ORACLE

Oracle Database Update

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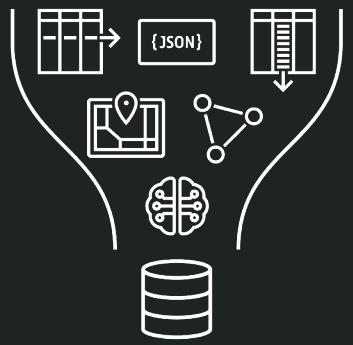
Oracle Database Vision

Make Modern Apps and Analytics
Easy to **Develop and Run**
For All Use Cases
at Any Scale

How we deliver the Vision

Complete and Simple Platform for All Data Management Needs

Complete



Converged Database

Complete support for all modern data types, workloads, and development styles

Completely consistent, scalable, available, and secure

Simple

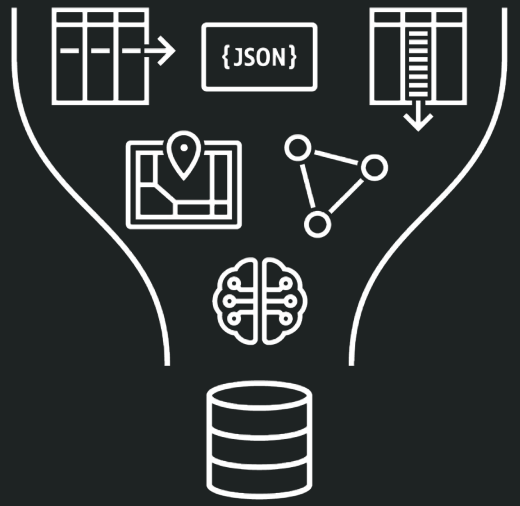
Autonomous Database

Converged DB on Exadata Cloud delivered as a self-driving, self-securing, self-repairing service

Simplest Database for developing and running any apps or analytics at any scale or criticality

Comparing Database Strategies

Run converged, open, SQL Database



Developers and I.T. focus on Innovation

Instead of single-use proprietary databases

Aurora

DocumentDB

Redshift

Quantum Ledger

Synapse

MongoDB

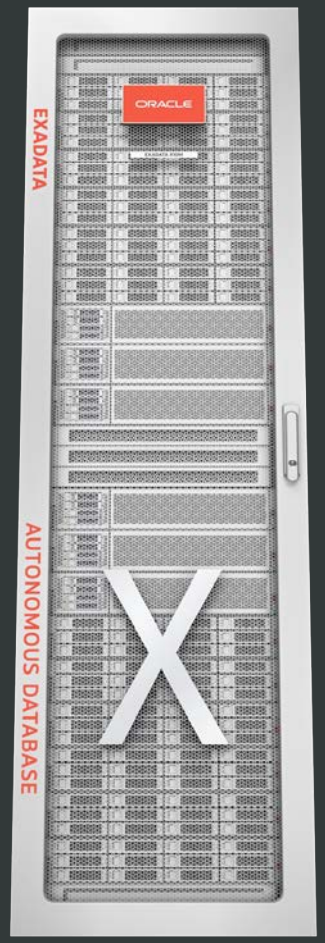
Snowflake

Big Query

Developers and I.T. focus on Integration

Exadata Platform

Extreme performance and availability for all data workloads



Ideal Database Hardware

Database-Aware System Software

Unique algorithms vastly improve the performance of modern operational and analytic apps for all use cases at any scale

Automated Management

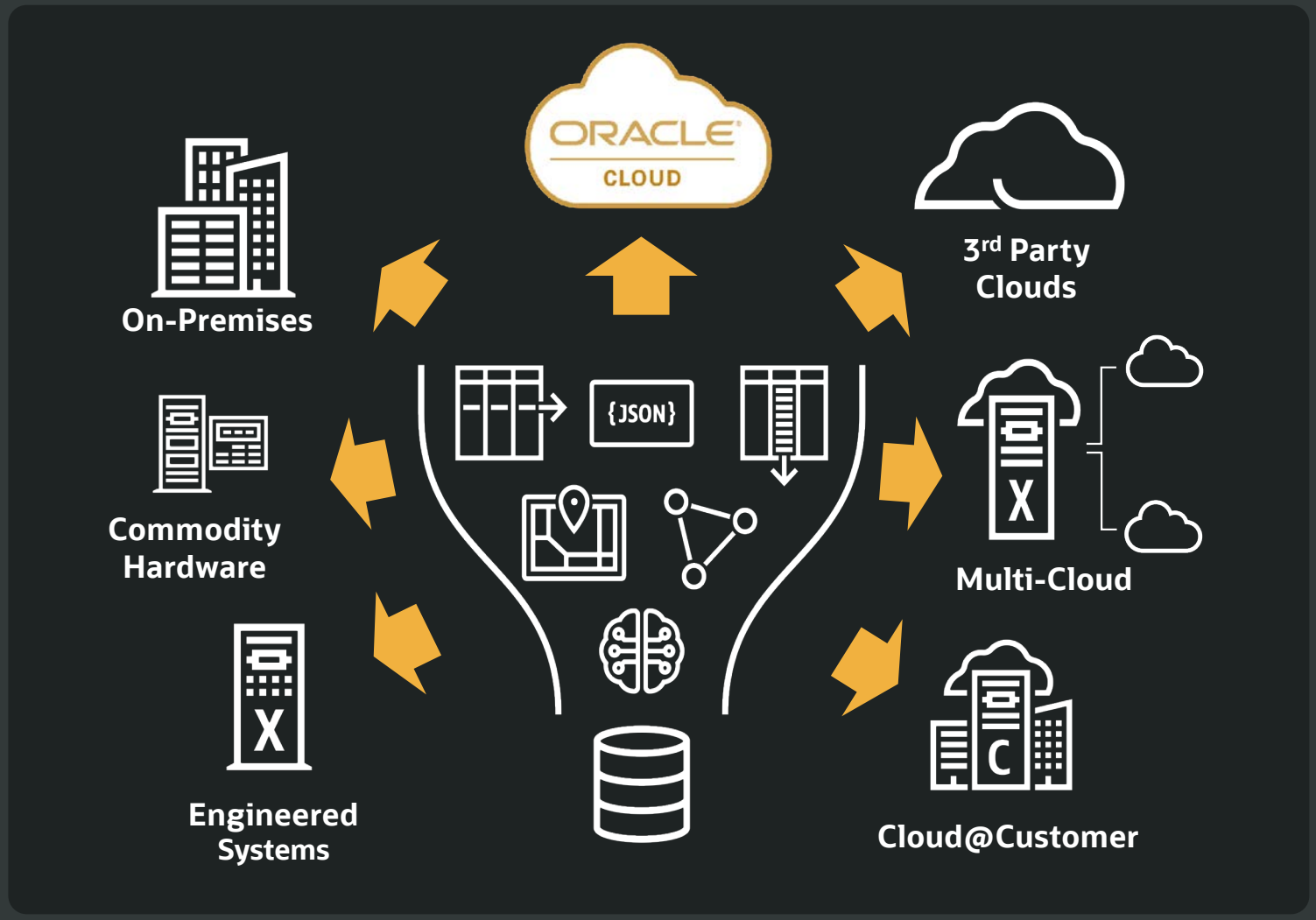
Exadata Platform: Extreme performance and availability for all workloads

76% of Fortune Global 100 Run Exadata | 53% Run Exadata Cloud

Superior Architecture for ALL Workloads

- Petabyte Warehouses
- Super Critical OLTP
- Packaged Applications
  - SAP, Oracle, Siebel, PSFT, …
- Database Consolidation

Oracle Database and Exadata run everywhere



The same database technology

100% compatible

New Multicloud - Oracle Database@Azure

OCI Azure Interconnect

Integrated network

2ms latency

No egress fees

Oracle Database Service for Azure

Adds:

Integrated identity

Service metrics, events, logs shipped to Azure

Oracle Database@Azure

Adds:

Exadata systems in Azure

Sub-ms latency

Purchase & bill using Azure credits

Available Oracle Support Rewards

Oracle Database 23c

300+ New Features

Emphasis on *Developers and AI*

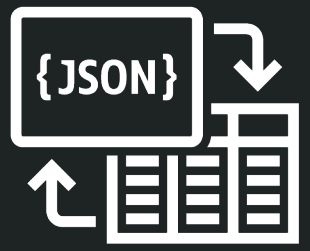
Plus enhances Oracle's lead in scalability, availability, security, analytics, etc.

Developer Release available now

Oracle.com/23cFREE

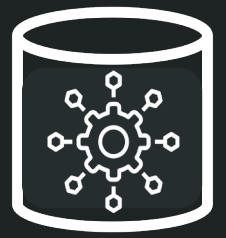
Oracle Database 23c

Adds compelling capabilities to simplify app development

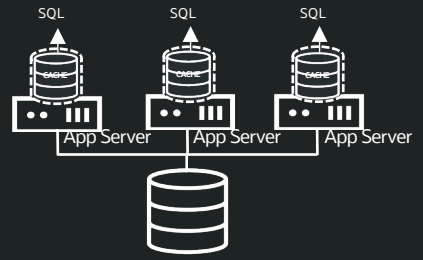


JSON Relational Duality

Operational Property Graphs



In-Database Microservices Support

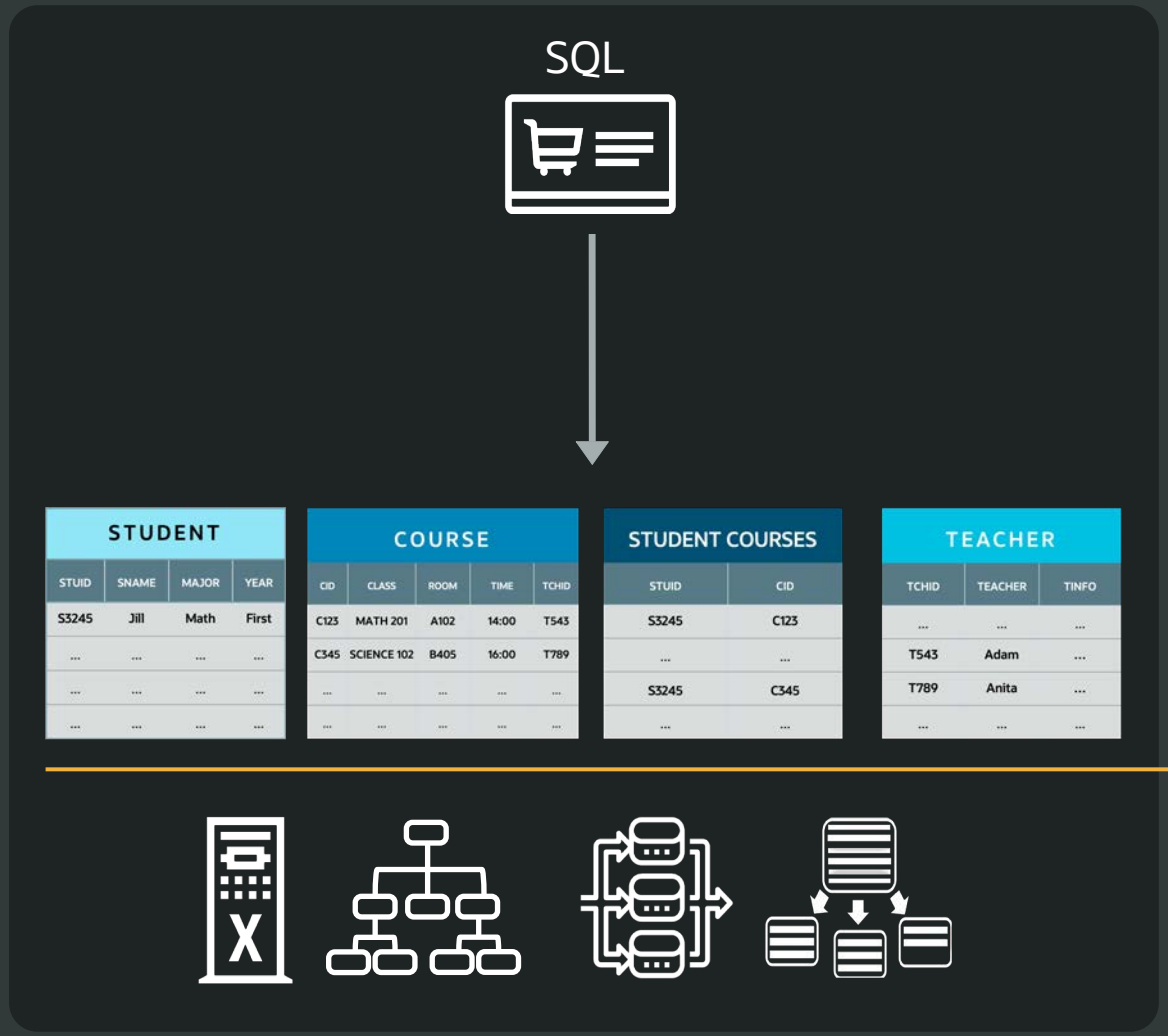


True Cache

JavaScript Stored Procedures

SQL Simplification

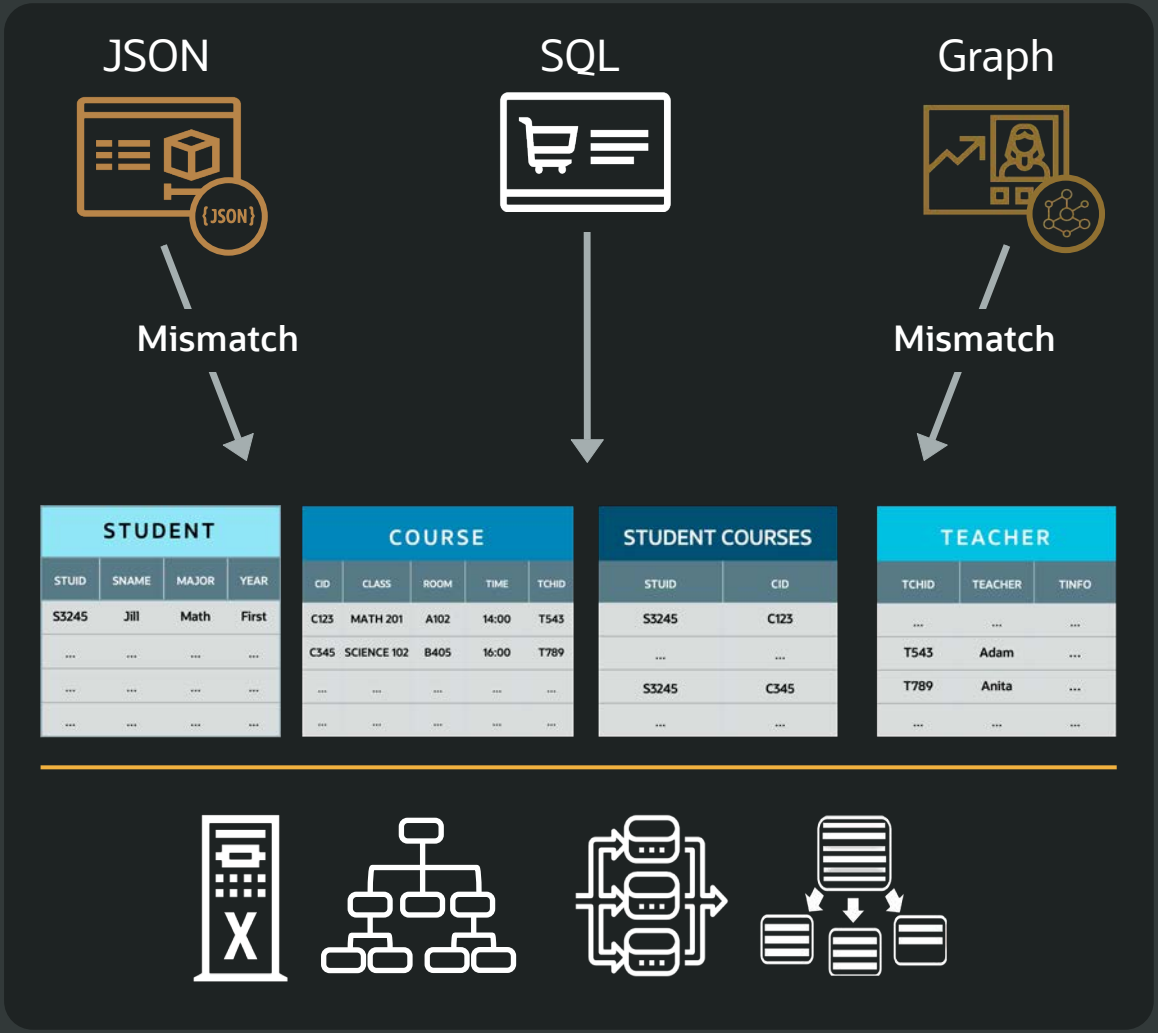
The Relational Model provides the most solid foundation for building apps



Normalized tables and rows ensure data consistency, Declarative SQL increases productivity

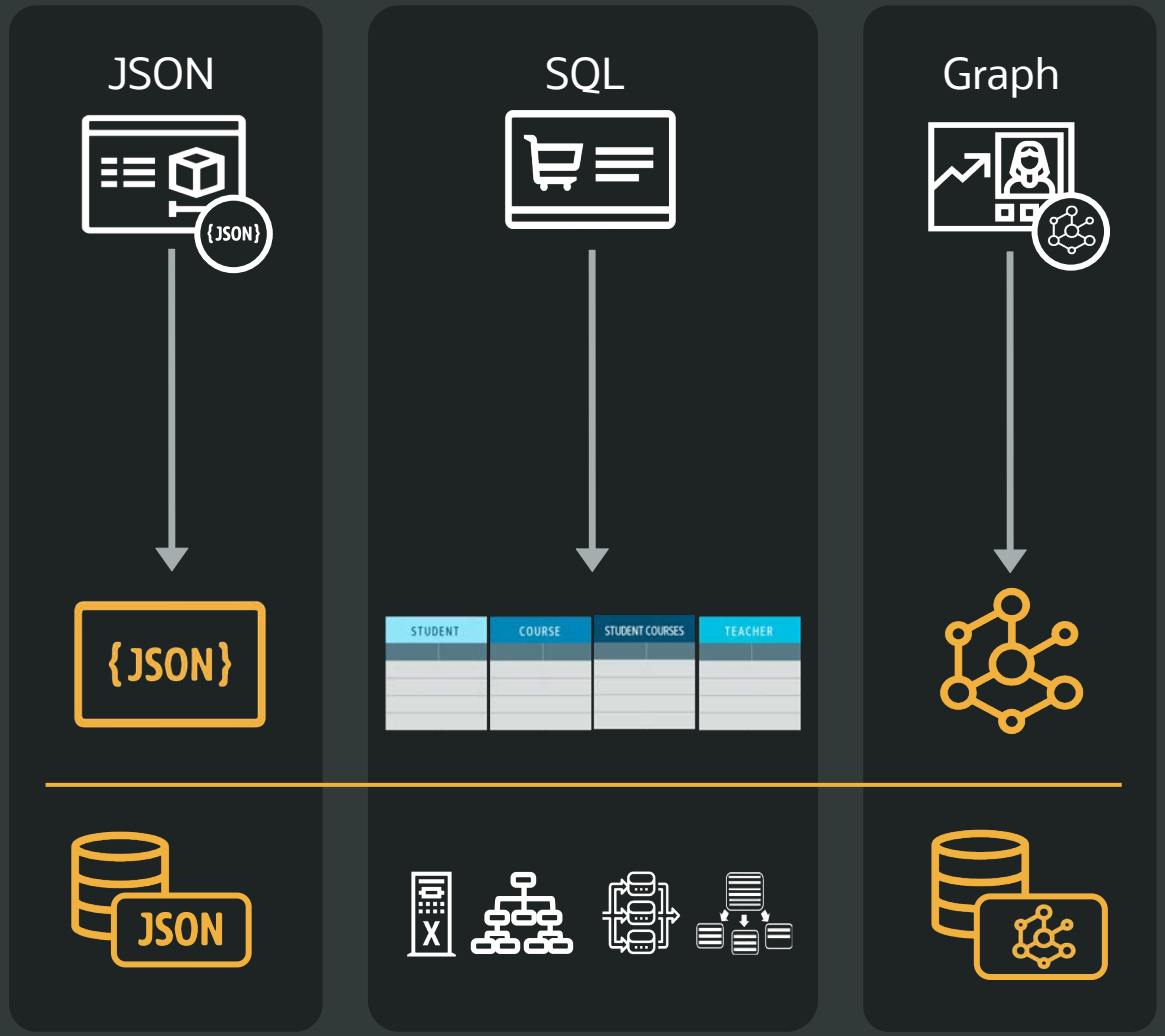
Apps transparently optimized using indexes, parallel SQL, Exadata, …

However, some Apps prefer JSON or Graph formats and APIs



Mismatch between JSON and Graph Apps and the Relational Model complicates app dev

To satisfy these app preferences the worlds of data and app dev have fractured by app format



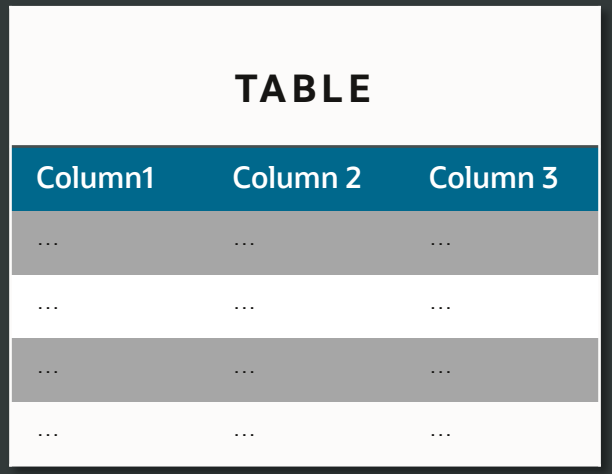
New databases were invented with JSON and Graph Models

JSON Relational Duality Views

Provide the use-case simplicity of JSON with the multi-use case power of relational

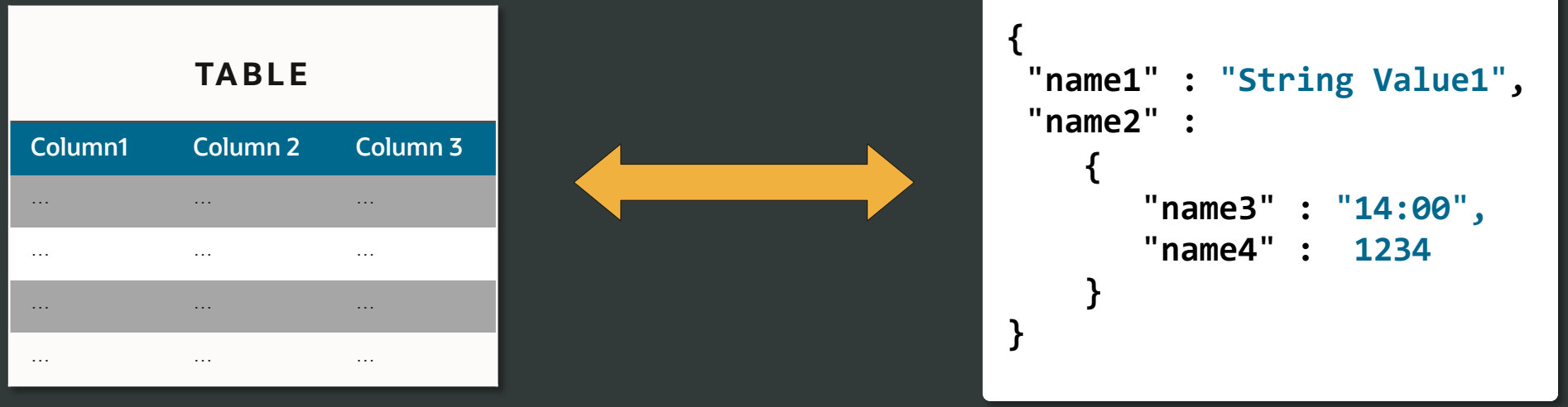
Data is stored as rows in tables to provide the benefits of the relational model and SQL access

Rows can include JSON columns to store data whose schema is dynamic or evolving

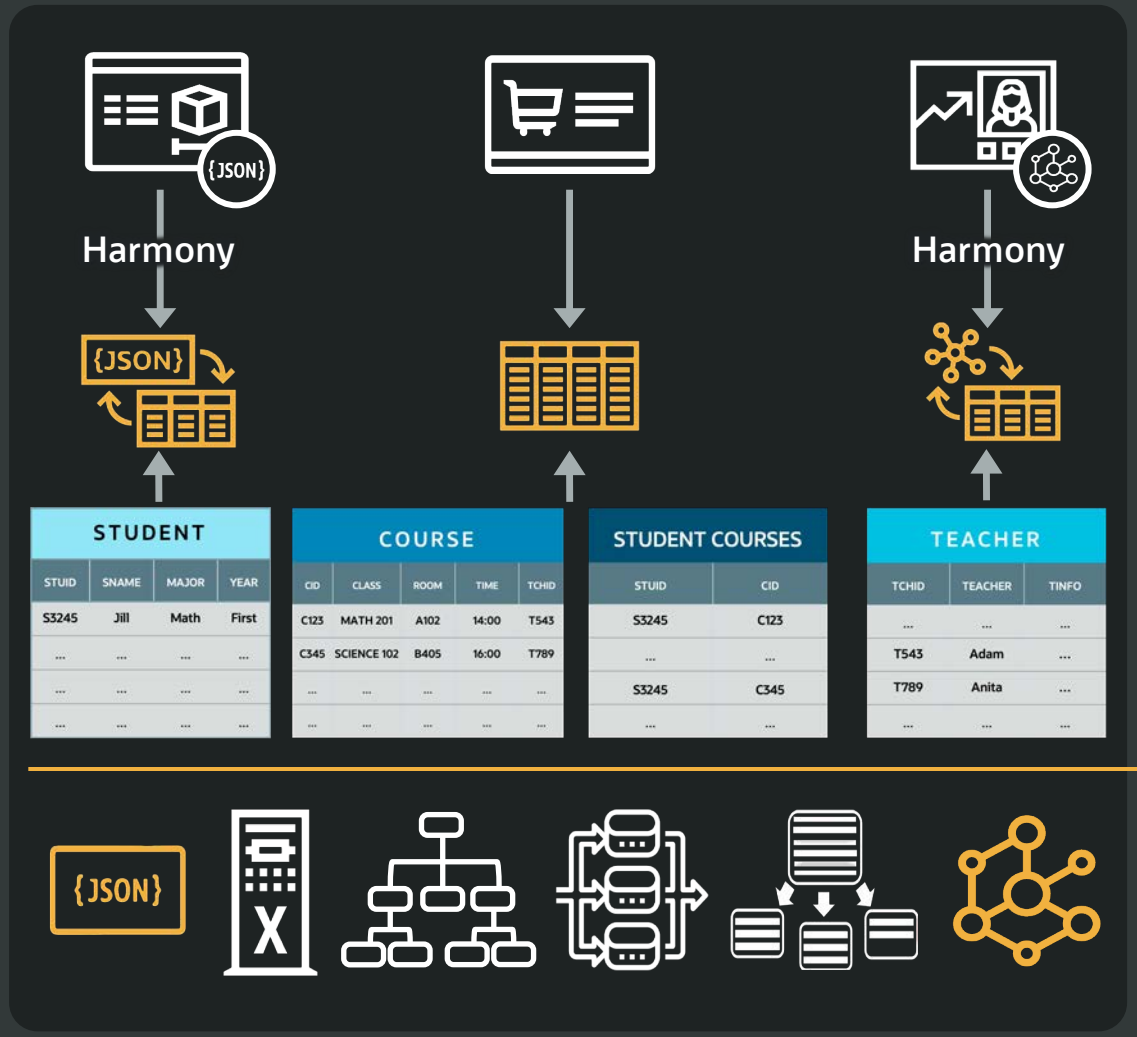


JSON Relational Duality Views

Data can be read and written as JSON documents to deliver the application simplicity of documents



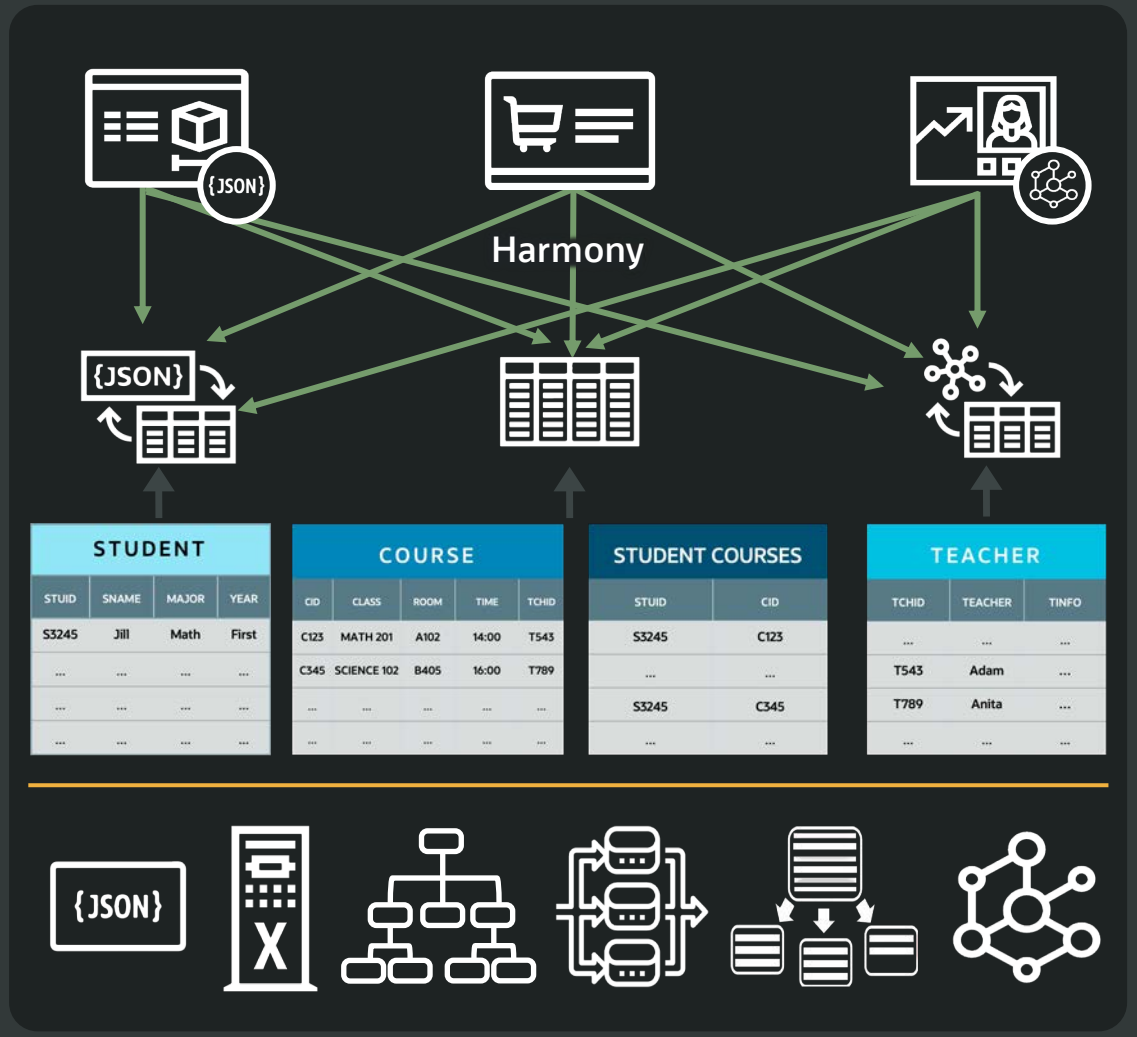
Duality Views harmonize app preferences with the relational foundation - reunifying the worlds of data and app dev



JSON Duality and Graph views generate the app preferred format

Native optimizations for JSON Duality and Graph added

Apps can choose their preferred format by use-case, the database will generate it



Industry Analysts' Views on JSON Relational Duality

IDC

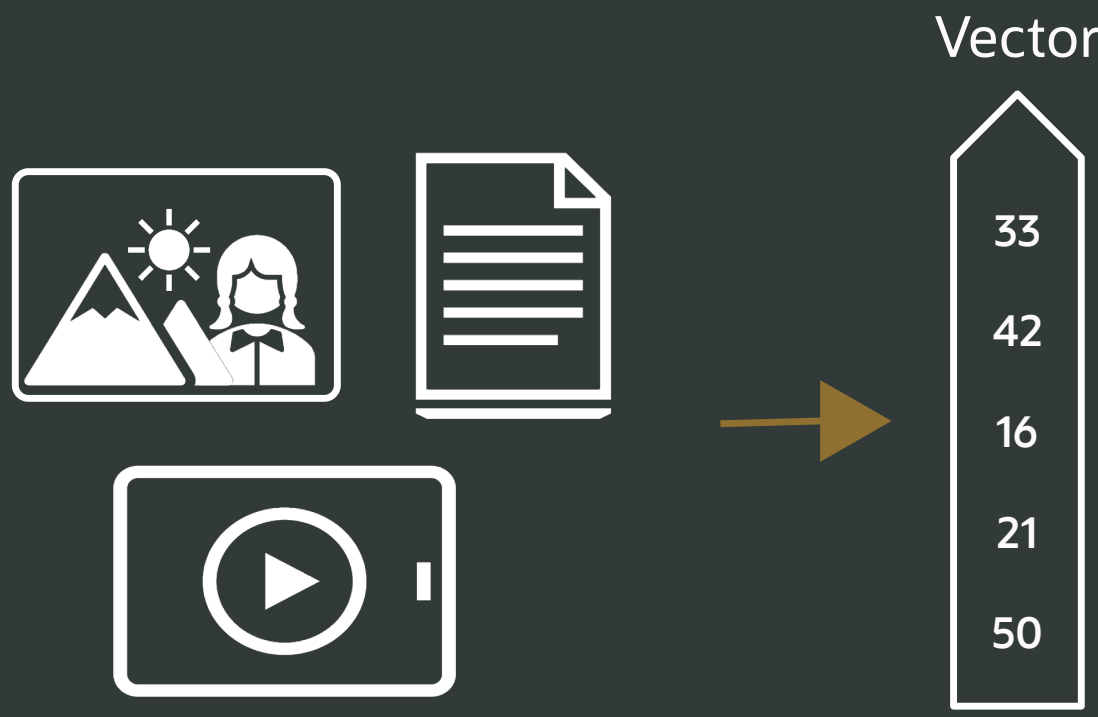
"Oracle's JSON Relational Duality, is perhaps one of the most important innovations in information science in 20 years."

OMDIA

"A **revolutionary** technology that finally combines the advantages of relational and document databases instead of settling for compromises"

A new technology called AI Vector Search enables semantic searches on unstructured data

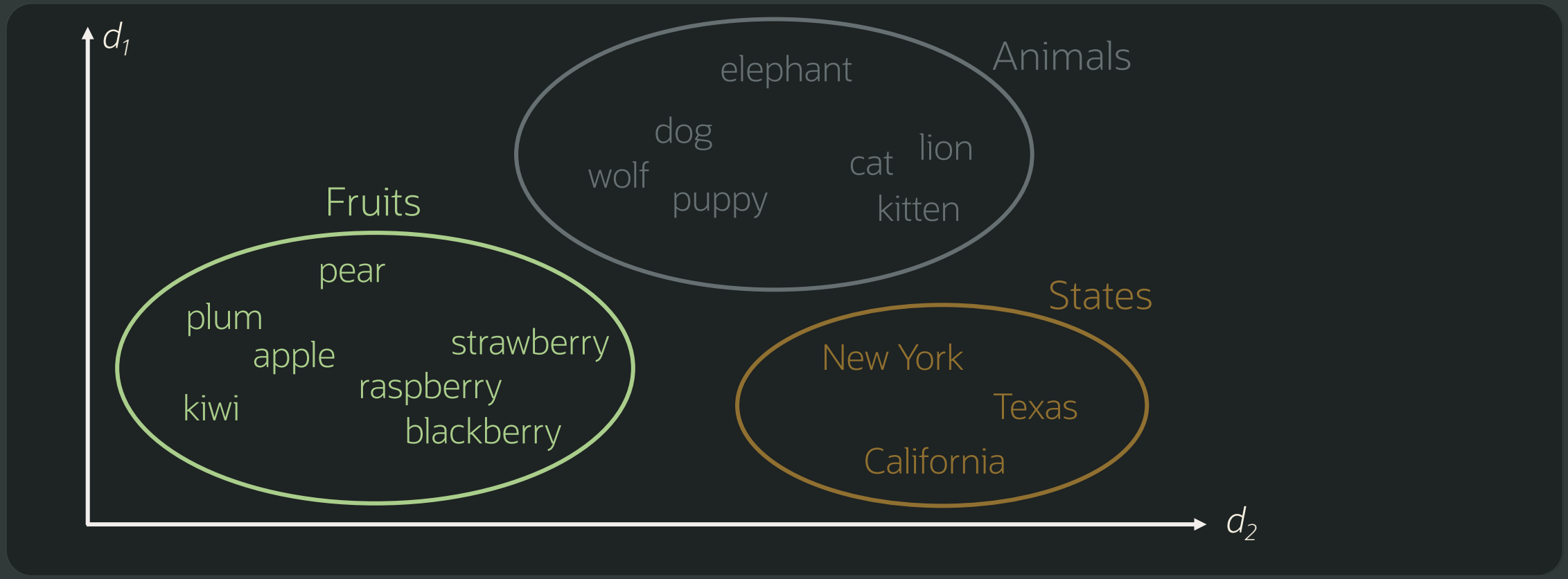
Vectors are used in AI to represent the content of unstructured data such as images, documents, videos, etc.



A vector is a sequence of numbers, called dimensions, used to capture the important "features" of the data

Vectors represent the semantic content of data, not the underlying words or pixels

The distance between the vectors is proportional to their semantic similarity



Oracle AI Vector Search enables searches on business data to be combined with semantic searches on unstructured data

Oracle Database is the leading repository of business data

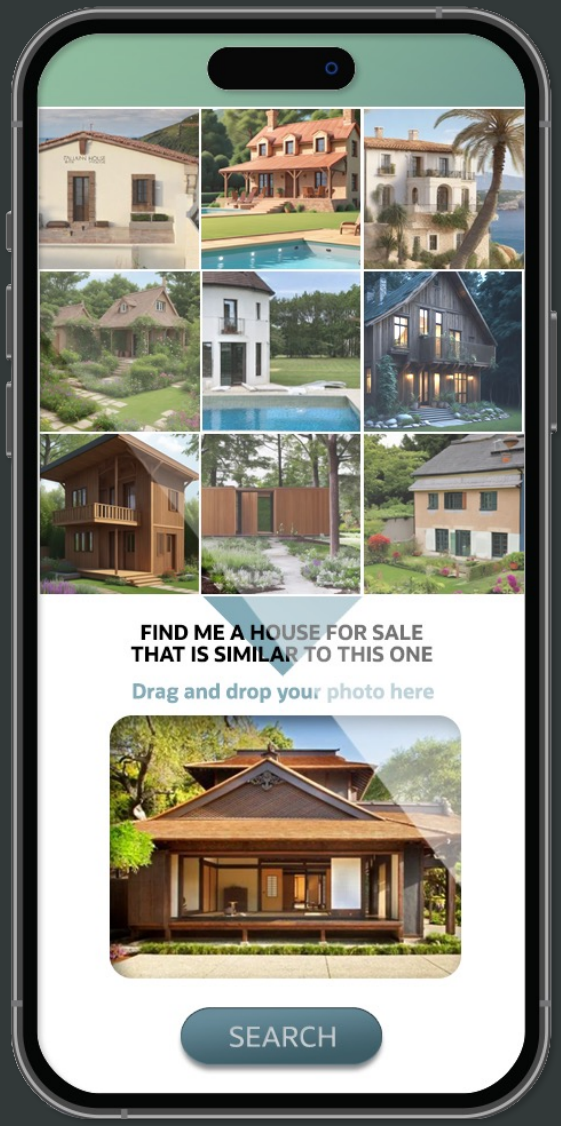
Answering end-user questions requires business data

End-user data

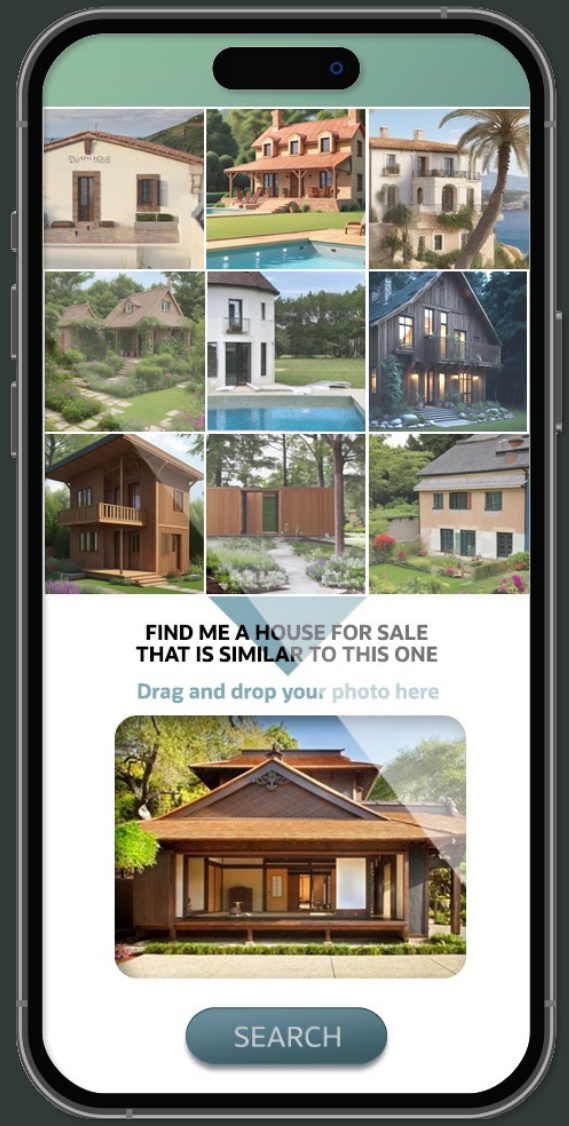
Buying history, interests, balance, location, etc.

Product data

Product attributes, inventory, limitations, configurations, etc.



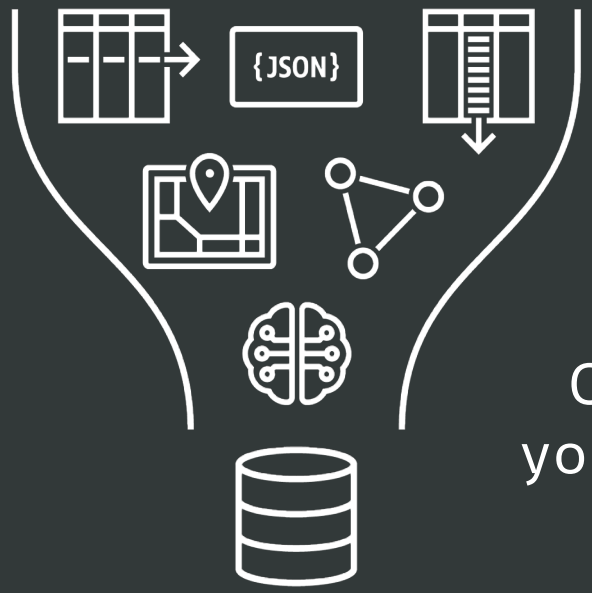
Imagine a house-hunting app that helps customers find houses for sale that are similar to a picture the customer uploads



Finding a good match requires combining semantic picture search with searches on business data including:

- Customer data such as location preference and budget
- Product data such as house inventory by location and price

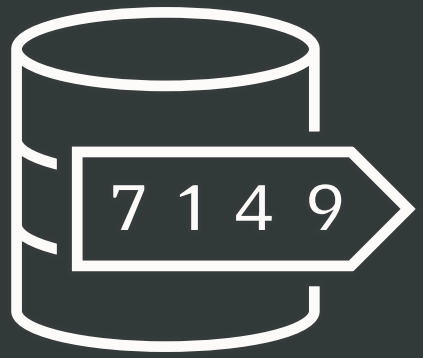
Searches on a combination of business and semantic data are more effective if both types of data are stored together



Business Database

User and Product Data

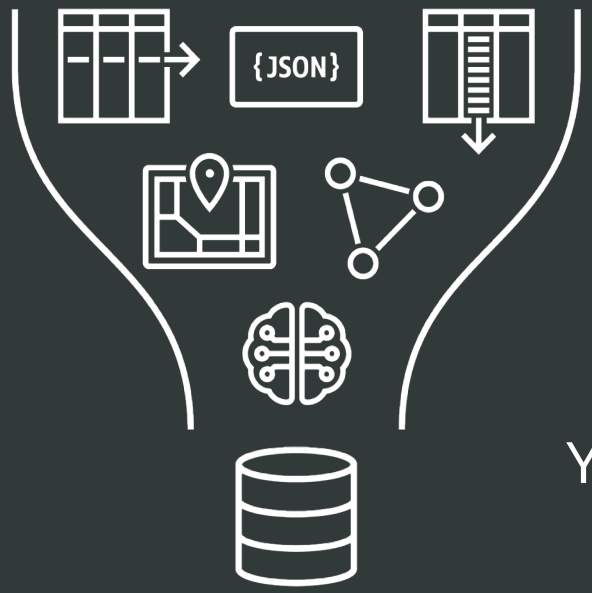
One solution is to continuously send your business data to a vector database



Vector Database

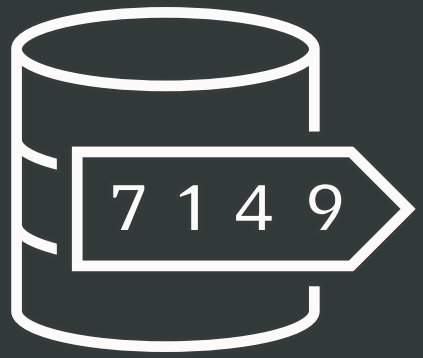
The business data that is relevant to a question varies widely

Dedicated vector databases are not good at searching or securing business data

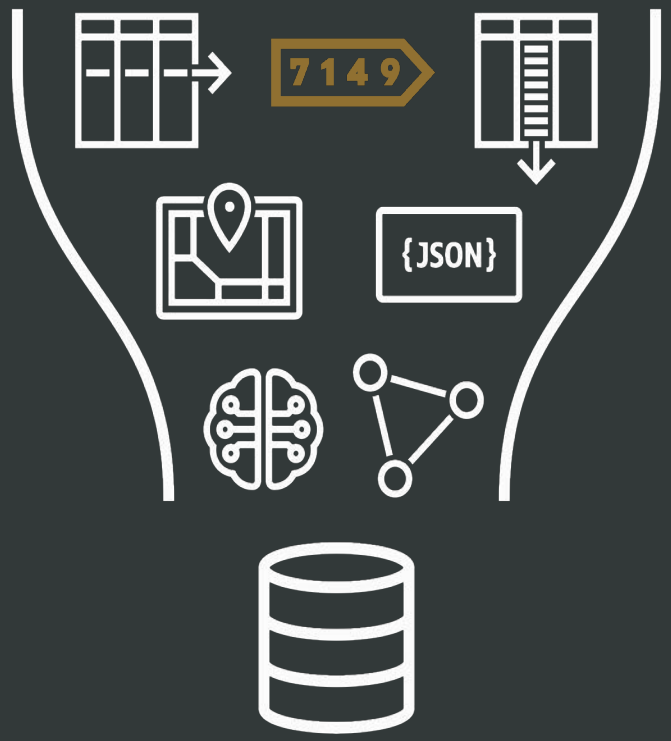


Business Database

You need to send lots of business data since you can't predict the question



Vector Database

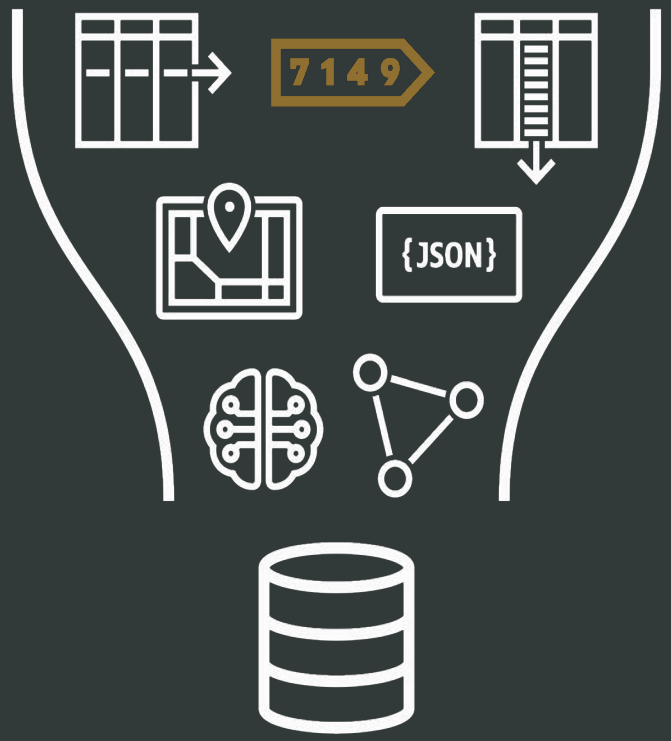


Converged Database

Best solution is to add vector search to your business database

Can use both business data and vectors when answering a question

- No need to move and synchronize data, manage multiple products, etc.



Converged Database

Announcing:

AI Vector Search in Oracle Database

See demo today in Tech Hub

Sign up for Preview

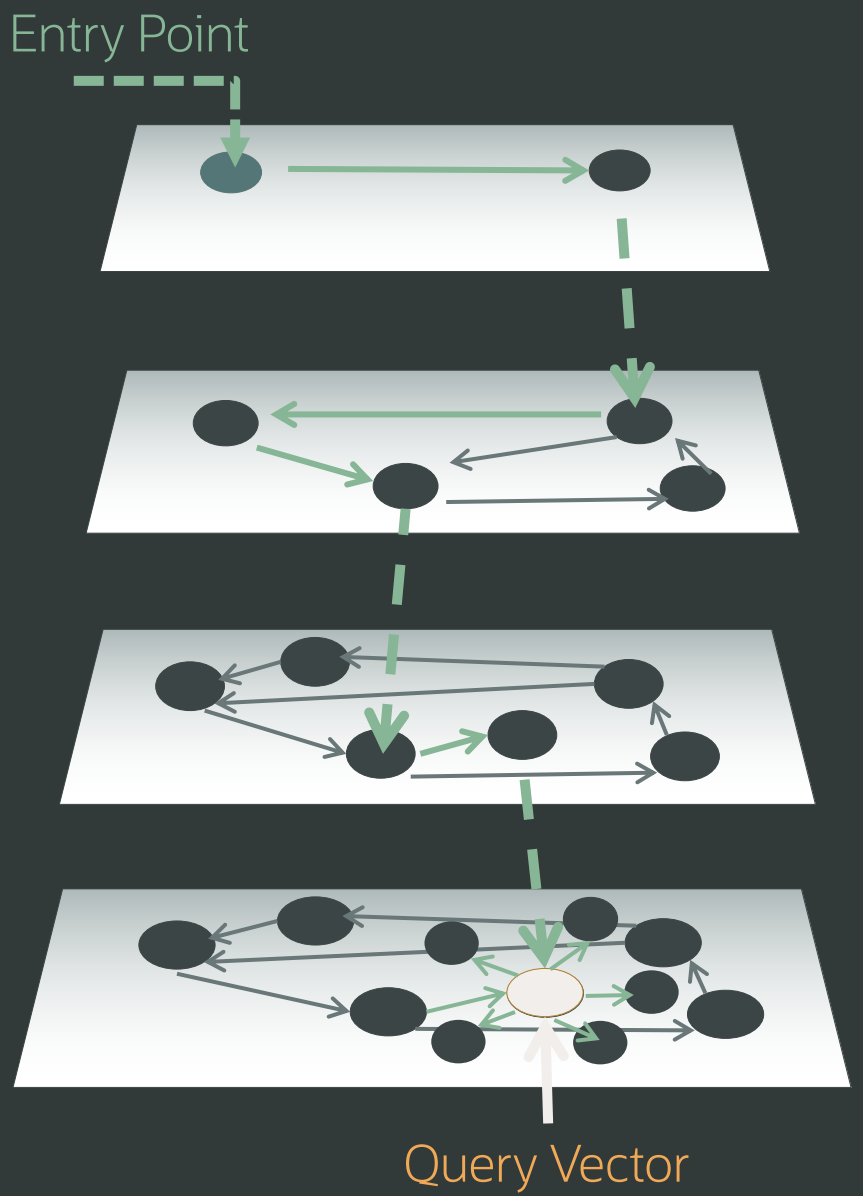
Enables combining AI vector search with search on business data about customers and products

Combines customer data, product data, and AI search in 5 lines of SQL!

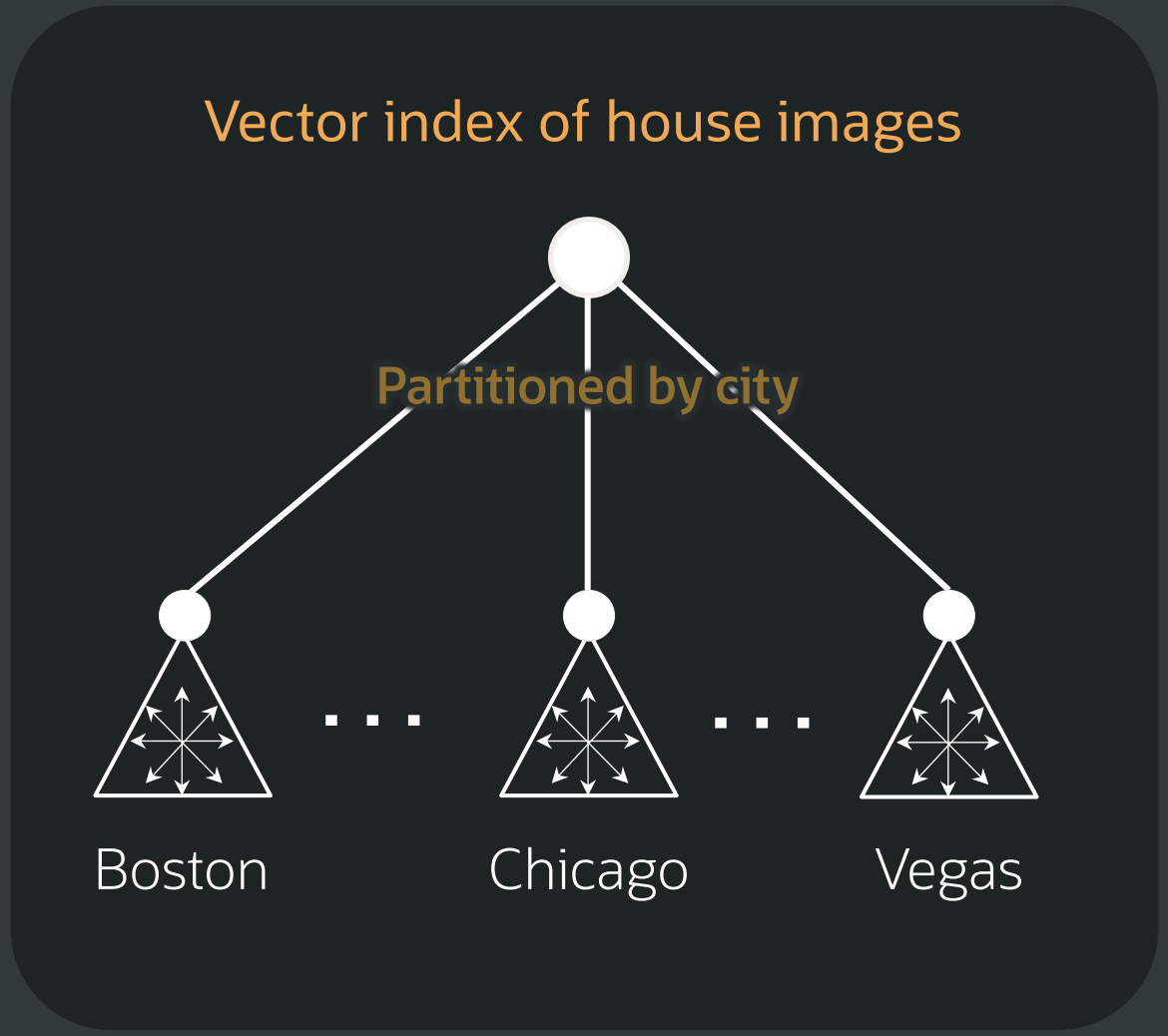
Single integrated solution, all data fully consistent

Find houses that are similar to this picture and match the customer's preferred city and budget

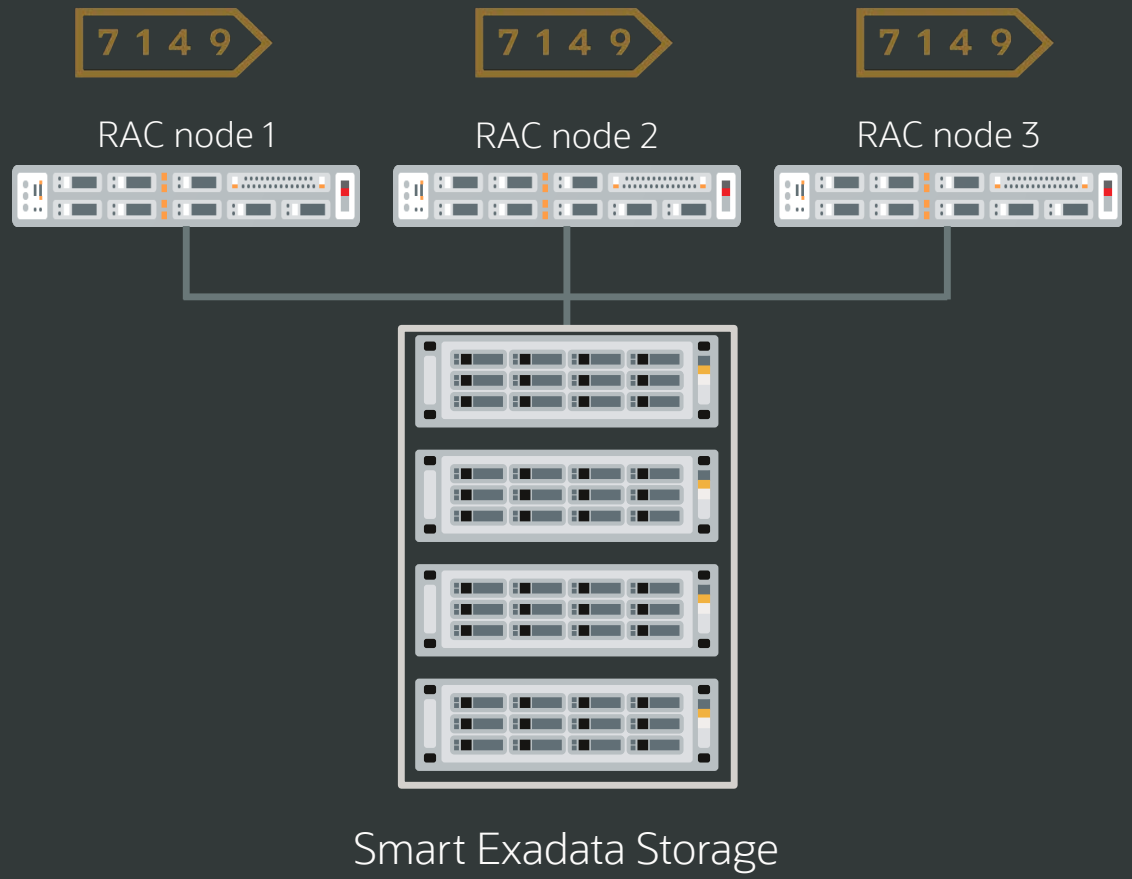
```
SELECT …
FROM   house_for_sale
WHERE  price <= (SELECT budget      FROM customer …)
AND    city  in (SELECT search_city FROM customer …)
ORDER BY vector_distance(house_vectors, :input_vector);
```

Oracle database will accelerate AI vector search using sophisticated vector indexes

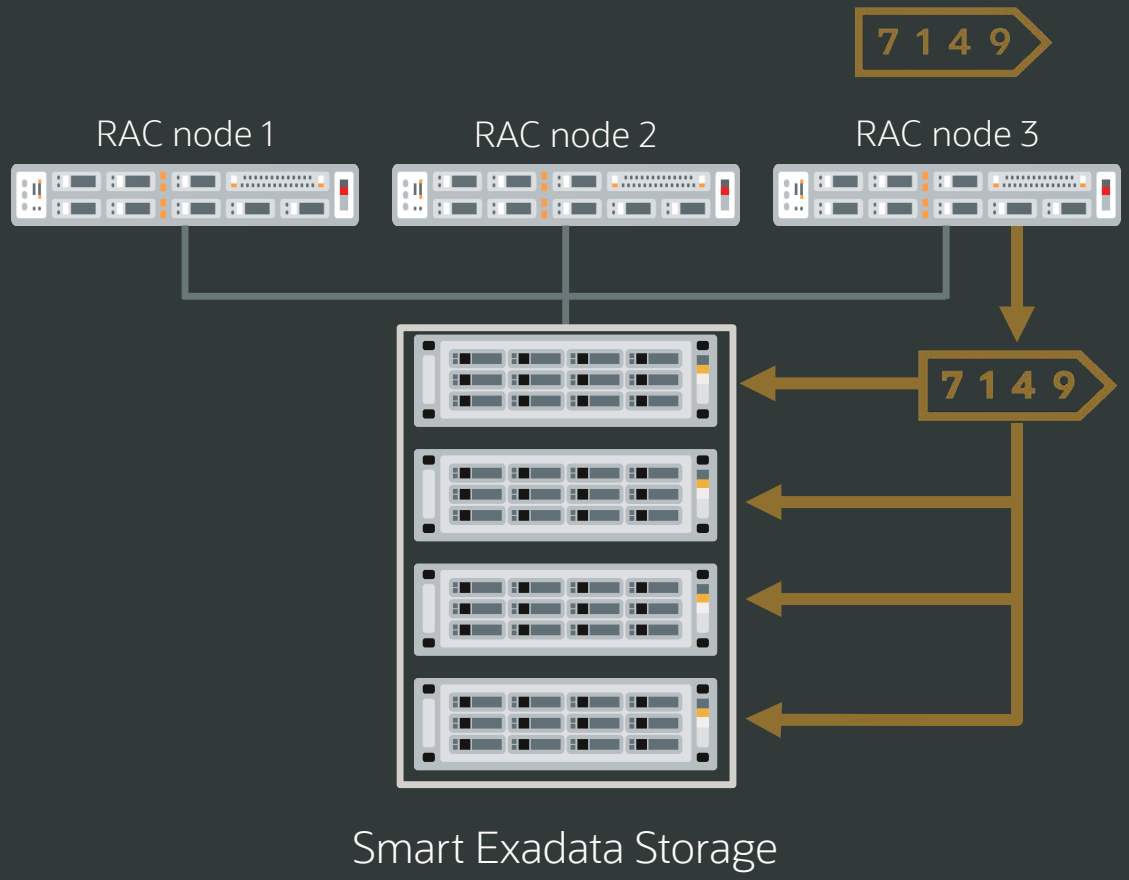


Oracle will partition or shard vector indexes for improved performance



Oracle will transparently scale vector processing across the computers in a RAC cluster

With full data consistency



Oracle will transparently offload vector search to smart Exadata storage for faster search

Parallel SQL

Transactions

Analytics

Disaster Recovery

Security

Oracle AI Vector Search will benefit from many other core database capabilities

Adding Generative AI to AI Vector and business data search enables end-users to get answers to natural language questions

AI Vector Search can map the natural language question to relevant data in the database

The user question plus relevant data can then be passed to a Generative AI to provide an informed answer to the question

AI Vector Search augments Generative AI
by retrieving detailed, often private content
needed to answer questions

Called: **Retrieval Augmented Generation (RAG)**

Big Picture - Oracle Database Goals

Best Database	Oracle Converged Database
Best Database Platform	Oracle Exadata
Best Cloud Database	Oracle Autonomous Database
Best Cloud Database@Customer	Oracle Autonomous Database Cloud@Customer
Best Document Database	Oracle Database with JSON Duality
Best Graph Database	Oracle Database with Graph
Best AI Database	Oracle Database AI Vector Search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