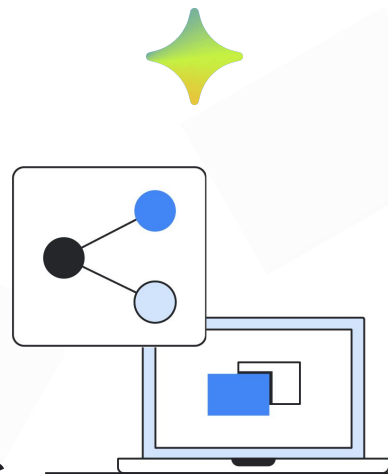


# Data Analytics GenAI

Data Analytics for rich GenAI experiences



# Agenda

**01**

The era of AI

**02**

Connect your data  
ecosystem

**03**

Activate your Data  
with GenAI

**04**

Provide rich GenAI  
experiences

# What we're hearing from customers

Attract **new customers** and **increase sales** by delivering personalized content for every single customer

Improve **employee productivity** through assistive technology; content creation, coding, ...

Transform **customer engagement** through intelligent conversations.

Easily **find information** using semantic search

**Improve decision making** by analyzing unstructured data and identifying new patterns



**We want to use our enterprise data in a secure, responsible, and trusted way to enable GenAI applications**

# An Evolving Data Infrastructure



**Create an intelligent, open,  
unified data ecosystem**

*“By 2025, 90% of new data and analytics deployments will use an **established data ecosystem.**”  
- Gartner*



**Simplify** managing and governing data estates

*“**50% reduction** in human-driven data management by 2025”  
- Gartner*



**Leverage Gen AI** to transform the organization

*“**70% of organizations** currently in exploration mode with generative AI”  
- Gartner*

# Google's Data and AI Cloud

Simplifying data and AI experiences for all users with Gen AI

Any user



**Data engineers**  
Clean, useful data



**ML engineers**  
Integrated intelligence



**Data scientists**  
Models that work



**Developers**  
Intelligent apps



**Data analysts**  
Query and analyze



**Business users**  
Insights Everywhere

## AI Lakehouse



BigQuery

**Multi-engine** (SQL, Spark, Python, Search, remote functions)  
**Multi-storage** (managed storage, GCS, BQ Omni cross-cloud)  
**Multi-format** (structured, semi-structured, unstructured)  
**Multi-capability** (governance, streaming, data pipelines)

## GenAI & ML



Vertex AI

## Business Insights



Looker

Foundation models (text, chat, code, video, image, audio)



Google Cloud infrastructure: GPUs/TPUs

# Most are just getting started with Gen AI.

96%

of CxOs recognize that generative AI will soon become critical to the success of any organization

---

94%

of CxOs acknowledge they are at the very beginning of their generative AI journey

# How can your data bring AI to life?



Connect your  
data ecosystem



Activate your data  
with Generative AI



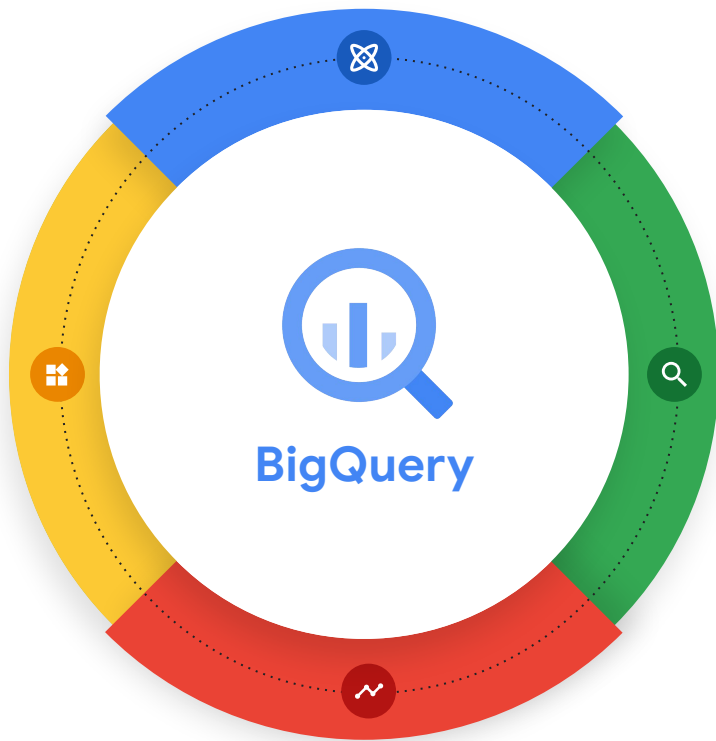
Provide rich AI  
experiences



# **Connect your data ecosystem**

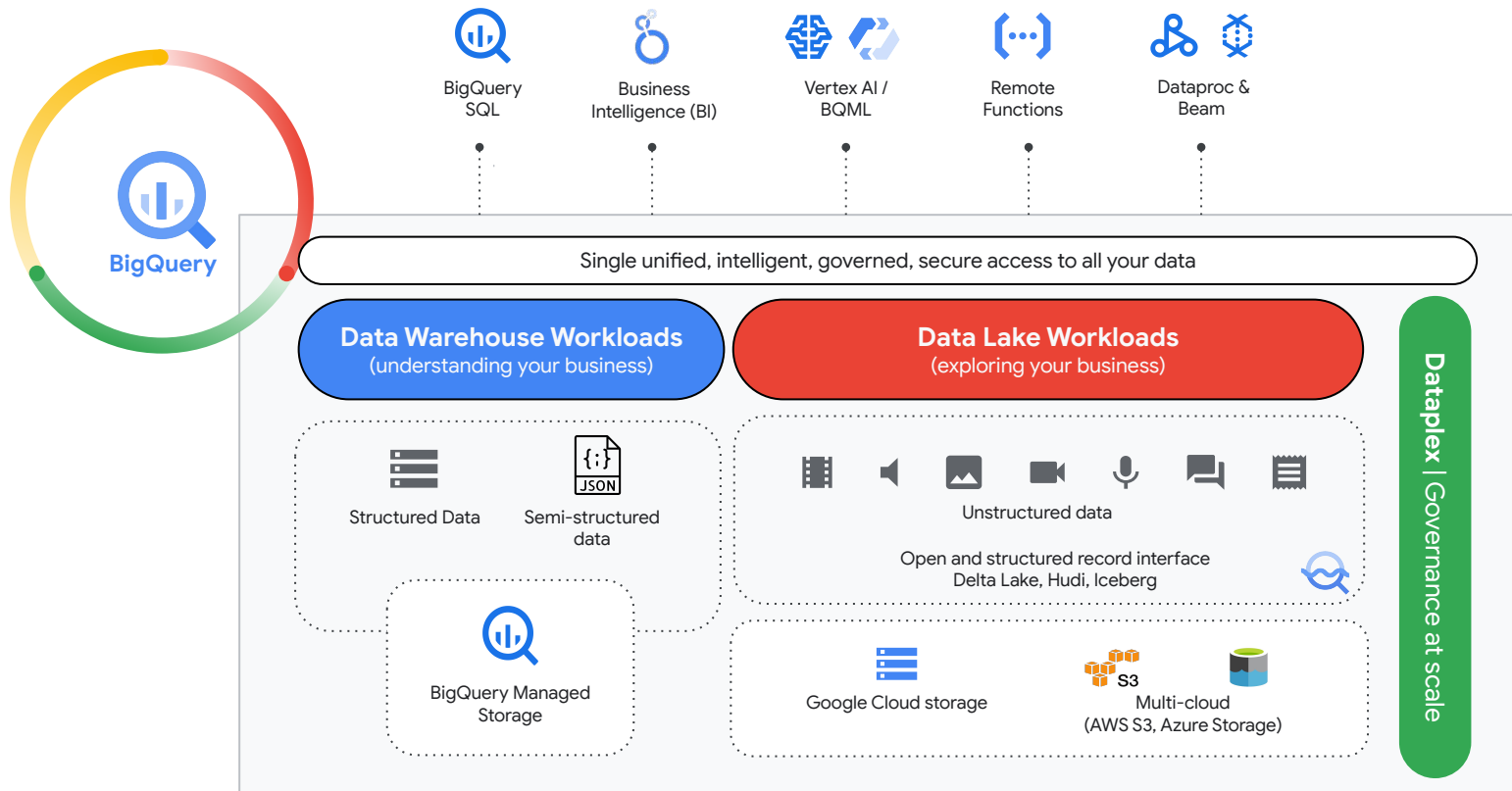


**BigQuery** is the core  
of Google's Data & AI  
Cloud to power  
your AI driven  
innovation



# AI Lakehouse

BigQuery is at the heart of the AI Lakehouse. Bringing structured and unstructured data together the AI Lakehouse gives you the best of both worlds.



# Structured & Unstructured data for answers at scale

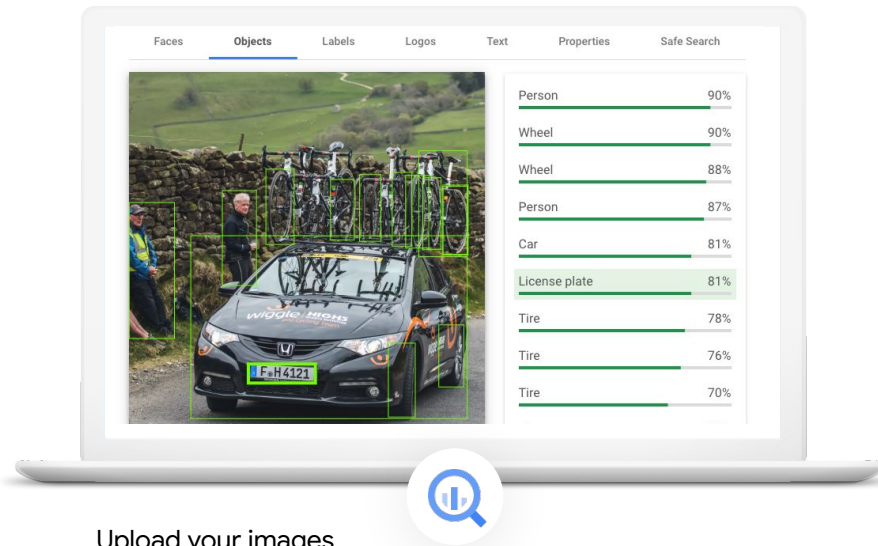
SQL support for text, images, audio, video, documents, and conversations

## Easy

Object tables bring the simplicity and scale of SQL to unstructured data including images, audio, docs, and videos

## Powerful

Google's leading AI technology in speech recognition, vision, translation, text processing accessible through BigQuery



Upload your images

Create BigQuery dataset and object table

Extract text from images

Run SQL queries

```
SELECT *, gcp_cloud_function(image_data) AS text  
FROM cars
```

# Advantages of BigQuery: the AI Lakehouse



**All data types:** Have all your data in one place whether structured, semi-structured or unstructured across your entire data ecosystem



**Protect your data:** Your data never leaves your data cloud. Foundation models are frozen and your data is not shared with others



**Responsible and governed:** Always know where your answers come from with accurate, reliable, trusted, and secure data



**Ease of use:** Built-in AI assistive technology accelerates data teams to bring together data from 1P or 3P sources, build analytics workflows, and deliver GenAI applications



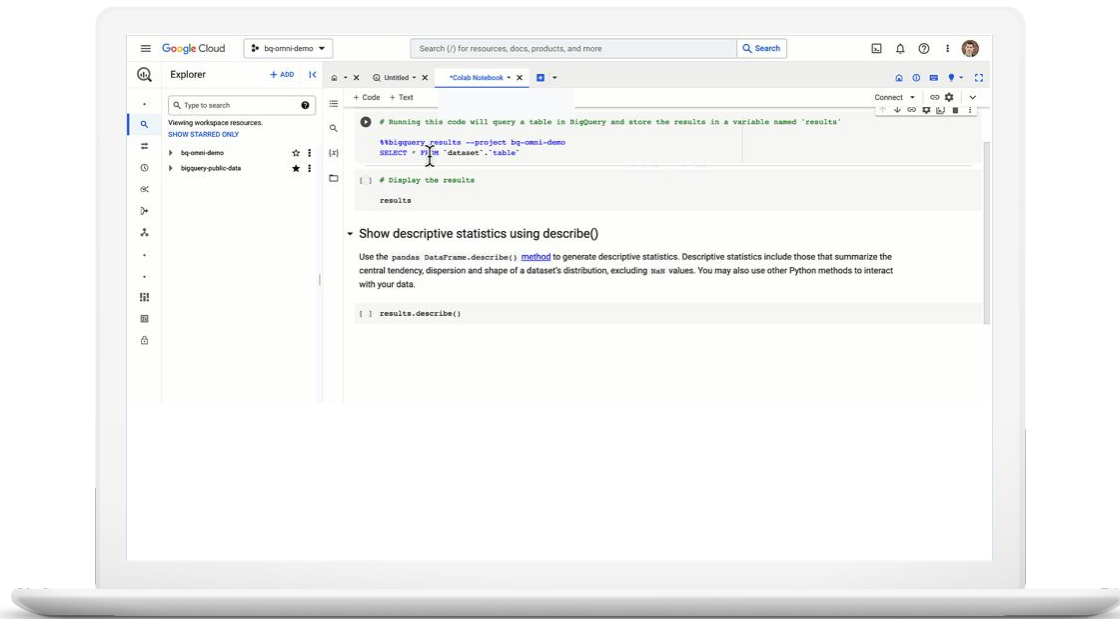
**AI choice and value:** Availability of broad range models to support a variety of use cases at the optimal cost and performance

# Announcing BigQuery Studio

Data Analytics for everyone with assistive genAI capabilities

## Notebook interface for users of all technical skills

- **Single Notebook workspace** for all workloads - SQL, Spark, Python and more
- With integrated **assistive AI & chat**
- Enabling collaboration and **governance across teams** & individuals
- Allowing work at petabyte scale using Notebooks integration with BigFrames
- Enabling faster/one-click deployment

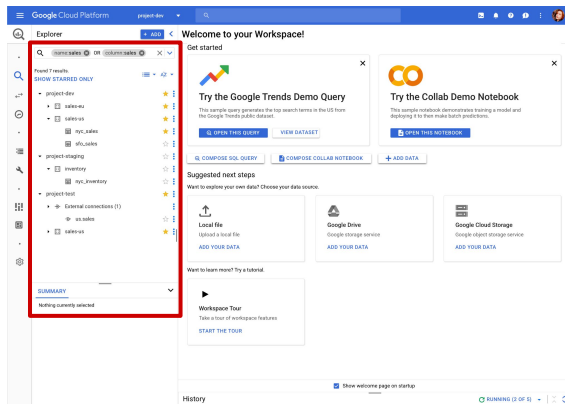


New

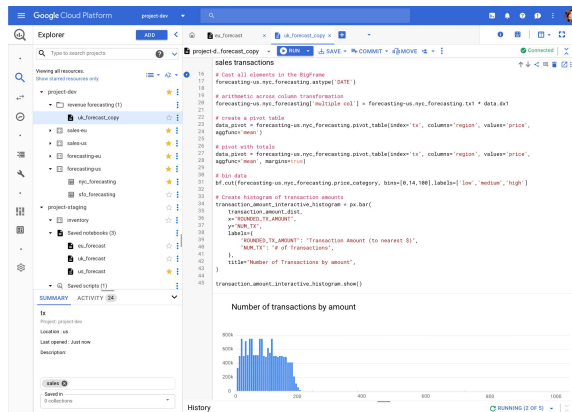
# Announcing BigQuery Studio

## Data Analytics for everyone with assistive genAI capabilities

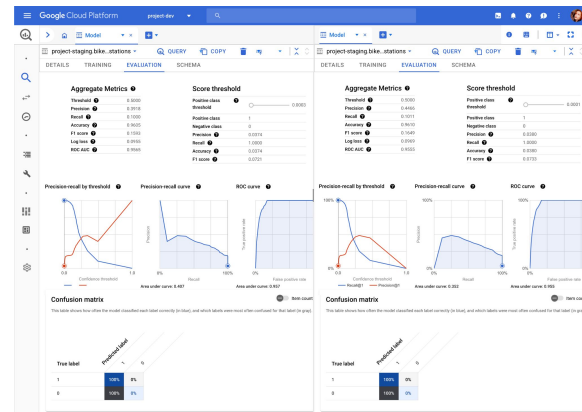
With its unified interface for SQL, Spark, and Python BigQuery Studio brings unprecedented ease-of-use so that data teams can collaborate on small datasets to petabyte scale workloads throughout the entire data lifecycle.



GenAI assisted **data and code discovery**



GenAI assisted **data exploration and visualization**

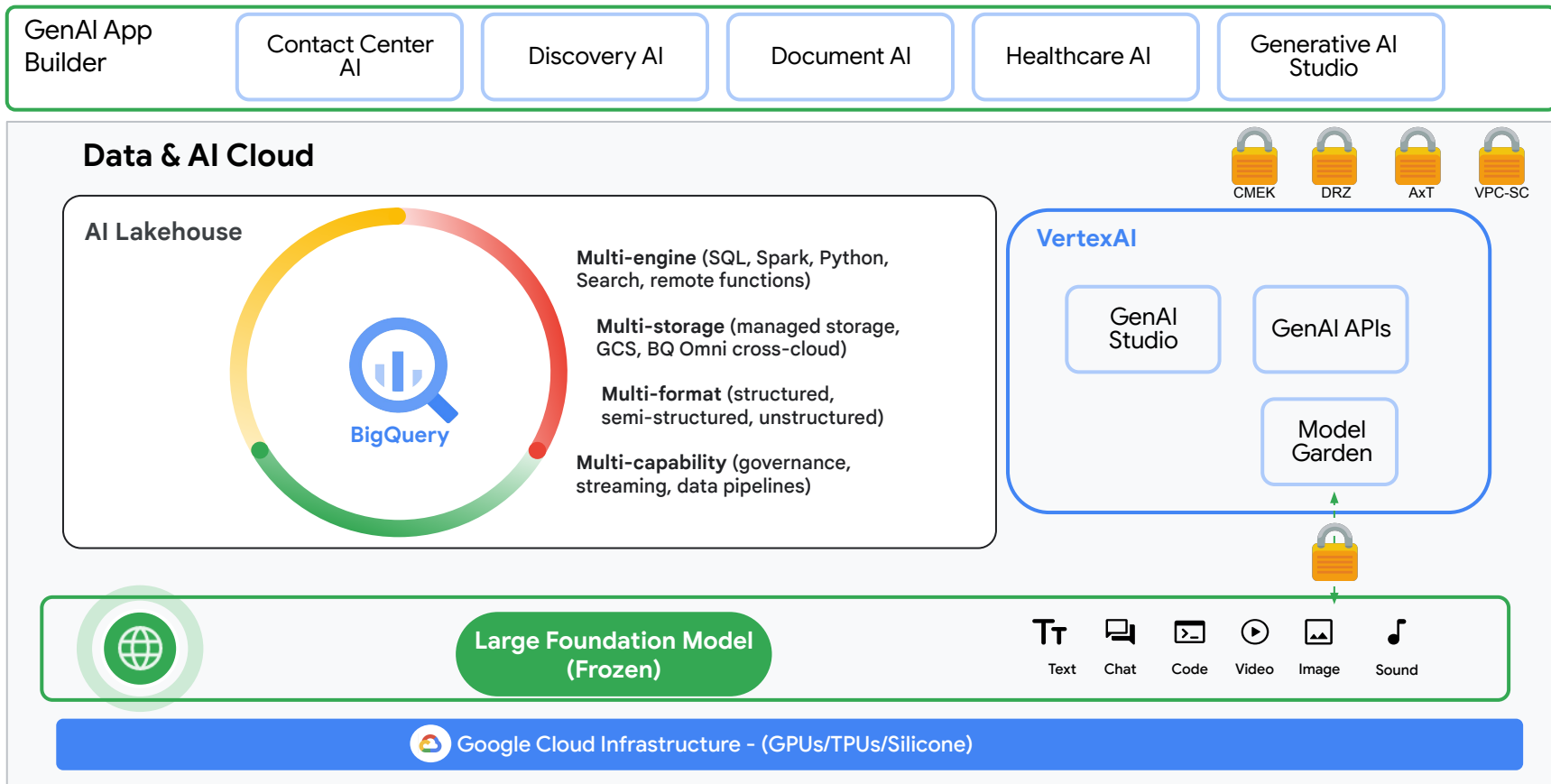


GenAI assisted **model deployment and serving**



# **Activate your Data with Generative AI**

# Bring GenAI to your data; on your own terms





# Use SQL to run LLMs on your data

New

As a data user, I can call a SQL API interface to **perform advanced analysis of text data to gain insights.**

## Example Use Cases:

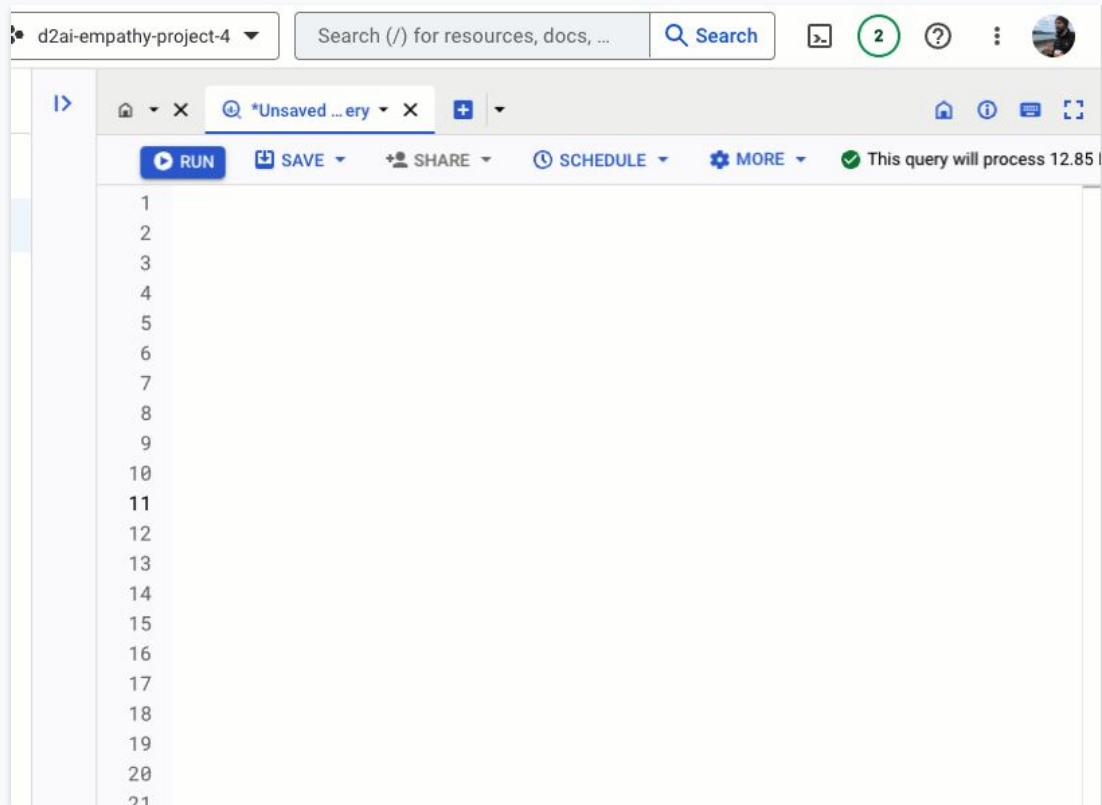
**Translation:** Run an ML function to do translate text in my warehouse from Chinese to english

**Enrichment:** Add the capital of each country to my dataset

**Sentiment analysis:** Run an ML function to do sentiment analysis on text in my warehouse

**Classification:** Classify the data in my dataset

**Summarization:** provide me a summary of text in this dataset



# BigQuery ML LLM Use cases



## Sentiment analysis

"Give me the sentiment of the online reviews in column x and put the results in column y."



## Data enrichment

"For each city in column x, give me the country name in column y."



## Entity extraction

"Extract entities from a piece of text."



## Content generation

"Create a customized marketing email based on the customer information stored in a BigQuery table."



## Translation

"Translate text in my dataset"

**Bring your imagination to how you do prompt engineering!**



# Provide rich *AI* experiences

# Generative AI is driving new opportunities

Operational efficiencies, cost savings, and value creation



**Complex data,  
intuitively accessible**

**Improve time-to-value** to search, navigate, and extract insights and understanding from large amounts of complex data



**Analyst**



**Online interactions  
made conversational**

**Improve customer experience**, reaching larger client bases by making online interactions more natural, conversational, and rewarding



**Customer  
Service**



**Content generation at  
the click of a button**

Generate text, code, image, video, or music quickly and multi-modally, speeding up every business process and **maximizing employee productivity**



**Creative**



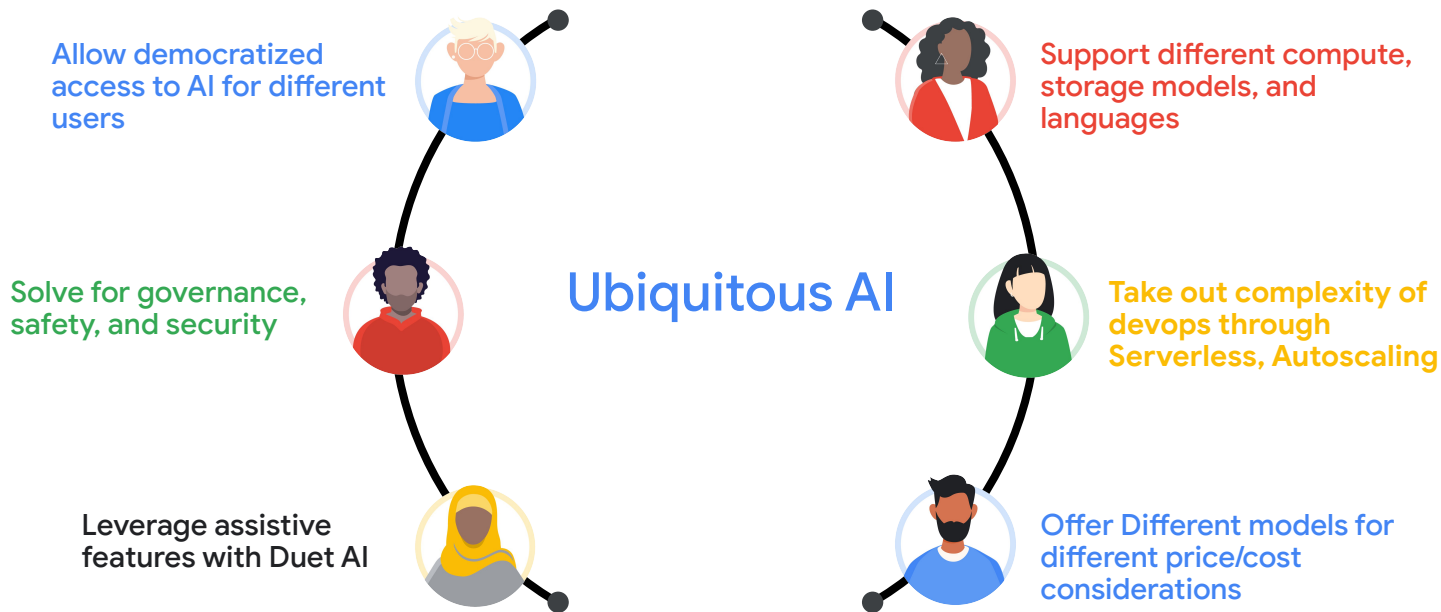
**Customize  
Foundational models**

Customize large models and incorporate state of the art generative capabilities natively into **your own internal ML operational platforms**



**AI  
Practitioner**

# Empower your users with AI



# Make data professionals more productive: Duet AI in BigQuery

Always on AI collaborator



Deeply **integrated AI assistance** into Google Cloud's products.



**Assisted coding** within the Cloud Console, Cloud Workstations, and IDEs along with **console-integrated chat experience**.



Serves **developers, operators, data engineers, security professionals, and citizen developers**.



Trained on Google Cloud **expert content** including product media and best practices.

## Duet AI in BigQuery

# Chat interface to learn and explore

### Assistive Data Exploration

As a data user, I can **ask for help using natural language** and get complete answers that increase my productivity.

#### Example Use Cases:

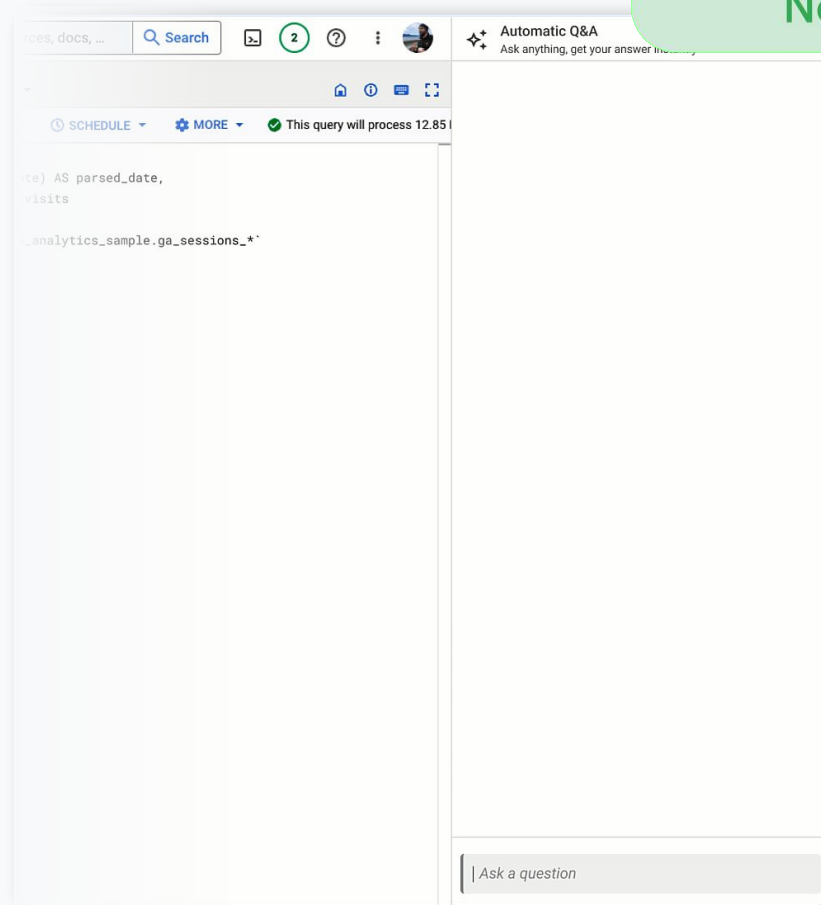
How can I use BigQuery materialized views?

Using public datasets for NY taxis, show me how to get started with a query for average wait times

Can you recommend ways to save costs on this project?

Can you help me with importing data from BigTable to BigQuery everyday and train an ML model, then I want to use the model for online serving.

How do I fix this error “403 - Quota Exceeded”?



## Duet AI in BigQuery

# Developer assistance while writing code in the IDE

### Assistive Data Exploration

As an data user, I can **receive contextual assistance while writing my code** to increase my efficiency.

#### Example Use Cases:

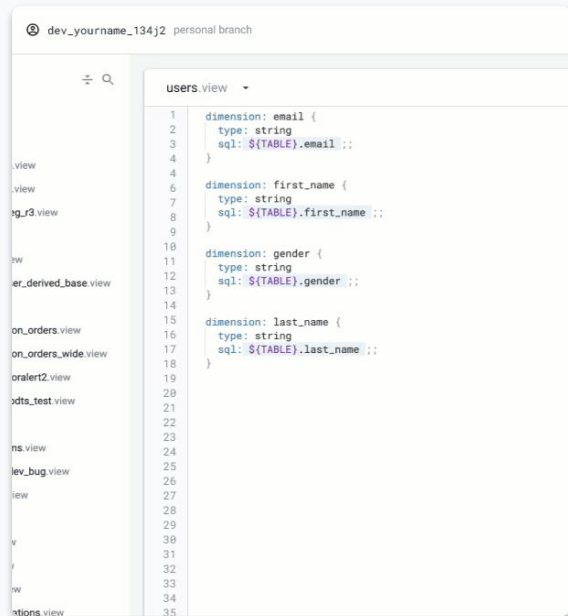
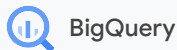
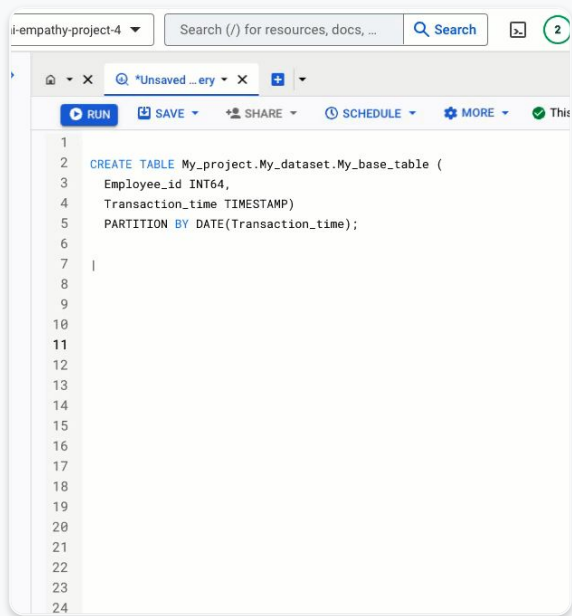
Real time code completions

Code Auto Generation from Comments

Code to text translations (Code summarization)

Autofix suggestions within IDE

New



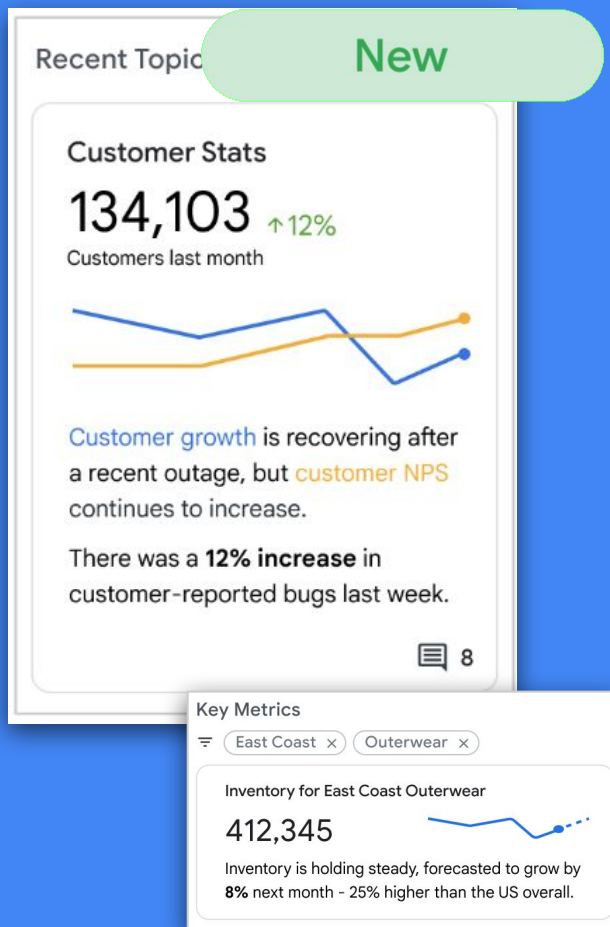


# Introducing Duet in Looker

## Personalized. Collaborative. Intelligent

Conceptualized as a **chief of staff**. Knows you and your business, keeps you informed of what matters, takes action on your behalf, and prepares things for you. Works with your teammates to get stuff done. A system that:

- Knows You : A **Highly Personalized System**. Trained through conversation and activity
- Informs You : **Always On** via Alerts & Notifications
- Takes Action: **Guides** you to the Right Insight
- Prepares Reports/Analyses > **Creates Rich Content** to 90%, lets you coach it the last 10%
- Works in **Collaboration** : Works with you and your team, supports easy sharing of analysis





Use natural language to **ask, refine, and converse** with AI about your data



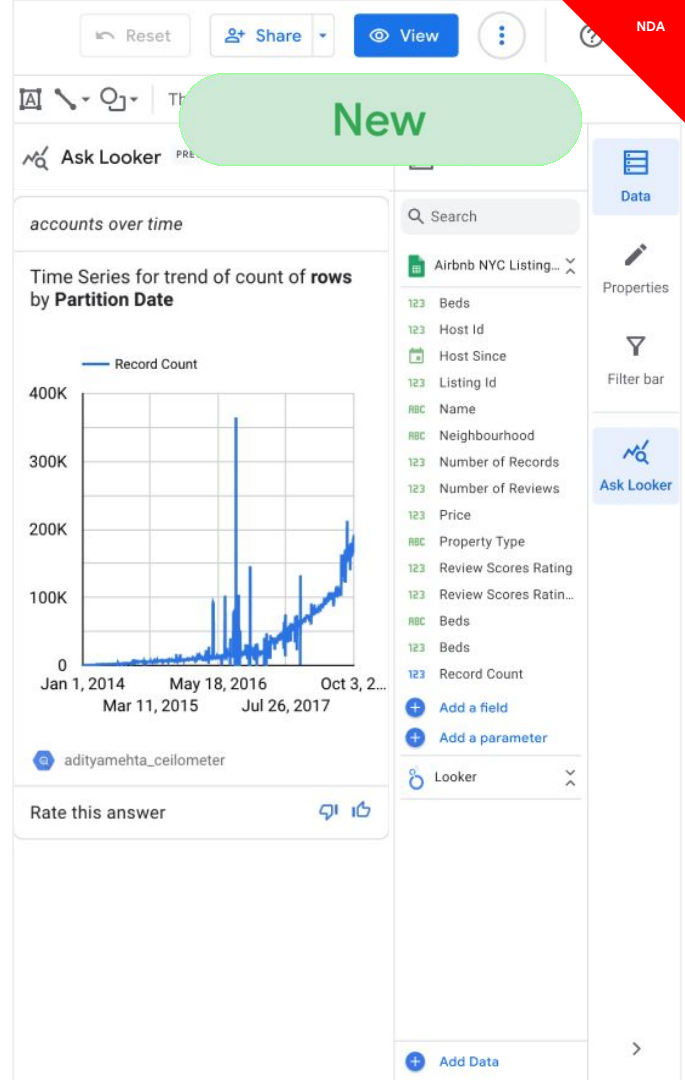
Leverage Generative AI to **produce stunning dashboard, and graphics** without the need for a professional designer



Generate **summaries and narratives** across your data that dynamically update as you further explore



**AI driven modeling and discovery** breaks down data silos to ensure you have access to the most trusted datasets in your organization



# Bring AI to life



Connect your  
data ecosystem

The AI Lakehouse provides a  
trusted and secure data  
foundation



Activate your data  
with Generative AI

With AI integrated to the Data  
& AI Cloud, all users can access  
AI with language of their  
choice



Provide rich AI  
experiences

Improved customer engagements,  
intelligent conversations, and  
productivity gains

# Trusted Tester

1. **BigQuery ML LLM** - allowlist [here](#)
2. **Duet AI in BigQuery** - [go/bigquery-duet-tt-user-guide](https://cloud.google.com/bigquery/docs/duet-ai-user-guide)
3. **BigQuery Studio (Notebooks)** - early tester program [here](#)

**Q+A**