



Accelerating Innovation: GenDev with Oracle APEX

Marc Sewtz

Senior Director, Software Development

Oracle APEX

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APEX Team @ APEX Alpe Adria



Marc Sewtz



Simon Hunt



Monica Godoy Millan



Patrick Wolf



Steve Muench



Fanel Secara

Marc Sewtz - Bio

1998 Joined Oracle Consulting in Hamburg, Germany

1998 – 2000 Worked on Bertelsmann Books Online (BOL) in New York City
Online book & media store for the US, several EU countries and Japan

1999 Transferred to Oracle Consulting in the United States



2000 – 2001 Worked for the City of Chicago on the
Web Bid & Compliance project

2001 – 2002 Worked for the Chicago Police Department on
Oracle Forms Migration

2002 – Present Oracle APEX Development Team



First Oracle APEX (Flow Builder) Project



City of Chicago Web Bid & Compliance Team

Oracle APEX Features

- XML-based Application Export / Import (discontinued)
- Classic Reports
- Tabular Forms
- APEX_ITEM PL/SQL API
- Create App and Create Page Wizards
- Designed several early Themes, including Builder UI
- Theme Subscriptions and Template Options
- Mobile



Graphics & Themes

Build Applications Browse and create database objects Load Data

ORACLE® Application Express

Home > Application Builder > Application 463

Application: 463 - Sample Application

Run Application Supporting Objects Shared Components Export / Import

Page 1 View Icons Display 15 Go Create Page >

1 - Sample Application 2 - Customers 3 - Add/Modify Customers 4 - Orders 5 - Cluster Bar

6 - Add/Modify Products 7 - Products 8 - Manage Users 9 - Enter New Order 10 - Calendar

Data Entry Forms Interactive Reports Tabular Forms Navigation Cal

Logout Home Application Builder SQL Workshop Utilities

Reports Validations Translation Services

Forms Processes Conditional Processing

Charts Computations Authentication

Calendar Branches Authorization

Session State Management

Logging & Monitoring

Select Columns Filter Sort Control Break Highlight Compute Aggregate Chart Flashback Save Report Reset Help Download

Department : Accounting

First Name	Last Name	Job Title	Email	Salary
Shelley	Higgins	Accounting Manager	SHIGGINS	\$12,000.00
William	Gietz	Public Accountant	WGIEZ	\$8,300.00
				Sum: \$20,300.00

Department : Administration

First Name	Last Name	Job Title	Email	Salary
Jennifer	Whalen	Administration Assistant	JWHALEN	\$4,400.00
				Sum: \$4,400.00

Department : Executive

First Name	Last Name	Job Title	Email	Salary
De Haan		Administration Vice President	LDEHAAN	\$17,000.00
Kochhar		Administration Vice President	NKOCHHAR	\$17,000.00
King		President	SKING	\$24,000.00
				Sum: \$58,000.00

Report View Row 2 of 106

First Name Neena
Last Name Kochhar
Email NKOCHHAR
Phone Number 515.123.4568
Hire Date 21-SEP-1989
Salary \$17,000.00
Department Executive
Job Title Administration Vice President
Commission



Oracle APEX Development Team Meeting - 2017



Oracle APEX Team Today



APEX



United States	32
Morocco	14
Mexico	13
Austria	12
India	12
UK	10
Germany	10
Netherlands	4
Canada	3
Ireland	3
Brazil	2
Australia	2
Finland	1
Romania	1
Bulgaria	1



Oracle APEX

*“We're now building a lot of our applications in **APEX**. And our productivity gains are, again, a factor of 10. And we build the applications in one tenth the time, or **one tenth** the amount of people, or at **one tenth** the cost. But these are not typical **low-code** applications. These are applications that can scale to **millions** of users and all over the world.”*

*Oracle Q4 FY23 earnings call - June 12, 2023

Larry Ellison

Founder & CTO, Oracle



Larry Ellison outlines Oracle's generative AI strategy at OCW 2024



Oracle Cloud World 2023

Larry Ellison's Keynote at Oracle Cloud World 2024



Oracle Cloud World 2024



@Oracle

- APEX is now considered "mainstream"
- Officially a Tier-1 platform to build Fusion apps
- Oracle is building new Fusion SaaS modules using APEX
- Oracle Global Business Units are shipping APEX based SaaS
- Oracle APEX surveys are in production use by multiple business units
- Oracle Forums (external) and Einstein (internal)

APEX is used by every line of business at Oracle

More Apps are built on APEX internally than all other frameworks combined

apex.oraclecorp.com

6,400+

Active Workspaces

- Provisioning takes < 2 minutes
- Oldest App is over 20 years old
- Self service provisioning

48k+

Applications

- 1.8 Million Pages
- Most used app framework
- Apps that are not used are purged

6k+

Developers

- On one single instance
 - Used daily by almost all employees
- Larger projects deployed to ADB-S



APEX Ideas App

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

New functionality that is missing? Enhancements for something that already exists? Is something more difficult than it should be? Whatever it is, we'd love to hear from you.

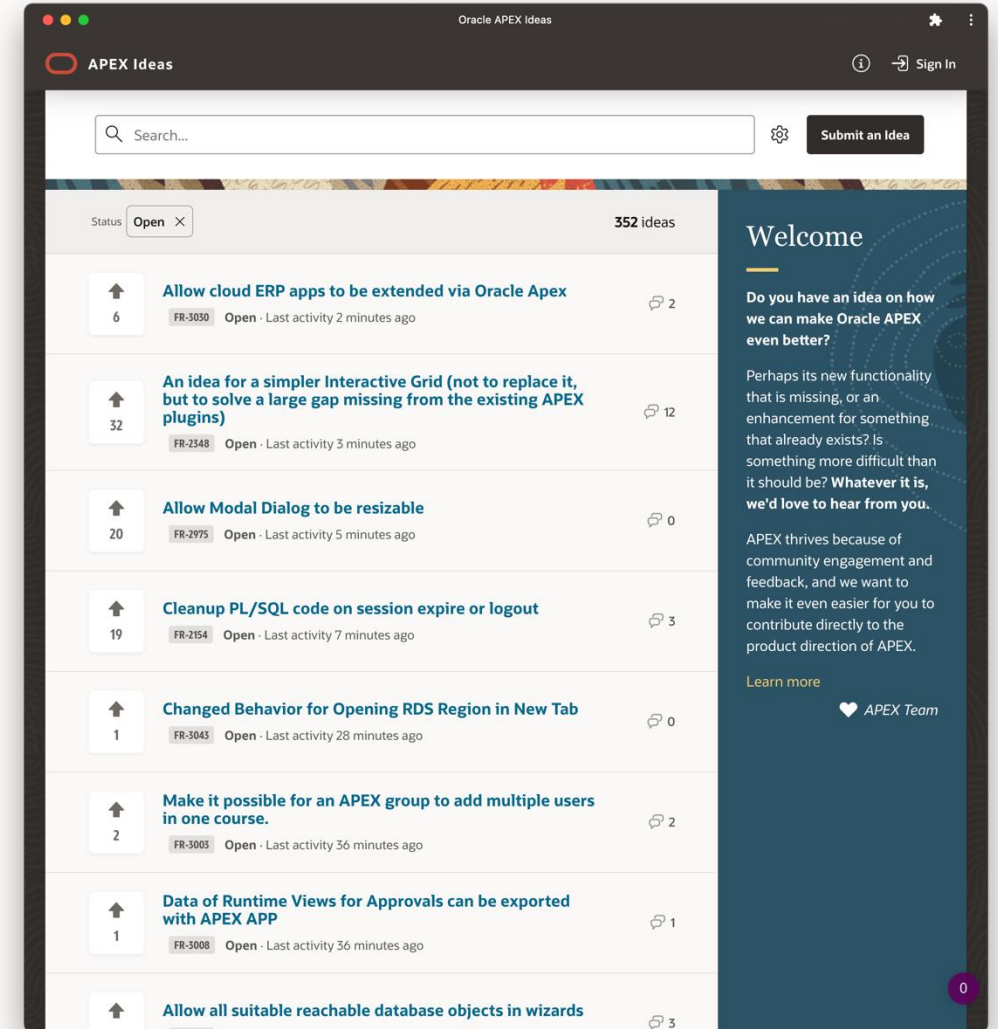
31 Ideas delivered in APEX 24.2

6,000+ Active Users

2,600+ Ideas

More than 15 ideas per week

More than 2,000 Page Views per month



apex.oracle.com/ideas





What's New in APEX 24.2 - 4-Part Series

- | | | |
|----|------------|---|
| #1 | January 16 | <ul style="list-style-type: none">- Vector Search Support in Search Configurations- AI Configuration with RAG Sources- Dynamic Action Generate Text With Gen AI- Create Custom Data Models Using AI |
| #2 | January 23 | <ul style="list-style-type: none">- Oracle Fusion Cloud Applications - REST Source Enhancements- Select Many Improvements - Application Object Dependencies |
| #3 | January 30 | <ul style="list-style-type: none">- Workflow & Human Tasks Enhancements- Document Generator Service Integration Enhancements- Template Component Grouped Headers - Faceted Search Enhancements- Delivered APEX Ideas |
| #4 | February 6 | <ul style="list-style-type: none">- JSON Sources: Build Components directly on JSON columns, JSON Collection Tables or JSON Relational Duality Views. |



BLOG

3 Easy Steps to Integrate OCI Document Generator Function

with Oracle APEX on Autonomous Database

3 Easy Steps to Integrate OCI Document Generator Function with Oracle ...

Roopesh Thokala
9 minute read

CONFERENCES

Oracle APEX Nordic Tour 2025

Helsinki, Finland **May 5**
Copenhagen, Denmark **May 7**
Stockholm, Sweden **May 9**

Oracle APEX Nordic Tour 2025 is coming to you in Spring!

Monica Godoy
2 minute read

Oracle APEX 24.2 Now Available

Now it's even easier to build AI into your apps with low code: ...

Chaitanya Koratamaddi
Simon Hunt QVRM
4 minute read

CONFERENCE

Oracle Database 23ai & APEX Iberian Tour!

Barcelona February 10, 2025
Madrid February 12, 2025
Lisbon February 14, 2025
Malaga February 17, 2025

Oracle Database 23ai & APEX Iberian Tour is coming to you!

Monica Godoy
2 minute read



Become an Oracle APEX Pro: The Latest Learning Path You Need to Follow

blogs.oracle.com/apex/post/become-an-oracle-apex-pro

Claim your Free Certification until May 15, 2025



Get Oracle APEX Certified for FREE!

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



APEX 24.2

Product Update



Oracle APEX 24.2

Oracle announced the general availability of the **APEX 24.2** release on January 15, 2025.

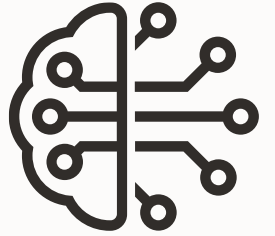
APEX 24.2 is available for all databases across all commercial cloud regions as of March 2025.

This release simplifies the creation of low-code applications through generative development, delivering improved experiences for both developers and end users. Designed to help developers harness the power of AI to speed up app development and elevate user engagement, the APEX 24.2 release introduces enhancements across the following key areas:

- **Use APEX GenDev to quickly create apps**
- **Add AI capabilities to apps**
- **Build enterprise-ready applications**



Focus on AI



AI Assisted Development (GenDev)

- Transforming every phase of application development
- Extends beyond coding: debugging, testing, learning, and more
- Empowers developers through natural language interfaces
- Rapidly evolving landscape of LLMs: diverse models, fierce competition
- Flexible deployment: private self-hosted or public cloud-based solutions

AI Enhanced Applications

- Natural language interfaces for intuitive user experiences
- Conversational and context-aware interactions
- Automated data summarization and actionable insights
- Seamless integration of private data with LLM knowledge
- Dynamic generation of charts and visualizations
- Transparent attribution for trust and accuracy

AI Assisted Development

- Why are we adding AI-assisted development (GenDev) to Oracle APEX?
 - **To accelerate app development and boost developer productivity**
- How do GenDev capabilities in Oracle APEX deliver on this?
 - **Automated DB modeling** – Supports rapid design and refinement of data structures
 - **App generation from natural language** – Instantly turns ideas into fully functional apps
 - **Simplified SQL development** – Converts natural language into complex SQL with ease
 - **Smarter debugging and troubleshooting** – Speeds up issue detection and resolution across SQL, PL/SQL, and JavaScript

Create Custom Data Models

- 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

APEX Assistant

This assistant lets you use natural language to generate a data model and sample data. Use it to jump-start the creation of a schema to build your application on.

Let's create a data model together. Describe the kind of elements you want your data model to include.

Create a data model for managing project and task data. MA

Thank you for your request. Below is a data model for managing project and task data, designed to efficiently store and handle information related to projects and their associated tasks.

```
sql
-- create tables
create table project_mgmt_projects (
  id          number          generated by default on null as
  identity                                constraint
project_mgmt_projects_pk primary key,
  name        varchar2(255) not null,
  description  varchar2(4000),
  start_date   date          not null,
  end_date     date,
  status       varchar2(255) not null check (status in
('planned', 'in_progress', 'completed')),
```

This data model includes two primary tables: `project_mgmt_projects` for storing project details, and `project_mgmt_tasks` for storing tasks associated with each project. Both tables contain audit columns and triggers to automatically manage creation and update data. An index is added to efficiently manage the foreign key relationship between tasks and projects.

1. Would you like to add more attributes to the project or task tables, such as priority or assigned personnel?
2. Do you need any additional tables to manage other aspects, like project resources or team members?

Create SQL Script

Type your message here

SQL Format **Oracle SQL** Quick SQL

Adding AI capabilities to end-user applications

- How can AI **enhance the experience of end users** in APEX applications?
 - **Natural language interaction** – Allows users to ask questions conversationally, leveraging large-language models and enriching responses with contextual data for more relevant results.
 - **AI-powered content generation** – Helps generate new content, create concise summaries, and provide accurate translations, improving productivity and accessibility.
 - **Intelligent search capabilities** – Enables users to find the most relevant information through semantic similarity searching, delivering smarter and more intuitive search results.

Generate Text with AI

- New Dynamic Action “Generate Text with AI”
- Leverages Generative AI services
- Generate a **one-time response** based on user content
- **Configurable** System Prompt, Input Value, and Use Response attributes

The screenshot displays the Oracle APEX interface for configuring a dynamic action. The top navigation bar includes 'Rendering', 'Dynamic Actions', and 'Processing'. The left sidebar shows the page structure: 'Page 1: Home' > 'Pre-Rendering' > 'Components' > 'Breadcrumb Bar' > 'Poem Writer' > 'Body' > 'Write a Poem' > 'Region Body' > 'P1_FRUITS' > 'Generate' > 'Dynamic Actions' > 'Write Poem'.

The main configuration panel is titled 'Action' and contains the following sections:

- Identification:** Name is 'Write', Action is 'Generate Text'.
- Generative AI:** Configuration is '- Select -', Service is 'AI', and the System Prompt is 'You are a talented poet, write a beautiful tercet, base on the fruits provided. If the provided value is not a fruit, answer with "Sorry, this is not a fruit"'. There is a 'Write' button and a 'False' status indicator.
- Input Value:** Type is 'Item', Item is 'P1_FRUITS'.
- Use Response:** Type is 'Item', Item is 'P1_POEM', and the 'Suppress Change Event' toggle is turned off.

The bottom section shows the 'Poem Writer' component in a preview mode. It has a header 'Poem Writer' and a 'Generate Poem' button. The input field 'Fruits' contains 'Strawberry, Cherry'. The output field 'Poem' displays the generated text: 'Amidst the bloom of summer's gentle breath, Strawberry and cherry dance with sweet embrace, Their rubies gleam, a vivid tableau of grace.'

AI Vector Search

- Vector Search enables AI-powered similarity search within the Oracle Database by storing and querying data as vectors.
- It allows you to find relevant text, images, or documents based on meaning - not just exact matches - making it ideal for semantic search, recommendations, and generative AI applications.
- Vector Search requires **Oracle Database 23ai**
- Sample Vector Search Application included in APEX 24.2



Vector Providers

- 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

 **APEX** **App Builder** ▾ SQL Workshop ▾ Team Development ▾ Gallery

↑ Workspace Utilities \ Vector Providers

Vector Providers

History

Q ▾

Go

Actions ▾

Create >

Name	Static ID	AI Provider	Provider Type	Provider Details
OpenAI Vector Service	EBA_VECTOR_OPENAI	Open AI	Generative AI Service	https://api.openai.com/v1
OCI Vector Service	EBA_VECTOR_OCI	OCI Generative AI Service	Generative AI Service	https://inference.generativeai.us-chicago-1.oci.oraclecloud.com



Retrieval-Augmented Generation (RAG)

- 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.
- Define **RAG Sources** in **AI Configuration**

The screenshot displays the APEX App Builder interface for configuring a RAG Source. The breadcrumb trail at the top indicates the path: Application 100 > Shared Components > Generative AI Configurations > Create / Edit > RAG Source. The page title is "RAG Source", and it includes "Cancel", "Delete", and "Apply Changes" buttons. Below the title is a tabbed interface with "Show All", "Identification", "Description", "Source", "Advanced", "Server-Side Condition", "Security", "Configuration", and "Comments". The "Identification" tab is active, showing a "Name" field with the value "properties". The "Description" tab shows a text area with the value "Data about properties available in Park Slope, Brooklyn". The "Source" tab is active, showing a "Type" dropdown set to "SQL Query". Below this is a text area for the "SQL Query" containing the following code:

```
1 select ID,  
2 ADDRESS,  
3 STATUS,  
4 PRICE,  
5 MONTHLY_FEES_AND_TAXES,  
6 PROPERTY_TYPE,  
7 BEDS BEDROOMS,  
8 TOTAL_BATHS BATHS,
```

AI Configurations

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

Generative AI Configuration

Cancel

Delete

Apply Changes

Show All

Identification

Subscription

Generative AI

RAG Sources

Advanced

Comments

Identification

*

Name

Real Estate AI Agent

?

*

Static ID

real_estate_ai_agent

?

Generative AI

Service

Application Default

?

System Prompt

?

APEX Assistant

1

You are a friendly real estate agent, specializing on properties in Park Slope Brooklyn. You onl

Welcome Message

?

APEX Assistant

1

Welcome! How can I assist you in finding your perfect new home?

RAG Sources

Create RAG Source

Name	Description	Type	Conditional	Updated	Updated By
properties	Data about properties available in Park Slope, Brooklyn	SQL Query		2 days ago	MARC

1 - 1

Roadmap

APEX Lang



APEX Lang

APEX Lang is a domain specific language

- **Human-readable APEX export format**
 - Simplifies diffing and code reviews for APEX applications.
- **File-based representation of App metadata**
 - Provides a structured way to store and manage application configurations.
- **Full grammar-based language**
 - Enables programmatic editing, generation, and AI-assisted authoring of APEX applications.



APEX Lang

Benefits & Goals

- **Standardized export/import format**
 - Supports modern file-based lifecycle and enables code merging and version control.
- **Encapsulation of declarative attributes**
 - Seamlessly integrates SQL, PL/SQL, JavaScript, CSS, and HTML within a unified structure.
- **Facilitates static analysis**
 - Enforces best practices and enables automated application evolution.
- **Supports AI-driven code generation & modification**
 - Enhances efficiency with AI-assisted automation and refactoring.



Export / Import: SQL script vs APEX Lang

	SQL Script	APEX Lang
Highly human readable	No	Yes
ANTLR Grammar	No	Yes
Designed for AI Generation	No	Yes
Editable with documented syntax	No	Yes
Elegant static analysis	No	Yes
Uses static IDs not generated primary keys	No	Yes
Integrated into SQL Developer for VS Code	No	Yes
SQLcl command line export and import	Yes	Yes



Q&A



Thank you

Text

Text



Our mission is to help people see data in new ways,
discover insights, unlock endless possibilities.