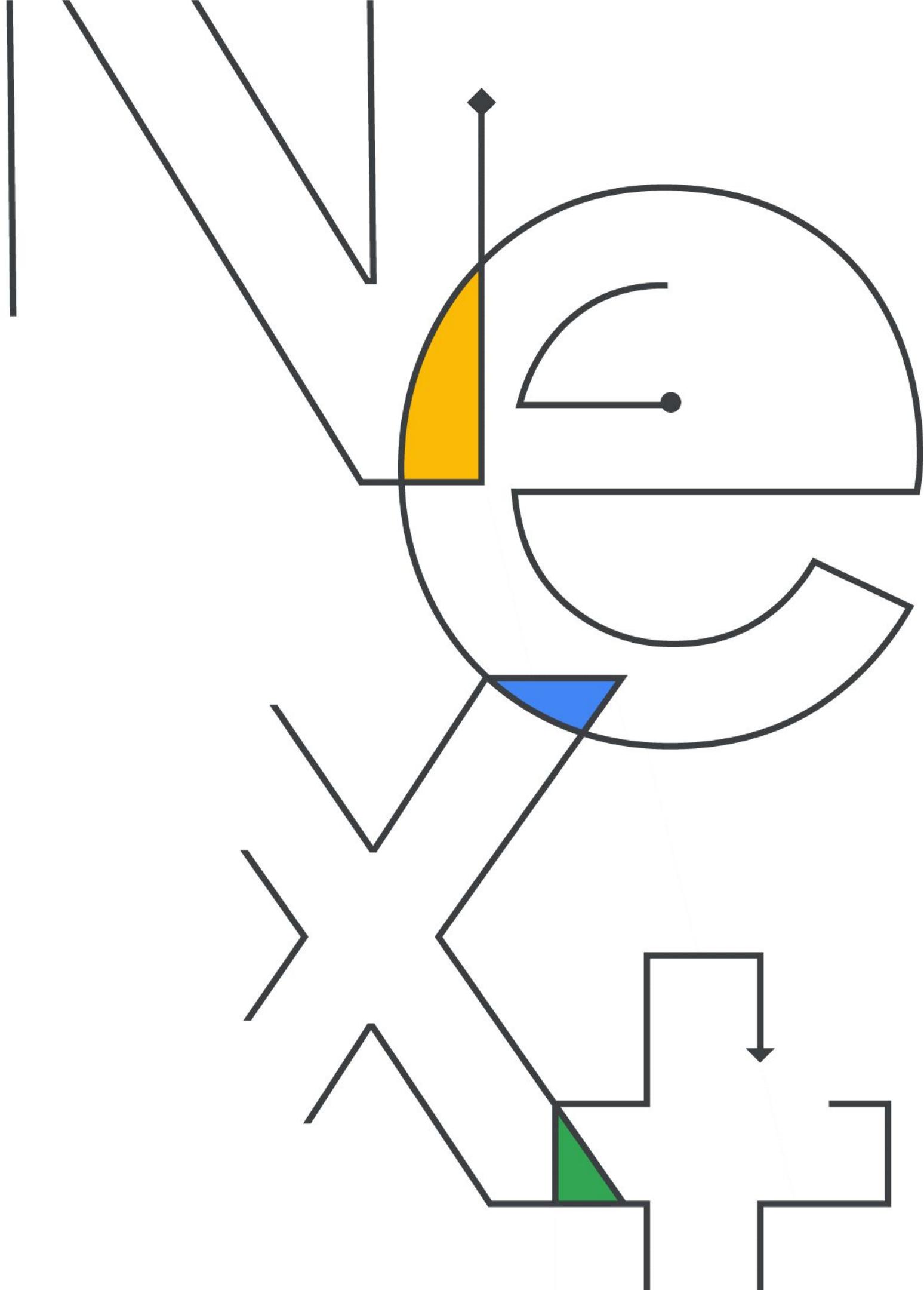


Google Cloud

Next '22

What's new in BigQuery

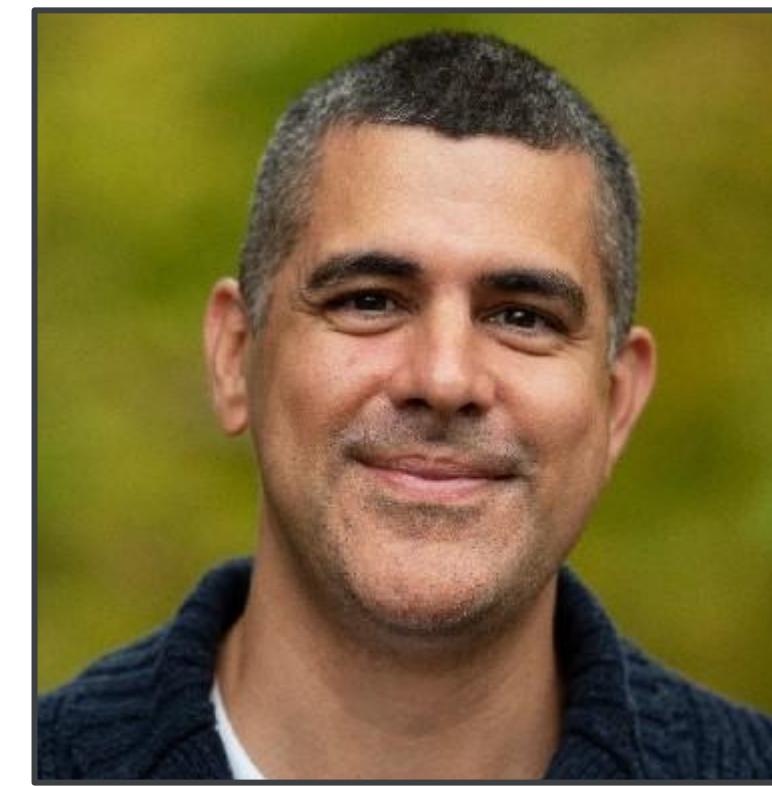




Brian Welcker

Director, Product
Management

Google Cloud



Jaime Tatis

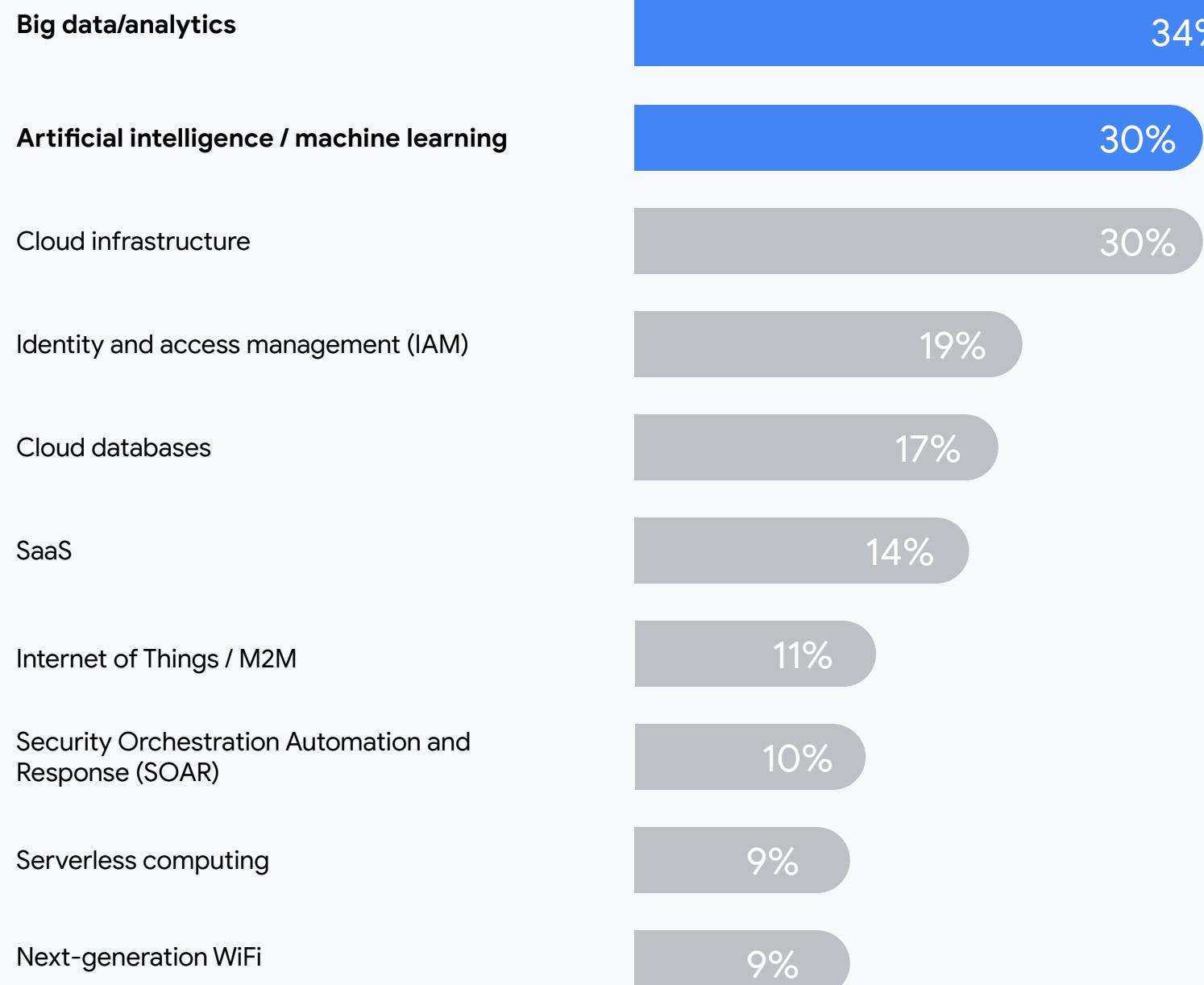
VP of Data Strategy &
Enablement



Technology is altering the way organizations operate

Organizations see big data and AI/ML potential

but are struggling to make it a reality



Q: Which of these technologies has the most potential to significantly alter the way your business operates over the next 3 to 5 years?
[CIO Magazine](#), Oct 2021

20%

of analytic insights will deliver business outcomes

Gartner
[Our Top Data and Analytics Predicts for 2019](#), Jan 2019

10%

of organizations achieve significant financial benefits from AI

Boston Consulting Group
[Are You Making the Most of Your Relationship with AI?](#), Oct 2020

Organizations are challenged to keep pace with big data



181 ZB

expected by 2025



75%

of enterprises will shift from piloting to operationalizing artificial intelligence



73%

of data leaders feel real-time access to data is extremely important



Google's data cloud mission

**Help users drive limitless innovation with
an open, integrated, and intelligent data
ecosystem**



BigQuery

Serverless cloud data warehouse with exabyte scale

- Easy scaling of storage and compute
- Full ANSI SQL (inc. DML and DDL)
- Built in security and encryption
- High availability and durability



BigQuery momentum

100s

of customers with > 1
Petabyte-scale
environments

110 TB

of data processed per
second (~3.5 zettabytes /
year)

> 3 B

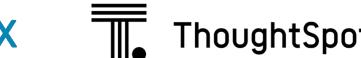
queries accelerated each
month using BI Engine

An ecosystem with hundreds of partners

800+ partners build with Google's data cloud



Hundreds of tech partners integrations



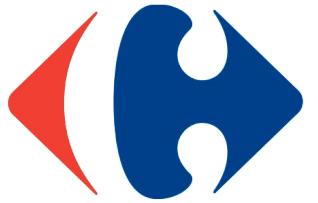
“

*Enabling customers to gain superior insights and **intelligence from data** is core to the ZoomInfo strategy. We are excited about the innovation Google is bringing to market and how it is creating a differentiated ecosystem that allows customers to gain insights from their own data and Google's data, at scale and securely, without having to move data around.*

Henry Schuck, CEO



BigQuery-powered customer transformations



**Reimagined
customer interaction**

Driving innovation from
700TB data lake
migration and **100M API calls** per month

ATB Financial

**SAP data insights
and outcomes**

Realized **\$4M in
operating revenue**
and saved **\$2M+
in productivity**

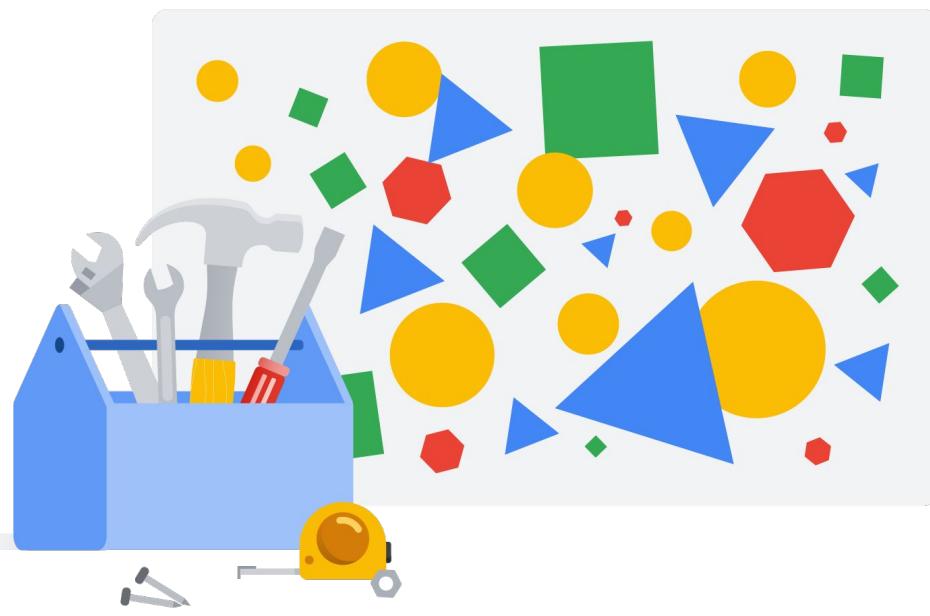
TELUS

**Enhanced
customer journey**

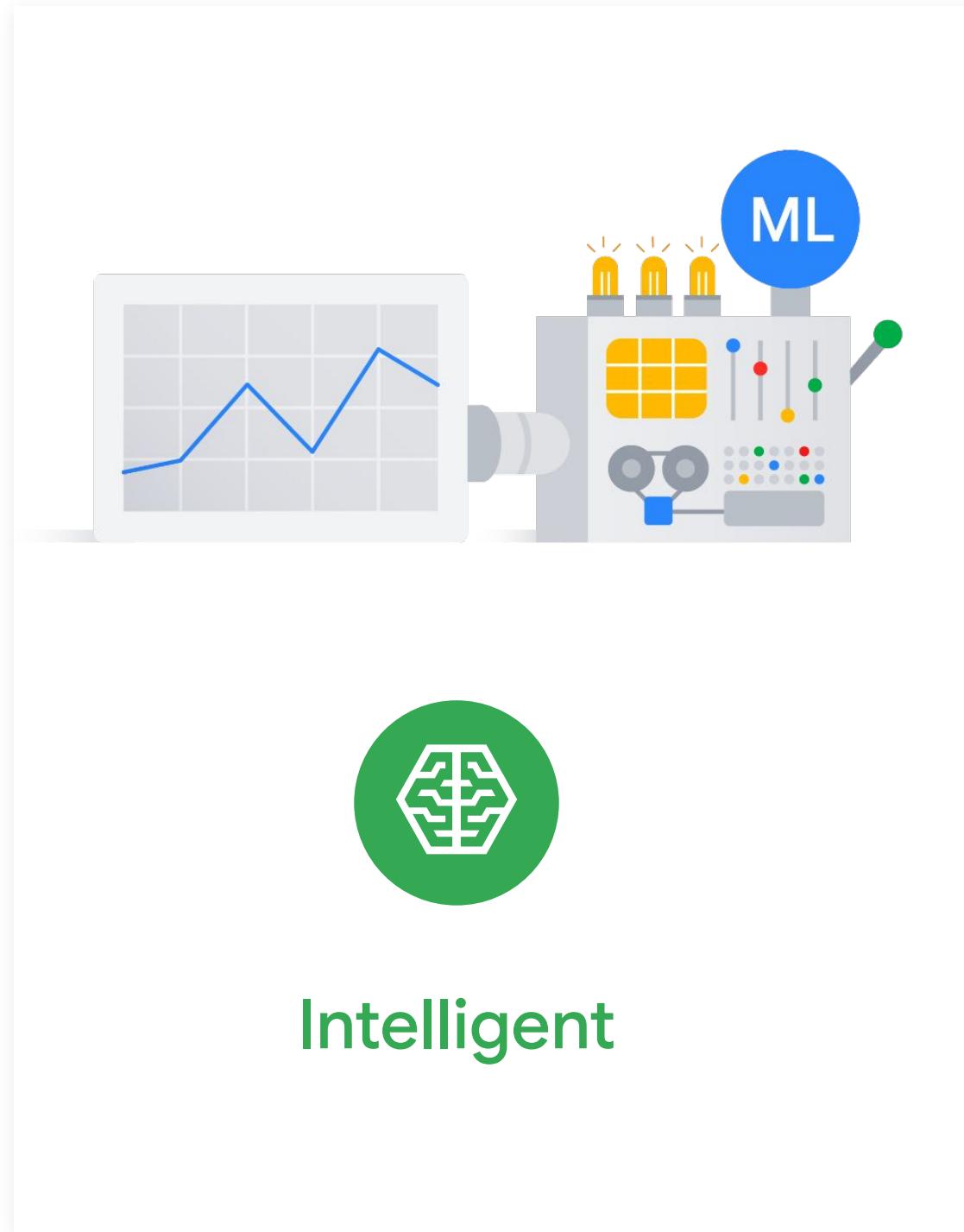
Improved **customer
case resolution by
50%** and accelerated
data processing by **20x**



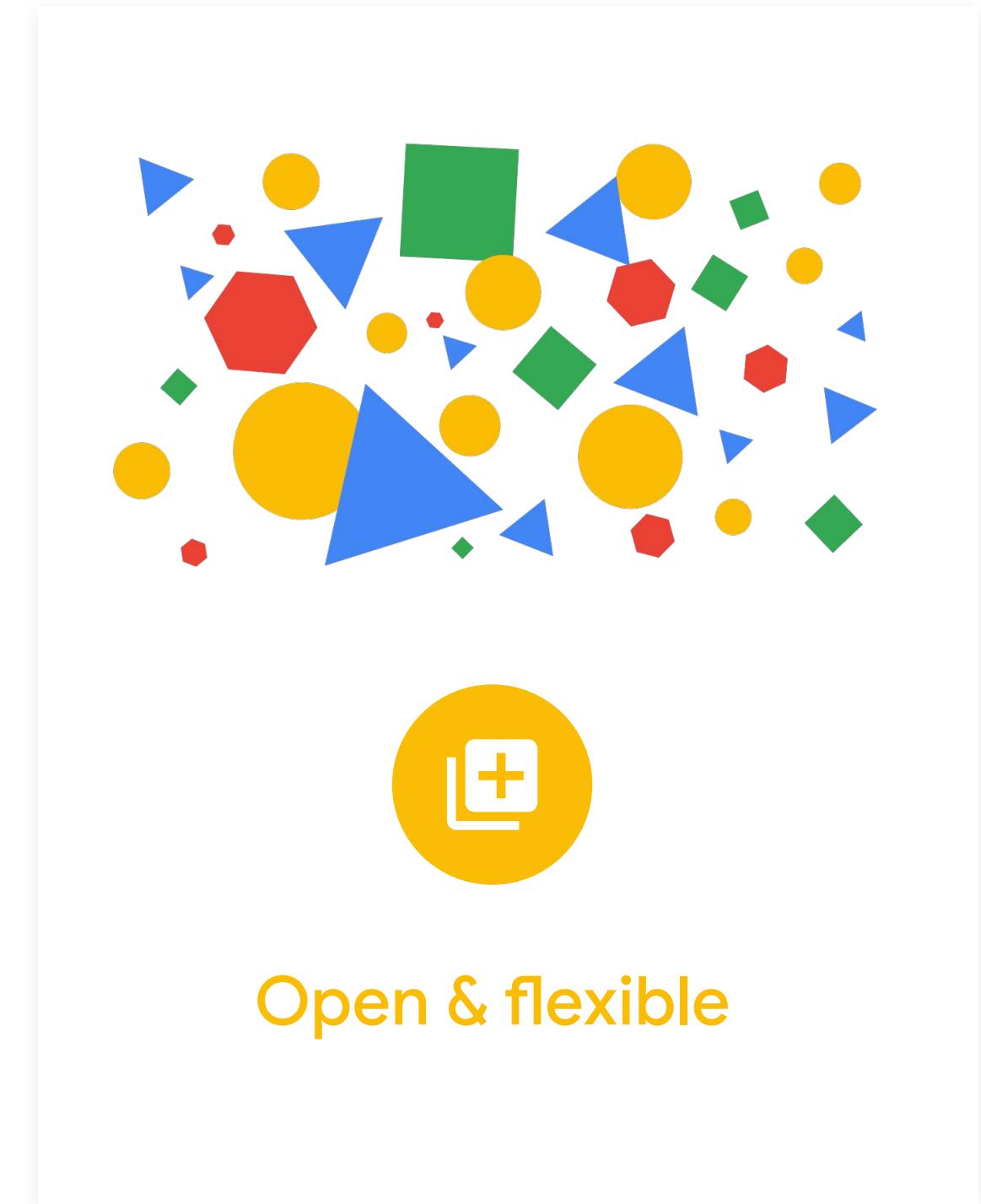
New and upcoming BigQuery innovations



Simple & Secure



Intelligent

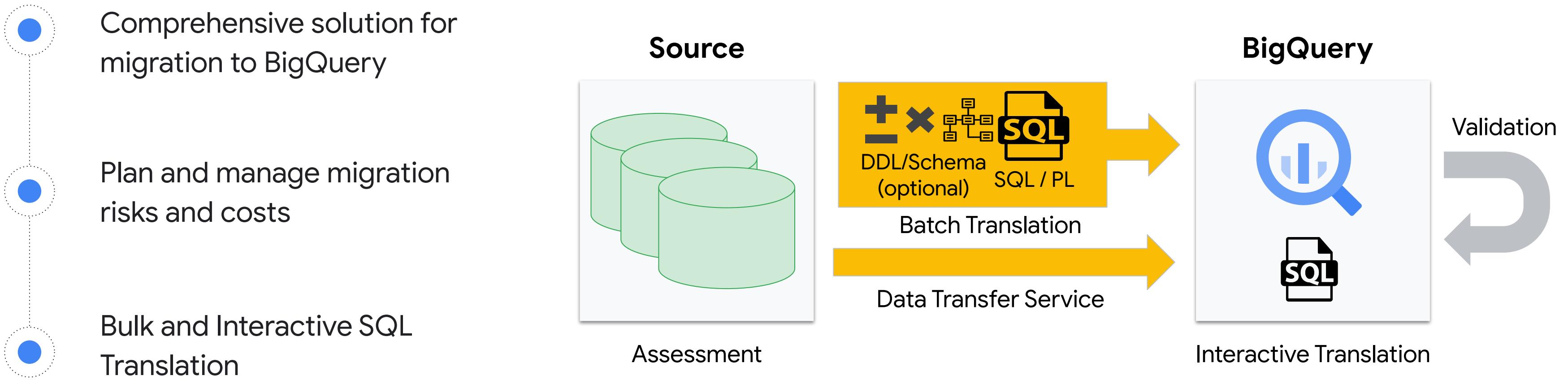


Open & flexible

BigQuery Migration Service

Generally Available

Simple & Secure



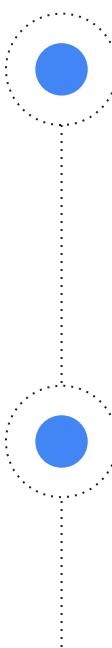
Translation sources include Amazon Redshift SQL, Apache HiveQL, Apache Spark SQL, Azure Synapse T-SQL, IBM Netezza SQL/NZPLSQL, MySQL, Oracle SQL/PL/SQL/Exadata, Presto SQL, PostgreSQL, Snowflake SQL, SQL Server T-SQL, Teradata SQL/SPL/BTEQ, Vertica SQL

Reduce the **cost**, **time** and **risk** of migrating to BigQuery across a wide range of legacy EDWs

Dataform

Preview

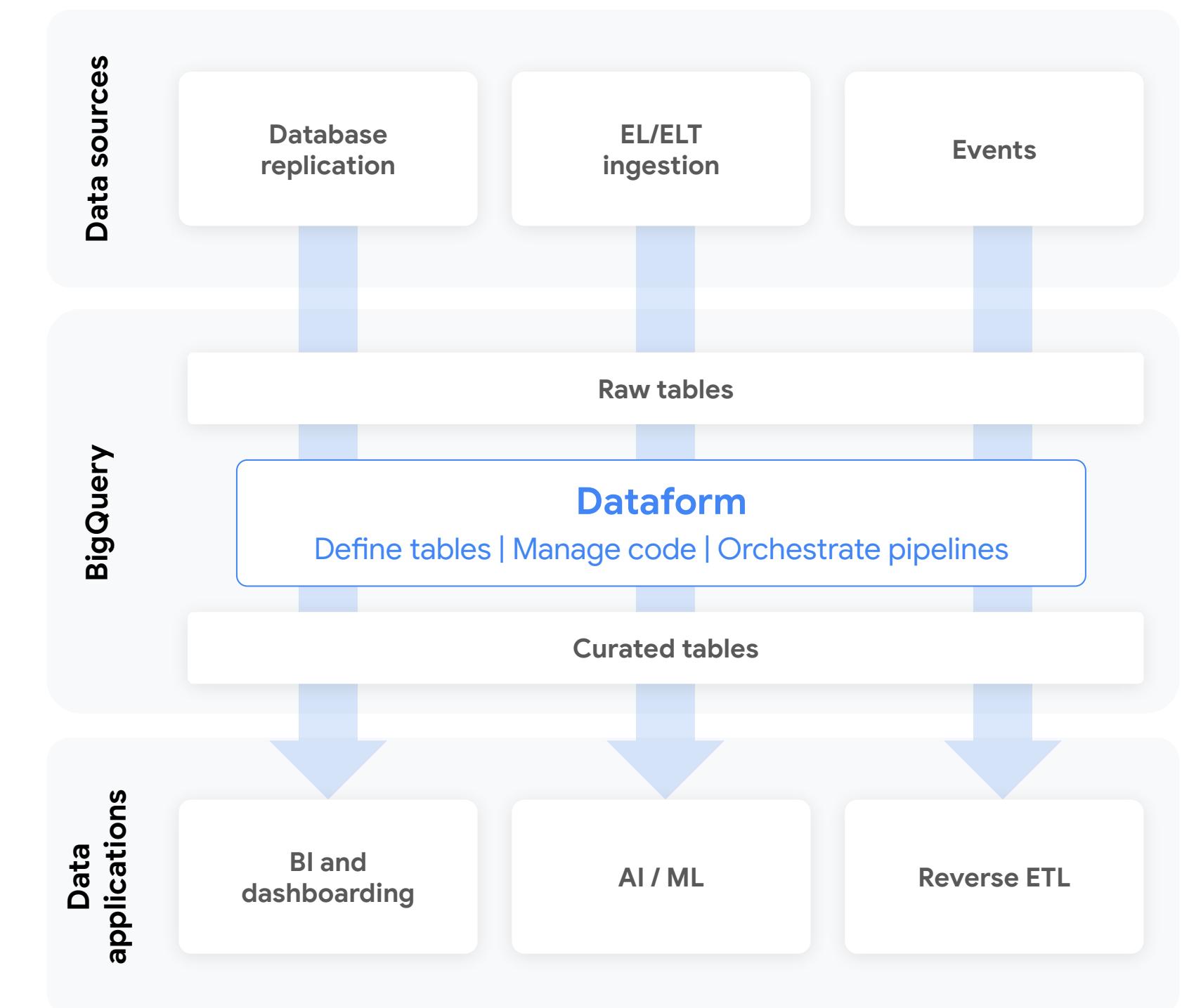
Simple & Secure



Build scalable data transformation (ELT) pipelines in BigQuery using SQL

Empower data analysts to build production-ready SQL pipelines

Help teams collaborate while following software development best practices



Connected Sheets

Generally Available

Simple & Secure



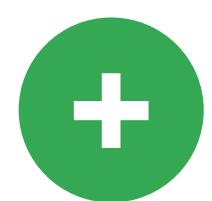
Analyze billions of rows of data in Sheets, **without specialized DW knowledge**



Easy access through the “Open with” menu in BigQuery



No additional charge with any Google Workspace plan - Enterprise, Business, and Personal (free)



covid19_open_data | 22M Rows Refresh options Schedule refresh

Chart Pivot table Function Extract + Calculated column Column stats

PREVIEW ⓘ

Tr	date	place_id	wikidata_id	datacomm	country_code	country_name	iso_3166_1	iso_3166_2
RO	10/11/2021	ChIJw3aJlSb_sL	Q218	country/ROU	RO	Romania	RO	ROU
RO	11/16/2021	ChIJw3aJlSb_sL	Q218	country/ROU	RO	Romania	RO	ROU
RO	6/2/2020	ChIJw3aJlSb_sL	Q218	country/ROU	RO	Romania	RO	ROU
RO	6/9/2021	ChIJw3aJlSb_sL	Q218	country/ROU	RO	Romania	RO	ROU
RO	1/3/2022	ChIJw3aJlSb_sL	Q218	country/ROU	RO	Romania	RO	ROU
RO	5/25/2020	ChIJw3aJlSb_sL	Q218	country/ROU	RO	Romania	RO	ROU
RO	7/31/2021	ChIJw3aJlSb_sL	Q218	country/ROU	RO	Romania	RO	ROU
RO	3/23/2020	ChIJw3aJlSb_sL	Q218	country/ROU	RO	Romania	RO	ROU
RO	7/5/2020	ChIJw3aJlSb_sL	Q218	country/ROU	RO	Romania	RO	ROU
RO	5/18/2020	ChIJw3aJlSb_sL	Q218	country/ROU	RO	Romania	RO	ROU
RO	6/25/2021	ChIJw3aJlSb_sL	Q218	country/ROU	RO	Romania	RO	ROU
RO	1/4/2022	ChIJw3aJlSb_sL	Q218	country/ROU	RO	Romania	RO	ROU
RO	9/17/2021	ChIJw3aJlSb_sL	Q218	country/ROU	RO	Romania	RO	ROU
US_AK	11/1/2020	ChIJG8CuwJzfA	Q797	geoid/02	US	United States of US	US	USA
US_AK	6/26/2020	ChIJG8CuwJzfA	Q797	geoid/02	US	United States of US	US	USA
US_AK	1/15/2021	ChIJG8CuwJzfA	Q797	geoid/02	US	United States of US	US	USA
US_AK	12/16/2020	ChIJG8CuwJzfA	Q797	geoid/02	US	United States of US	US	USA
US_AK	12/14/2020	ChIJG8CuwJzfA	Q797	geoid/02	US	United States of US	US	USA
US_AR	11/8/2020	ChIJYSc_dD-e0o	Q1612	geoid/05	US	United States of US	US	USA
US_AR	12/10/2020	ChIJYSc_dD-e0o	Q1612	geoid/05	US	United States of US	US	USA
US					US	United States of US	US	USA
US	Preview of 22M rows	9:12 AM	Refresh preview		US	United States of US	US	USA
US_AZ	12/13/2020	ChIJaxhMy-sIK4	Q816	geoid/04	US	United States of US	US	USA

Analytics on Log Data

Generally Available

Store, explore, and analyze machine generated logs from servers, sensors, and other devices in BigQuery alongside your business data

Intelligent

Native JSON data type

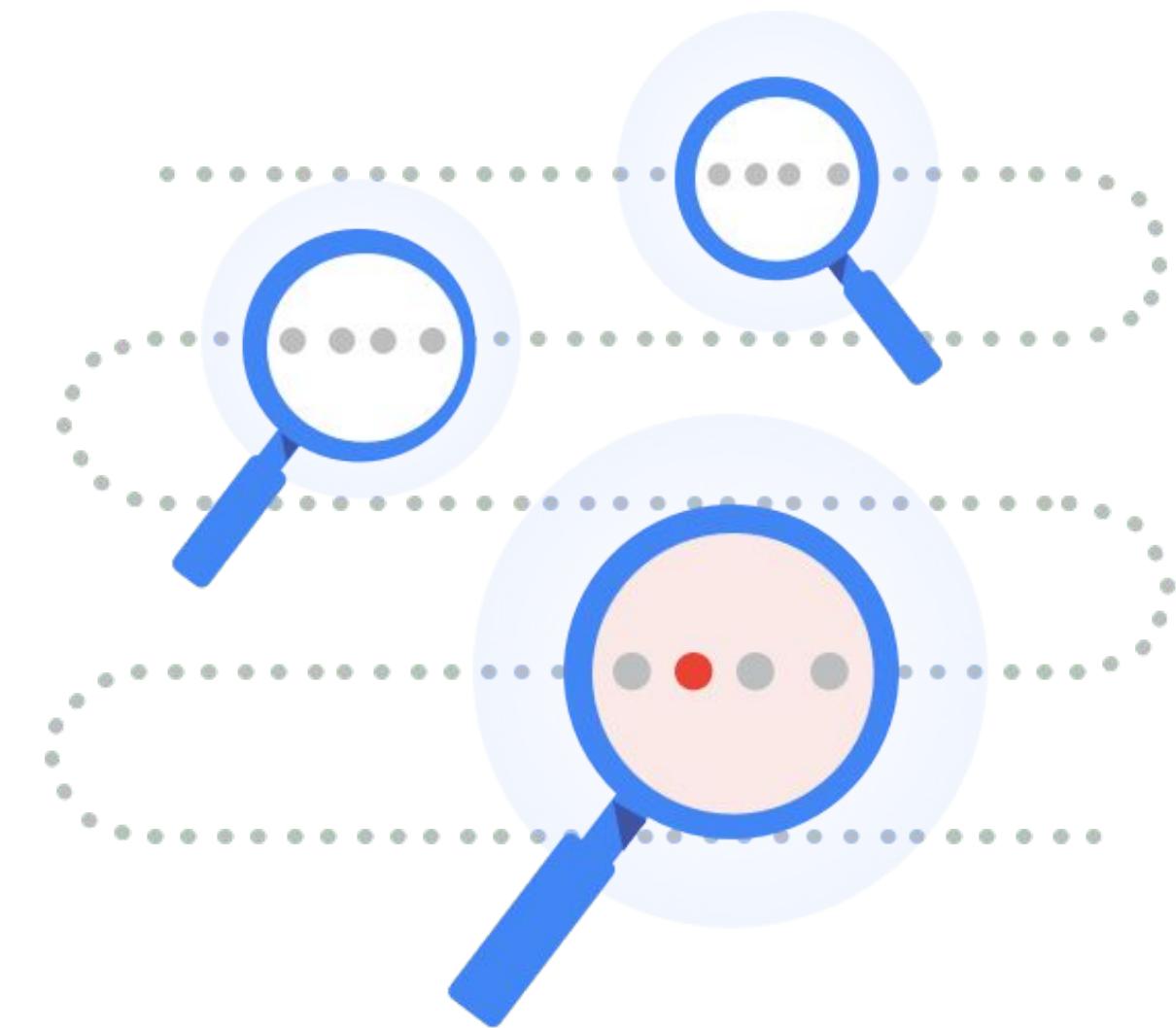
New JSON functions and support for shredding JSON documents into columnar store format.

Search indexes

Text indexes that provide users the ability to run exact match queries on log data, including JSON.

Storage Write API

Streaming data ingestion with exactly once processing and support for fault-tolerant execution

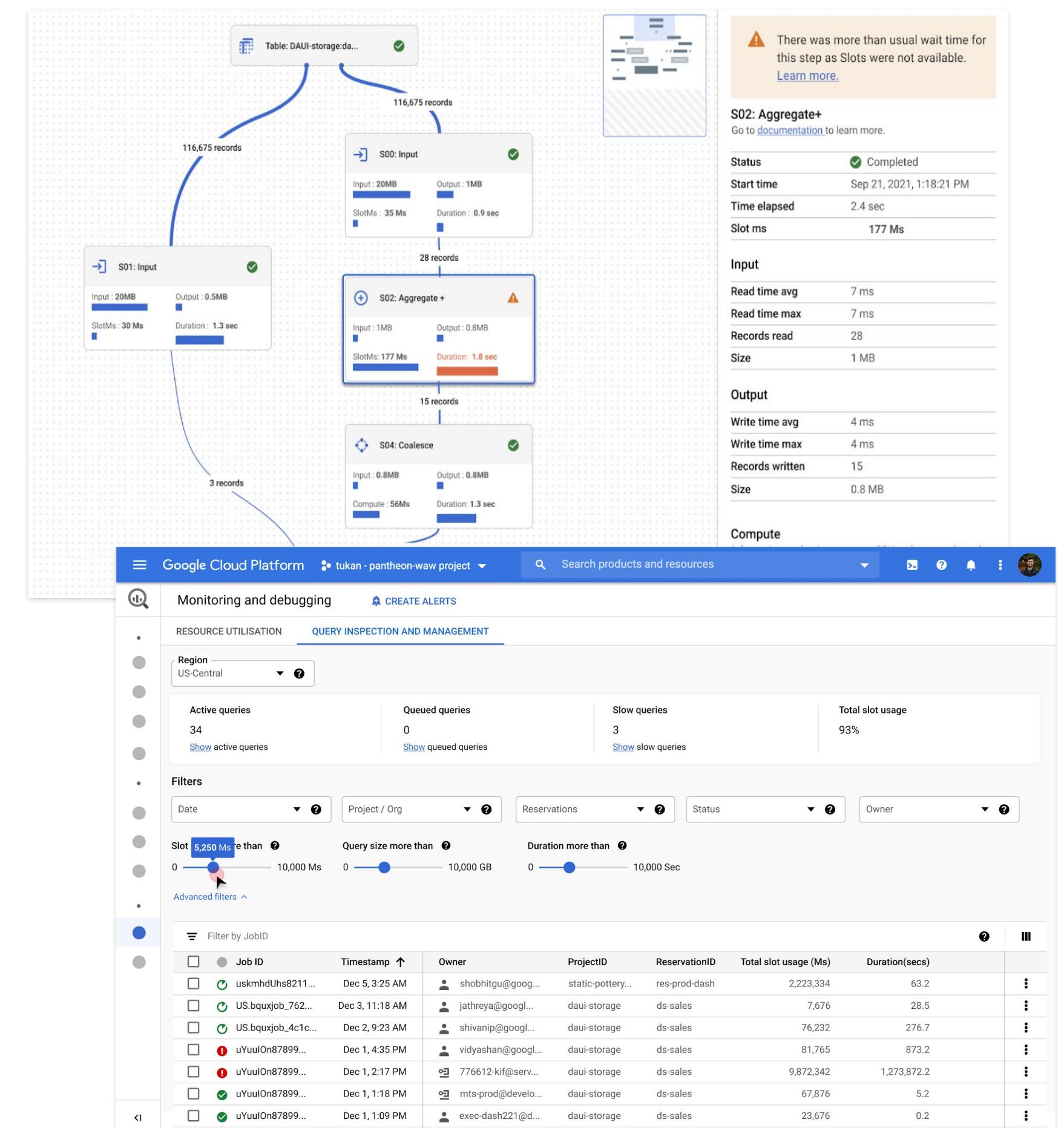


Query Inspector

Preview

Visualize

Observe data flow and relevant metrics across stages to troubleshoot query performance.



Intelligent

Troubleshoot

Get targeted insights on query performance variance compared to historical average.

Monitor

A single place to see all queries, diagnose, inspect against similar queries, and optimize.

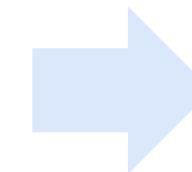
BigQuery ML integration with Vertex AI Model Registry

Generally Available

Train & Deploy model in SQL for batch prediction

```
1 CREATE MODEL numbikes.model
2 OPTIONS
3   (model_type='linear_reg', labels=['num_trips']) AS
4 WITH bike_data AS
5 (
6 SELECT
7   COUNT(*) as num_trips,
```

Run Query



Register model in Vertex AI for online prediction

- Register, organize, track, and version your trained and deployed ML models.
- Store model metadata and runtime dependencies for deployability.
- Integrate with model evaluation and deployment capabilities and track online and offline evaluation metrics.
- Govern the model launch process: review, approve, release, and roll back.

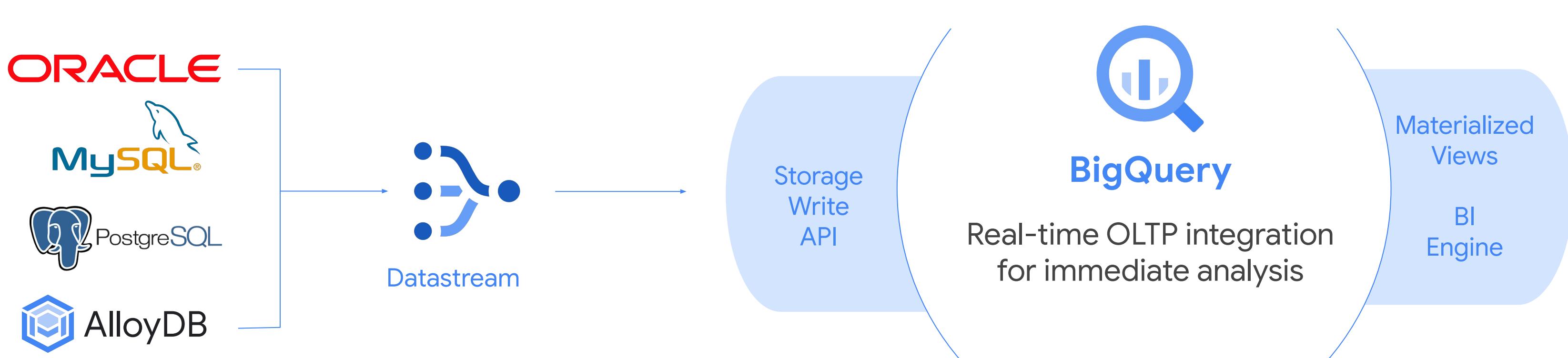
Change Data Capture integration with Datastream

Preview

Open & flexible



- Analyze business events in real-time
- Easy schema creation and mapping
- Leverages new BigQuery built-in CDC support



Google Cloud

Object tables - support for unstructured data

Preview

Easy



Object tables enable you to build SQL-based pipelines on unstructured data (images, audio, docs, videos)



Powerful



Leverage unique Google IP in speech recognition, vision, translation, text processing using BigQuery SQL



Object tables
(query, join, predict, govern, share)

BigQuery ML

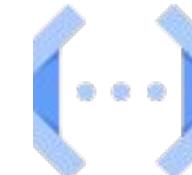


TensorFlow
models



Vertex AI
Models

Remote UDFs



Cloud
Functions

Secure



Secure, govern and join object metadata and inferences with your structured data

Thank you

Google Cloud

Next '22

