ORACLE

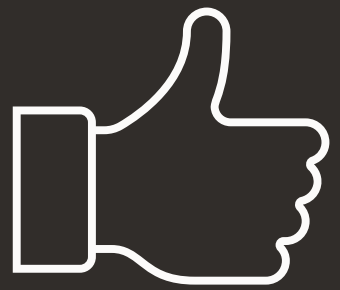
Select AI – A technical session

Use natural language to analyze your data

Generative AI models

Results from GenAI models can be brilliant

- Creative and innovative content
- Messages use a “voice” specific to your audience
- Capture attention using personalized messages



GenAI models have their limits

- Frozen in time
- Don’t know your company’s private data

Introduction

Accessing data used to require special languages

SQL

R

etc

Relational data requires joins to retrieve relevant information

Missing a join results in a bad answer

Introducing Select AI

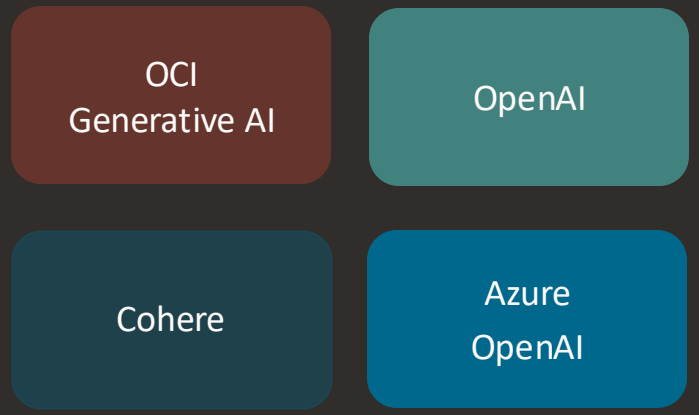
Retrieve data using natural language

Refine your question by adding additional demands

Generate meaningful responses based on Natural Language

How does it work?

1 Choose an LLM supporting **NL2SQL**



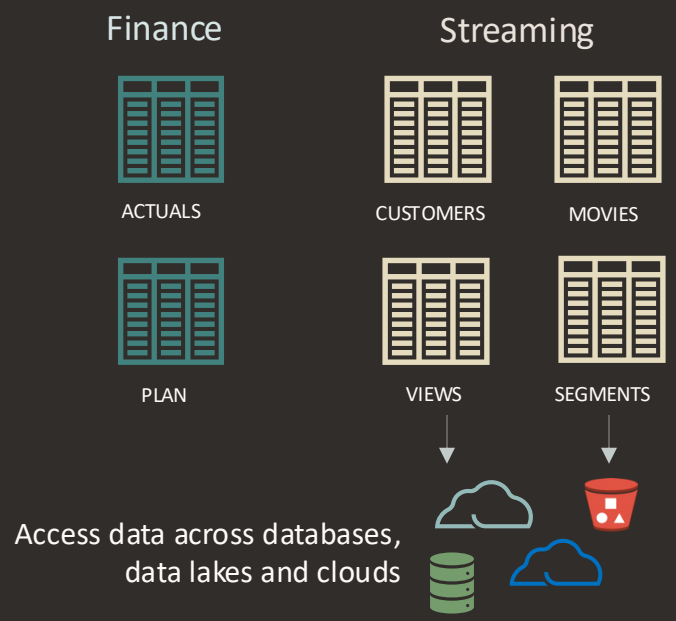
2 Create credentials to access the LLM

```
DBMS_CLOUD.CREATE_CREDENTIAL (
   credential_name IN VARCHAR2,
   username IN VARCHAR2,
   password IN VARCHAR2 DEFAULT NULL);

DBMS_CLOUD.CREATE_CREDENTIAL (
   credential_name IN VARCHAR2,
   user_ocid IN VARCHAR2,
   tenancy_ocid IN VARCHAR2,
   fingerprint IN VARCHAR2,
   private_key IN VARCHAR2);
```

How does it work?

3 Specify schemas, tables and/or views in a profile



4 Enable the profile and start querying

```
SQL> SELECT AI <your question>
```

Going deeper and deeper

Choose an LLM

For SQL generation, the LLM needs to support NL2SQL

- Each LLM might have one or more models
- Check the documentation which are currently supported

The following LLMs are currently supported

- OCI GenAI Service
- Azure OpenAI Service
- OpenAI
- Check Google, Anthropic and Hugging Face

Used in this presentation:

- OCI: meta.llama-3-70b-instruct
- OpenAI: gpt-3.5-turbo ??

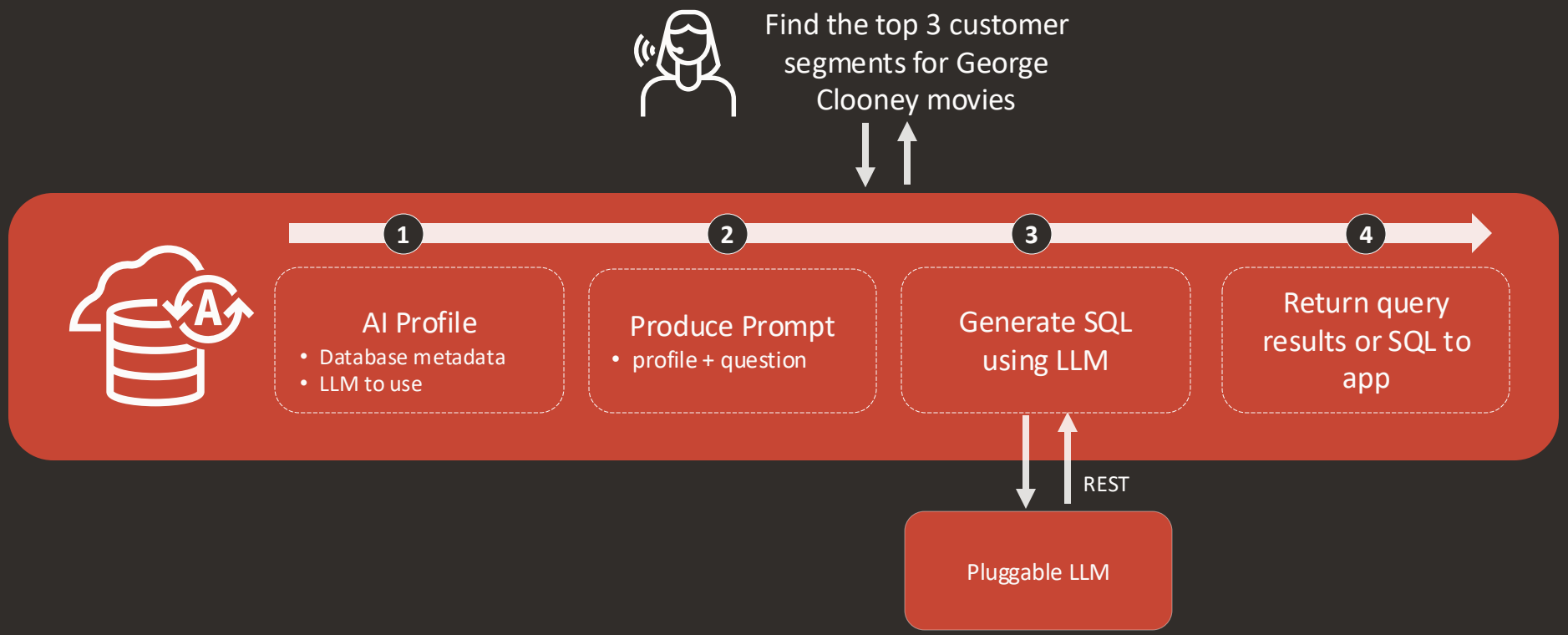
Choose an LLM

- Choose Public or Private
  - No actual data is sent to the LLM
  - Only questions, table/view names, column names and any comments are sent
  - Follow-up questions might contain other information

- Choose specialized LLMs?
  - LLM needs to interpret your question
    - The better the LLM is trained, the better the question is understood
    - Example: "How many people live in LA"
  - Specialized questions might require a specialised LLM
    - ChemGPT might be a better choice for Chemistry related questions
    - Example: "What is the SMILES representation of {compound name}"

Create your credentials

SQL query generation process flow



Generative AI use cases across business functions

Customer Operations

Automated customer service based on customer's product suite, experience and language

Real-time AI call scripts based on conversation history and caller context

Post call agent feedback on call performance, ways to optimize future calls

Marketing

Content generation for ecommerce (product descriptions), B2B (articles optimized for SEO) in brand voice

Mass personalization of search, outreach, customer nurture based on buyer profile and usage history

Synthesis, clustering of unstructured customer data to identify new trends and personas

Sales

Custom sales outreach based on interaction history, prospect profile to free up sales rep time

Virtual sales representatives that guide prospects through offerings through to a sale

Custom sales pitch generation for new customers based on existing content

Product Development

Analysis, cleaning, and labeling large volumes of data, such as user feedback, market trends, logs

Coding and API auto-completion to speed up development,, refactoring, and systems integration

Testing automation through creation of synthetic data, and compilation of log data

Strategy and Finance

Synthesis of unstructured data from earnings calls, analyst reports and other sources

Automation of complex, context heavy processes like expensing, AR

At scale monitoring of competitors, customers, across public, private sources

Agenda

Build apps on Autonomous Database that use your data, natural language and AI to :

1> Query your data

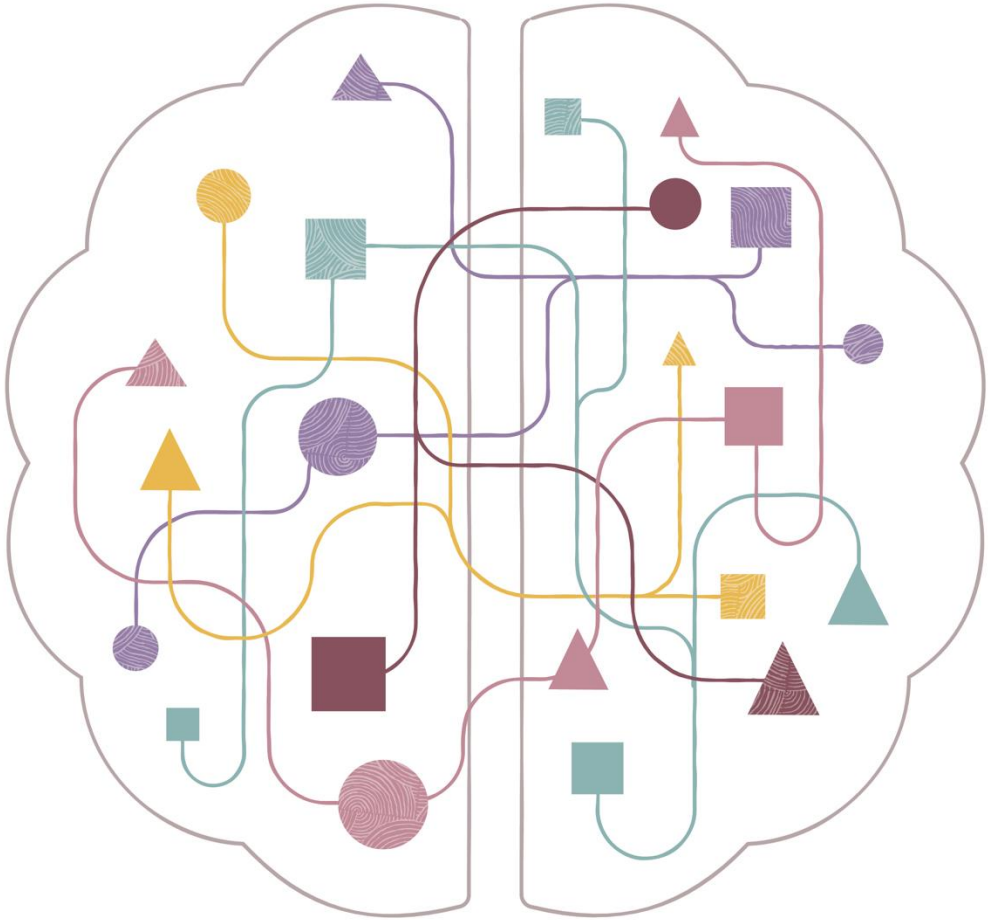
2> Summarize content and generate innovative responses

Autonomous Database Select AI

Simplest way to get answers about your business

Use **your language** to query data

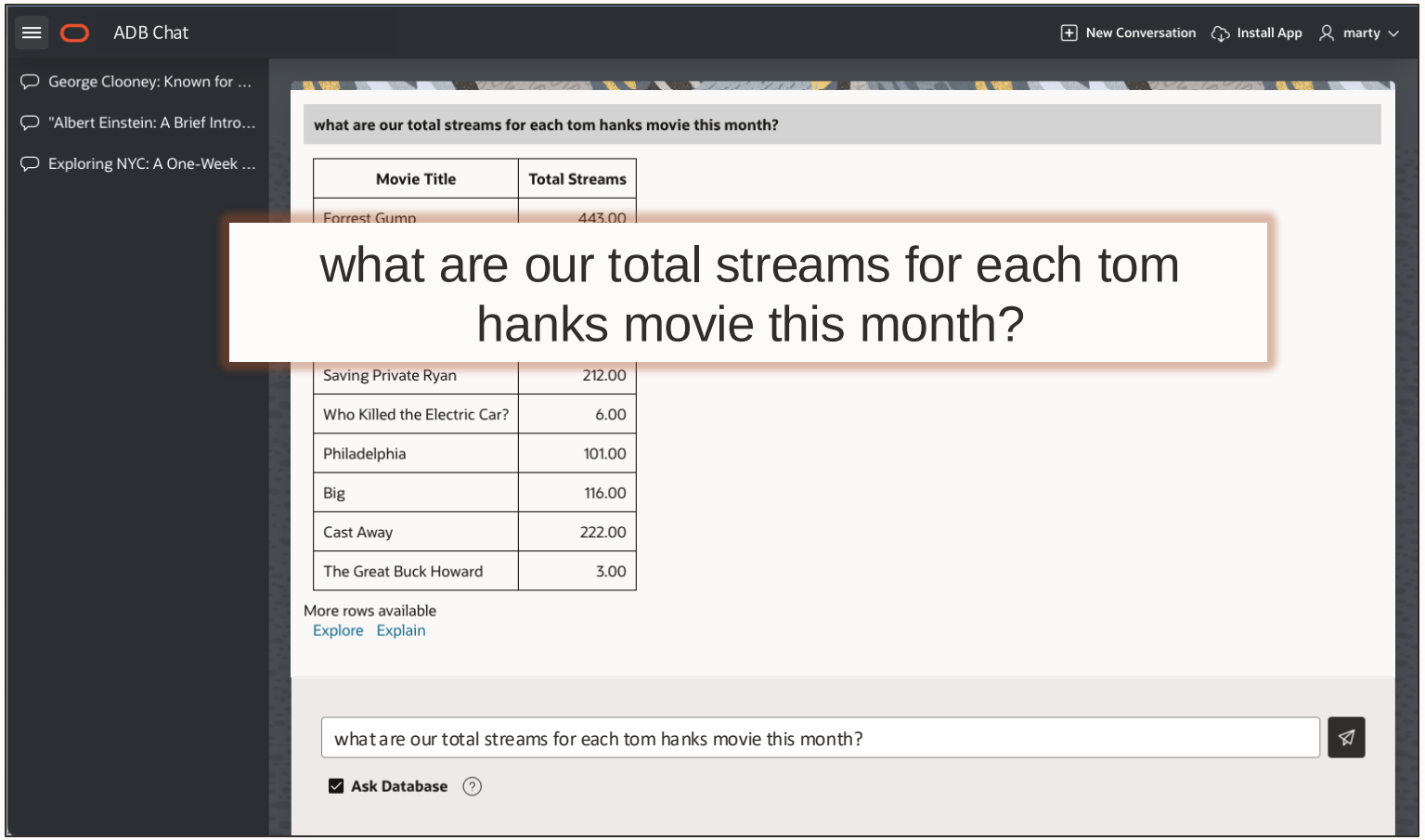
No need to understand where and how your data is stored to gain insights



Select AI - Simplest way to get answers about your business

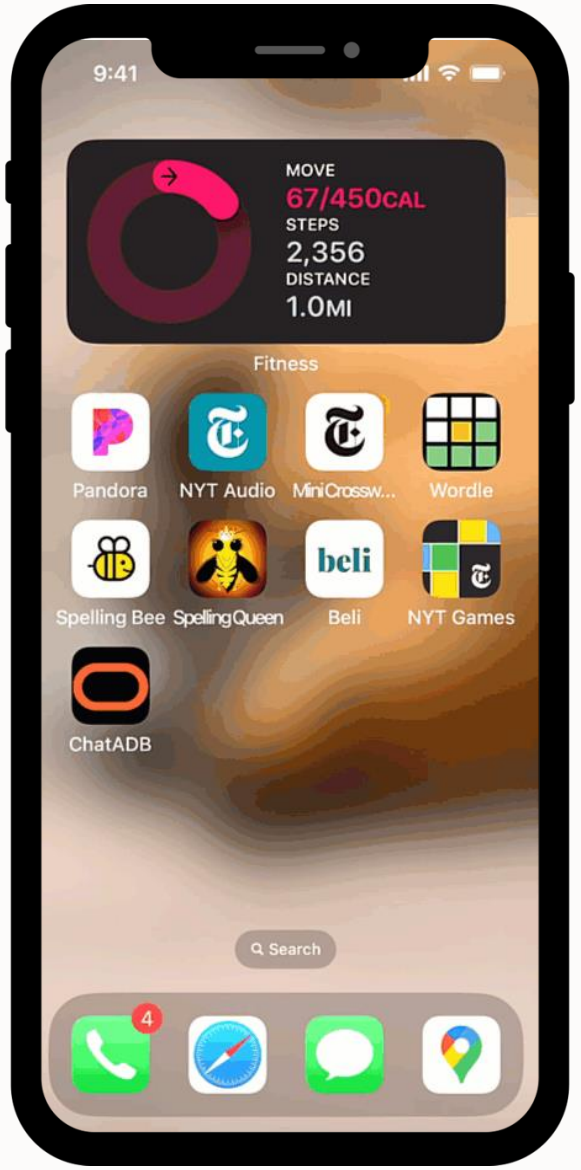
Just ask a question

Autonomous Database manages the entire query process to produce your answer



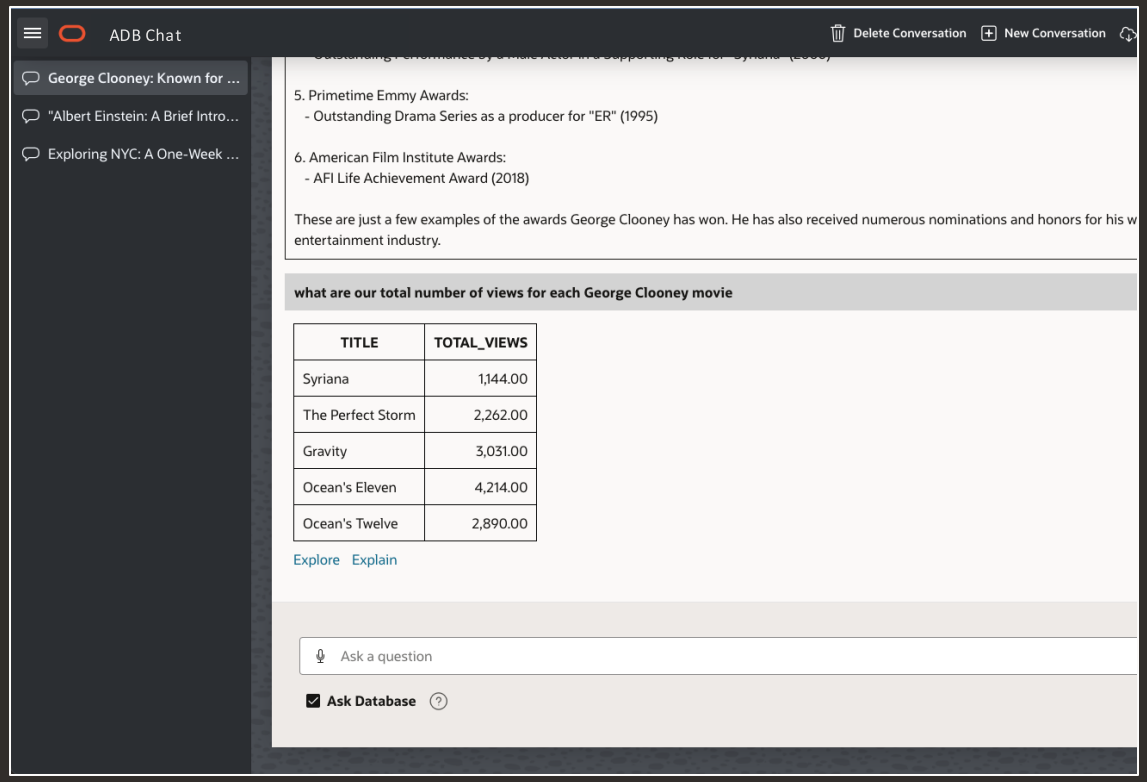
Demonstration

Gain business insights instantly. Just ask your database



Demonstration

Speak “Human” to Autonomous Database to get your business questions answered



Developing apps with Select AI

Simple

Designed so that you can easily build generative AI capabilities into new or existing applications

Future-enabled

Choose from an array of large language models. Pick the model that is best suited to your business

Secure

Rely on the same Oracle Database security that protects your data. Plus, when using OCI Generative AI, your data will not be sent to the LLM provider or seen by other customers

Historically, answering these types of questions has not been easy

We infer a lot from human language

what are our total streams for each tom hanks movie this month?

- total streams → total number of movie views
- for each → breakout views by movie
- tom hanks → tom hanks is an actor
- this month → understanding of time

Select AI translates your language into Oracle SQL language

Processes question using an AI large language model (LLM)

Question	Inference
what are our	
total streams →	total number of movie views →
for each →	breakout views by movie →
tom hanks movie →	tom hanks is an actor →
this month? →	Understanding of time →

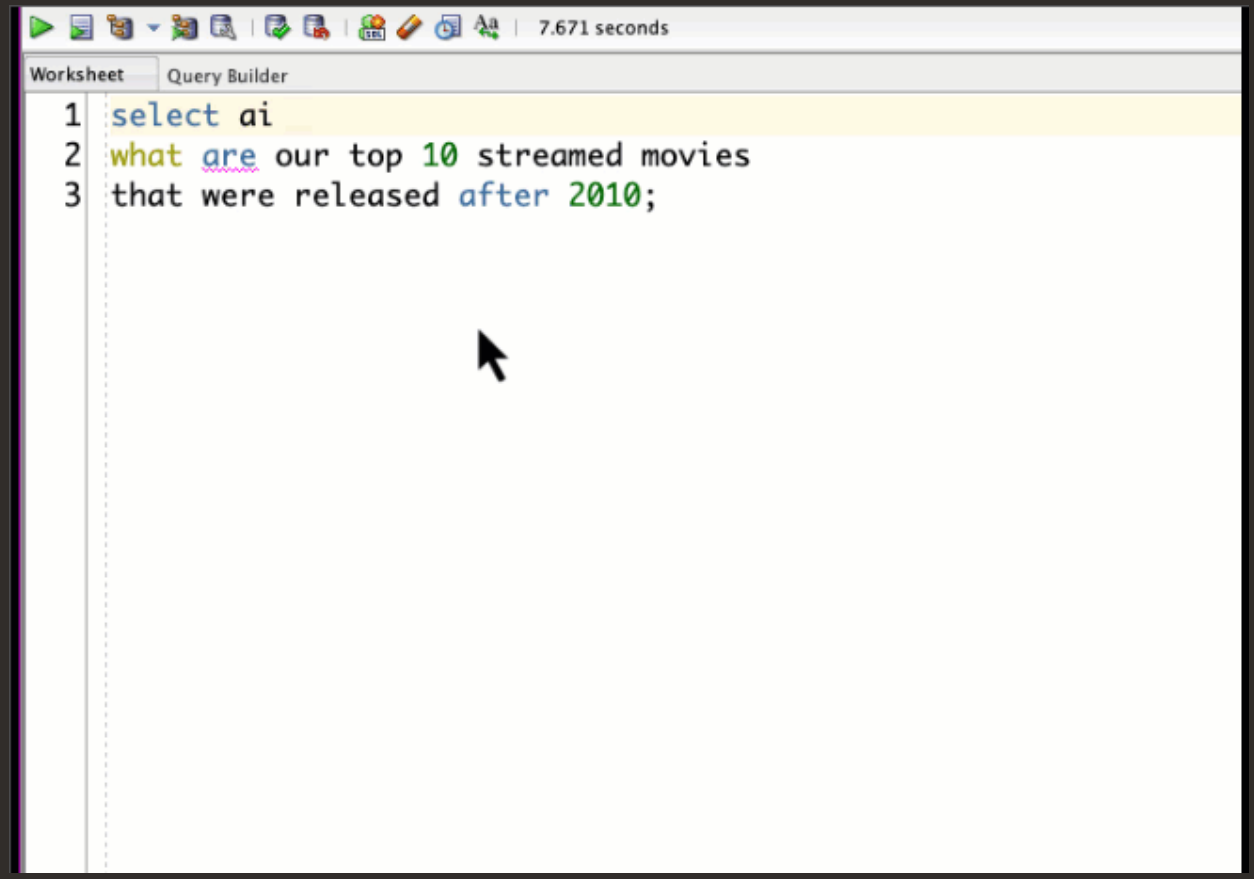
```
SELECT
  m.title AS movie_title,
  COUNT(s.views) AS total_streams
FROM movie m
  JOIN activity s ON m.movie_id = s.movie_id
  JOIN actors a ON m.movie_id = a.movie_id
WHERE a.actor = 'Tom Hanks'
  AND EXTRACT(MONTH FROM s.day_id) =
     EXTRACT(MONTH FROM SYSDATE)
GROUP BY m.title
```

LLMs are remarkable at inferring intent (and getting better)
They are not perfect! It is important to verify results

Easy to extend and build new natural language apps

Use a standard SELECT statement followed by AI and your question

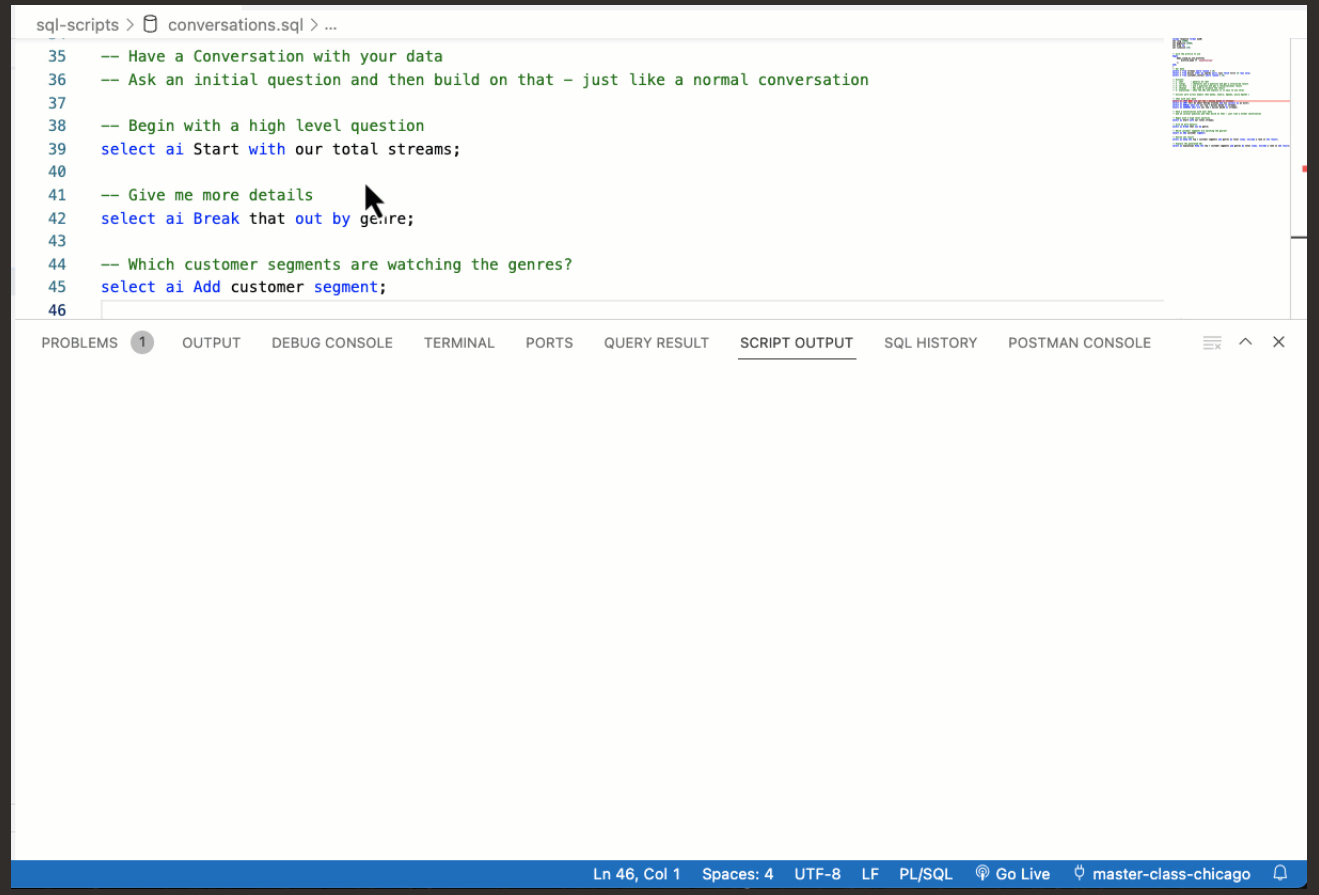
Process the result as you would any other SQL result set



Have a conversation to get your questions answered

Your first question is not your last!

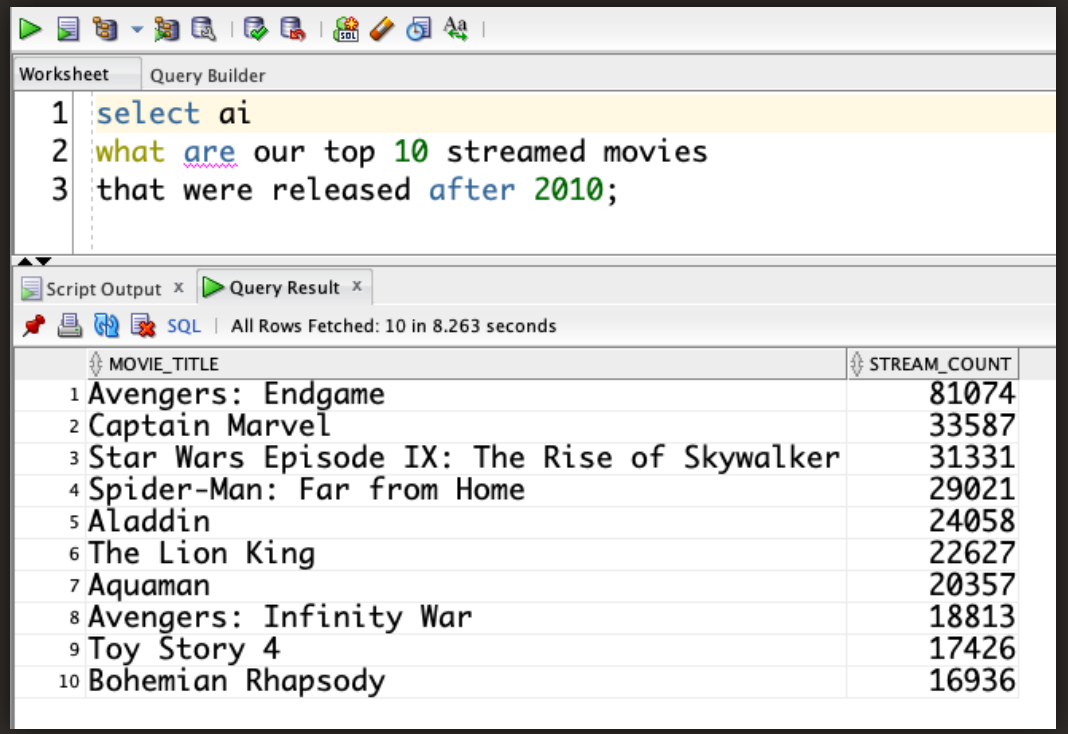
Keep refining your questions until you get the answer you need



Demonstration

Behind the scenes:

How you can use Select AI to deliver natural language apps



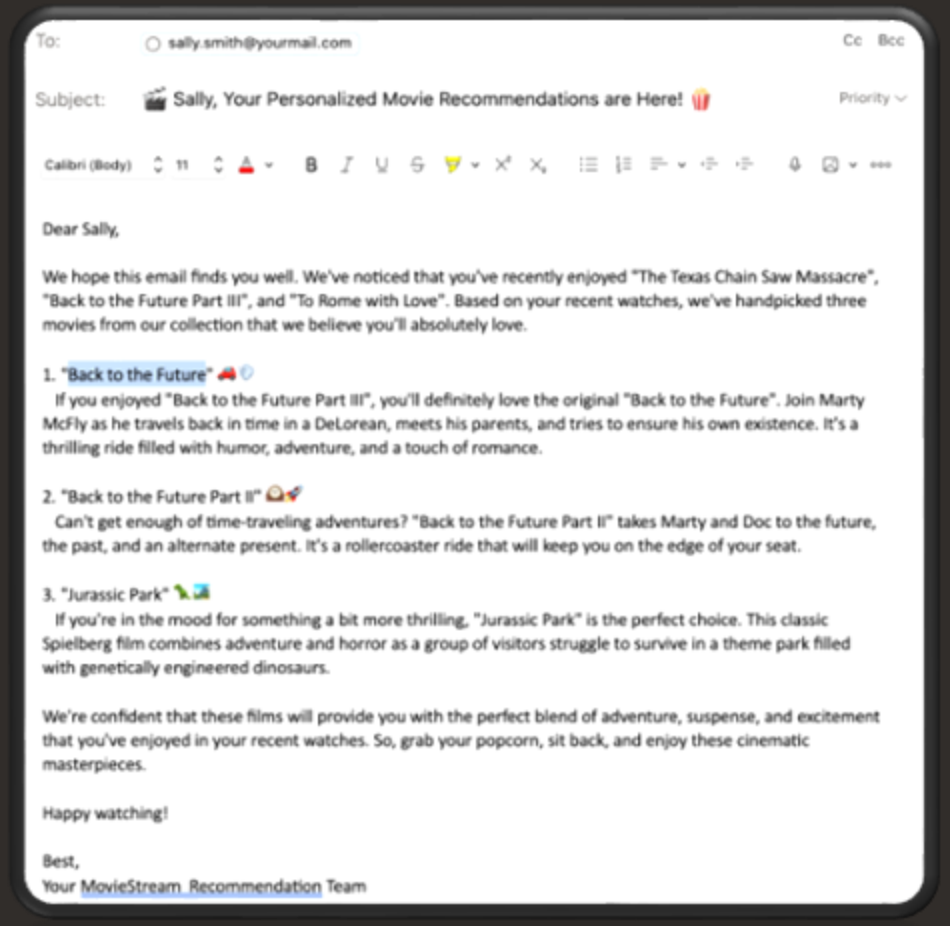
	MOVIE_TITLE	STREAM_COUNT
1	Avengers: Endgame	81074
2	Captain Marvel	33587
3	Star Wars Episode IX: The Rise of Skywalker	31331
4	Spider-Man: Far from Home	29021
5	Aladdin	24058
6	The Lion King	22627
7	Aquaman	20357
8	Avengers: Infinity War	18813
9	Toy Story 4	17426
10	Bohemian Rhapsody	16936

Get better results

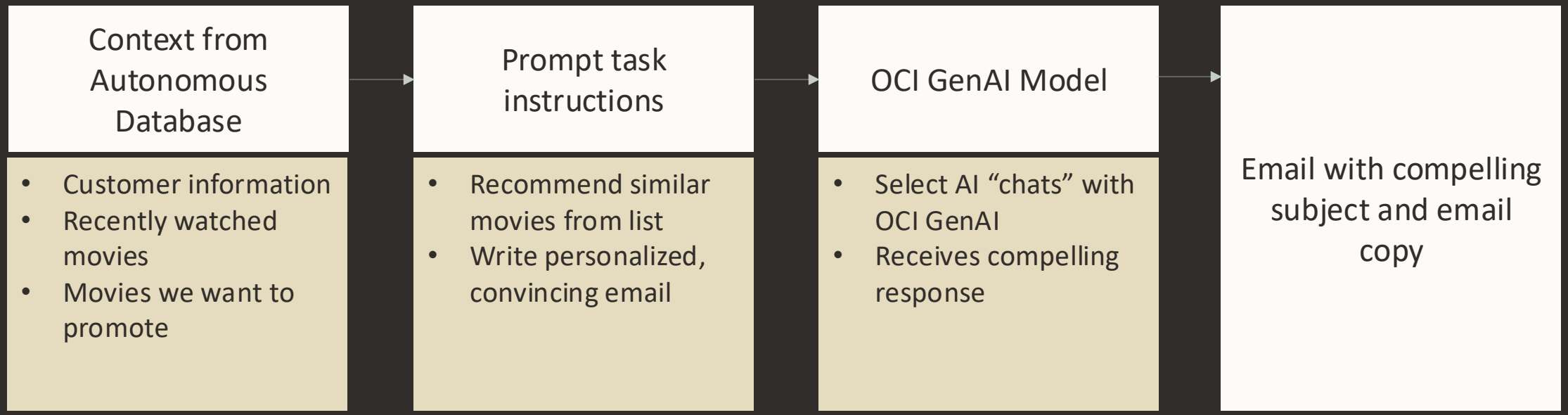
Easily use your organization’s data with generative AI

Autonomous Database provides an integrated view of your organization’s data

Use your most recent data to provide context to AI models with Select AI



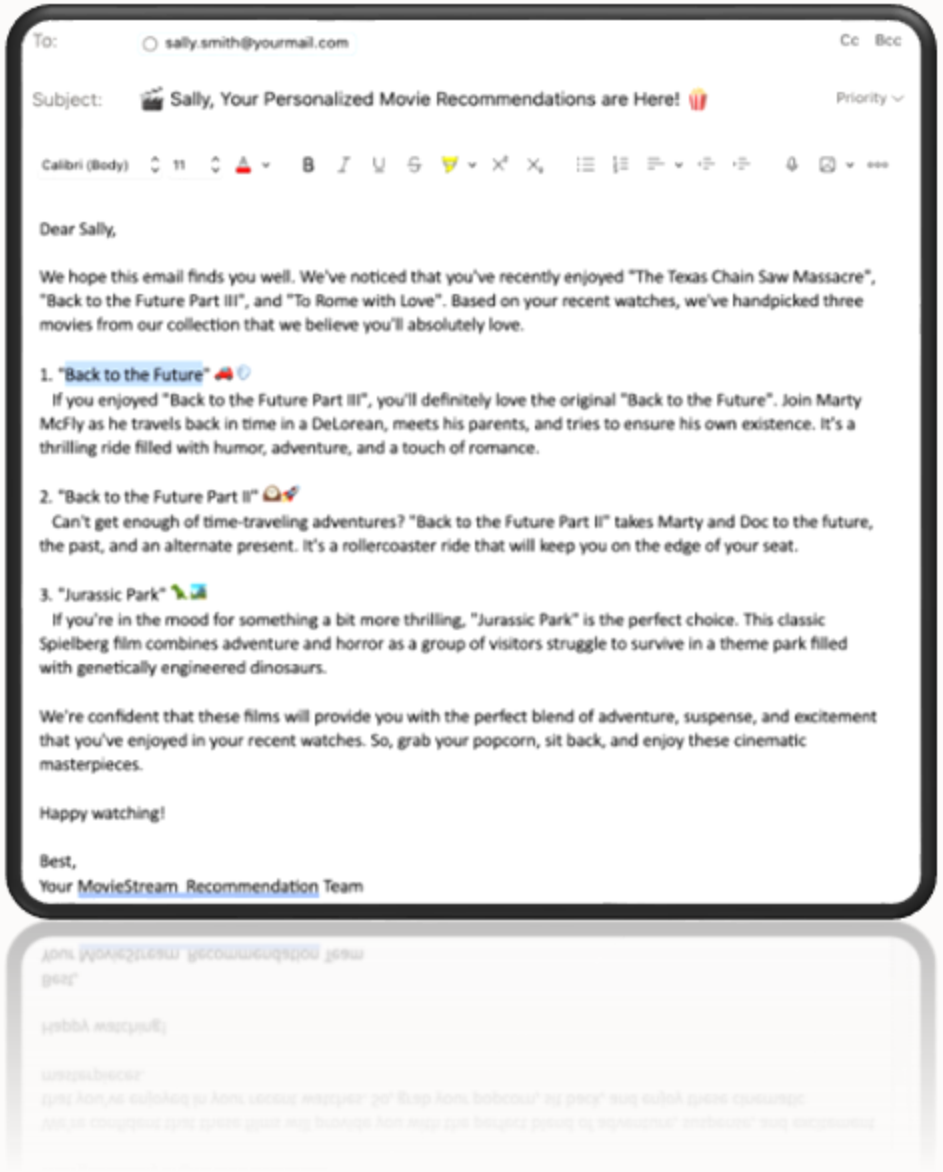
Enhance GenAI with context from private data



Demonstration

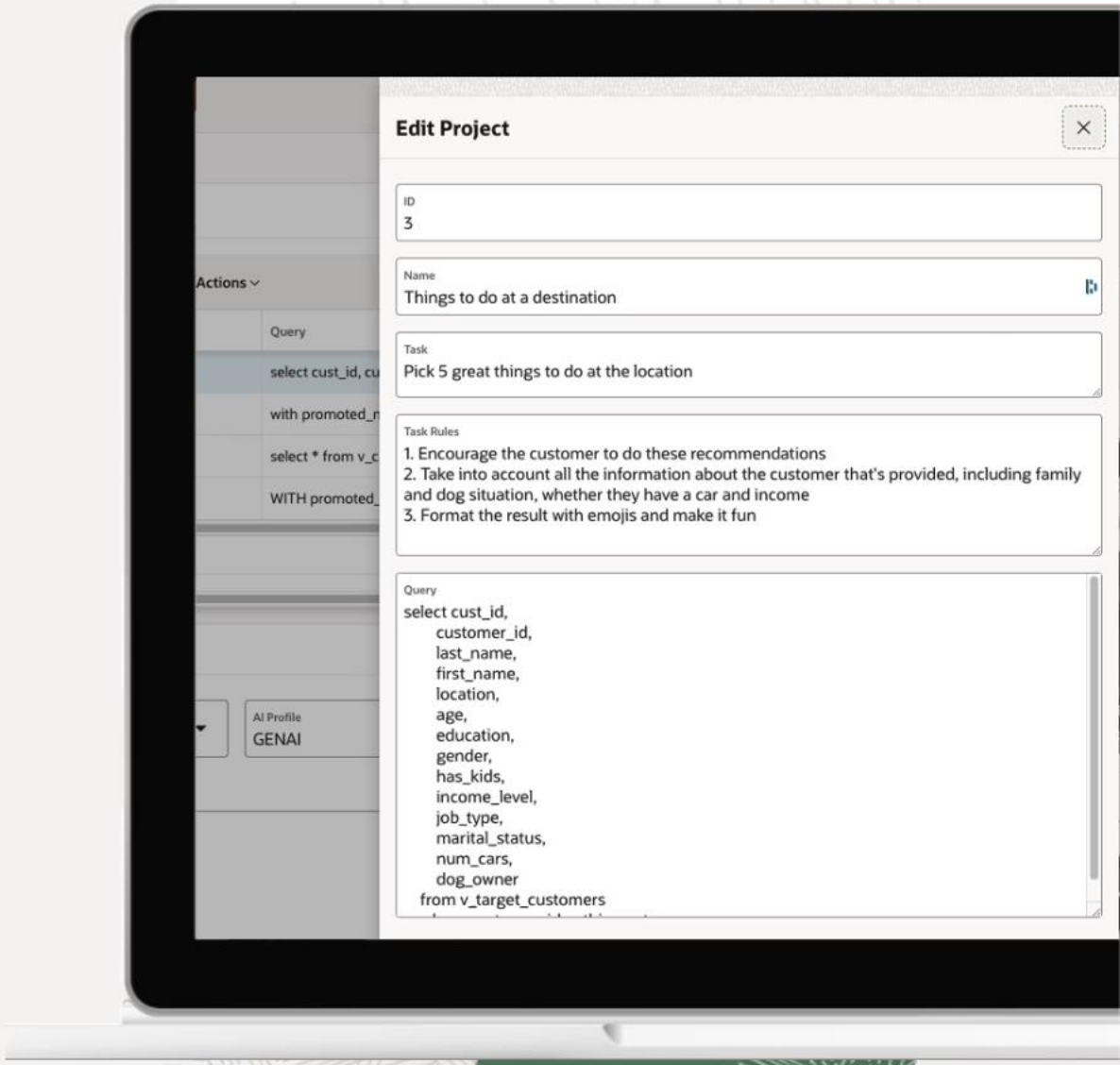
SQL-powered RAG

Provide context to LLMs to get great results



AUTONOMOUS DATABASE

Use GenAI to Analyze Your Data



Create clear prompts for the LLM

Use a query to combine the tasks and the contextual data

Query **task** and **customer data**

```
SELECT
  task,
  task_rules,
  last_name,
  first_name,
  location,
  age,
  gender,
  has_kids,
  num_cars,
  income_level,
  dog_owner
FROM v_customer, genai_project
WHERE customer_id = 1 and id = 3
```

Tabular result

TASK	TASK_RULES	LAST_NAME	FIRST_NAME	LOCATION	AGE	...	DOG_OWNER
Pick 5 great things to do at the location	1. Encourage the customer to do these things. Really sell them as to why it would be right for them 2. Take into account all the information about the customer that's provided, including family and dog situation, whether they have a car and income 3. Format the result with emojis and make it fun	Mouly	Jennine	Paris, Ile-De-France	37	...	NO

Create clear prompts for the LLM

Use built-in JSON features to structure the LLM request

Query combining **task** and **customer data**

```
SELECT JSON_OBJECT(*) FROM (
  SELECT
    task,
    task_rules,
    last_name,
    first_name,
    location,
    age,
    gender,
    has_kids,
    num_cars,
    income_level,
    dog_owner
  FROM v_customer, genai_project
  WHERE customer_id = 1 AND id = 3
)
```

JSON document


```
{
  "task": "Pick 5 great things to do at the location",
  "task_rules": "
     1. Encourage the customer to do these things. Really
     sell them as to why it would be right for them
     2. Take into account all the information about the
     customer that's provided, including family and dog
     situation, whether they have a car and income
    3. Format the result with emojis and make it fun",
  "last_name": "Mouly",
  "first_name": "Jennine",
  "location": "Paris, Île-De-France",
  "age": 37,
  "gender": "Female",
  "has_kids": "NO",
  "num_cars": 2,
  "income_level": "F: Above 110,000",
  "dog_owner": "NO"
}
```

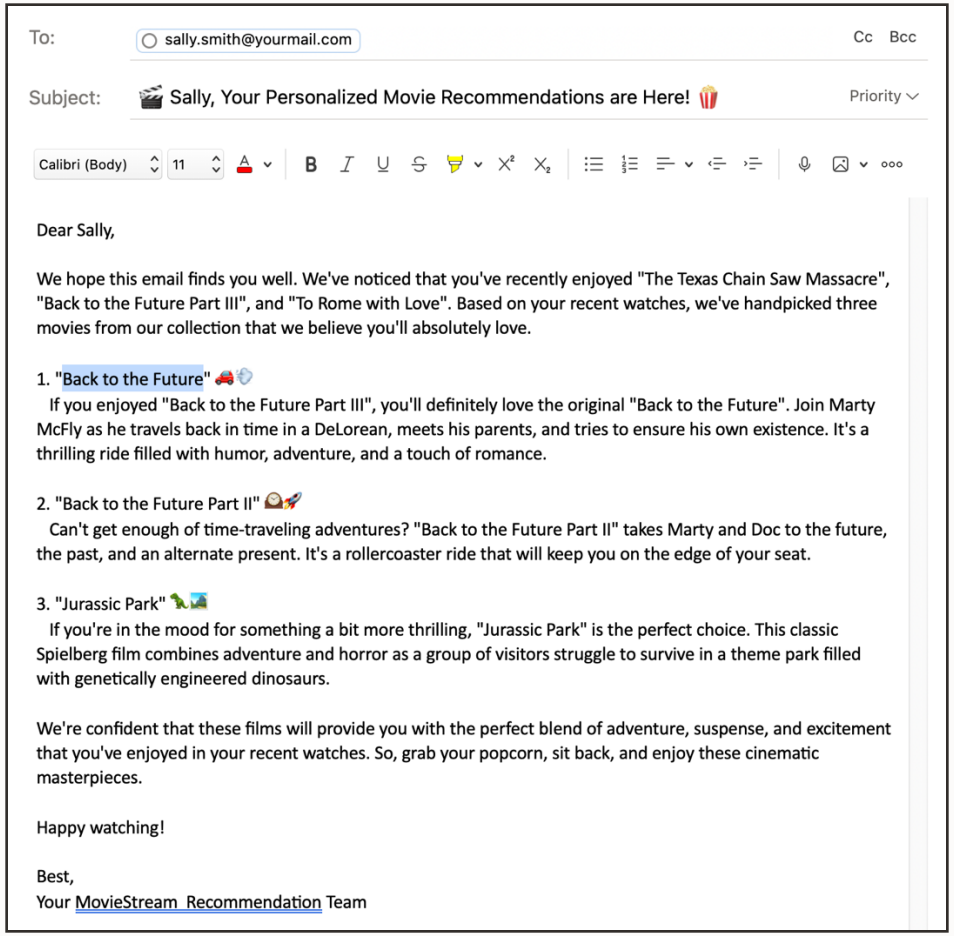
Analyze data using your AI

Simple API call combines your data and the task to get results

DBMS_CLOUD_AI

GENERATE

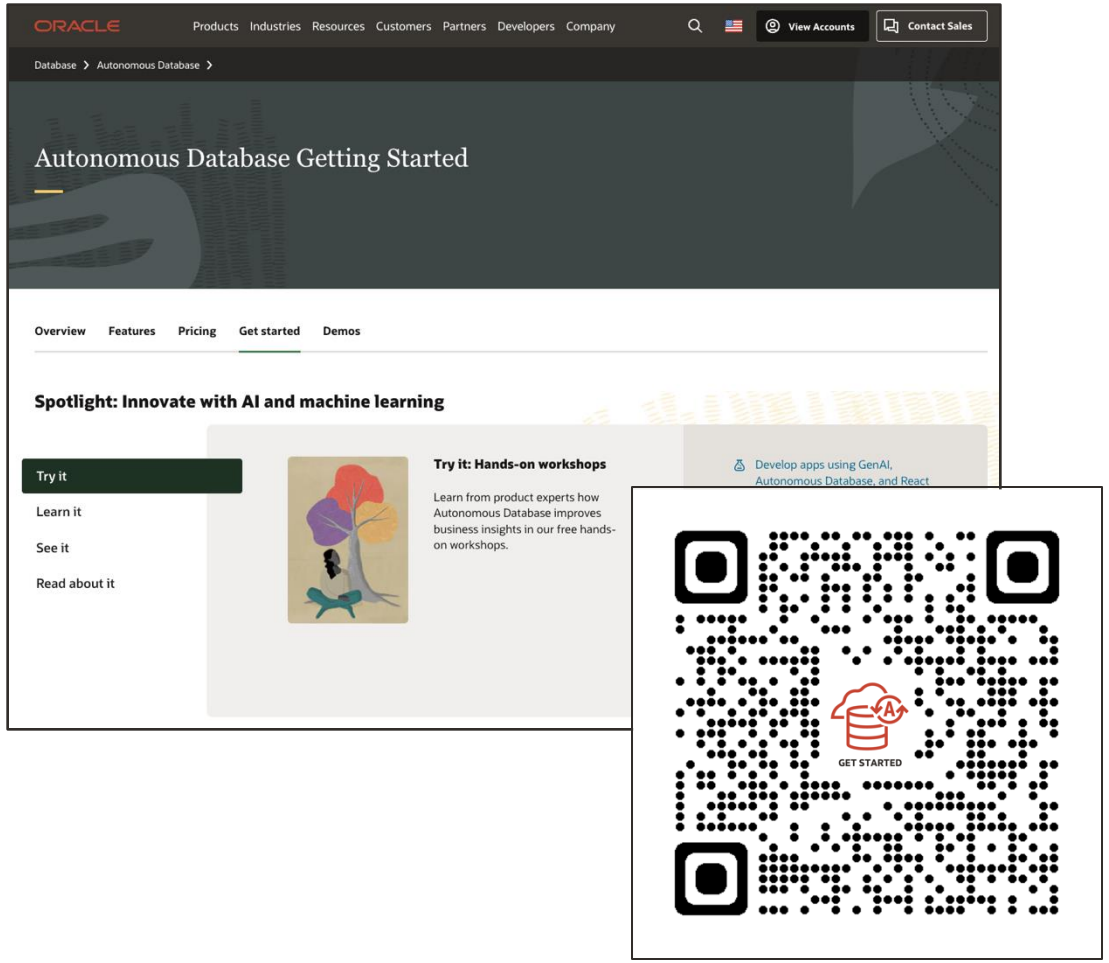
```
l_response := DBMS_CLOUD_AI.GENERATE (
   prompt => '<task + data>',
   profile_name => 'ociai',
   action => 'chat'
 );
```



Q&A

Get started!

- Try Autonomous Database for free
- Watch demos
- Learn with self-service workshops
- Keep up with the latest news

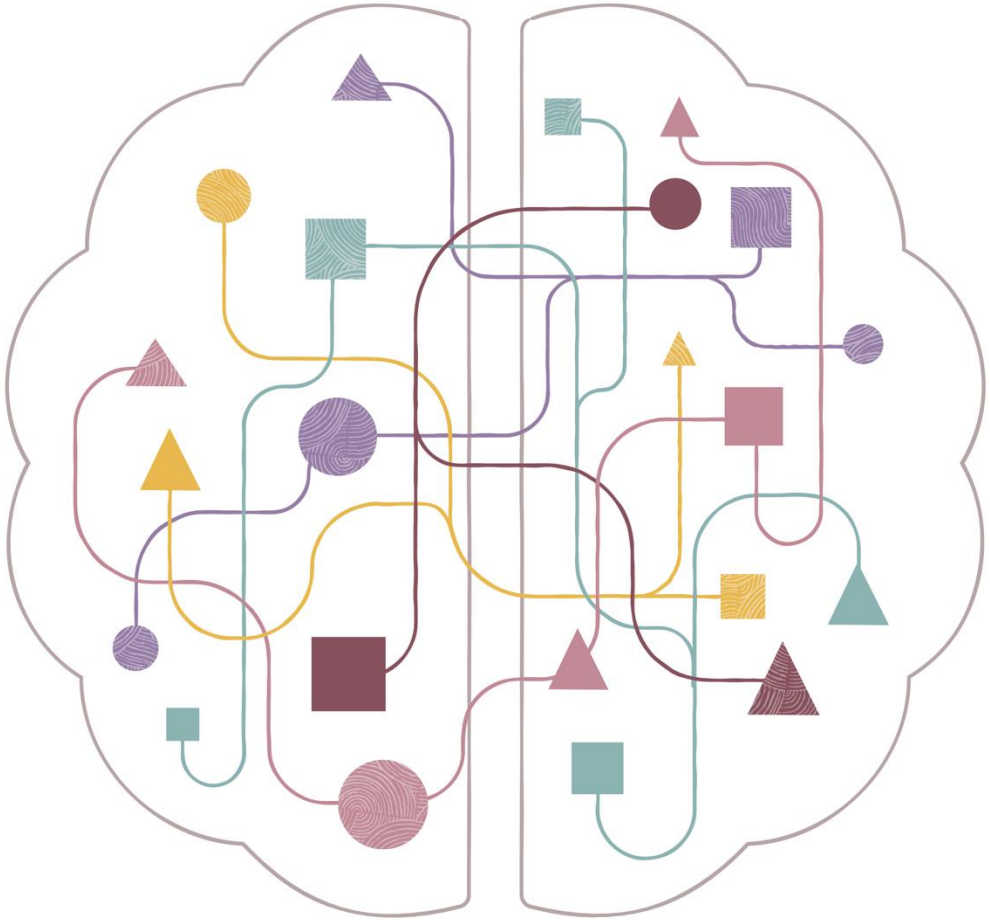


https://www.oracle.com/autonomous-database/get-started/

Select AI Summary

Simplest way to get answers about your business

- It’s simple to develop AI powered apps
- It’s future-enabled
- It’s secure



Thank you