

ORACLE

Build Apps through natural language with AI and APEX GenDev

Autonomous Database Learning Lounge

Hosted by Marcos Arancibia

Autonomous Database Product Management

AUTONOMOUS
DATABASE
LEARNING
LOUNGE

Agenda



**Jayson
Hanes**

Using Oracle **APEX**, the world's most popular enterprise low-code application platform, developers can **quickly develop and deploy compelling apps** that solve real problems and provide immediate value.

Topics

- Introduction to Oracle **APEX** on Autonomous Database.
- Learn how to use the **APEX AI Assistant** to create and fine-tune **custom SQL data models** and associated **sample data** via a natural language interface.
- Easily add **AI Vector Search semantic search functionality** to applications using the standard search component.
- New support for **business process automation** using **APEX Visual Workflows**.
- New “Create Fusion Integration” option to simplify the process of creating Oracle Fusion Apps extensions.

Q&A

- **Product Managers** will answer any questions

Before we begin....

This session is for you !!!

Ask your questions using Q&A

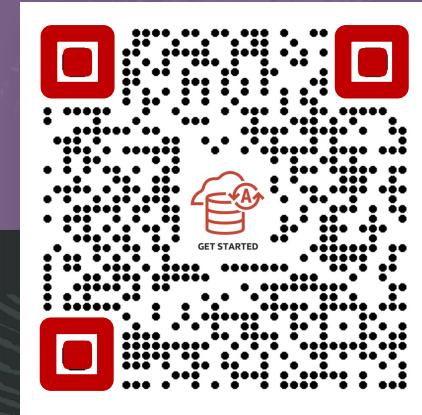
Product Managers are monitoring your questions

We will share links in Chat

**The recording will be made available in a few days at
oracle.com/goto/adb-learning-lounge**

Important links to bookmark

**Links to get you started
and to keep up to date with
Autonomous Database**



1 Get Started with ADB:
oracle.com/autonomous-database/get-started/

2 Join us: bit.ly/adb-linkedin-grp [@AutonomousDW](https://twitter.com/AutonomousDW)

2



Bluesky
autonomousdb.bsky.social

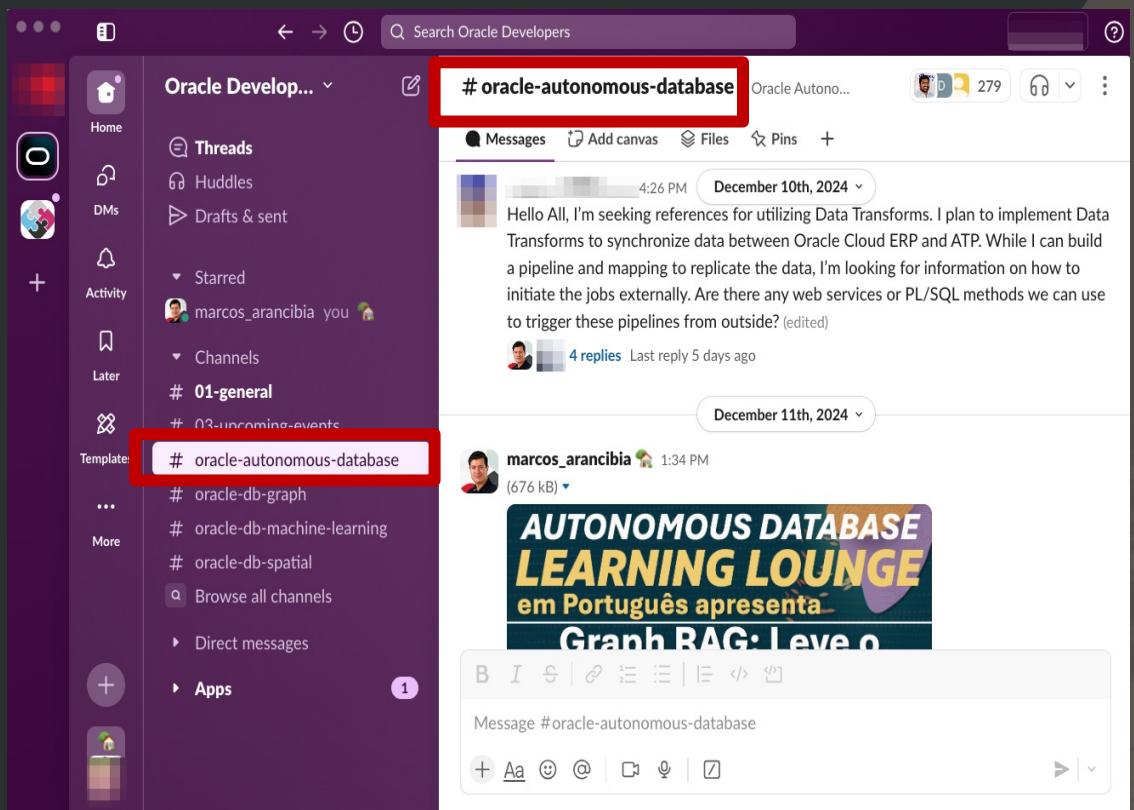
3 Got a question?
We are on stackoverflow
bit.ly/adb-stackoverflow

Join us on Developers Slack
(search #oracle-autonomous-database)
bit.ly/odevrel_slack

Join our External Slack

STEP 1: Join our Slack workspace at:
bit.ly/odevrel_slack

STEP 2: search for **#oracle-autonomous-database** at the top and click on the Channel



Speaker



Jayson Hanes

Oracle APEX Generative Development

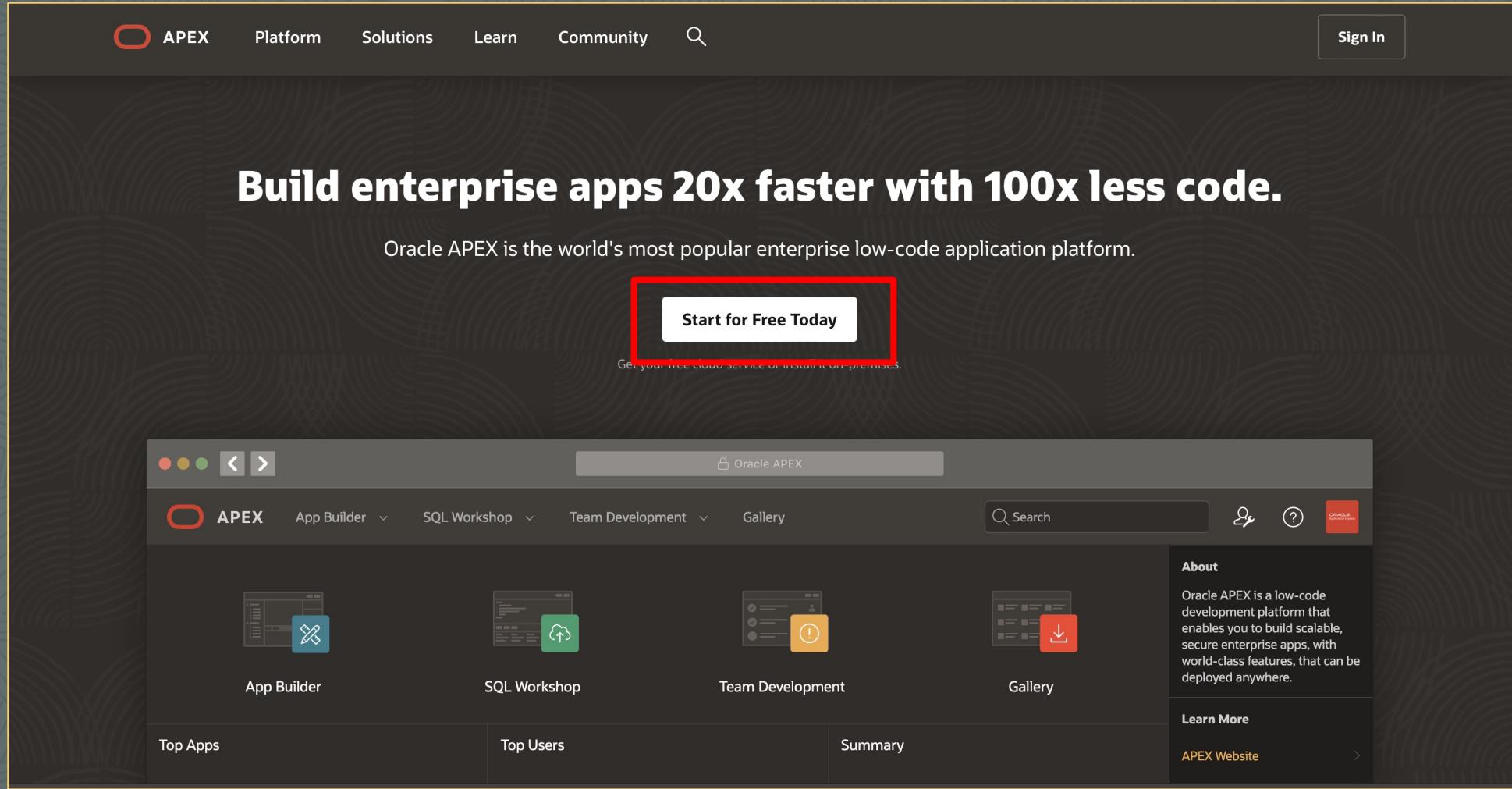
Everywhere Oracle Database is, especially on Autonomous Database!

Jayson Hanes
APEX Product Manager
Florida, USA



Agenda

- Getting Started with APEX
- New in APEX 24.1 and 24.2:
AI Services & Configurations
- AI Assistant & AI Text Dynamic Actions
- RAG Sources
- AI GenDev Assistant for Developers
- Create a Data Model using AI
- Create an Application using AI
- Advanced RAG Sources Using Vectors
- OCI Generative AI Agents
- Create Fusion Integration



The image displays two screenshots of the Oracle APEX platform. The top screenshot shows the homepage with a dark background and a large banner stating 'Build enterprise apps 20x faster with 100x less code.' Below the banner is a subtext: 'Oracle APEX is the world's most popular enterprise low-code application platform.' A prominent 'Start for Free Today' button is highlighted with a red box. The bottom screenshot shows the Oracle APEX application interface with a light gray background. It features a top navigation bar with icons for App Builder, SQL Workshop, Team Development, and Gallery, along with a search bar and user profile icons. Below the navigation is a grid of four main application components: App Builder, SQL Workshop, Team Development, and Gallery, each with a corresponding icon. At the bottom of the interface, there are three tabs: Top Apps, Top Users, and Summary.

Oracle APEX is Available Everywhere Oracle Database is!

Oracle Cloud

- APEX Service
- All Database Cloud Services including Autonomous Database
- Oracle Base Database Service
- Oracle Exadata Cloud Service
- **Always Free** APEX Service
- **Always Free** Autonomous Database

On-Premises

- All Oracle Database editions
- Oracle Exadata
- Oracle Database Free

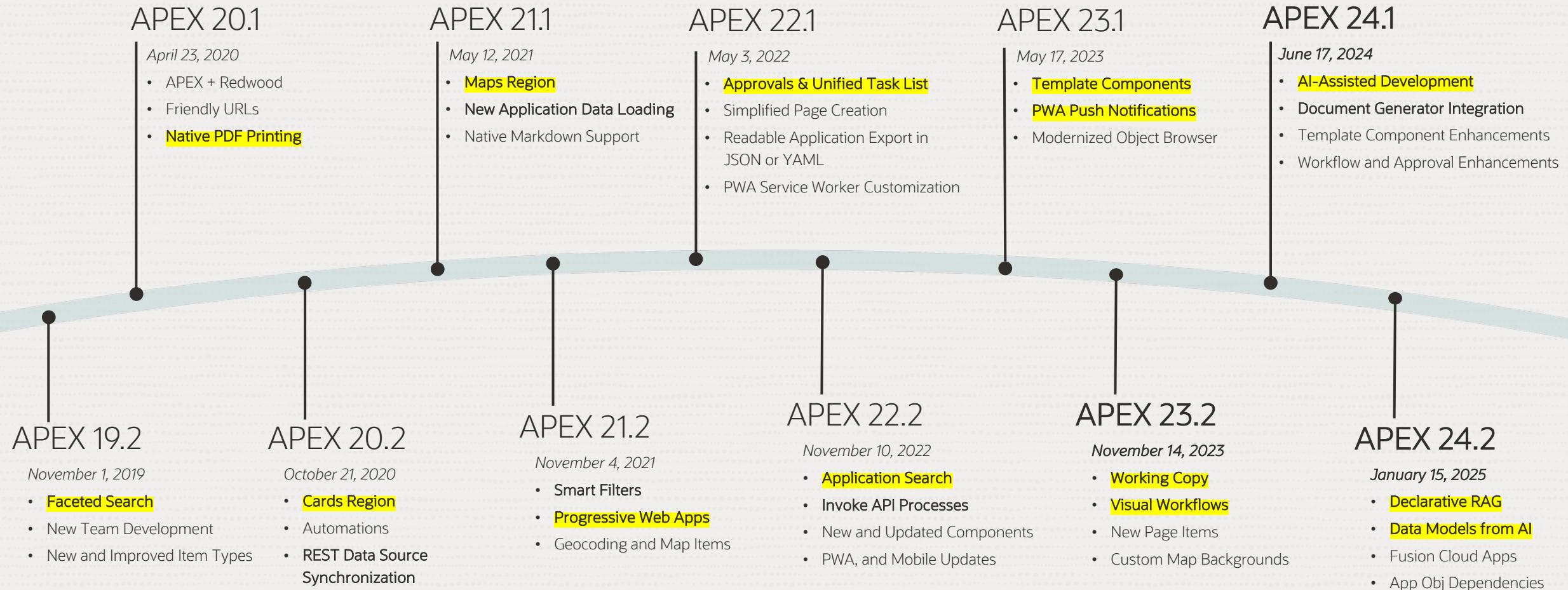
Other Clouds

- 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 Distributions and Editions

Tour a simple APEX application

Oracle APEX powered by No Code / Low Code World Class Features



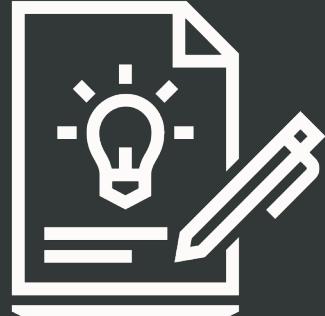
High Code vs Oracle APEX Low Code



Source: Neel Shah, Visa, posted on LinkedIn

Oracle APEX 24.1, 24.2 Generative Development

APEX AI Assistant



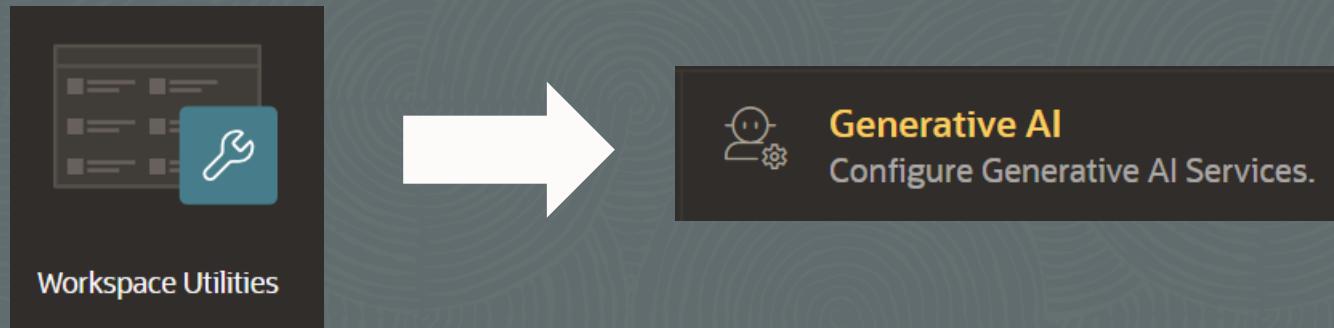
- Create App using GenAI
- APEX AI Assistant (NL2SQL)
- Show AI Assistant
- Generate Text from AI
- Data model from AI

Next-Gen Data Platform with Database 23ai



- AI Vector Search
- Native Server-Side JavaScript
- JSON Relational Duality

AI in APEX requires YOUR AI Service to be configured in each workspace



AI Services

AI Services encapsulate AI Providers, models and credentials.

Supported Providers:

- OpenAI
- Cohere
- OCI Gen AI

Generative AI Service open-ai

Cancel Delete **Apply Changes**

Show All Identification Settings Advanced

Identification

* AI Provider: Open AI

* Name: open-ai

Static ID: open_ai

Settings

Used by App Builder:

* Base URL: <https://api.openai.com/v1>

Credentials

* Credential: credentials_for_open_ai

Test Connection

Advanced

AI Model: gpt-4o

HTTP Headers:

Additional Attributes

Generative AI Service
The Name and Static ID must be unique within the workspace. The developer can select from the list of supported AI Services and specify if the AI Service should be used by App Builder. Only one AI Service can be configured for App Builder. Advanced properties including additional HTTP headers and JSON attributes can be configured.

AI Components

APEX
24.1

- Open AI Assistant Dynamic Action
- APEX_AI APIs

The screenshot shows the configuration interface for AI Components in Oracle APEX 24.1. The top navigation bar has tabs for 'Action', 'Identification', 'Generative AI', and 'Appearance'. The 'Action' tab is selected. A search bar labeled 'Filter' is present. The 'Identification' section contains a 'Name' field and an 'Action' dropdown set to 'Open AI Assistant'. The 'Generative AI' section includes a 'Service' dropdown set to 'open-ai' and a 'System Prompt' text area containing the placeholder 'You are a helpful assistant.' The 'Welcome Message' section contains a text area with the placeholder 'How may I help you?'. The 'Appearance' section has a 'Display As' dropdown set to 'Dialog'.

AI Configurations

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

APEX_AI PL/SQL API

Generative AI Configuration

Cancel Delete Apply Changes

Show All Identification Subscription Generative AI RAG Sources Advanced Comments

Generative AI

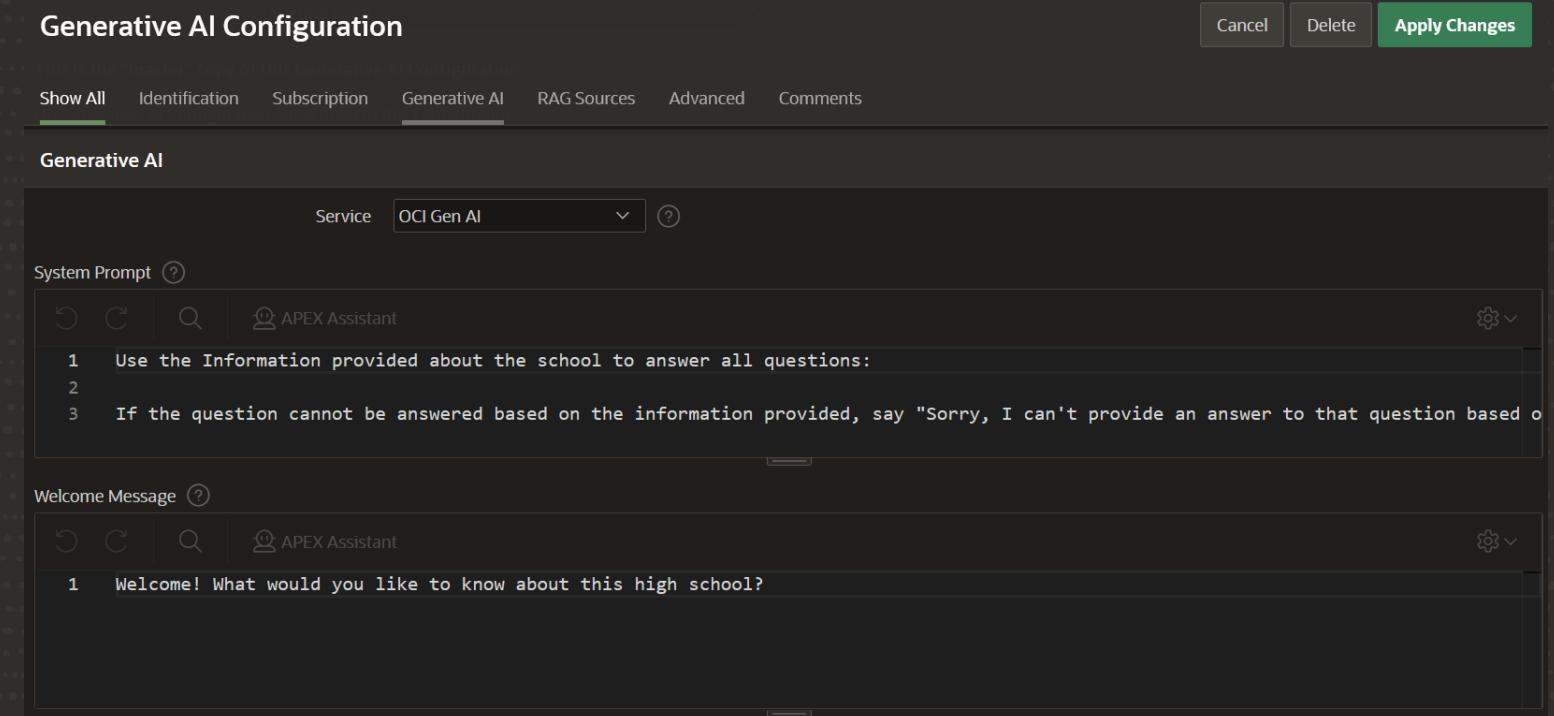
Service OCI Gen AI

System Prompt

1 Use the Information provided about the school to answer all questions:
2
3 If the question cannot be answered based on the information provided, say "Sorry, I can't provide an answer to that question based on the information provided."

Welcome Message

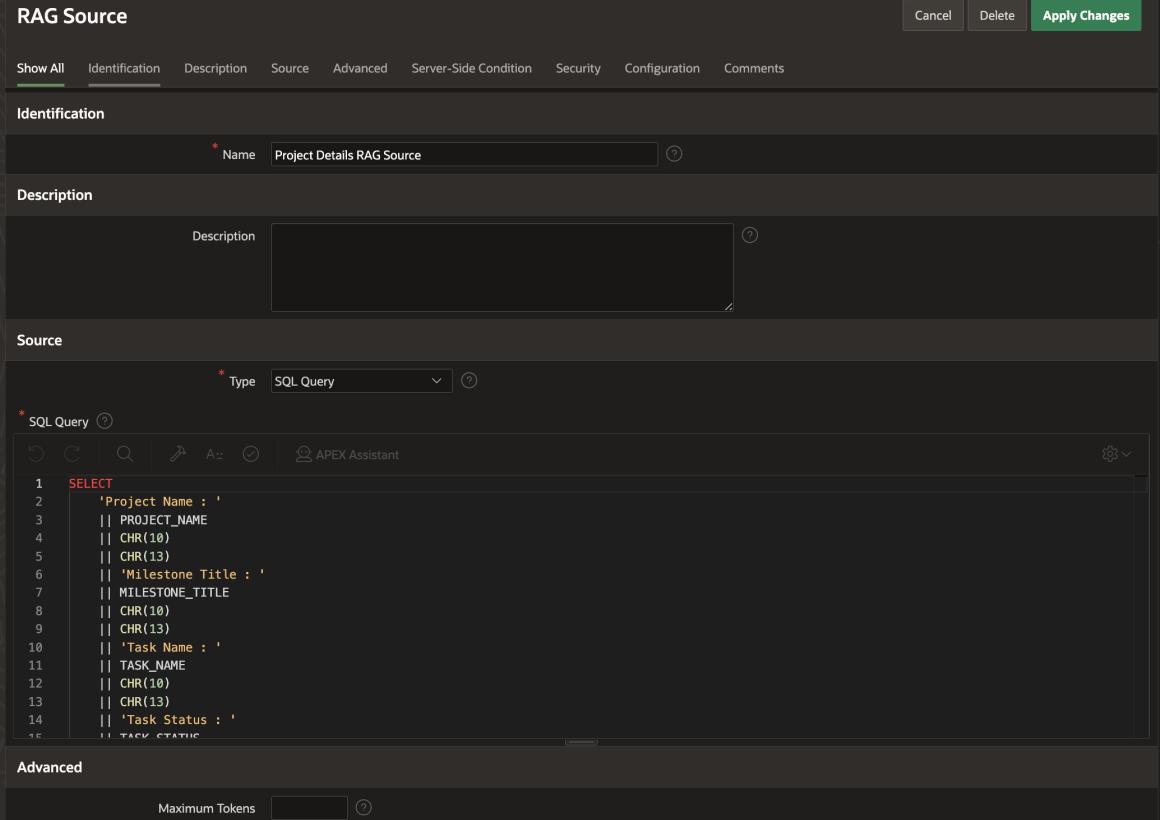
1 Welcome! What would you like to know about this high school?



Review what this looks like in APEX

Review the AI Dynamic Actions

RAG Sources



RAG Source

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

Cancel Delete **Apply Changes**

Identification

* Name Project Details RAG Source

Description

Description

Source

* Type SQL Query

SQL Query

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

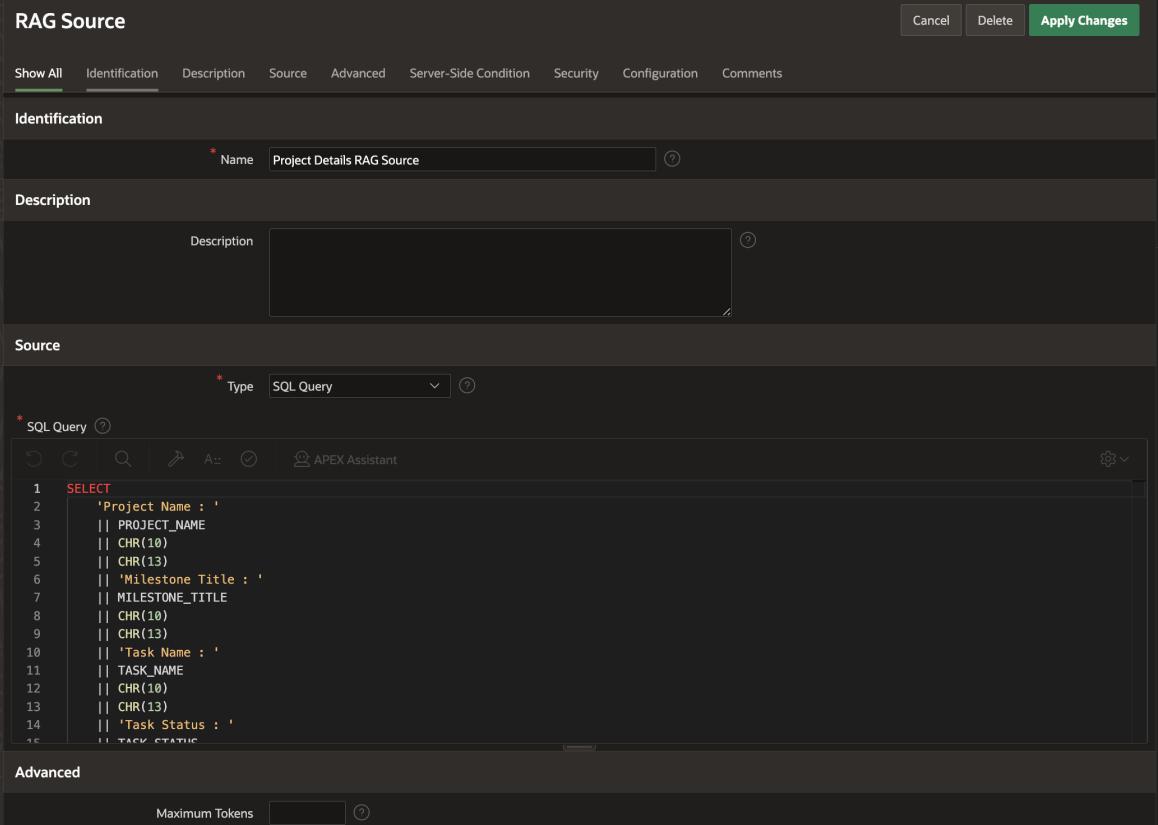
Advanced

Maximum Tokens

- Use **RAG Sources** to enrich AI conversations with application-specific data.
- Can include **SQL Queries, Function Bodies Returning CLOB, or Static Text.**

apex.oracle.com/go/blog-ai-config-and-rag-sources

RAG Sources – Server-Side Conditions



RAG Source

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

Cancel Delete Apply Changes

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

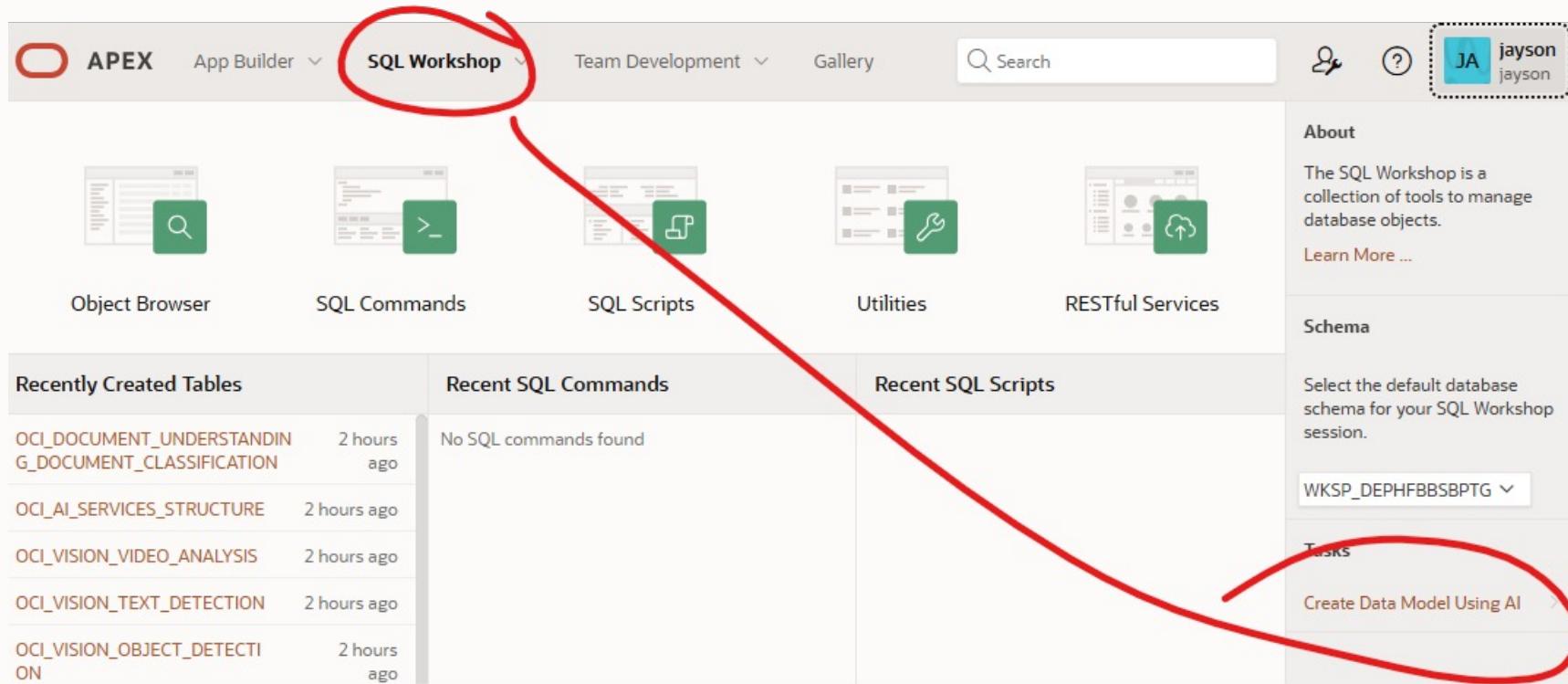
Maximum Tokens

- Use **Authorization Schemes** or **Server-side Conditions** to control which RAG data is included
- Use **Server-side Condition** offers even more flexibility: **Any User Prompt Contains** and **Last User Prompt Contains**.
- Use **APEX\$AI_ALL_USER_PROMPTS** and **APEX\$AI_LAST_USER_PROMPT** bind variables for custom RAG logic

apex.oracle.com/go/blog-ai-config-and-rag-sources

APEX Generative Development features

Create a Data Model



The screenshot shows the Oracle APEX interface with the 'SQL Workshop' tab selected, indicated by a red circle. The 'SQL Workshop' tab is part of a dropdown menu that also includes 'App Builder', 'Team Development', and 'Gallery'. A red arrow points from the 'SQL Workshop' tab down to the 'Create Data Model Using AI' button, which is also circled in red. The 'Create Data Model Using AI' button is located in the 'Tasks' section of the right sidebar. The sidebar also includes sections for 'About' and 'Schema', and a dropdown for the default database schema ('WKSP_DEPHFBBSBPTG').

Recently Created Tables

Table Name	Created
OCI_DOCUMENT_UNDERSTANDING_DOCUMENT_CLASSIFICATION	2 hours ago
OCI_AI_SERVICES_STRUCTURE	2 hours ago
OCI_VISION_VIDEO_ANALYSIS	2 hours ago
OCI_VISION_TEXT_DETECTION	2 hours ago
OCI_VISION_OBJECT_DETECTION	2 hours ago

Recent SQL Commands

No SQL commands found

Recent SQL Scripts

Tasks

Create Data Model Using AI

Create an Application

Name

ID

<new>

Create Application



Use Create App Wizard

Create a new application using the full Create Application wizard with advanced options.



Create App Using Generative AI

Enter a natural language prompt to create your application.



Create App From a File

Upload a CSV, XLSX, XML or JSON file, or copy and paste data, then create your application.



Create App From Quick SQL

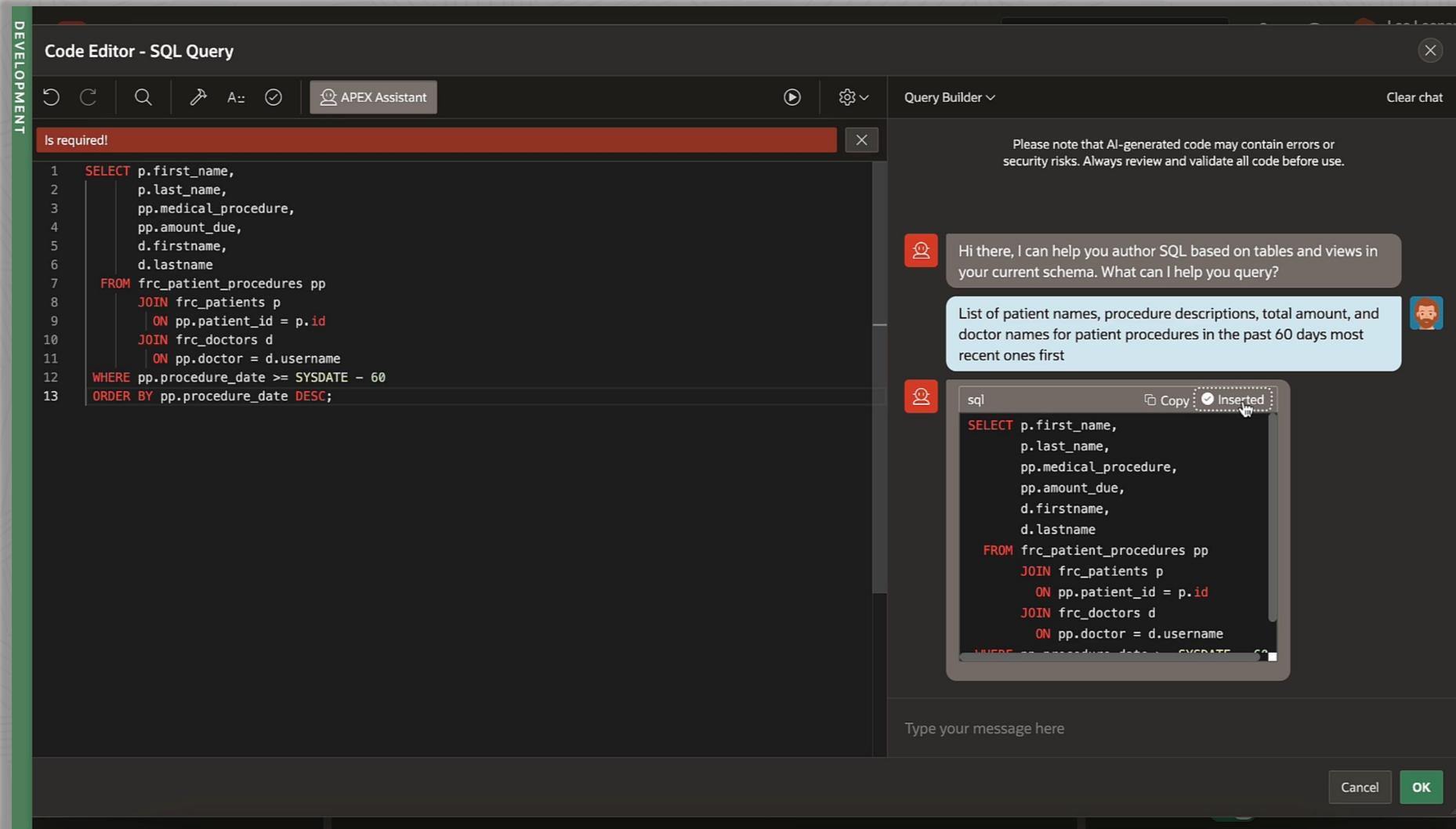
Build your own data model or use an existing one and create a new application from it.



Browse Apps in Gallery

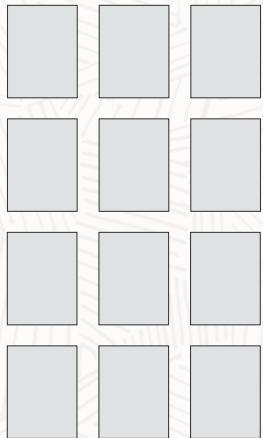
Install one of many Sample and Starter Apps from the Gallery.

New in APEX 24.1: APEX Assistant - Generate SQL from NL

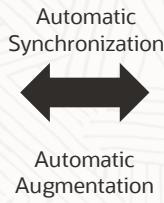


Oracle APEX Natural Language to SQL (NL2SQL) for AppDev

Database Tables



Automatic
Synchronization
Automatic
Augmentation



APEX Meta Data

- Table and Column Information
- Labels
- Primary Keys (PK)
- Foreign Keys (FK)
- Object Prefixes
- Data Types
- Average Data Length
- Distinct Value Counts
- Null Column Counts
- Facet Type (range, checkbox)
- Recommended Queries
- Primary Display Column
- UI Default Information

Setup



Identify Generative AI Service(s) per Workspace

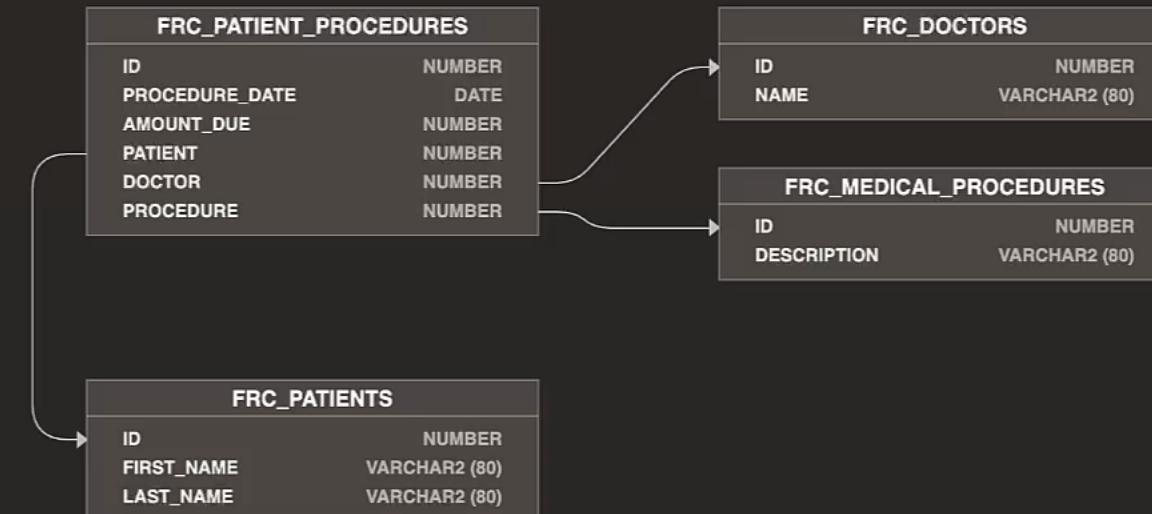
Choose Open AI, OCI Generative AI Services, Cohere

- Click “APEX Assistant”
- Enter your query in natural language
 - You are an Oracle SQL query writer and Oracle SQL performance expert
 - Guardrails
 - Coding style
 - Instructions
 - Use only the following tables...
- Query Returned
 - Use the suggested SQL
 - Ask a follow up question with session context
 - Clear Chat and Start Fresh

Meta Data Source Material

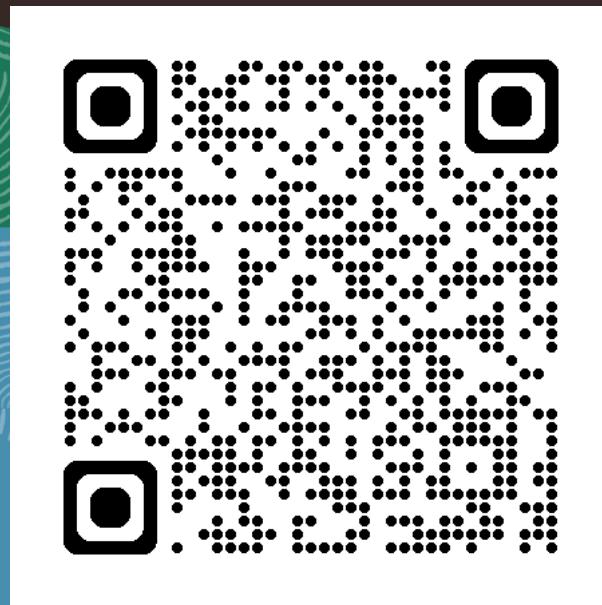
APEX Assistant

```
1  #prefix: frc
2  medical_procedures
3    description vc80
4
5  doctors
6    name vc80
7
8  patients
9    first_name vc80
10   last_name  vc80
11
12 patient_procedures
13   procedure_date date
14   amount_due num
15   patient /fk patients
16   doctor /fk doctors
17   procedure /fk medical_procedures
18
19
```

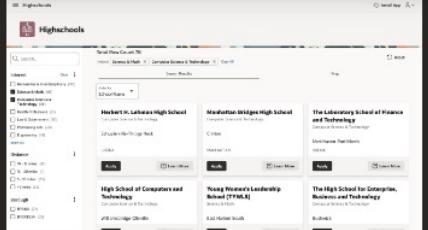


New Hands On Labs

Several focusing on APEX and AI



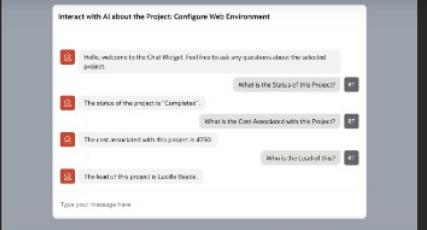
apex.oracle.com/hols



Build an Innovative Q&A Interface Powered by Generative AI

Learn how to integrate Generative AI Service and use it to develop a questions and answers feature for the New York High Schools APEX application.

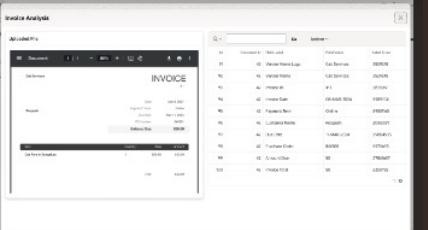
Intermediate 1hr



Smart Project Management with AI-Assisted Development

Build a dynamic application using the APEX AI Assistant to create the app and generate SQL queries, and implement your own version of an AI chat assistant.

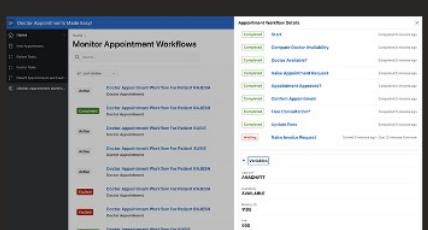
Intermediate 2hrs



Automate Invoice Handling with OCI Document Understanding

Learn how to integrate Oracle APEX with OCI Document Understanding, and use it to process invoices and streamline expense management.

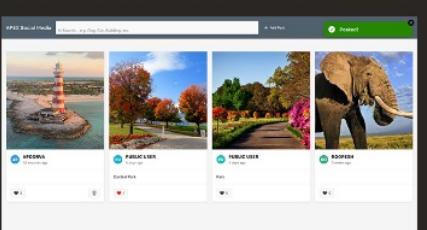
Intermediate 1hr



Workflow Lab

Learn all about Workflows in APEX by implementing an efficient system to schedule and manage doctor consultations.

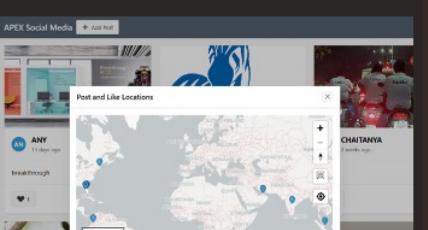
Advanced 2hrs 35min



Build AI-Powered Image Search

Learn how OCI Vision is used to tap into the power of visual intelligence and enhance the Oracle APEX Social Media app for the classification of images.

Advanced 1hr



Build a Social Media App

Build a social media application in APEX using low-code practices and a simple approach to the development process.

Intermediate 1hr

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APEX App Builder SQL Workshop Team Development Gallery

Search Apps Sample Apps Starter Apps Utility Apps Custom Apps

APEX PWA Reference oracle

Oracle APEX enables developers to build Progressive Web Apps (PWAs) that can be installed on any desktop or mobile device to deliver a more native app experience. This application serves as a reference for key PWA features in APEX and how you can use them in your own apps.

24.1.0

Install

Brookstrut Sample App oracle

The Brookstrut sample application analyzes a simplified stored data model and includes a feature to generate random data, accommodating everything from small to extra large data sets. It showcases Oracle APEX's capabilities in data reporting, navigation, and data presentation. This tool allows you to explore various Oracle APEX components, including faceted search, interactive reports, content row reports, and calendars.

24.1.0

Sample Application Search oracle

This application showcases the Application Search feature, introduced with APEX 22.2. Search Configurations and Search Regions allow developers to add robust search engine functionality to their APEX applications.

24.1.0

Sample Calendar oracle

This application highlights the native calendaring capabilities of Oracle APEX. It features a monthly calendar with stylized daily tasks. The dates can be changed using drag and drop, which is all declarative and easily created using native APEX wizards.

24.1.0

Sample Cards oracle

This application highlights Cards regions in Oracle APEX. Cards regions are a native region type. They provide developers with a powerful and flexible new way to display data in bite-sized blocks, ideal for use in faceted search, or presenting at-a-glance information.

24.1.0

Sample Charts oracle

This application highlights the charting capabilities of Oracle APEX. It demonstrates how you can enhance your applications to visually represent your data, using declarative and plug-in based charting solutions.

Update available: 24.1.0 (23.2.0)

Install

Sample Collections oracle

Sample Collections enables you to store rows of data for use within an Oracle APEX session. This database application illustrates how to use PL/SQL to create and manage collection-based session state.

24.1.0

Install

Sample Data Loading oracle

This application is built on simple EMP and DEPT tables to highlight how developers can define pages to allow end users to upload spreadsheet data into an existing table.

Update available: 24.1.0 (23.2.0)

Install

Sample Document Generator oracle

This application showcases the integration with the Oracle Document Generator Pre-built Function on OCI. It features examples of generating PDF documents from a combination of JSON data and MS Word templates.

24.1.0

Install

Sample Interactive Grids oracle

This application demonstrates a number of different dynamic actions that can be incorporated into an application. These declarative client-side behaviors include simple examples for manipulating the display of components, style examples for changing the appearance of components, and server-side examples which interact with the database.

24.1.0

Install

Sample Maps oracle

This application contains numerous examples of visualizing coordinate data on a map. Use Map Markers, Lines or Polygons, or the Heat Map feature. The APEX Map Region can easily be combined with Oracle Spatial functionality (which is included in every Oracle Database) to perform a 'Within Distance Search', 'Nearest Neighbor Search', or other spatial analysis.

Update available: 24.1.0 (23.2.0)

Install

Sample Master Detail oracle

This application highlights the native master detail capabilities of Oracle APEX. The application contains four different master detail page layouts. The first two layouts display master detail in a single page using editable Interactive Grids. The last two layouts display master detail in two pages with mix of editable Interactive Grids, form items, classic reports and modal popups.

Install

Sample Reporting oracle

This application highlights the reporting capabilities of Oracle APEX. You can create Interactive Reports, Interactive Grids, Faceted Search Reports, Cards Reports, and Classic Reports declaratively using SQL.

Install

Sample REST Services oracle

This application showcases how to access external REST services from Oracle APEX. The app works on the sample RESTful Service, oracle.example.hr. The examples in this application illustrate how to create a simple tabular report on REST service data, how to filter, and how to add pagination.

Install

Sample Trees oracle

Learn how to create a tree control using a SQL query. This application shows various methods of integrating tree controls into your Oracle APEX application.

Install

Sample Workflow, Approvals, and Tasks oracle

This application highlights the key features of the Workflow, Approvals, and Tasks capabilities in Oracle APEX. It lets users manage changes to employees' salaries and jobs, provision a laptop for an employee, and manage employees' self-appraisals. All use cases involve human tasks requiring an action by an appropriate individual, some of which require an approval or rejection.

Install

Universal Theme Reference oracle

This app introduces you to Universal Theme by providing an easy way to browse through the various templates, template options, and theme styles. The examples demonstrate how you can easily control the layout of your pages, to create a great looking application.

Install

APEX Gallery Apps!

Vector Search Sample App

Vectors in AI Represent Semantics of Unstructured Data

Such as images, documents, videos, etc.



Vector

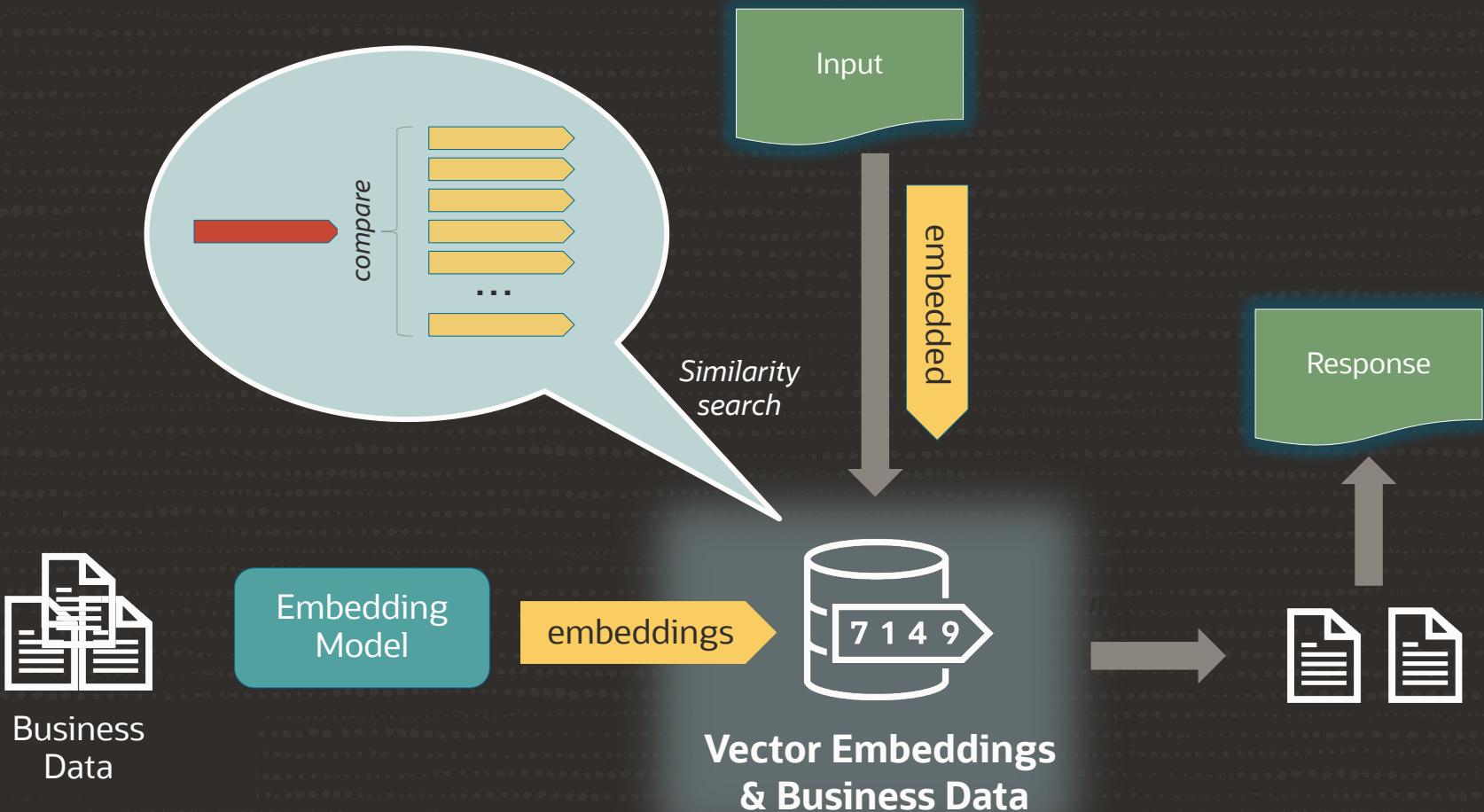
A vector is a sequence of numbers, used to capture the important "features" of the data

Vectors represent the **semantic content** of data, not the underlying words or pixels

Vectors are generated using deep learning embedding models

AI Vector Search

Search across your unstructured data

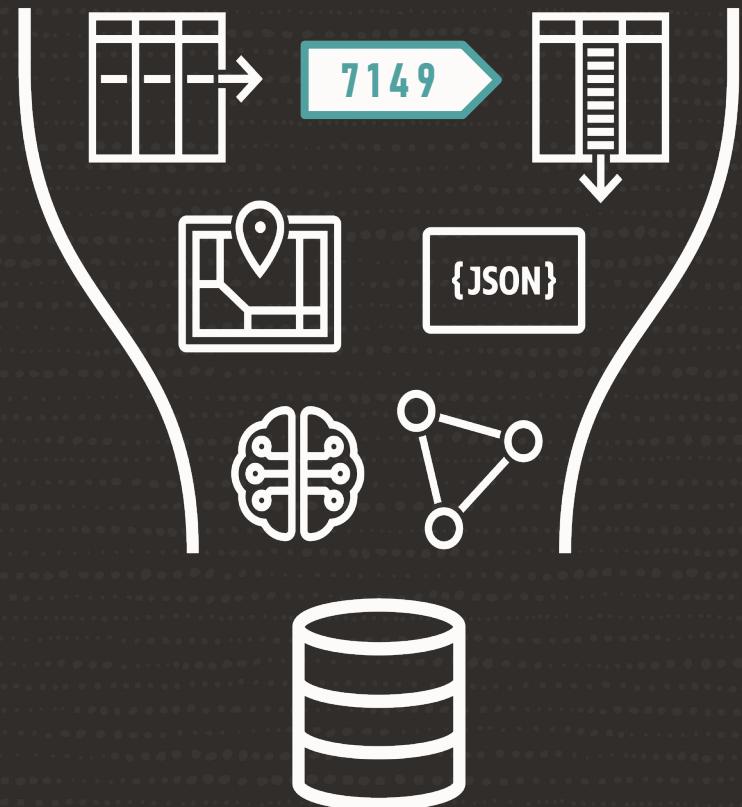


Introducing Oracle AI Vector Search

New set of capabilities in **Oracle Database 23ai**

Query business data alongside vector embeddings

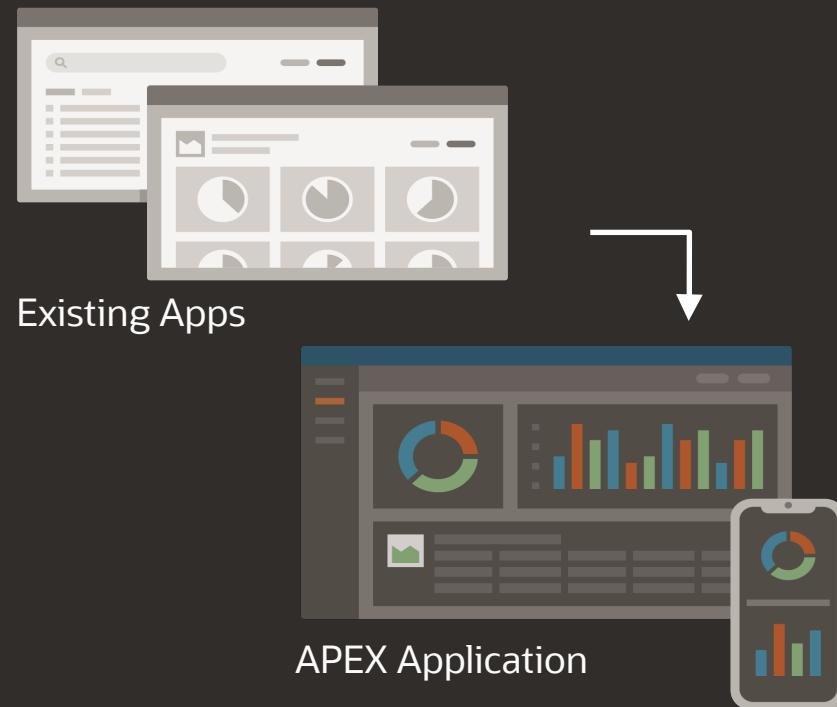
- **Generate** vector embeddings from unstructured data
- **New** VECTOR data type for storing vectors
- **New** SQL syntax and functions express similarity search with ease
- **New** Approximate search indexes packaged and tuned for high performance and quality



Visual Workflow Sample App (business process automation)

Create Fusion Integration

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.

apex.oracle.com/go/fusion-app

APEX.oracle.com for more APEX + AI
information!

Blogs + Videos + Training

apex.oracle.com/blog

apex.oracle.com/videos

apex.oracle.com/go/training

Thank You

Jayson Hanes
APEX Product Manager
@jaysonhanes



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Learn more at apex.oracle.com







Q&A is open

Important links to bookmark

**Links to get you started
and to keep up to date with
Autonomous Database**



1 Get Started with ADB:
oracle.com/autonomous-database/get-started/

2 Join us: bit.ly/adb-linkedin-grp [@AutonomousDW](https://twitter.com/autonomousDW)

2



Bluesky
autonomousdb.bsky.social

3 Got a question?
We are on stackoverflow
bit.ly/adb-stackoverflow

Join us on Developers Slack
(search #oracle-autonomous-database)
bit.ly/odevrel_slack

Final Thoughts

oracle.com/goto/adb-learning-lounge

Links

Upcoming

Replays

The Autonomous Database Learning Lounge series offers free bi-weekly Live Webinars where **Oracle Product Managers** share the many ways you can unlock your talents with complete tutorials on the most important topics for any professional looking to improve their skills for the best **Data Platform** on the Cloud with Autonomous Database.

For more information on all things **Autonomous Database**, make sure to go to our site for **Get Started with Autonomous Database** at: <https://www.oracle.com/autonomous-database/get-started/>

There are other **Autonomous Database Learning Lounge** series for different languages:

- Autonomous Database Learning Lounge en Español: <https://oracle.com/goto/adb-learning-lounge-es>
- Autonomous Database Learning Lounge em Português: <https://oracle.com/goto/adb-learning-lounge-pt>

The listing below shows the Autonomous Database Learning Lounge sessions, their recordings, links to the slides and other important resources in each session.

Upcoming

- Build AI-powered apps: A Step-by-Step Guide to Autonomous Database and GenAI**
11 March 2025 09:00 AM US/Pacific
Marcos Arancibia, Marty Gubar
English 1 Hour
[Log In To Register](#)
- Developer's nirvana with Autonomous Database: JSON-Relational Duality in Oracle Database 23ai**
18 March 2025 09:00 AM US/Pacific
Julian Dontcheff, Julian Dontcheff
[Log In To Register](#)
- Autonomous Database: SQL Firewall, because hackers deserve 404s**
25 March 2025 09:00 AM US/Pacific
Marcos Arancibia, Michelle Malcher
[Log In To Register](#)

Replays

- Migration to ADB Part III: OCI Database Management, the Swiss Army knife for databases**
Derik Harlow, German Viscuso
[Migration to ADB Part III: OCI Database Management, the Swiss Army knife for databases](#)
- Graph RAG: Bring the Power of Graphs to Generative AI**
Melli Annamalai
[Graph RAG: Bring the Power of Graphs to Generative AI](#)
- Migration to ADB Part II: Easily migrate from previous database releases with DMS**
Jorge Martinez
[Migration to ADB Part II: Easily migrate from previous database releases with DMS](#)
- Migration to ADB Part I: Visualize and Evaluate your entire database estate with Oracle Estate Explorer**
Simon Griffiths, Paul Brankin
[Migration to ADB Part I: Visualize and Evaluate your entire database estate with Oracle Estate Explorer](#)
- Migration to ADB Part III: OCI Database Management, the Swiss Army knife for databases**
Derik Harlow
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