 40%. Plus, customers can access PharmaCloud from anywhere in the world, from any device.

Products Used:

Oracle Cloud Infrastructure Oracle Database

Oracle APEX

Read [story](#)

Learn more at apex.oracle.com



Tanishq Expands Jewellery Business with Oracle Cloud Infrastructure

“At Tanishq, we take great pride in offering an unparalleled retail experience taking into consideration our customer's unique needs and preferences. With the rapid growth in our business, we needed better scalability from our inventory management system. With OCI and Oracle APEX, we can scale up easily and transform our inventory tracking and order fulfilment process enabling us to reduce operational costs. Previously, we operated with a time-consuming manual process that could take up to a few days to generate an inventory report, severely hindering our ability to offer our customers more products”.

Akshay Jawanjal,
Sales Development Director, IWM Cyber Security

Business Challenge:

Tanishq has plans to expand its presence and market share over the next five years. As customer demand for jewellery increased, Tanishq developed an Endless Aisle service for its store managers that allows customers to order products, including those not available in the store

Results:

- ✓ With Oracle Web Application Firewall, Tanishq protects its business against unwanted internet traffic and OCI Flexible Load Balancing allows it to distribute network traffic equally during peak demand across its 500 stores.
- ✓ Through [Oracle Support Rewards](#), Tanishq estimates a substantial CAPEX and software support cost savings of up to 30 percent, supporting the company's future expansion plans.
- ✓ Oracle APEX, a no-cost capability provided with Oracle Database, enables Tanishq to manage changing demand for its Endless Aisle service by adding compute and storage resources, and scale back down when it is no longer necessary.

Products Used:

Oracle APEX
Oracle Cloud Infrastructure
Oracle Database
Oracle Web Application Firewall
OCI Flexible Load Balancing



1022

Shimizu Corporation introduces Oracle Cloud Infrastructure to promote digitalization and standardization of construction site operations

Utilizing Oracle Autonomous Data Warehouse and Oracle Application Express to streamline work related to special safety councils at construction sites. Enables employee productivity improvement and business data aggregation to support digital transformation.

Business Challenge:

With the long-term vision of "SHIMZ VISION 2030," the Shimizu Group, including Shimizu Corporation, will create value that is ahead of the times through constant self-transformation and challenges that go beyond the framework of the construction business, and through co-creation with diverse partners.

The company was reviewing business processes and developing various business systems to promote electronic approval, improve business efficiency through information collaboration and data utilization using project databases, and automate and streamline in-house management operations using RPA and workflow systems.

Results:

- ✓ With the support of Oracle Japan's consulting department, Shimizu Corporation began developing systems and applications on OCI in October 2021. Develop mobile and web applications using the low-code development tool "Oracle APEX," and integrate and centralize data sent from applications using "Oracle Autonomous Data Warehouse," which uses autonomous functions to reduce database construction and operational management burden.
- ✓ Additionally, using Oracle Analytics Cloud, the company is able to visualize data and check progress intuitively. The company was able to build a production environment in just one month by using the autonomous functionality of Oracle Autonomous Data Warehouse to easily set up a database and low-code development using Oracle APEX.

Products Used:

Oracle APEX

Oracle Analytics Cloud

Oracle Cloud Infrastructure (OCI)


Oracle Autonomous Data Warehouse





Oracle APEX in the Real World




APEX@Oracle

 ARIA




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Roopesh Thokala


Senior Product Manager

Location


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Org Chart



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Senior Product Manager



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1,970 views

Ed Jones
updated on Feb 5 2021

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Started by **Ashutosh Mishra** — on Dec 19 2024

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Steve Muench
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Started by **Sayantane Basu** — 2 days ago

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Steve Muench
updated 4 hours ago

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Started by **Govind Das** — on Nov 19 2024

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Steve Muench
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Announcement

For appeals, questions and feedback about Oracle Forums, please email oracle-forums-moderators_us@oracle.com. Technical questions should be asked in the appropriate category. Thank you!

Interested in getting your voice heard by members of the Developer Marketing team at Oracle? Check out [this post for AppDev](#) or [this post for AI](#) focus group information.

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Share your Ideas, Suggestions, and Feature Requests

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14 comments

2,220 views

Ed Jones-Oracle

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Started by Veerendra Patil in APEX — 2 days ago

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15.4k

foex

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Why are most of keywords in V\$RESERVED_WORDS not actually reserved?
Hello, Could you please clarify the meaning of the view V\$RESERVED_WORDS and especially its contents? At first glance, the documentation has a clear explanation. The view contains reserved words, and columns RESERVED, RES_TYPE, RES_ATTR, and RES_SEMI describe, for which purposes ...

difference between 2 dates
I want to get difference between two dates say (10-FEB-2000 - 02-JAN-1999) and the result has to be displayed in following format 1 year, 1 month, 8 days

About sub-totals
Hi Gurus, I have a schema as described in the link <https://livesql.oracle.com/ords/livesql/s/ct0zdah8slxq66h8fnpfhwdb>. drop table t; create table t (instance number , id_sup number , id number , srt number , v01 number , v02 number , v03 number , value_01 n

Is feasible to add column as IDENTITY if the data in the table is too large.
Hi Senior, My database is 12C PLSQL. Is it possible to alter table and add IDENTITY for primary key, if the data in the table is beyond 200Crore or 2Billion data. As I am concerned about database crashing or Cache overflow. Please guide me. In the code I am crea

Locating the Snippet file - xml to back it up
Good day, I want to backup my Snippets but cannot find the file to back it up as I cannot locate the XML file with my Snippets therein. I went to system23.1.1.345.2114 and in there I went to o.sqldeveloper.snippet and this folder is empty despite me setting "Sow hidden files"



APEX Ideas

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50 ideas

8

Workflow Purge Days should be optional

FR-4150 Open · Last activity 5 hours ago

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Create secure PDF with password by using document generator in prebuild function

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6

50

API for executing apex advisor, CI / CD integration

FR-1939 Roadmap · Last activity 17 hours ago

1

51

Oracle APEX Workflow - Approving from email notification

FR-3431 Roadmap · Last activity 17 hours ago

13

76

Enable Paste from Excel to Interactive Grid

FR-2479 Roadmap · Last activity 17 hours ago

15

Welcome

Do you have an idea on how we can make Oracle APEX even better?

Perhaps its new functionality that is missing, or an enhancement for something that already exists? Is something more difficult than it should be? **Whatever it is, we'd love to hear from you.**

APEX thrives because of community engagement and feedback, and we want to make it even easier for you to contribute directly to the product direction of APEX.

Learn more

APEX Team

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Oracle APEX Training & Certification

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Learn Oracle APEX Foundations



Embark on your APEX journey by enrolling in the Oracle APEX Foundations course.

This 3-hour learning path is ideal for beginners looking for a general overview of APEX. Explore the core functionality of APEX such as the App Builder and SQL Workshop, and build your first cloud application with APEX on OCI.

Upon completion, you will be familiar with the key capabilities and components of APEX.

Now available in Japanese! [Learn more.](#)

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Become an Oracle APEX Professional



Dive deeper into APEX capabilities by enrolling in the Oracle APEX Developer Professional Course

This 13-hour learning path is targeted for both beginners and seasoned developers that want a deeper understanding of APEX. Dive into detail for each APEX component, learn about the latest advancements of AI in Oracle APEX, and try out the step-by-step guided labs for a hands-on experience.

Upon completion, you will have a practical knowledge of APEX concepts and capabilities, and a solid footing on how to build APEX apps.

[Enroll Now](#)

APEX Foundations

apex.oracle.com/go/foundations

APEX Developer Professional Learning Path

apex.oracle.com/go/professional-ai-lp

Consists of **TWO** courses:

1. apex.oracle.com/go/professional
2. apex.oracle.com/go/ai-learn

Get Certified

apex.oracle.com/go/professional-ai-lp

Learn the Foundations of Oracle APEX

Oracle APEX Foundations Course



Learn the foundations of low-code app dev with Oracle APEX



3.5 + hours of expert training delivered by the APEX Product Team



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Oracle APEX Foundations

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Oracle APEX Developer Professional

apex.oracle.com/go/training



Soup-to-nuts covering complete low-code app dev along with the latest advancements of AI with Oracle APEX

21+ hours of expert training delivered by the APEX Product Team

Hands-on-Labs to practice along with the training videos

Enroll and learn for FREE today on Oracle University!!

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The screenshot shows the Oracle APEX Developer Professional Learning Path page. At the top, it says "Become An Oracle APEX Developer Professional" with a status of "In Progress". Below this, it states: "This learning path enables developers to design, develop, and deploy scalable, secure enterprise applications using Oracle APEX by integrating AI capabilities to create innovative solutions." It then lists the "Learning Objectives":

- Develop and deploy modern, secure, and scalable enterprise applications with Oracle APEX
- Create dynamic, data-driven interactive reports and dashboards that deliver actionable real-time insights
- Enhance application functionality and streamline business process management using Oracle APEX Workflow capabilities
- Implement robust authentication and authorization mechanisms to safeguard application integrity
- Integrate Oracle Cloud Infrastructure (OCI) AI services, including Generative AI, Vision, Oracle Digital Assistant (ODA), and Document Understanding, to create AI-powered applications
- Leverage the power of AI Vector Search to enable Retrieval-Augmented Generation (RAG) features for advanced AI-powered solutions.

At the bottom, it mentions: "This Learning Path also prepares you for the **Oracle APEX Cloud Developer Professional certification**."



Oracle APEX : Empowering Low Code Apps with AI



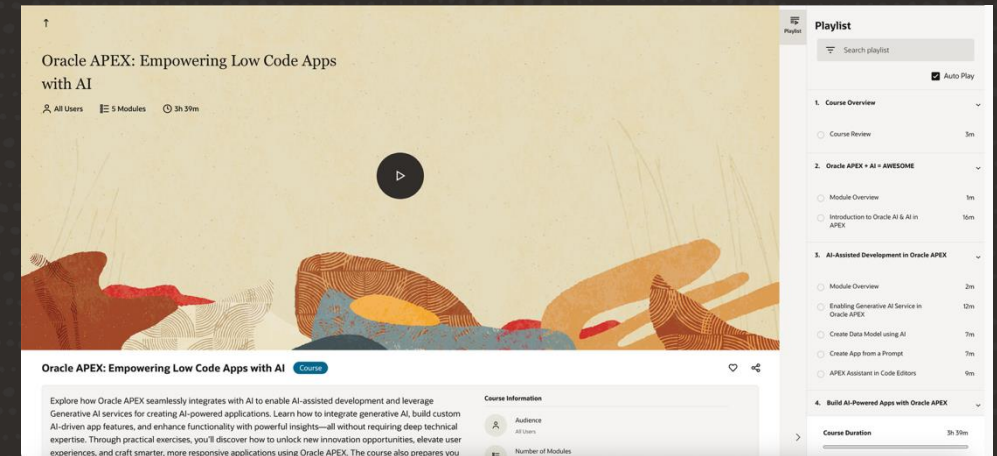
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Hands-on-Labs to practice along with the training videos

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Oracle APEX Professional Learning Path

Learning path consists of two key courses:

- Oracle APEX Developer Professional
apex.oracle.com/go/professional
- Oracle APEX : Empowering Low Code Apps with AI
apex.oracle.com/go/ai-learn

#Oracle #LowCode #orclAPEX #orclAPEXCertified #OracleCertified #AI #GenAI



Get Oracle APEX Certified !

apex.oracle.com/go/professional-ai-lp

Why should you get certified?

- Validates your skills, making you more competitive in job markets that require Oracle APEX low-code development expertise
- Ensures you understand best practices for building secure, scalable web and mobile apps with world-class features that can be deployed anywhere—cloud or on-premises.
- Showcase your skills in low-code application development
- Enhance your expertise in AI-powered low-code app development
- Open new career opportunities with Oracle APEX Cloud Developer Professional certification



#Oracle #LowCode #orclAPEX #orclAPEXCertified #OracleCertified #AI #GenAI



Become a Certified Oracle APEX Developer Professional

apex.oracle.com/go/professional-ai-lp

1

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APEX: Empowering Low
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Hands-on Labs

4

**Prepare for the
Certification**

Take up the Practice
Exam and self assess
your Skills

5

Get Certified

Pass the exam and earn
your Badge!

Summary

Oracle APEX

Summary

- Used by real customers for real applications: It is used for both opportunistic and mission-critical apps that service tens of thousands of users.
- Well-Established Product: First released in 2004
- The most powerful Low-Code Application Development Platform allows developers to focus on solving business problems and delivering superior solutions with less time and effort spent on mundane and repetitive lower-level coding.
- Continually growing: Oracle install base is adopting Oracle APEX for increasing numbers of projects, and is increasingly an approved corporate IT standard.



Oracle APEX

Summary

- Aligned with industry trends: Strong support for HTML5 development frameworks, Modern & responsive CSS3 UI, integrated JavaScript libraries, Browser-based, self-service provisioning, flexible development and deployment including cloud services.
- Consistent with Oracle developers skill set: SQL, PL/SQL, Oracle Database.
Proficiency in the Oracle database easily translates into an ability to develop web applications.



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data in new ways, discover insights,
unlock endless possibilities.

