

Real-time Data in the Retail Industry

Business transformation with
real-time, data-driven solutions

Spring 2023 – focus on Oracle GoldenGate platform



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About

Oracle provides retailers with a complete, open, and integrated suite of best-of-breed business applications, cloud services, and hardware that are engineered to work together and empower commerce. Leading fashion, grocery, and specialty retailers use Oracle solutions to anticipate market changes, simplify operations and inspire authentic brand interactions.

Oracle solutions discussed in this eBook include:

- Oracle Retail Solutions (<https://www.oracle.com/industries/retail/>)
- Oracle Cloud Infrastructure (<https://www.oracle.com/cloud/>)
- Oracle Database (<https://www.oracle.com/database/>)
- Oracle GoldenGate (<https://www.oracle.com/goldengate/>)
- Data Mesh (<https://www.oracle.com/integration/what-is-data-mesh/>)

Transformation in Retail, 2023 and Beyond

The retail industry landscape is more competitive than ever, and timely, trusted data is crucial for retailers to make important decisions and stay ahead of the competition. By collecting and analyzing real-time data on customer behavior, preferences, and trends, retailers can gain valuable insights that help them optimize their operations, improve their products and services, and drive sales and profits.

To truly unlock potential, retailers must develop a clear and effective retail strategy that leverages real-time data to drive success. In the coming years, retailers will need to stay on top of emerging trends and technologies, such as artificial intelligence, hyperpersonalized omnichannel, personalized experiences, proximity marketing, and Data Mesh to stay relevant and competitive.

This eBook will explore the power of real-time data in the retail industry and how retailers can use it to develop and execute a winning strategy. Key Oracle solutions are discussed, as well as pragmatic guidance on how retailers can use data to drive winning strategies and revenue growth in the years ahead.



Oracle Perspective on Retail, 2023 and Beyond

 **YouTube** <https://www.youtube.com/watch?v=whEUqeowQdA&t=41s>



5 Trends / Challenges

- Economic uncertainty – global and macro-economic forces
- Changing consumer expectations – post-pandemic engagement patterns
- Constraint based execution – emerging new realities of supply chain limits
- Expanded ESG scope – environmental and social consumer preferences
- Diverse and inclusive workplaces – finding talent that mirrors consumer diversity

3 Imperatives

- **Build a blueprint for agility** – create a bias towards urgency, moving fast
- **Get closer to customers** – anticipate behaviors, to create moments that matter
- **Make space for innovation** – move from ‘IT maintenance’ to IT led innovation

1 Solution

ORACLE

Innovation imperative for retailers is urgent...

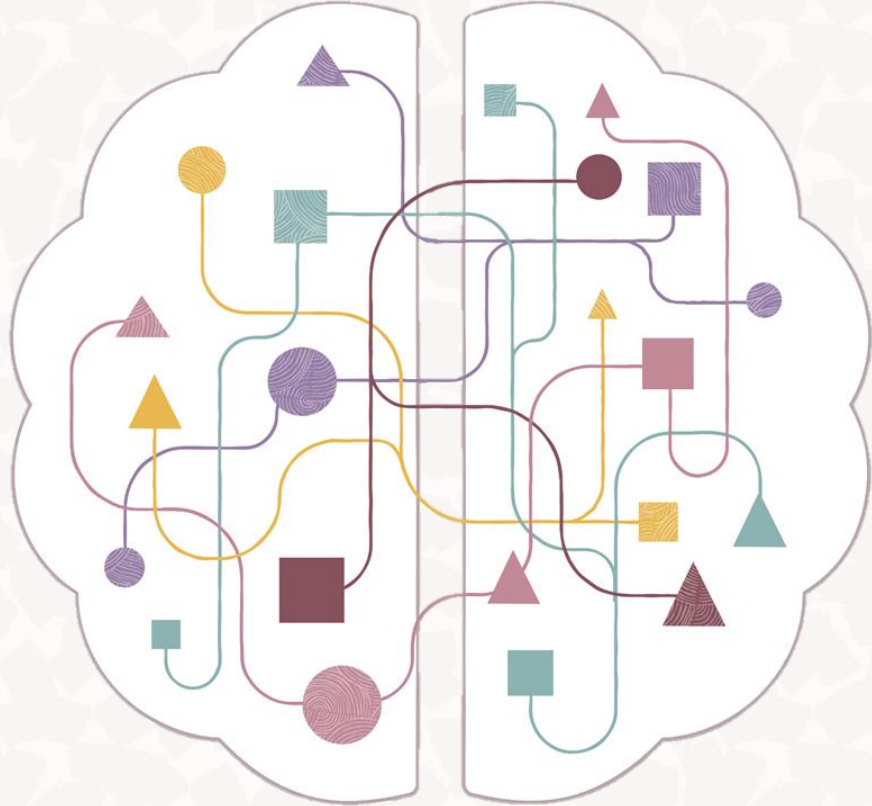
“As changes accelerate in consumer behaviors and attitudes, retailers with ‘wait and see’ approaches will only fall further behind. The bad news may not be apparent immediately, since frustrated or disappointed shoppers may not lodge a complaint. Instead, they may simply walk out the door or abandon their shopping carts, never to return. They will find another retailer that understands them and moves fast to meet their needs.” [McKinsey Retail Insights](#)

Key innovations for 2023 and beyond

- **Retail Media Networks** – Advertising revenues, excluding website placements, will grow 38% in 2023 to \$6.5 billion. [Forbes Retail in 2023](#)
- **AI & Integrated Data** – By 2025, 20% of the top 100 global retailers will drive holistic business result using distributed artificial intelligence (AI) systems with integrated data across retail planning, decisions, operations, and optimization. [IDC Top 10 predictions for global retail in 2023](#)
- **Actionable Data & Analytics** – Retailers will invest in more actionable data and visibility into their perishable foods. [Progressive Grocer 2023 Predictions](#)
- **Real-time Visibility** – Technology will play a key role in enabling organizations to gain real-time visibility and insight across their supply lines. [Infor Outlook for Retail and Logistics in 2023](#)

Technology is not the answer to every Retail challenge – but an investment in becoming more data-driven is one of the most important ways to empower business transformation and next-generation customer engagement. The time to act is now.





Data-driven Retail Enterprise

“Rapidly accelerating technology advances, the recognized value of data, and increasing data literacy are changing what it means to be ‘data-driven.’”

[McKinsey – The Data Driven Enterprise of 2025](#)

Beyond the simple catch phrase, being ‘data-driven’ means embracing specific organizational and technological innovations. Retailers who adopt these changes are more likely to thrive in the coming years.

Key characteristics of being data-driven:

- **Datafication** – decisions, interactions and processes powered by data
- **Real-time** – data is captured, processed and delivered in real-time
- **Data Product Thinking** – operating models treat data like a product
- **Data Trade** – consumer-producer domain ecosystems are the norm
- **Decentralization** – data architecture and governance mirror reality (eg; cloud, hybrid-cloud, multi-cloud, supercloud and edge computing)

Like many other industries being disrupted by new innovations, the global Retail sector will forever be altered by the rapid shift towards data-driven business practices.



Real-time Data is Shaping the Future

“When digging into data in search of insights, it's better to know what's going on right now – rather than yesterday, last week, or last month. This is why real-time data is increasingly becoming the most valuable source of information for businesses.” [Forbes – Top 5 Data Trends in 2023](#)

Legacy (slow, batch data processing) systems are the most significant impediment to modernization because IT becomes the main constraint to how fast the business can move. Adopting real-time data platforms empower the organization to move at the speed the business needs, unimpeded by technological roadblocks.

Market & IT forces driving focus on fast data in retail industry:

- Faster, more insightful visibility into supply chain & inventories
- Competitive pressure to engage customers at the right moments
- Brand and reputational impact of high visibility outages
- Improved speed of analytics, organizational decision-making
- IT agility, avoidance of lock-in by utilizing Mesh/Fabric architecture
- Regulatory and market pressures on data sovereignty/governance



Part 2: Retail capabilities powered by real-time data

RETAIL OPERATIONS

- Business data continuity
- Point of Sale / Loyalty
- Real-time Supply Chain & Predictive Inventory

CUSTOMER MOMENTS

- Hyperpersonalized Omnichannel
- Next best action
- Proximity Marketing

ANALYTICS

- Data Product Strategy
- Datafication, advanced analytics on cloud
- Multi-cloud Data Lakes

Real-time data

Retail Operations

“More than ever, consumers expect retailers to meet them where they are. Purchasing decisions are increasingly driven by pricing and fulfillment options rather than loyalty — and retailers must be able to keep pace with this ever-changing landscape and be resilient, focused on operations and driven by innovations in technology.” [National Retail Federation \(NRF\) 2023](#)

Business Data Continuity



- Databases never go down
- Never lose data / transactions
- Continually operate across regions

Value of real-time data:

Real-time logical data transactions are the critical key technology to achieve 99.999% data availability across data center Regions – and can work at ‘planet scale’.

Point of Sale / Loyalty



- Engage customers in real-time
- Reward customers immediately
- Monitor bricks & mortar online

Value of real-time data:

Customers want to ‘gamify’ collection of loyalty points and have instant gratification for their loyalty. It’s important to engage customers at the point of their transaction.

Predictive Inventory



- Find best product, inventory level and location and channel, at the right time for the right consumer

Value of real-time data:

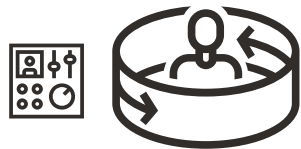
Organizations that can more accurately predict inventory issues in real-time will have significant advantages in sourcing and stocking products for their customers.

Real-time data

Create Delightful Customer Moments

“The margins for error in retailing are shrinking toward zero in five areas: shopping channels, customer assistance, delivery times, equity and sustainability, and talent. We believe retailers will have to bend, reinvent, and innovate to meet customers where they are—and where they’re going.” [McKinsey Retail Insights](#)

Hyperpersonalized Omnichannel



- Offers tailored to individuals
- Consistent customer engagement and 360 view across channels

Value of real-time data:

Demographic categories are no longer sufficient, we need to understand customers as individuals – their habits, preferences and patterns.

Experiential, Proximity Marketing

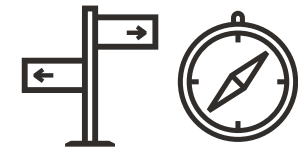


- Real-time push engagement
- Emphasis on experiences vs. ads
- Location aware engagement/offers

Value of real-time data:

Many studies show that customers increasingly view the experience as the product, use real-time data to engage customers in the moments that matter.

Next Best Offer / Next Best Action



- Guide customers to the right products and services, at the right time, at the most attractive price, via the most convenient channel

Value of real-time data:

Offers and promotions that reach customers hours or days later rarely produce results. Next best actions work best when the customer is deciding.

Real-time data

Analytic Game Changers

By 2025 vast networks of connected devices will gather and transmit data and insights in real time. Advanced analytics are reasonably available to all organizations as more powerful “in-memory” data tools come online. Altogether, this enables many more advanced use cases for delivering insights to customers, employees, and partners. [McKinsey – The Data Driven Enterprise of 2025](#)

Implementing a Data Product Strategy

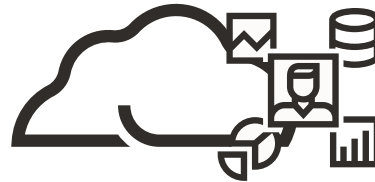


- Connect data consumers with data producers on a self-serve platform
- Curated and trusted data exchange

Value of real-time data:

Data products can be static data collections or historic analytics, but they can also be real-time data events about customer behavior or changing data

Datafication, Advanced Analytics on Cloud Platform



- Capture benefits of data analytics
- Modernization and automation
- Data APIs, contracts and protocols

Value of real-time data:

Datafication affects everything from ESG policy to customer 360, real-time data can be used to drive business strategy as well as day-to-day decisions.

Hybrid or Multi-Cloud Data Lake Houses



- Efficient collaboration among diverse set of data stakeholders
- 1st, 2nd or 3rd party interchange

Value of real-time data:

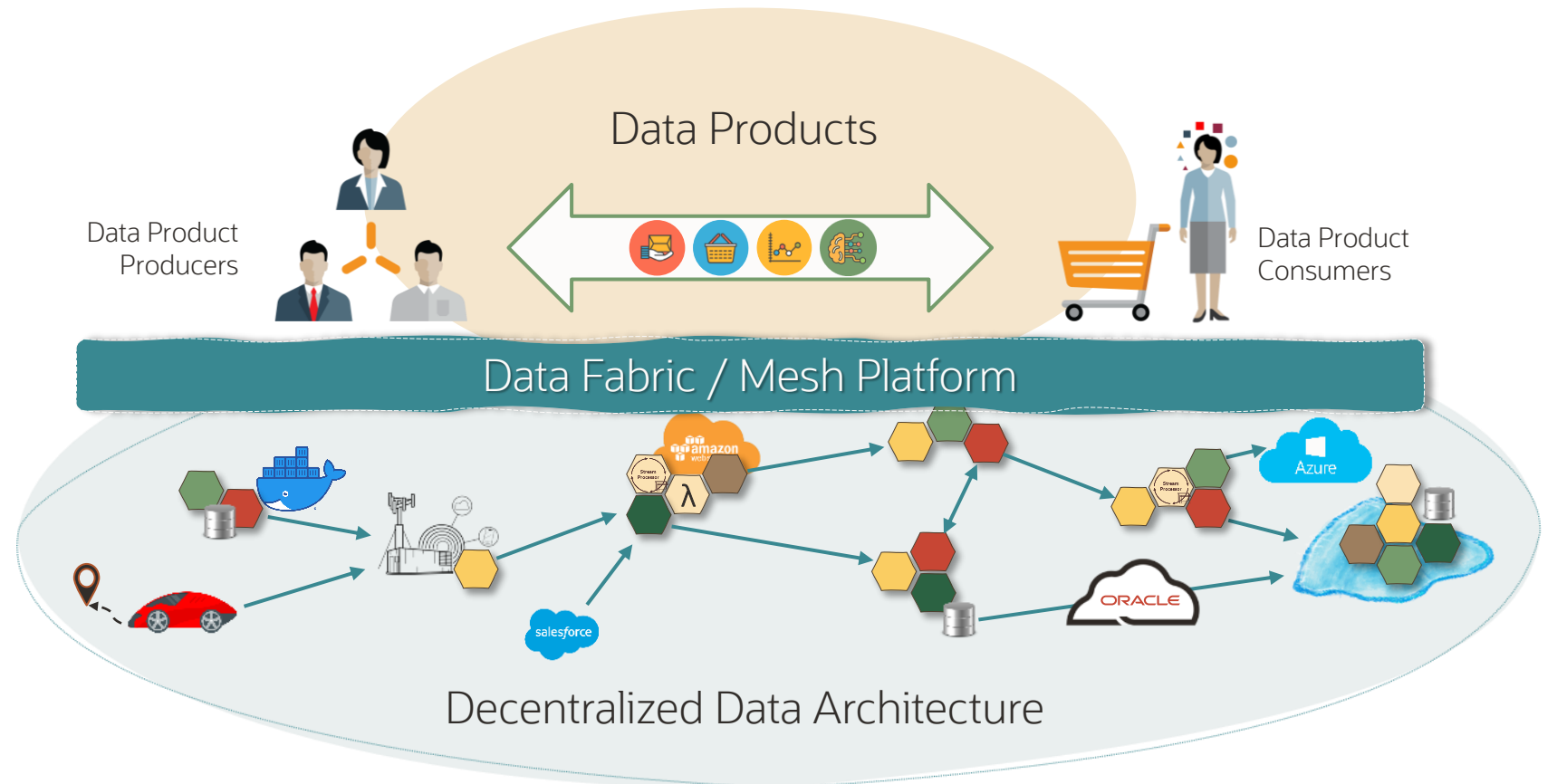
Shift away from legacy batch processing and lay the foundation for efficient real-time data interchange among diverse data owners and stakeholders.

Part 3:

real-time data fabrics and mesh

Connecting Data Consumers with Data Producers

Data Fabric and Data Mesh architectures are fundamentally about making it easier to connect the consumers of data with the producers of data. A modern approach must work in real-time across distributed multi-cloud data, provide a means to produce high quality data products, and the governance necessary for federated organizations.



Data mesh

Data Products

Like the products we shop for in stores, a data product fulfills a specific purpose (a job to be done) and typically has a long supply chain prior to reaching the consumer. Ordinary data products are collections of data, the pipelines, and stakeholders who produced them. Data products can also be streams of events, highly curated analytics, or data science models that have been trained to detect patterns in data.

DATA STREAMS

Telemetry Events / Alerts

- Logs, device events

Business Activity Events

- App/B2B processes

Data Transactions

- Continuous DML/DDL

Master Data Events

- Changes to biz objects

DATA ANALYTICS

Dashboards & Visualizations

- Charts, graphs etc.

Time-series Analysis

- Streaming data / CEP

Information Discovery

- Data relationships

Data Storytelling

- Creating clear narratives

DATA COLLECTIONS

Multi-model Data Sets

- Relational, Docs, Graph etc.

Data Warehouse Collections

- Dimensional, Data Vault...

Data Lake Collections

- JSON, Parquet, ORC, etc

Views, Virtualization, Queries

- Incl. Federated SQL engines

DATA AI / ML MODELS

Trained Models

- Production quality models

Knowledge Graphs

- Ontology, inferred facts

ML Features / MLOps

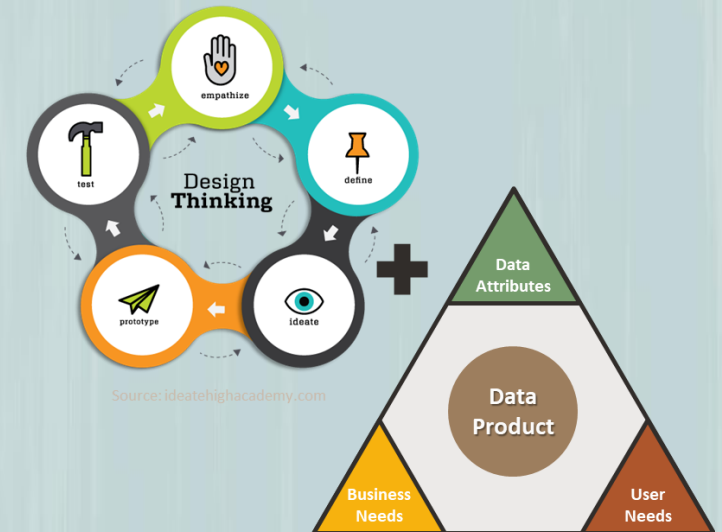
- Lifecycle, CI/CD etc.

AI/ML Powered Engines, Apps

- AI/ML is core engine

Data Product Thinking

Rooted in proven strategy and design methodologies that put the customer first, data product thinking brings a fresh, modern approach to data.



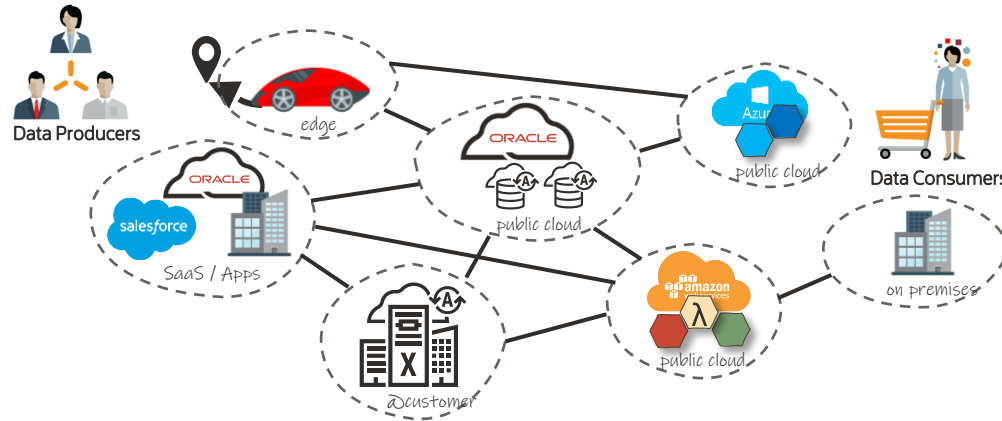
For more, check out Clayton Christensen's "jobs to be done" strategy and modern Design Thinking methodology.

Data mesh

Decentralized / Multi-Cloud Data Architecture

All modern systems are distributed to a significant degree.

Distributed architectures can typically **scale**, **adapt** and **evolve** more effectively than monolithic systems.

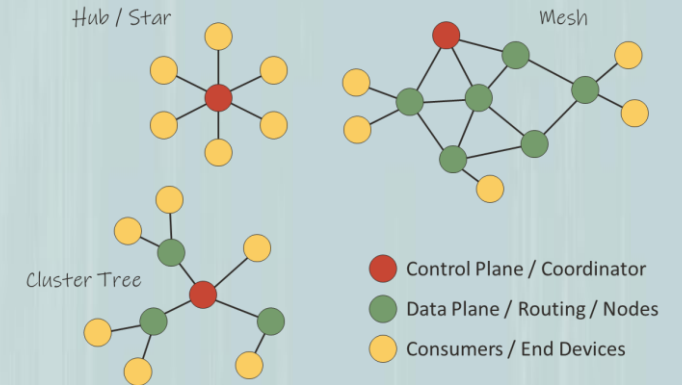


Big Picture: decentralization is a mega-trend

| Decentralized Finance | Decentralized Software Apps | Decentralized WiFi |
|---|--|--------------------------------|
| bitcoin ethereum DeFi | Open Service Mesh Istio LINKERD Consul CLOUD NATIVE COMPUTING FOUNDATION kubernetes | WI-FI MESH Wi-Fi™ |
| Decentralized Social Media | Decentralized Organizations | Decentralized Comms Protocols |
| twitter → mastodon ActivityPub Fediverse | <p><i>"[decentralized] restructurings have now come into full fashion, and we are observing a trend."</i></p> <p>https://www.barrons.com/articles/how-scale-went-out-of-fashion-in-corporate-america-51637920461</p> TOSHIBA GE Johnson & Johnson IBM | 5G 6G WORLD zigbee Z WAVE |

Why "Mesh"?

The word 'mesh' means something; it is a specific kind of topology comprised of non-hierarchical nodes that can work together collaboratively.



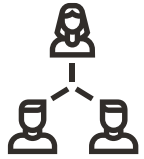
A mesh of data is fundamentally about supporting multiple (not just one) centers of gravity for distributed enterprise data resources.



Data mesh

Platform for the Exchange of Data Products

The fundamental actions on data products are collaboration and interchange. Data platforms empower joint work products, sharing, and data trade. Data standards (eg; formats) are a part of the solution, but the ROI and measure of value from data exists independently from a particular syntax or data structure.



1ST PARTY DATA

- Data producers and consumers are in the same legal entity
- May or may not be separated by different business units
- Data Products are an internal formalism among teams
- Can be considered as a “best practice” for internal sharing



2ND PARTY DATA

- Producers and consumers are in different legal entities
- Data trade happens directly between the entities
- Data Products are a contractual obligation
- Data has explicit but non-monetized value



3RD PARTY DATA

- Producers and consumers are in different legal entities
- Data trade happens via an intermediary (eg; broker)
- Data may be aggregated, cleansed or enriched
- Data Products are a literal product, bought and sold with monetary value, contractual obligations and SLAs

Governance & Observability

Data products are only useful if you can trust them. Governance SLAs require People, Process & Technology metrics.



TRUSTED DATA



Observability is a modern extension of conventional monitoring that focuses on providing trusted data quality – by analyzing logs, traces and metrics of the underlying data pipelines and data stores that produce data products.

Data mesh

Data Domains, Metadata and Lineage

Domain centric design is at the heart of data products and essential for creating a cohesive data architecture than can span decentralized resources and workloads. Data and tools of different types are governed by different metadata. Circa 2023/2024 there are no single meta-systems that can govern metadata across a wide variety of data stores, messaging systems, data pipelines, and data science toolkits.



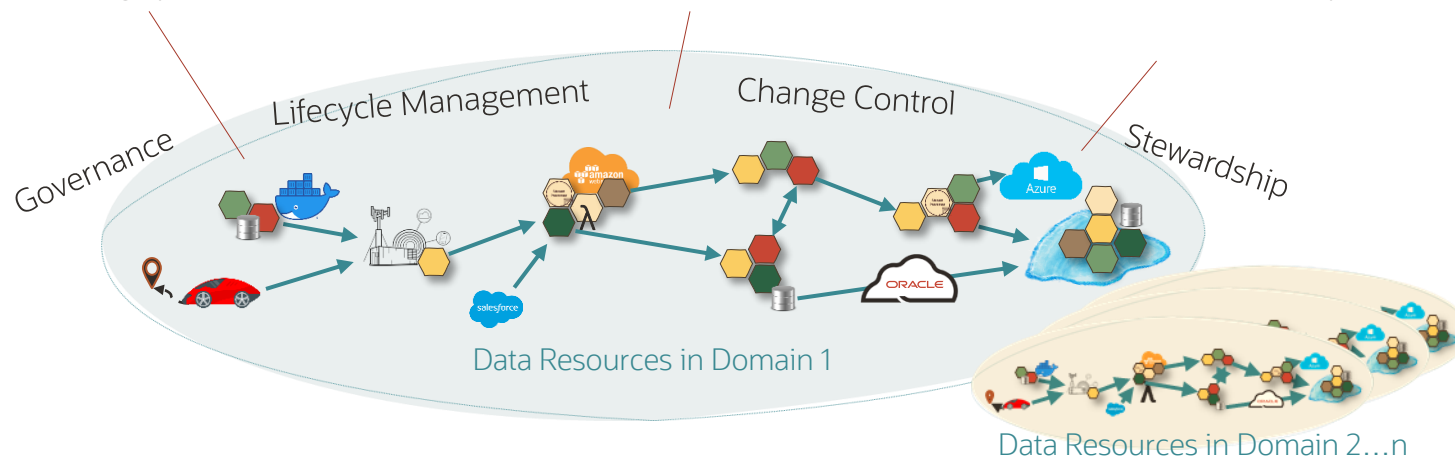
Used for DataOps, metadata about data collections (eg; databases, files in object stores, graph stores etc.)



Used for managing schema lifecycle on data event payloads (eg; JSON, Avro and Protobuf schemas)

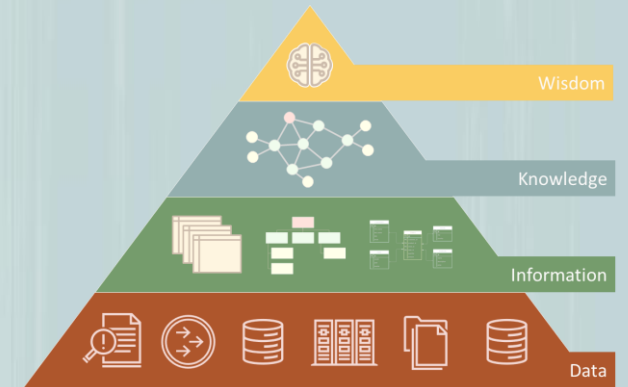


Used for MLOps, lifecycle management of ML model features (data attributes used in model refinement process)



Semantics or Pedantics?

Can algorithms really compute meaning from data? Let's avoid metaphysical questions and merely point out that *more expressive metadata can power more effective algorithms*.



Basic metadata like relational schemas or Avro schema can help. Synthetic metadata can be derived (statistically) from physical records. More advanced metadata like ontology, graphs or large language models (LLM) will still typically require humans to train and label.

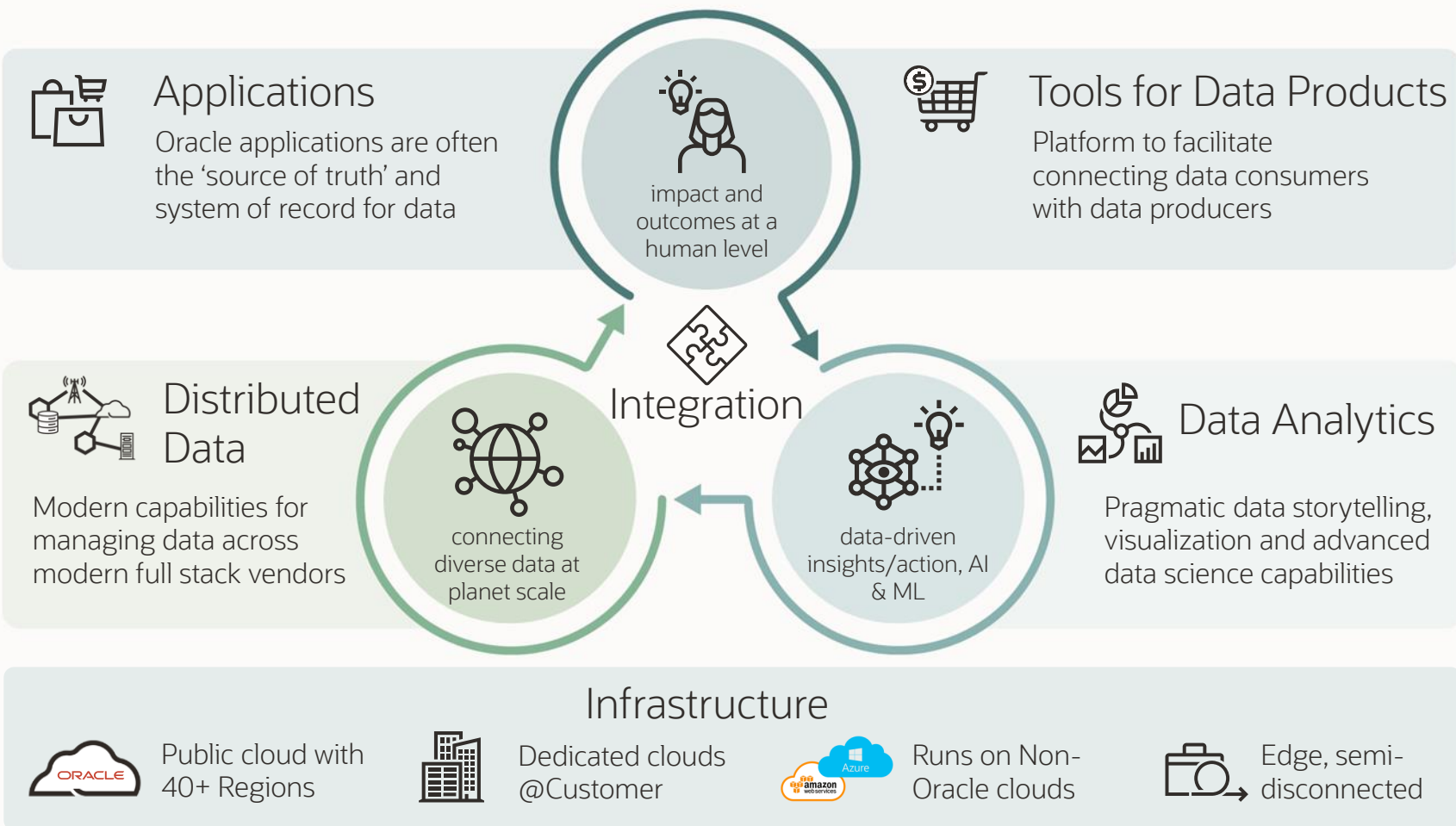


Part 4:

Oracle solutions for real-time retailers

What Sets Oracle Apart?

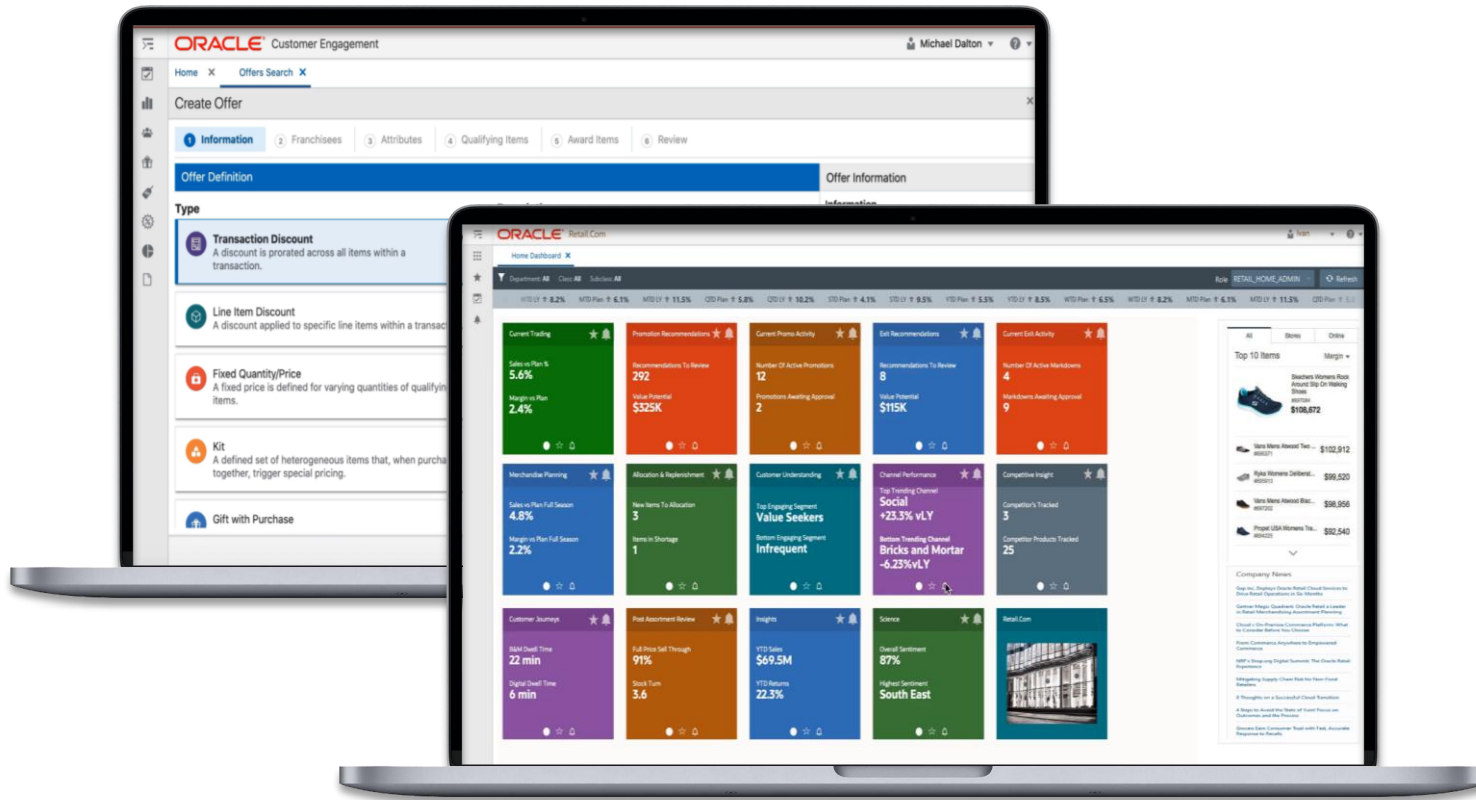
Oracle is the most complete enterprise technology vendor and the fastest growing hyperscale cloud. With over 430k customers, most of the global economy runs on Oracle. We are experts at data – data for retailers, data at planet scale, enterprise data, and for actionable data that drives innovation.



Oracle advantage

Best-of-Breed Applications for Retail Industry

Oracle provides retailers with a complete, open, and integrated suite of best-of-breed business applications, cloud services, and hardware that are engineered to work together and empower commerce. Leading fashion, grocery, and specialty retailers use Oracle solutions to anticipate market changes, simplify operations and inspire authentic brand interactions.



Oracle application for Retail:

- [Retail Stores and Omnichannel](#)
- [Marketing Solutions for Retail](#)
- [Retail Point of Sale Systems](#)
- [Retail Planning and Optimization](#)
- [Retail Merchandise Operations Management](#)
- [Brand Compliance Management](#)
- [Supply Chain Management for Retail](#)
- [Retail Artificial Intelligence and Analytics](#)
- [Human Capital Management for Retail](#)
- [ERP for Retail](#)
- [Retail Cloud](#)

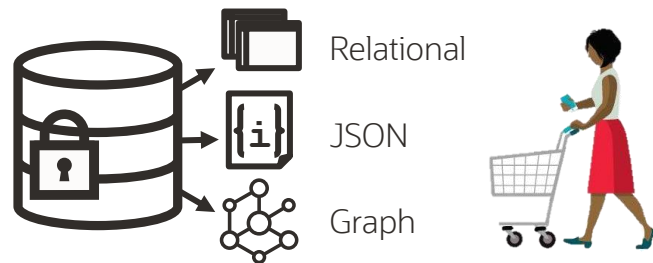


Oracle advantage

Market Leading Tools for Data Products

Data products are curated data, events and models that are shared among 1st, 2nd or 3rd party data platforms. Oracle provides a range of capabilities to produce and govern data products for easy accessibility by data consumers.

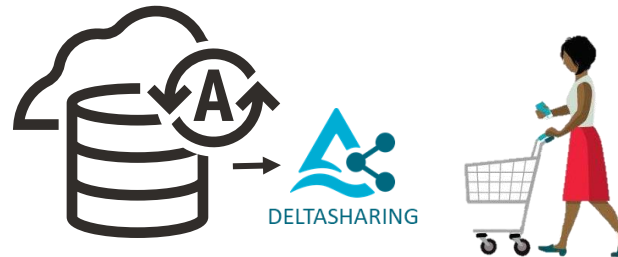
Triple-shaped, cryptographically secure Data Products



- Single 'data quantum' accessible via different shapes/formats
- Blockchain-powered security
- Automated data transforms

Oracle Database: Business data in the formats required by the Consumer, with the automation to make it practical at enterprise scale.

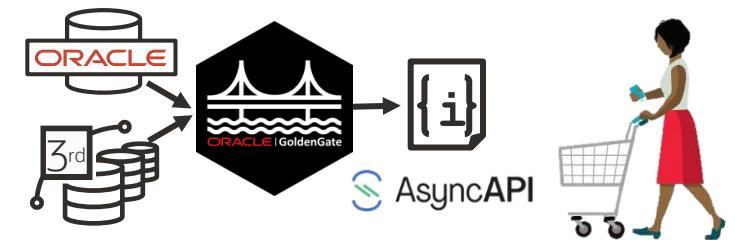
Standards-based, data sharing with open metadata & catalog



- Share data collections via open protocol for data sharing
- Integrated directly with 3rd party tools or share 1st party data

Autonomous Data Warehouse: Easily share 1st and 2nd party data internally or externally with data sharing Consumers or Producers.

Standards-based, loosely-coupled, exact-once Data Event Streams



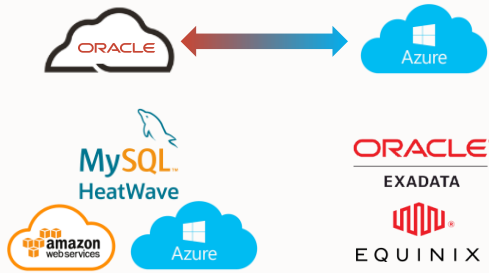
- Streaming data products via open Channels and pub/sub APIs
- Event-driven changed data streams
- Microservices data distribution

GoldenGate: Continually stream change data events to any Consumer, leveraging standard APIs and automated data bindings.

Oracle advantage

Best Decentralized, Distributed Data Platform

Supercloud Innovation



- 12+ Azure Interconnects
- Oracle MySQL Heatwave on 3 Clouds
- Exa* co-location options with GCP and others

OCI Multi-Cloud: Industry-leading, fast, native data access from anywhere your apps run, including on Azure, Amazon or any other cloud

Global Transaction Fabric (Multi-Cloud etc)



- Data sync for multi-cloud
- Real-time replication
- Transaction integrity
- Built-in governance
- No data loss

GoldenGate: Leverage GoldenGate to capture and transmit data events (eg; DML/DDL) from popular DBs or Messaging systems in any cloud

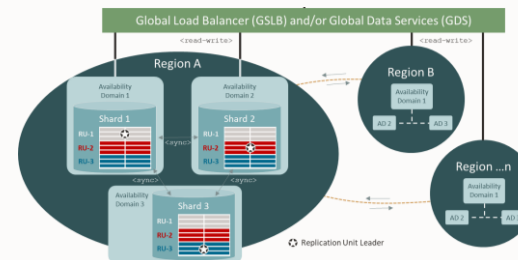
Public Cloud, Dedicated, and Edge



- 40+ Regions
- High Security
- Edge Devices
- @Customer
- Dedicated

OCI Native: Full stack public cloud in more Regions than any other vendor, more options for Edge, @Customer and Dedicated Regions

Database Mesh, Distributed SQL / Sharded Data



- Cross-region
- Sharded data
- Zero-downtime
- High consistency
- No data loss

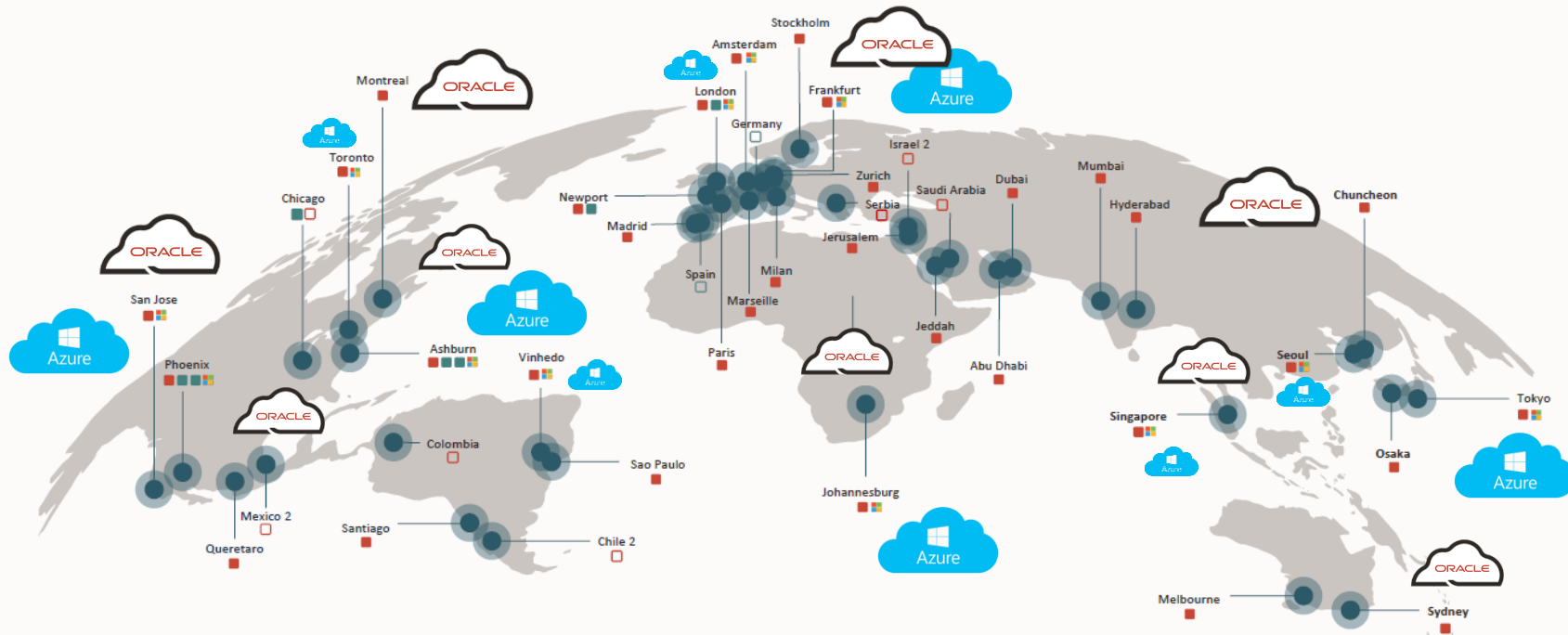
Oracle MAA Platinum: Operate Oracle databases at planet-scale, across private or public data centers, with full confidence in trusted, correct data



Advantage

Oracle Cloud Infrastructure

Oracle Cloud Infrastructure has all the services you need to migrate, build, and run all your IT, from existing enterprise workloads to new cloud native applications and data platforms.



- 40+ Regions, more than any other public cloud
- 12+ Interconnect Regions with Azure
- >120 public cloud services, leveraging Oracle Universal Cloud Credits

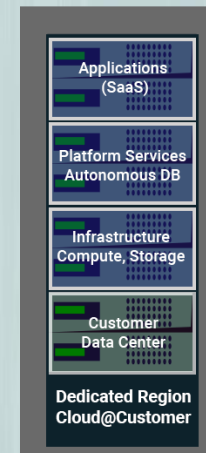
Oracle Cloud, Distributed

Roving Edge Infrastructure deploys cloud workloads outside the data center.



Exadata Cloud@Customer

runs in any data center as a fully-managed, high performance database platform.



OCI Dedicated Region Cloud@Customer (DRCC) brings >50 cloud native services hosted within customer's data centers, managed by Oracle, billed only for consumption.

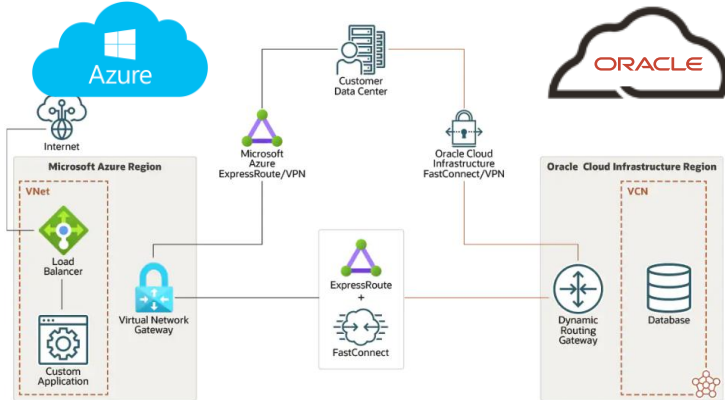


Advantage

Multi-Cloud Infrastructure

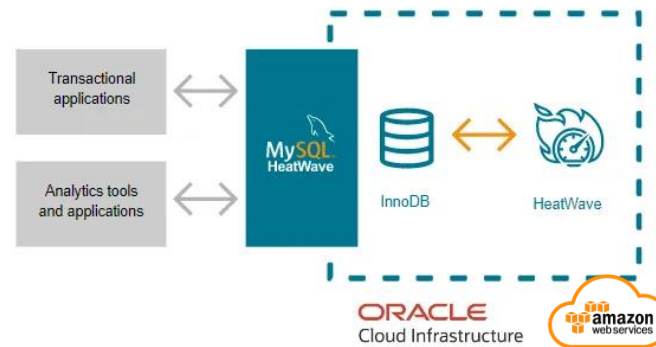
Oracle has pioneered the supercloud concept to help customers take advantage of best-of-breed managed services that may span several cloud vendors.

Azure to OCI Interconnect



- Combine cloud capabilities
- Private, low-latency connectivity <2ms for 'local' performance
- Run Azure apps on Oracle DBs
- Unify data management, data lakes, and stream analytics

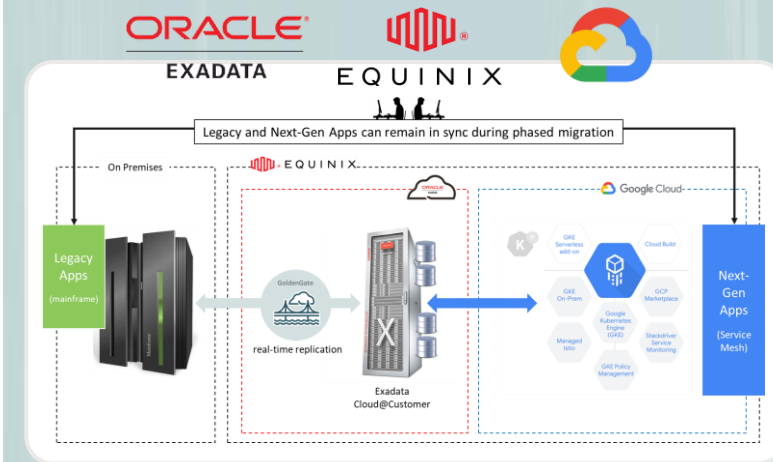
Heatwave on Amazon Cloud



- Combine cloud capabilities
- Private, low-latency connectivity <2ms for 'local' performance
- Run Azure apps on Oracle DBs
- Unify data management, data lakes, and stream analytics

Co-location with other clouds

Oracle provides retailers with a complete, open, and integrated suite of best-of-breed business applications



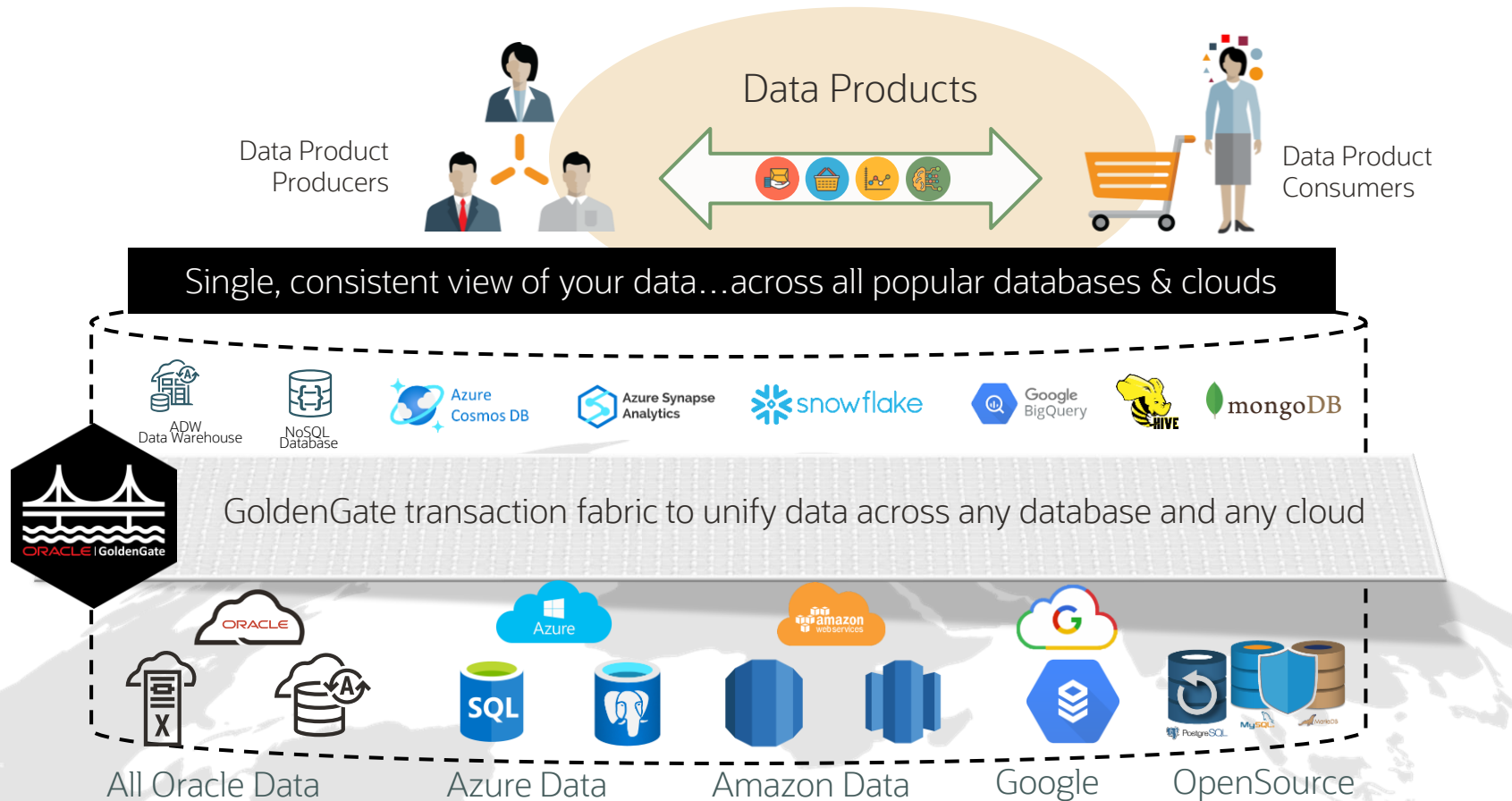
- Support legacy modernization when moving to GCP Apps
- Run best-of-breed Exadata DBs with GCP microservices/K8S
- High-speed, co-located networks
- Deploy GoldenGate on Exadata



Advantage

Multi-Cloud Transaction Fabric

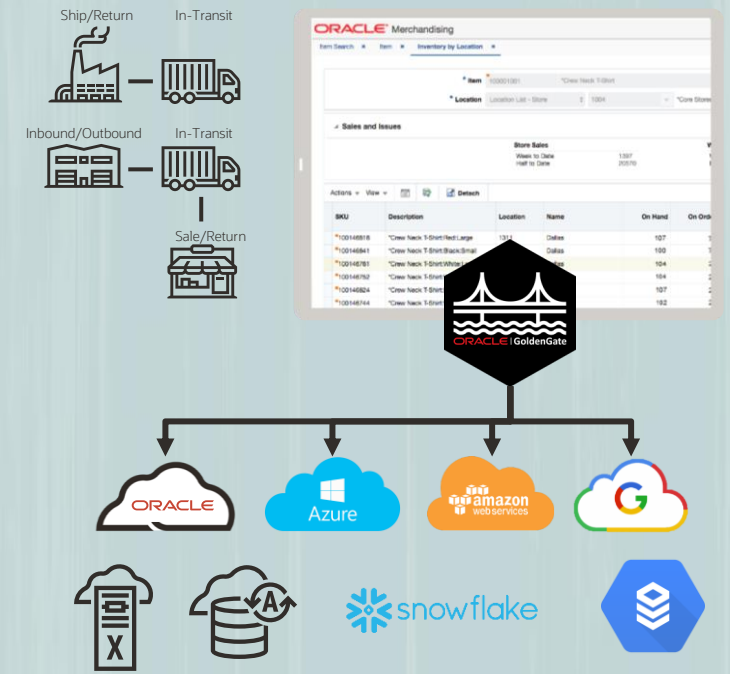
Data transactions are essential for maintaining trust and integrity of data. A single transaction may affect one or one billion records. Oracle is the industry leader for creating a trusted fabric of data transactions that can span from edge, on-premises or databases in many different public cloud infrastructure.



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Retail Cloud to Anywhere

Customers that operate Oracle Retail Cloud can also use Oracle GoldenGate to bring real-time merchandizing and inventory data to any downstream analytics cloud.

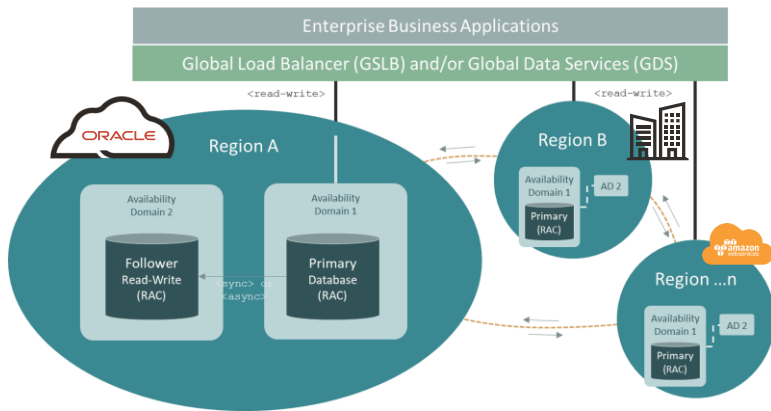


Advantage

Distributed SQL Databases

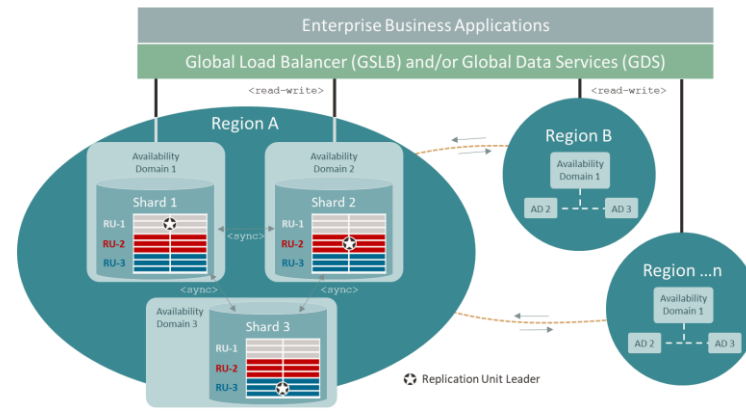
Modern, mission-critical applications need to run continually on a global scale, while still protecting the data sovereignty required for governance and compliance. The new normal for global business are databases that can be physically distributed across many secure locations while appearing as a single unit to the host application.

Multi-Region High Availability



- Zero data loss
- 99.999% high availability
- Strong/external data consistency
- Recovery Time Objective = zero
- Data sharding is optional
- Availability in DB19c and higher

Data Sharding with Raft Quorum



- Pin data records to specific named shards, by Region or Zone
- Raft consensus algorithm for 'voting'
- Optimized for applications that are aware of data shards
- Available in DB23c and higher

Speed of Light Problem

Distributed SQL DBs must move data across 1000's of KMs, but not even the world's fastest networks can defeat the speed of light.



In practice, this means that for real-world use cases, distributed databases located more than a few hundred KM apart must use asynchronous replication between them – otherwise, the end-users will easily notice the poor / laggy performance of the applications.

Nearby data centers (<2ms of latency) may utilize synchronous protocols for staying in sync.



Oracle advantage

Industry Leading Event-Driven Integration Capabilities

For more than 14 years Oracle has been recognized as a Gartner Leader for application and data integration solutions. The unique Oracle advantage is in the real-time event-driven integrations that can seamlessly connect business processes and analytic data. Modern Data Fabric / Data Mesh strategies are powered by Oracle's modern platform for integration.

Oracle Integration Cloud

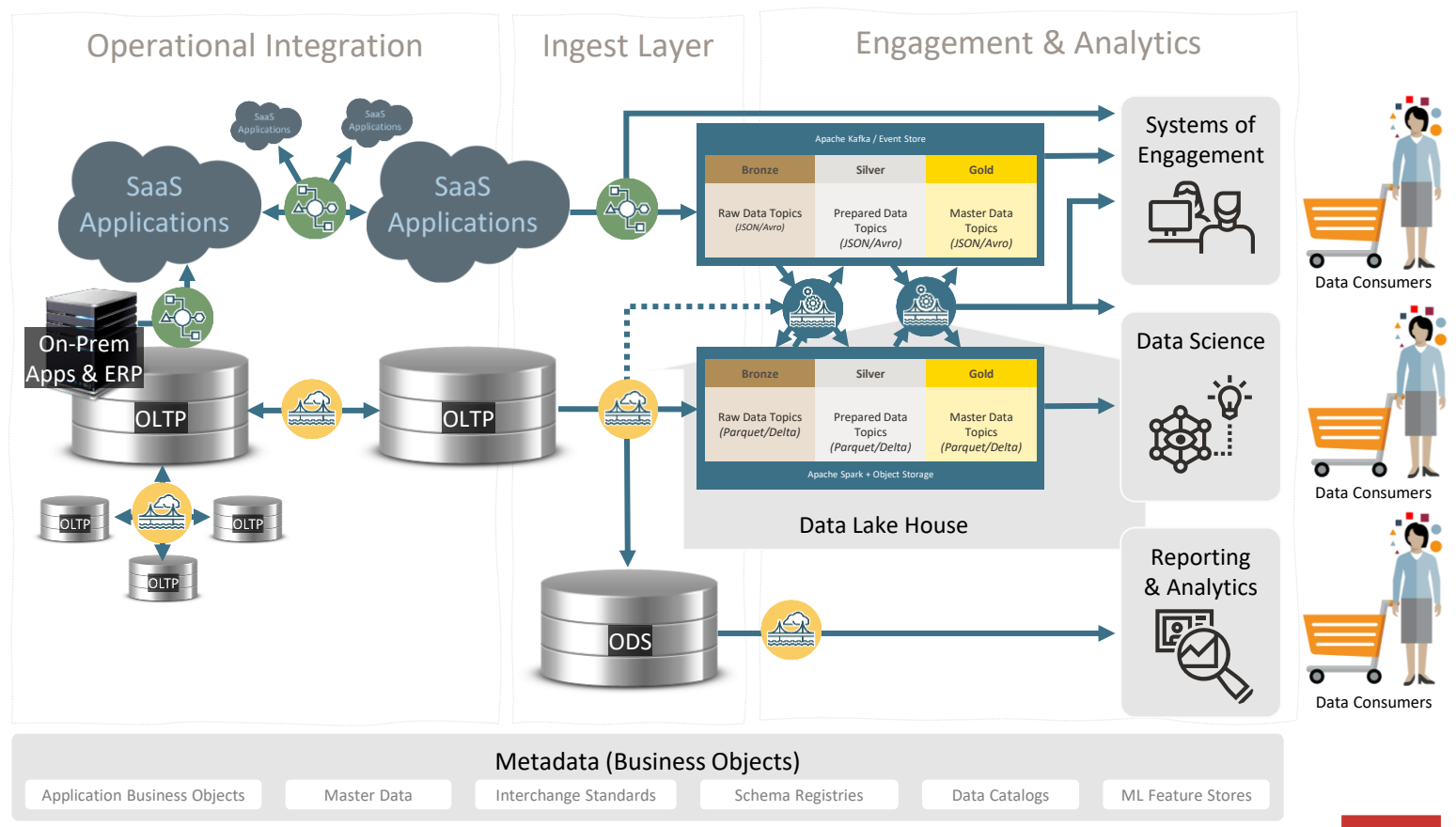
App Integration: business processes, APIs, messaging and data integration for SaaS and on-premises apps.

OCI GoldenGate

Data Events: business data, data transactions and data payload from real-time systems for cloud or on-premises integrations.

Stream Analytics

Stream Integration: capture and process events (app or data) in real-time, as the events happen event at nanosecond scale.

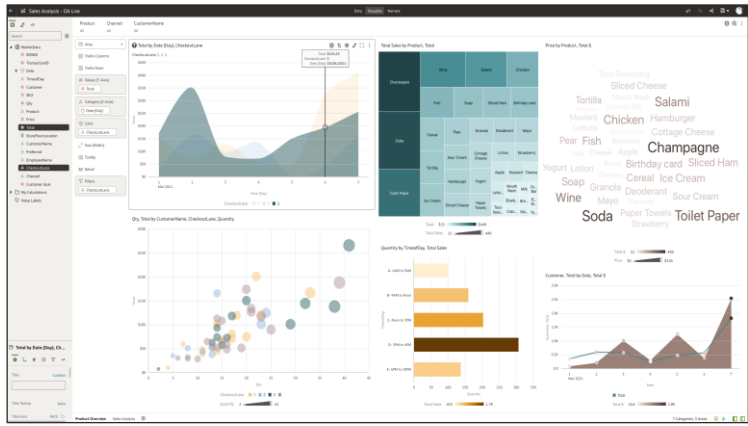


Oracle advantage

Broadest, Most Complete Data Analytics Solution

Oracle analytic solutions empower business users, data engineers and data scientists to access and process data, evaluate predictions, and make quick, accurate decisions.

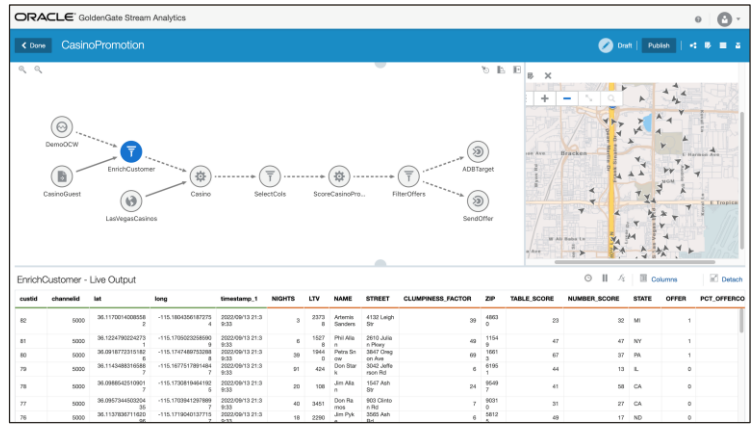
Data Visualization



- Visualization & storytelling
- Data prep, data modeling & governance
- Cloud native or on-premise servers

Analytics Platform: Embedded machine learning and natural language processing increase productivity and build an analytics-driven culture in organizations

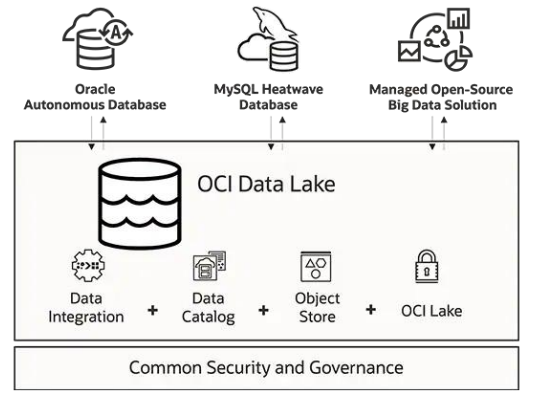
Streaming Data Analytics



- Exact-once, nano-second data events
- Time-series / geospatial analytics
- Runs on-prem, cloud, or multi-cloud

Stream Analytics: Instantly capture and process data events using advanced time-series and geospatial analytics – includes change capture, streaming ETL to many data targets

Data Science / Lakehouse



- Open standards-based / compatibility
- Class-leading GPUs and performance
- Most cost-effective cloud solution

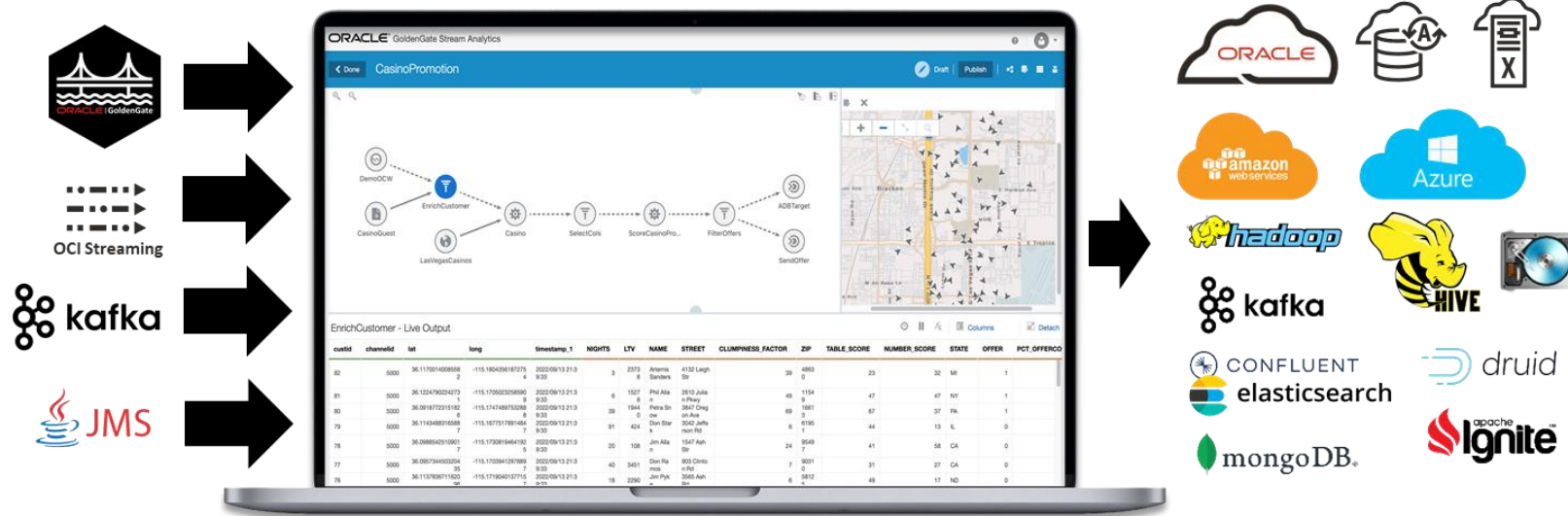
Oracle Cloud: Leverage cost-effective storage with no data egress fees to run a modern data lakehouse – built-in data catalog and data integration to popular data stores



Advantage

Stream Analytics

Intuitive and self-service platform for creating real-time data processing pipelines. Build streaming ETL, real-time alerts/alarms and more complex event correlations with machine learning, time-series or geospatial analysis.



- Easier to use and more advanced than open source like Apache Flink
- Runs on Apache Spark, but supports real-time events and transaction ordering
- Customers can run cloud-native (by the hour), multi-cloud (Azure, AWS etc) or on-premises

Retail Use Cases

Loyalty Systems

Capture customer activity to calculate earnings or promote offers in real-time

Predictive Inventory

Blend merchandizing and supply-chain events in real-time to provide moment-by-moment inventory analysis

Proximity Marketing

Use mobile apps, Bluetooth or RFID tags to identify high-probability coupons to push to your customers in real-time

2nd Party Data Products

Monetize or trade data events with your partners using data event services from your own servers or from the Cloud

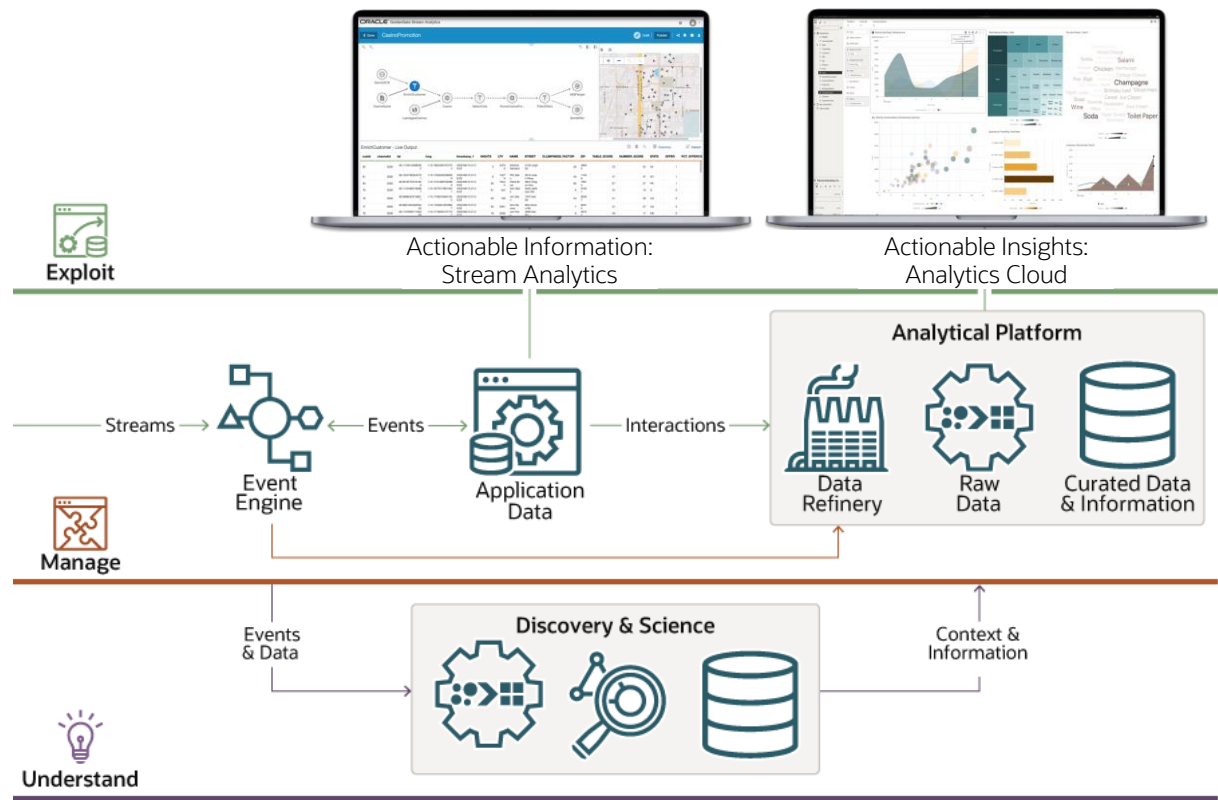


Advantage

Data Science / Data Lake House

With Oracle Cloud Infrastructure (OCI), you can build a secure, cost-effective, and easy-to-manage data lake. A data lake on OCI is tightly integrated with your preferred data warehouses and analytics as well as with other OCI services, such as data catalog, security, and observability services.

Create actionable scoring models to better understand customer behavior, predict supply chain events and add value to internal data products.



Retail Use Cases

Customer 360 / Hyperpersonalization

Leverage lake and catalog to drive an integrated view of customer data

Data Product Exchange

For 'data collections' a lake is an ideal location to facilitate 1st and 2nd party data exchanges, eg; data access

Advanced Analytics

The lake can provide a data foundation for several types of analytics, including data science, SQL reporting, stream analytics and virtualization

Predictive Modeling

Historic data in the lake should be used to train predictive models for inventory and next-best-actions



Part 5:

real-time data
case studies

Customer Case Studies

Oracle customer case studies showcase the real-world success of the company's products and solutions in the retail industry. They provide insight into how retail organizations have overcome specific business challenges and achieved their goals through the use of Oracle's technology. They provide an opportunity to learn from the experiences of other retail organizations and can be a source of inspiration for businesses seeking new ways to innovate and grow.



Case Studies

Customer Case Studies - Retail Operations



Business Data Continuity

- Oracle GoldenGate addresses the mission-critical needs for near Zero Downtime requirements during database upgrades and migrations, with (fallback) Risk Remediation.
- Oracle components keep lowes.com orders flowing without interruption and provides an interface for local sales associates to assist customers in placing orders within the store.

[Video: Lowe's case study](#)



Real-time Merchandising

- Oracle solutions synchronize merchandising operations from buying to inventory valuation.
- Front-end and back-end functions operate on Oracle Cloud, which provide a foundation for Retail Integration Hub and Oracle GoldenGate for real-time data replication.

"By adopting the Oracle Retail Cloud Service, we can maintain a consistent and modern merchandising platform that drives greater productivity through automated best practices."
Sally Gilligan, GAP chief information officer

[Oracle Cloud is in Fashion for Global Retailer GAP](#)



Inventory Management

- Oracle solutions drive operations with one single version of the truth across all lines of business and to enable better decision-making, including achieving the right balance between item availability and inventory position.
- Real-time reporting on business indicators, pricing, promotions and store performance

[Panda Retail moves to Oracle Cloud](#)

Case Studies

Customer Case Studies - Customer Moments



Focus on Customers

- Oracle solutions provide Sportina full visibility to inventory availability across all channels, the Sportina team can decrease transfer costs and increase stock rotation.
- With greater confidence to deliver what the consumer wants, Sportina can avoid markdowns and increase gross margin.

[Growing Fashion Retailer Taps Oracle to Increase Focus on Customers](#)



Analytics and Data Science

- Oracle Transportation Management (OTM) is consolidated in real-time to Azure Data Lake with Oracle GoldenGate for business analytics and data science projects, offering a single source of truth for all relevant data.
- Oracle GoldenGate seamlessly connects the Oracle Transportation Management system to the Data Science application, enabling real-time data integration and facilitating analytics tasks for Unilever users.

[Unilever cuts transport costs](#)



Analytics in the Cloud

- The Chalhoub Group (MCT) is taking steps to improve its data warehouse by constructing a cloud-based data lake and replicating transactional data in real-time, resulting in a rich and constantly updated source of customer and goods information.

“By implementing Xstore, we are also empowering our store associates. The goal is to provide a highly personalized and engaged customer experience at the world's finest shoe metropolis, Level Shoes,” said Olivier Leblan, Group Chief Information Officer, Chalhoub.

[Chalhoub modernizes the customer experience with Oracle Point of Service](#)



Case Studies

Customer Case Studies - Analytic Game Changers



High Speed Data Offloading

- To prepare for the anticipated high website traffic during the Tokyo Olympics, "just browsing" queries have been executed through NoSQL database to ensure a smooth and efficient user experience.
- Oracle GoldenGate is utilized to streamline the delivery of database transactions into an on-premise application cluster, enabling real-time data integration and access.

[Finding great travel deals with Oracle GoldenGate](#)



Real-time Analytics

- The Retail Merchandising and eCommerce systems are powered by Oracle Database. Oracle Data Guard and Oracle Golden Gate are responsible for managing real-time data replication, ensuring data reliability and availability.
- Oracle GoldenGate is employed for bidirectional data replication and for minimizing outages during systems and database upgrades as well as real-time data replication tool for analytics system.



Analytics in the Cloud

- PLCB is transforming from a traditional retail model to a wholesale, distribution, and retail-focused business. The goal is to improve master data management and achieve greater wholesale and retail efficiencies.
- By replicating data from the Oracle Retail Merchandising Foundation Cloud Service (OMFS) to a dedicated analytics system with OCI GoldenGate, PLBC provides access to a wider range of data, supporting on-time decision making.

[Continuous innovation and analytics](#)



Part 6:

retail industry in transition

Retail Industry in Transition

For 2023 and beyond consumers and retailers will become even more dynamic and robust years are likely ahead of us. Recent history has made consumers adaptable and retailers nimble, all of which bodes well for the future of retail. The retailers who best adapt to the 5 challenges and move quickly on the 3 big imperatives are the most likely to succeed in the years ahead.

5 Trends / Challenges

- Economic uncertainty – global and macro-economic forces
- Changing consumer expectations – post-pandemic engagement patterns
- Constraint based execution – emerging new realities of supply chain limits
- Expanded ESG scope – environmental and social consumer preferences
- Diverse and inclusive workplaces – finding talent that mirrors consumer diversity

3 Imperatives

- Build a blueprint for agility – create a bias towards urgency, moving fast
- Get closer to customers – anticipate behaviors, to create moments that matter
- Make space for innovation – move from 'IT maintenance' to IT led innovation

1 Solution

ORACLE



Making Space for Innovation: Oracle solutions described in this eBook

Best-of-Breed Applications

[Oracle Retail Platform](#)

Data Product Capabilities

[Oracle Database](#)

- Pluggable, multi-model data stores
- Document-relational duality

[Autonomous Data Warehouse](#)

[GoldenGate Data Event Services](#)

Decentralized Data Platform

[Oracle Cloud Infrastructure](#)

- >40 Regions, @Customer, Edge and Dedicated Regions
- [Supercloud / Multi-cloud Interconnect](#)

Oracle Database – [Multi-region Platinum MAA & Sharding](#)

[GoldenGate – Global Transaction Fabric](#)

Industry-leading Integration

[Integration Cloud and SOA Platform](#)

[Data Integration and GoldenGate](#)

Comprehensive Analytics

[Analytics Cloud and Server Platform](#)

[Stream Analytics for real-time data](#)

[OCI Data Science and Data Lakehouse](#)

Industry leadership for global Retailers:

Serving customers in

96

countries

Managing

176M

customer records

Processing

\$100B

in transactions annually

Running

500M

transactions on Oracle Cloud

Over 45,000 Customers Are Running Oracle Cloud Applications:



Bata



PRADA



WILLIAMS
SONOMA

Flink

PORTABELLA

TESCO

komax

makro



★ macy's

Pando



ESTÉE LAUDER

maurices

yamamay

Bealls
INC.

HELZBERG
DIAMONDS

Sainsbury's

Staples

Neiman Marcus

giant eagle



WOOLWORTHS

Our mission is to help people see data in new ways, discover insights, unlock endless possibilities.

About Oracle

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