



ORACLE

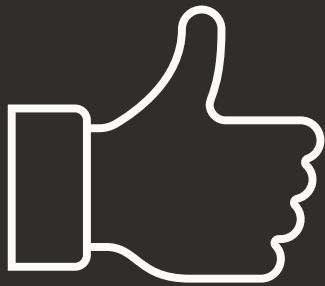
Select AI – A technical session

Use natural language to analyze your data

Generative AI models

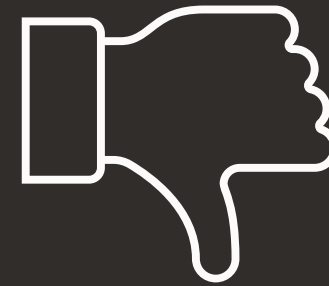
Results from GenAI models can be brilliant

- 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**

OCI
Generative AI

OpenAI

Cohere

Azure
OpenAI

2

Create credentials to access the
LLM

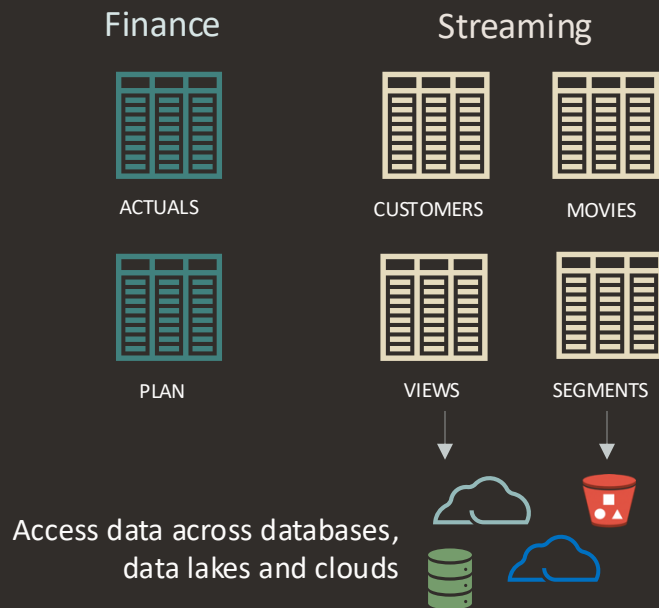
```
DBMS_CLOUD.CREATE_CREDENTIAL (  
    credential_name IN VARCHAR2,  
    username IN VARCHAR2,  
    password IN VARCHAR2 DEFAULT NULL);
```

```
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

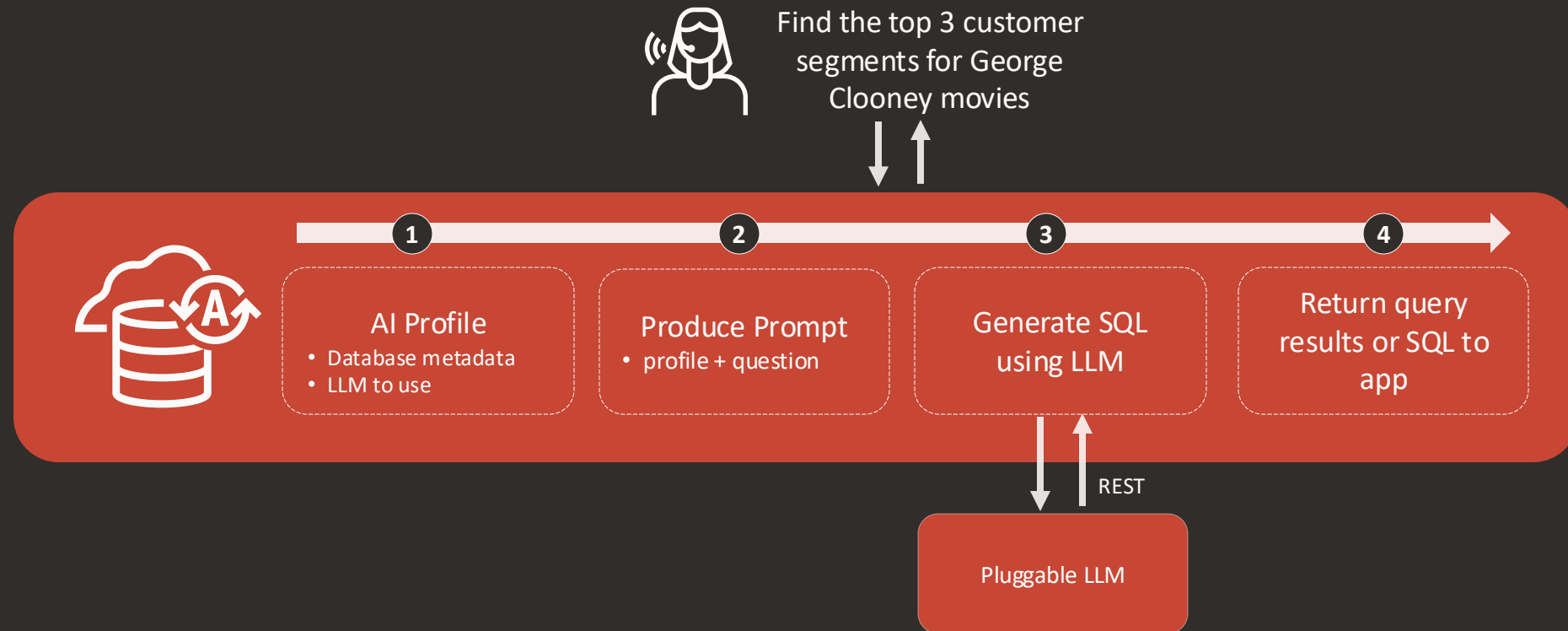
- Choose Public or Private
 - No actual data is sent to the LLM
 - Only questions, table/view names, column names and any comments are sent
 - Follow-up questions might contain other information
- Choose specialized LLMs?
 - LLM needs to interpret your question
 - The better the LLM is trained, the better 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	 Marketing	 Sales	 Product Development	 Strategy and Finance
<p>Automated customer service based on customer's product suite, experience and language</p> <p>Real-time AI call scripts based on conversation history and caller context</p> <p>Post call agent feedback on call performance, ways to optimize future calls</p>	<p>Content generation for ecommerce (product descriptions), B2B (articles optimized for SEO) in brand voice</p> <p>Mass personalization of search, outreach, customer nurture based on buyer profile and usage history</p> <p>Synthesis, clustering of unstructured customer data to identify new trends and personas</p>	<p>Custom sales outreach based on interaction history, prospect profile to free up sales rep time</p> <p>Virtual sales representatives that guide prospects through offerings through to a sale</p> <p>Custom sales pitch generation for new customers based on existing content</p>	<p>Analysis, cleaning, and labeling large volumes of data, such as user feedback, market trends, logs</p> <p>Coding and API auto-completion to speed up development,, refactoring, and systems integration</p> <p>Testing automation through creation of synthetic data, and compilation of log data</p>	<p>Synthesis of unstructured data from earnings calls, analyst reports and other sources</p> <p>Automation of complex, context heavy processes like expensing, AR</p> <p>At scale monitoring of competitors, customers, across public, private sources</p>



Agenda

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

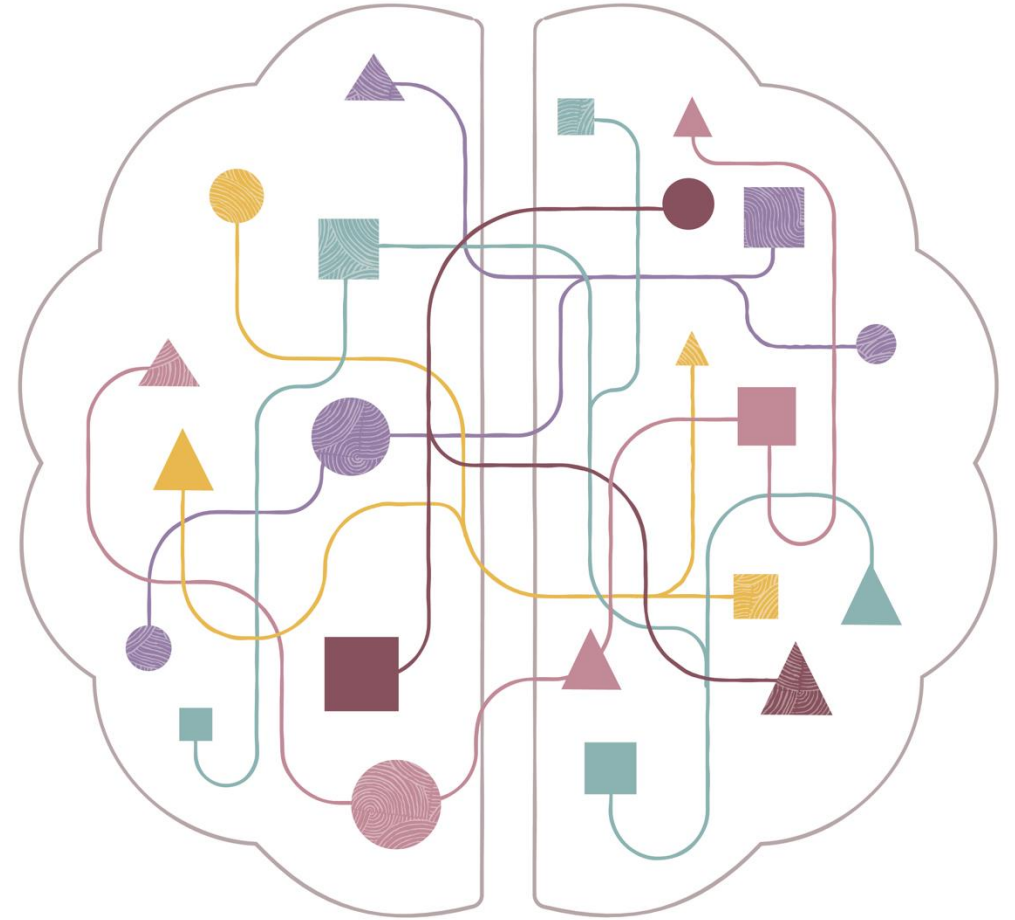
- 1>** Query your data
- 2>** Summarize content and generate innovative responses

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

ADB Chat

George Clooney: Known for ...

"Albert Einstein: A Brief Intro...

Exploring NYC: A One-Week ...

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

Movie Title	Total Streams
Forrest Gump	443.00
Saving Private Ryan	212.00
Who Killed the Electric Car?	6.00
Philadelphia	101.00
Big	116.00
Cast Away	222.00
The Great Buck Howard	3.00

More rows available
[Explore](#) [Explain](#)

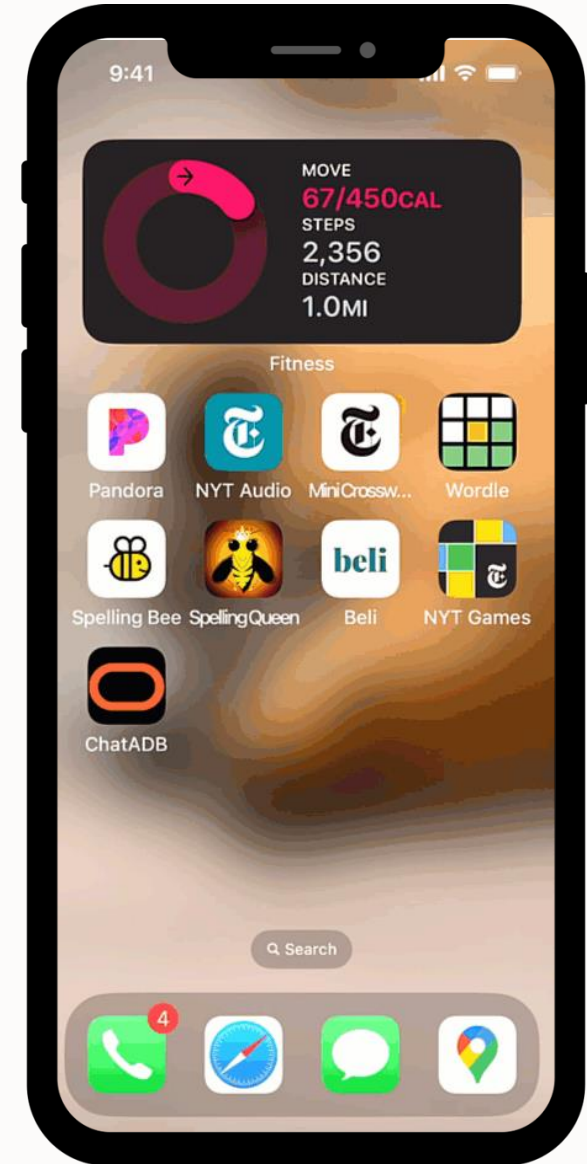
what are our total streams for each tom hanks movie this month?

☒ Ask Database ?



Demonstration

Gain business
insights instantly.
Just ask your
database



Demonstration

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

ADB Chat

George Clooney: Known for ...

"Albert Einstein: A Brief Intro...

Exploring NYC: A One-Week ...

Delete Conversation

New Conversation

5. Primetime Emmy Awards:

- Outstanding Drama Series as a producer for "ER" (1995)

6. American Film Institute Awards:

- AFI Life Achievement Award (2018)

These are just a few examples of the awards George Clooney has won. He has also received numerous nominations and honors for his w
entertainment industry.

what are our total number of views for each George Clooney movie

TITLE	TOTAL_VIEWS
Syriana	1,144.00
The Perfect Storm	2,262.00
Gravity	3,031.00
Ocean's Eleven	4,214.00
Ocean's Twelve	2,890.00

Explore

Explain

Ask a question

Ask Database



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 number of
movie views

breakout views
by movie

tom hanks is
an actor

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			
<u>total streams</u>	→	total number of movie views	→
<u>for each</u>	→	breakout views by movie	→
<u>tom hanks</u> movie	→	tom hanks is an actor	→
<u>this month?</u>	→	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
```

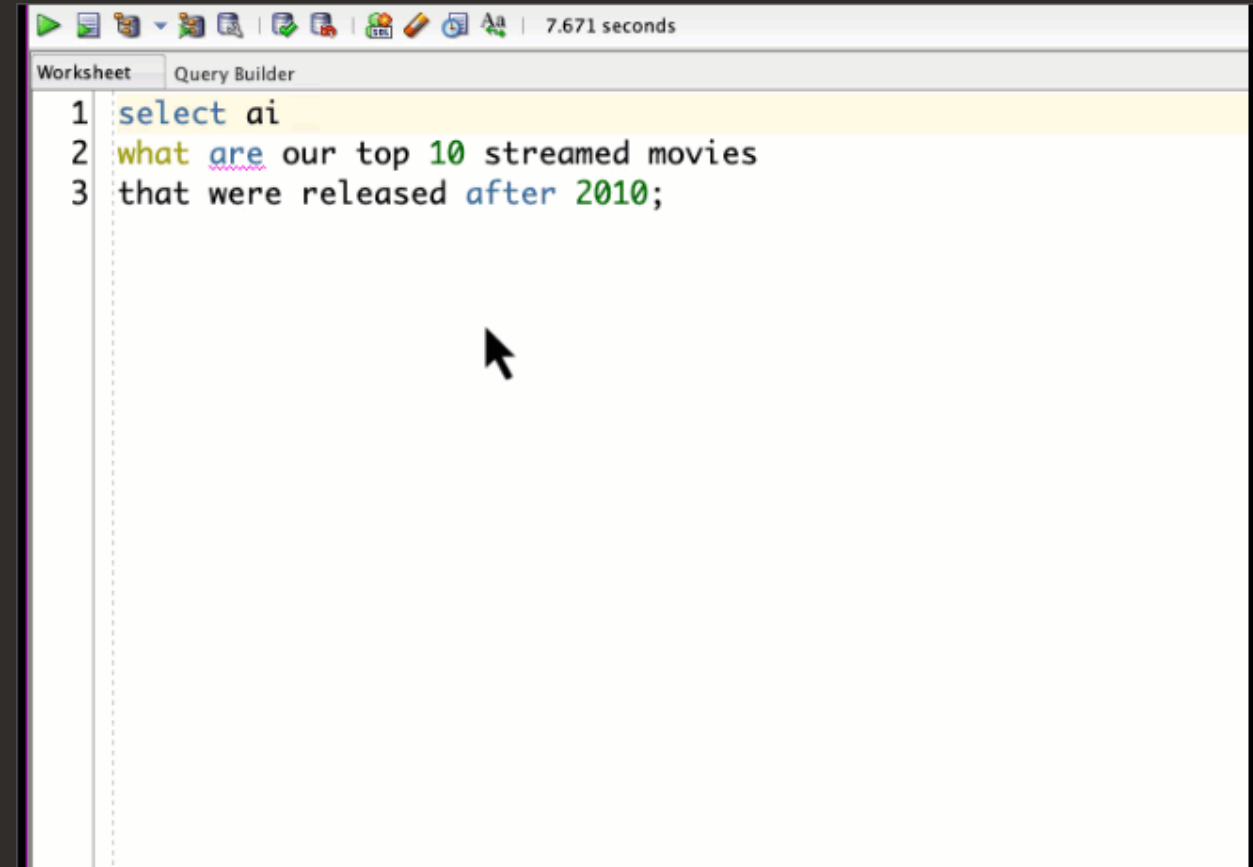
LLMs are remarkable at inferring intent (and getting better)
They are not perfect! It is important to verify results



Easy to extend and build new natural language apps

Use a **standard SELECT** statement
followed by AI and your question

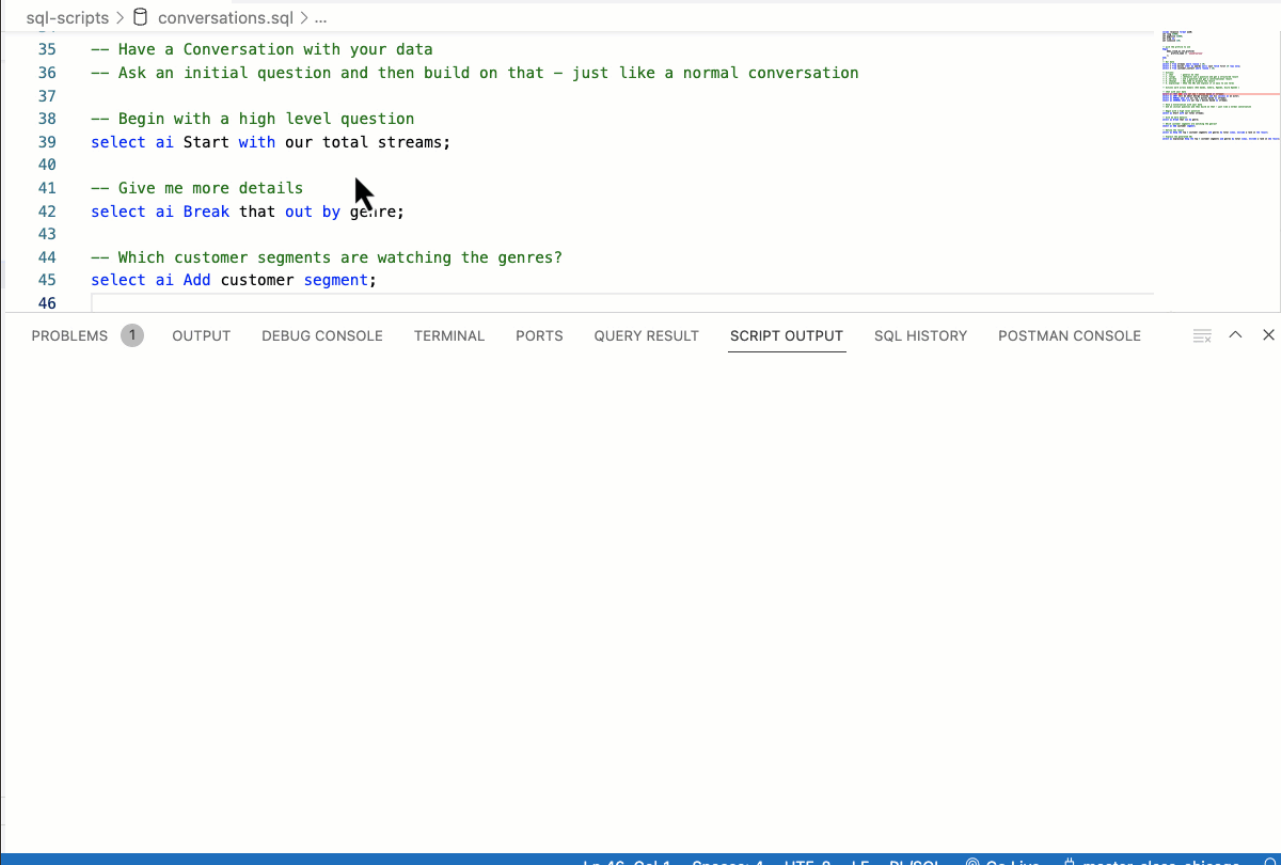
Process the result as you would any
other SQL result set



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



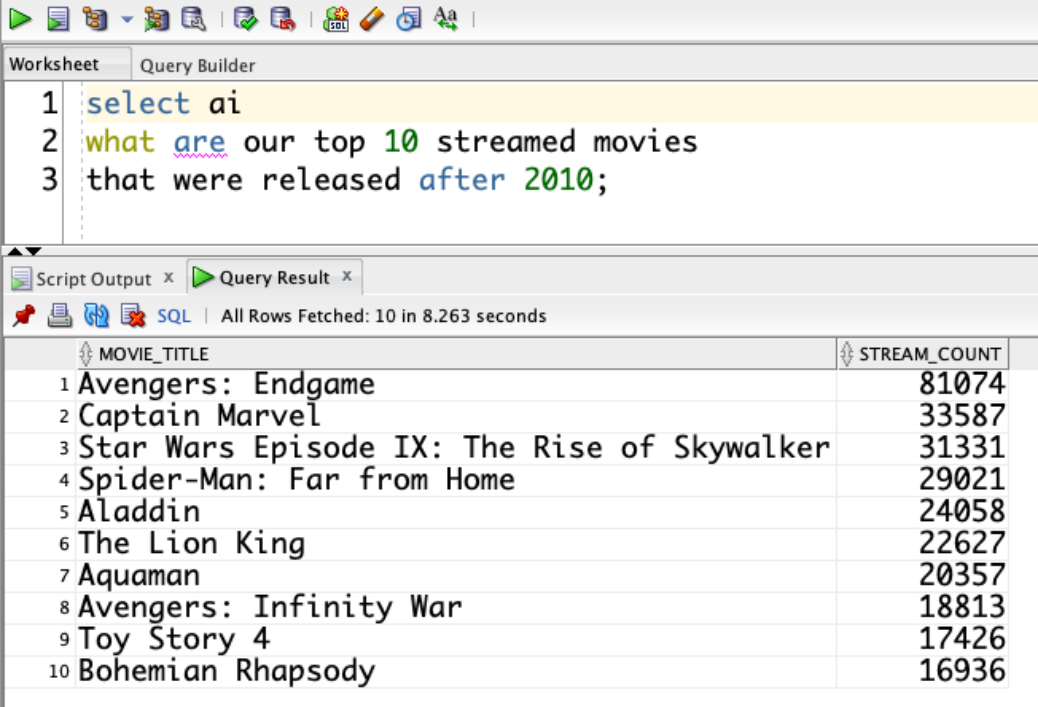
The screenshot shows a code editor window with a file named 'conversations.sql'. The script contains several SQL statements, each preceded by a comment that describes a step in a conversation. A mouse cursor is pointing at the word 'genre' in the second SQL statement. The IDE interface includes a top toolbar with tabs for PROBLEMS, OUTPUT, DEBUG CONSOLE, TERMINAL, PORTS, QUERY RESULT, SCRIPT OUTPUT (which is active), SQL HISTORY, and POSTMAN CONSOLE. The bottom status bar shows 'Ln 46, Col 1', 'Spaces: 4', 'UTF-8', 'LF', 'PL/SQL', and buttons for 'Go Live' and 'master-class-chicago'.

```
sql-scripts > conversations.sql > ...
35  -- Have a Conversation with your data
36  -- Ask an initial question and then build on that - just like a normal conversation
37
38  -- Begin with a high level question
39  select ai Start with our total streams;
40
41  -- Give me more details
42  select ai Break that out by genre;
43
44  -- Which customer segments are watching the genres?
45  select ai Add customer segment;
46
```



Demonstration

Behind the scenes:
How you can use Select AI to
deliver natural language apps



The screenshot shows the Oracle SQL Developer interface. The 'Query Builder' tab is active, displaying a natural language query entered in the script area:

```
1 select ai  
2 what are our top 10 streamed movies  
3 that were released after 2010;
```

Below the query, the 'Query Result' tab shows the results of the query. The status bar indicates 'All Rows Fetched: 10 in 8.263 seconds'. The results are displayed in a table with two columns: 'MOVIE_TITLE' and 'STREAM_COUNT'.

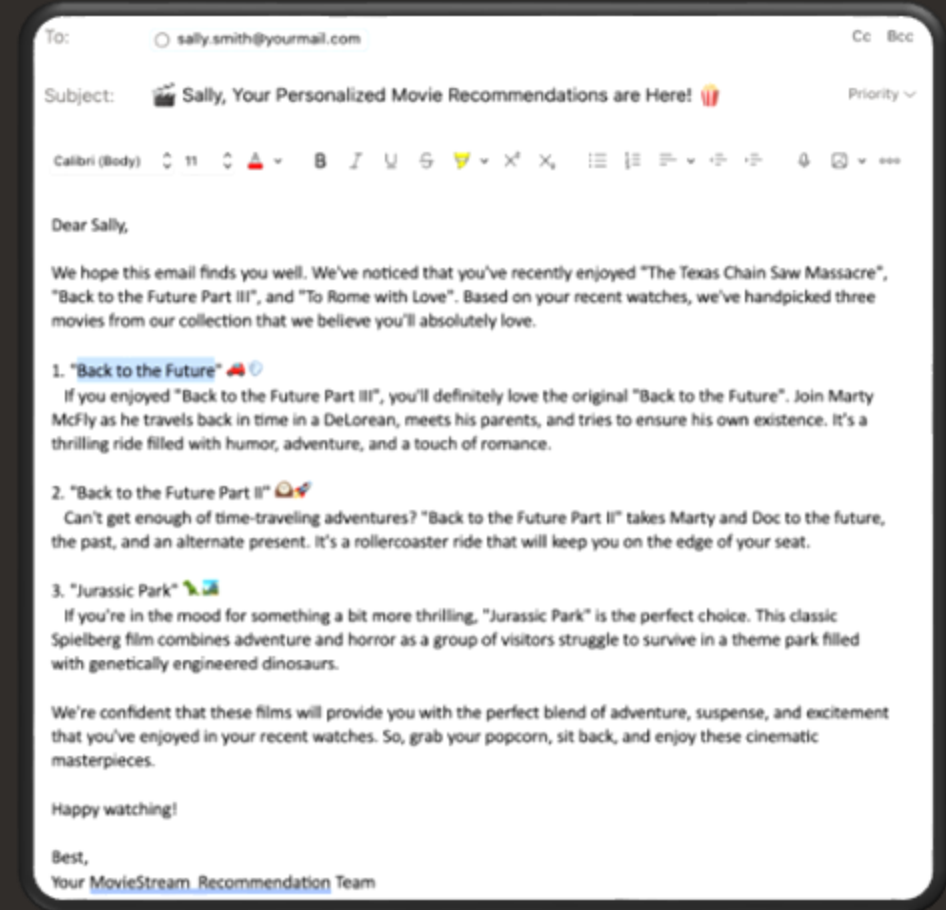
MOVIE_TITLE	STREAM_COUNT
1 Avengers: Endgame	81074
2 Captain Marvel	33587
3 Star Wars Episode IX: The Rise of Skywalker	31331
4 Spider-Man: Far from Home	29021
5 Aladdin	24058
6 The Lion King	22627
7 Aquaman	20357
8 Avengers: Infinity War	18813
9 Toy Story 4	17426
10 Bohemian Rhapsody	16936

Get better results

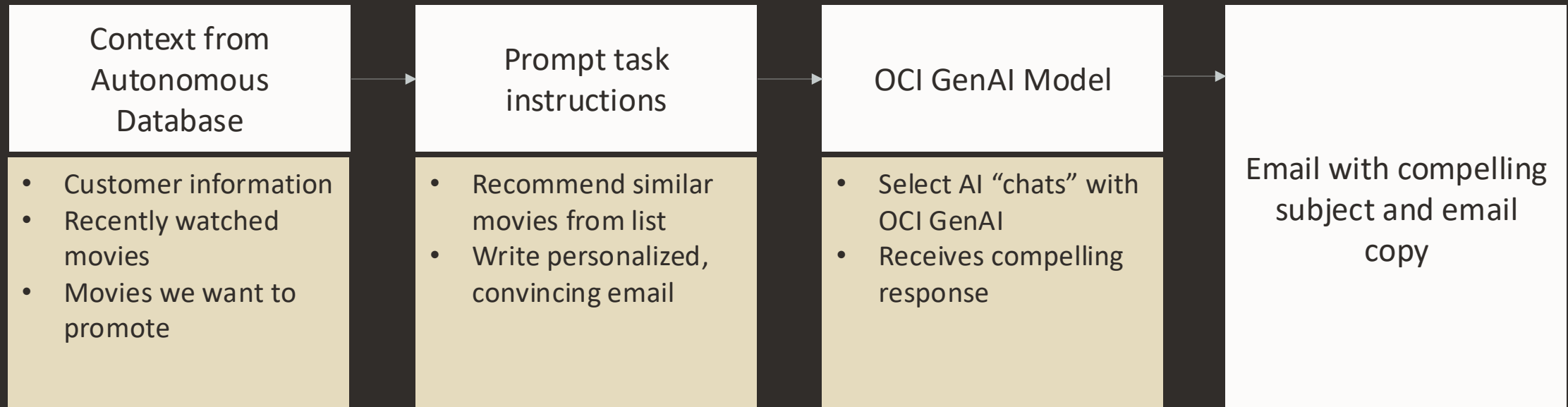
Easily use your organization's data with generative AI

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



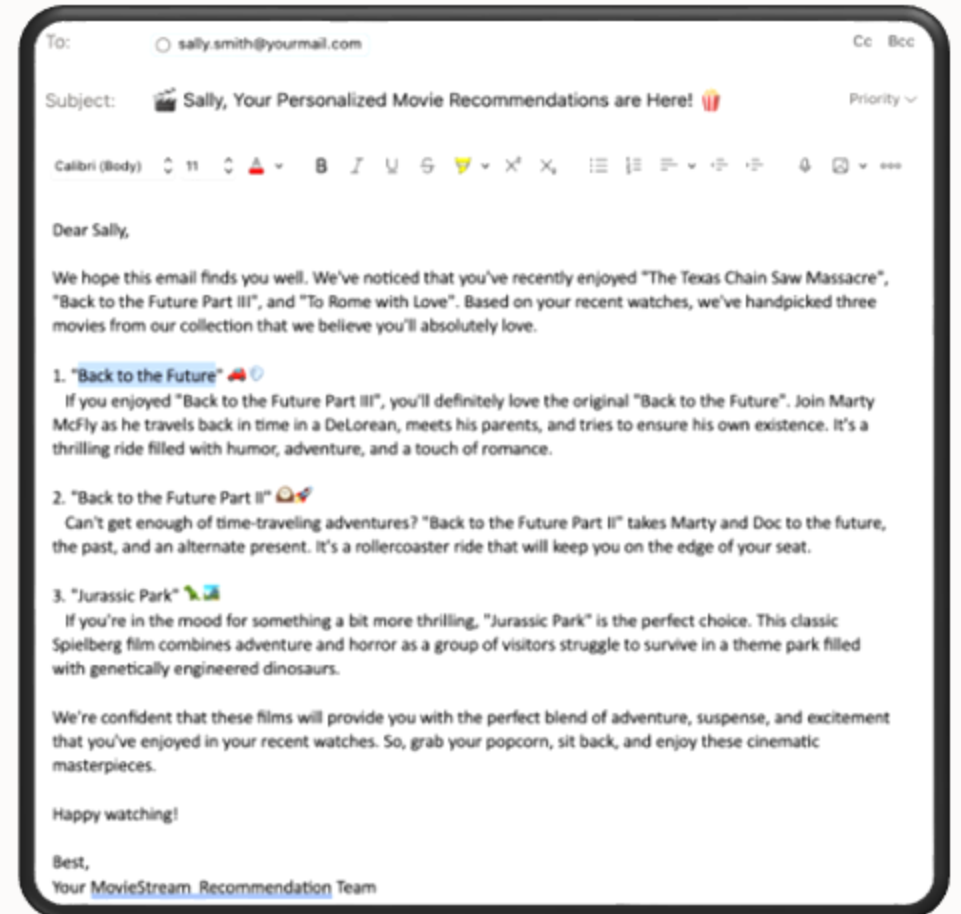
Enhance GenAI with context from private data



Demonstration

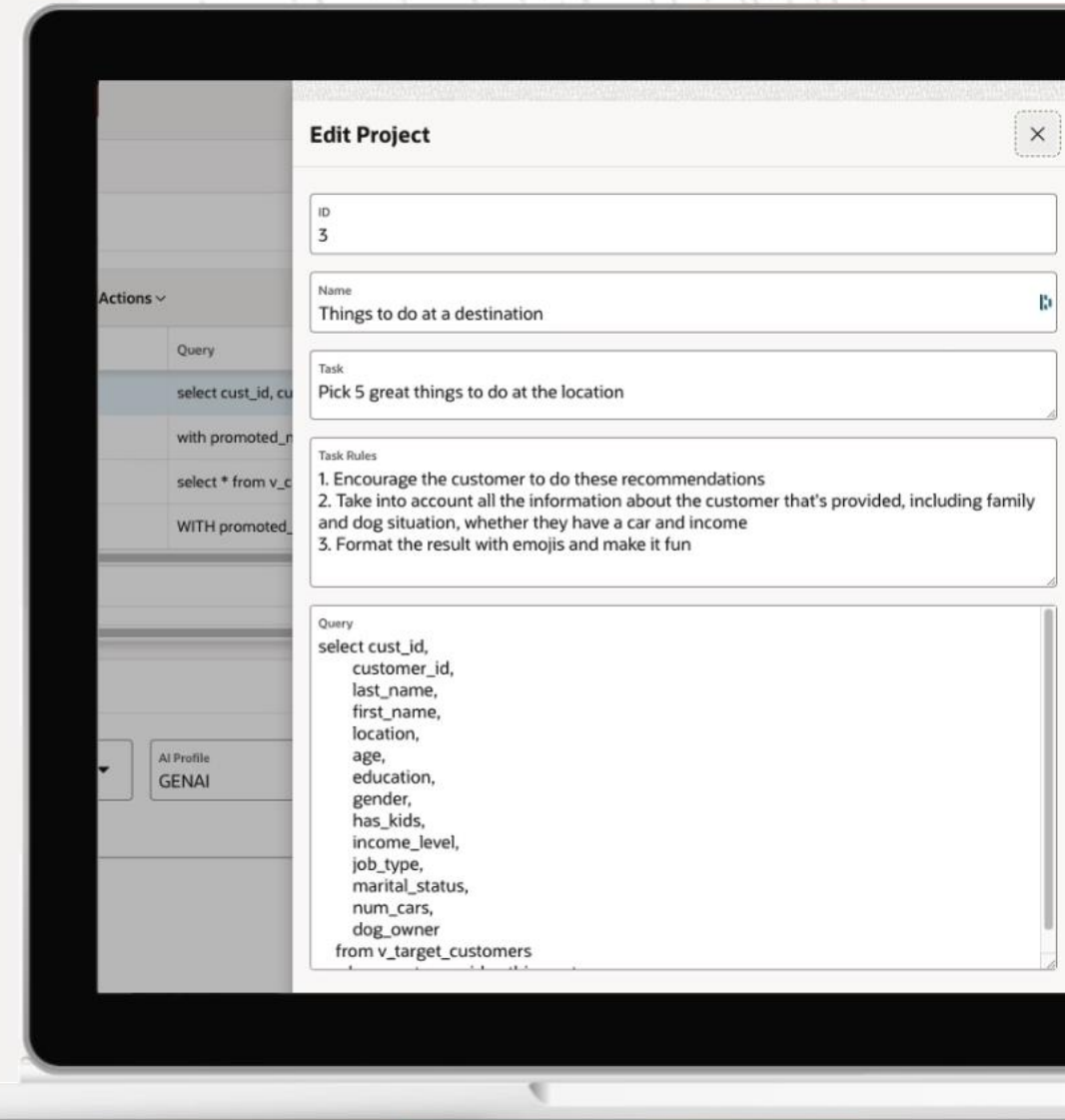
SQL-powered RAG

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"  
}
```

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



To: sally.smith@yourmail.com Cc Bcc

Subject: 🎬 Sally, Your Personalized Movie Recommendations are Here! 🍿 Priority ▾

Calibri (Body) 11 A B I U S ↵ X² X₂ ☰ ☷ ≡ ▹ ▸ 🔊 🖨 ⋮

Dear Sally,

We hope this email finds you well. We've noticed that you've recently enjoyed "The Texas Chain Saw Massacre", "Back to the Future Part III", and "To Rome with Love". Based on your recent watches, we've handpicked three movies from our collection that we believe you'll absolutely love.

1. "Back to the Future" 🚗💨

If you enjoyed "Back to the Future Part III", you'll definitely love the original "Back to the Future". Join Marty McFly as he travels back in time in a DeLorean, meets his parents, and tries to ensure his own existence. It's a thrilling ride filled with humor, adventure, and a touch of romance.

2. "Back to the Future Part II" 🕒🚀

Can't get enough of time-traveling adventures? "Back to the Future Part II" takes Marty and Doc to the future, the past, and an alternate present. It's a rollercoaster ride that will keep you on the edge of your seat.

3. "Jurassic Park" 🦖🌳

If you're in the mood for something a bit more thrilling, "Jurassic Park" is the perfect choice. This classic Spielberg film combines adventure and horror as a group of visitors struggle to survive in a theme park filled with genetically engineered dinosaurs.

We're confident that these films will provide you with the perfect blend of adventure, suspense, and excitement that you've enjoyed in your recent watches. So, grab your popcorn, sit back, and enjoy these cinematic masterpieces.

Happy watching!

Best,
Your [MovieStream Recommendation Team](#)

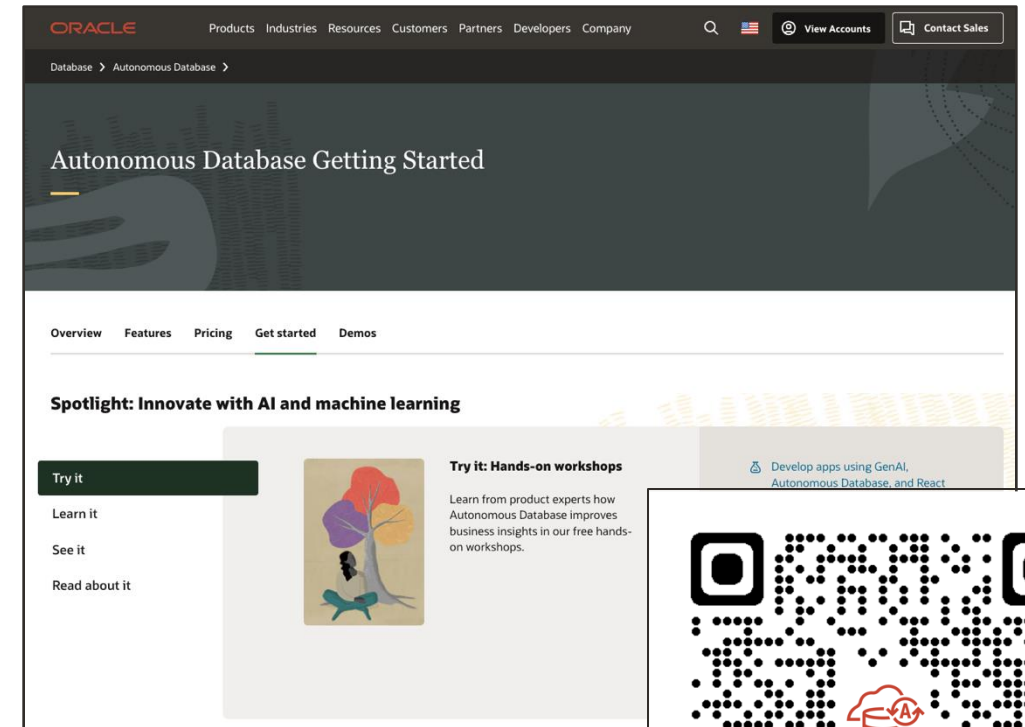
Q&A

—



Get started!

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

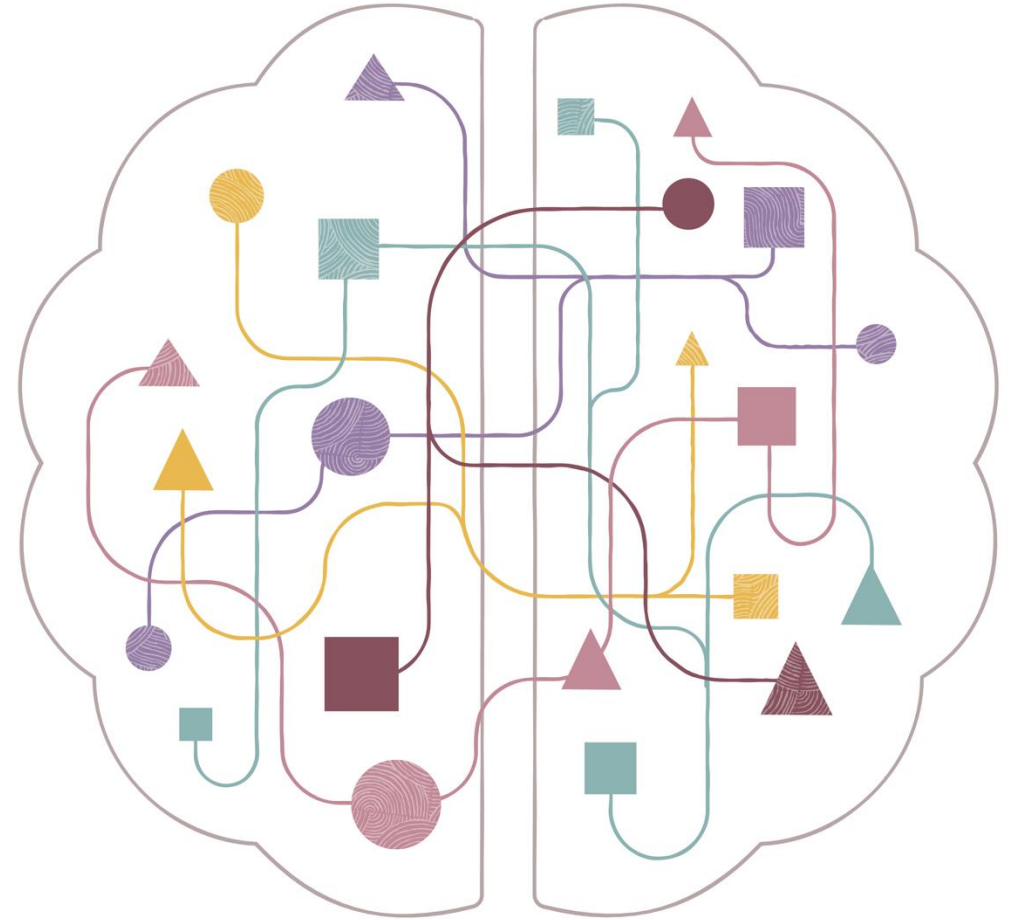


<https://www.oracle.com/autonomous-database/get-started/>

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
