



MySQL Forum

MySQL 30th Anniversary | 2025

Wim Coekaerts

Executive Vice President, Software Development, Oracle

July 22, 2025



Safe harbor statement

The following is intended to outline our general product direction. It is intended for information purposes only, and may not be incorporated into any contract. It is not a commitment to deliver any material, code, or functionality, and should not be relied upon in making purchasing decisions. The development, release, timing, and pricing of any features or functionality described for Oracle's products may change and remains at the sole discretion of Oracle Corporation.



Celebrating 30 Years of MySQL

1995 - 2025



The Origins of MySQL

1979

UNIREG is developed, a Unix-based tool for managing DBs

1994

TcX uses UNIREG for web applications but seeks better performance

1995

MySQL AB is founded. The first internal version of MySQL released in May 1995

1996

The first external release emerges, setting the stage for a database revolution



Evolution from UNIREG to the Cloud ERA

Open Source GPL

MySQL becomes open-source under GNU GPL, accelerating global adoption.

InnoDB

MySQL 4.0 introduces transactions and query caching.

8 Million Installations

MySQL reaches 8 million installations.

SQL + NoSQL

MySQL 8.0 bring Document Store, JSON support, and CTEs.

LTS Release Model

MySQL 8.4 LTS ensures long-term stability and enterprise growth.

“M” in the LAMP Stack

MySQL and the open source LAMP stack becomes widely used for web applications.

Stored Procedures, Triggers, Views

MySQL 5.0 introduces stored procedures, triggers, and views.

Sun/Oracle Acquisition

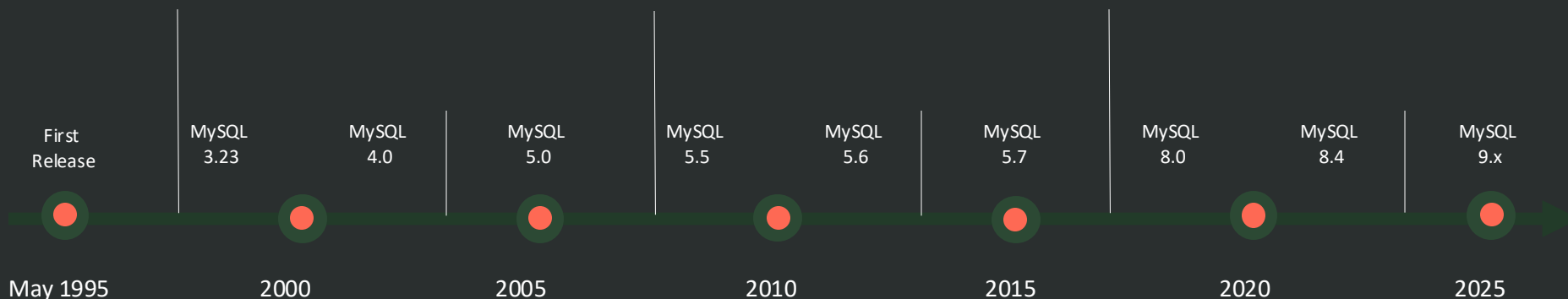
Sun Microsystems acquires MySQL followed by Oracle’s acquisition of Sun.

HeatWave

HeatWave enhances MySQL with Lakehouse scale analytics, and machine learning on OCI, AWS, and Azure.

GenAI & Vector Store

Use built-in LLMs to get fast, accurate, and contextually relevant results.



World's Favorite Database

#1

Open-source database



Popular database for learning to code



Open-source database



MySQL Powers Open-Source Applications

Custom Apps Development



django



Content management and eCommerce



Learning platforms



Celebrating 30 Years of MySQL

1995-2025



Global Events

- MySQL and HeatWave Summit
- MySQL Tech Forum

Regional Events

- Bucharest, Romania
- Chennai, India
- Seoul, South Korea
- India OCYatra Tour
- Sao Paulo, Brazil
- Dubai, UAE













Year in Review: What's New?



Developer Productivity Improvements



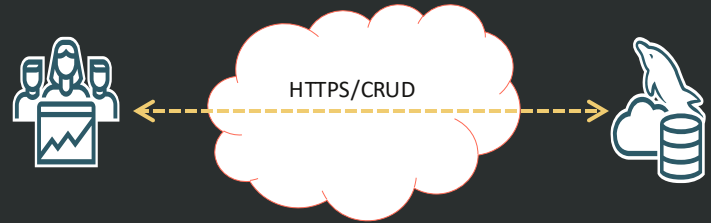
JavaScript Now Supported with MySQL Enterprise Edition

	SQL Stored Procedures		JavaScript Stored Programs
Expressiveness	 Hard to use, lacks basic constructs like containers (arrays, maps)		Highly expressive and robust
Efficiency	 Challenging to optimize due to interpreted code		Many JS code analysis tools JavaScript apps are fast and optimized by GraalVM
Ecosystem	 Insufficient: Lacks support from IDEs, debuggers, testing frameworks, ...		Massive ecosystem of tools for JavaScript developers
Popularity	 Few experienced programmers, especially within MySQL ecosystem		13.8 M Developers The most popular developer language
Library Support	 Few, mostly code examples		Millions



MySQL REST Service Simplifies App/Dev

- REST SQL extension
- RESTFUL web services
- Powerful data mapping
- Client SDKGeneration



```
sql> CONFIGURE REST METADATA;  
sql> CREATE REST SERVICE /myService;  
sql> CREATE REST SCHEMA /sakila FROM `sakila`;
```

MySQL for Developers License

Free download of MySQL Enterprise Edition

Full access to MySQL Enterprise Edition

- **Enterprise Server**
- **Backup**
- **Router**
- **Shell**
- **Connectors**
- **JavaScript**

Learn, Develop, Prototype



 MySQL Enterprise Masking	 MySQL Enterprise TDE	 MySQL Enterprise Authentication	 MySQL Enterprise Encryption
 MySQL Enterprise Firewall	 MySQL Enterprise Audit	 MySQL Enterprise Thread Pool	 MySQL Enterprise Backup

Download Now

<https://www.oracle.com/mysql/technologies/mysql-enterprise-edition-downloads.html>



Availability Improvements



MySQL High Availability Improvements

Intelligent failovers

- Faster/smarter failovers: Primary elected based on latest data state
- Resilient elections: Prevents promotion of lagging nodes
- Auto-evicts resource-exhausted members
- Improved uptime: Minimizes disruption during failovers
- Stronger resiliency: Enhances stability under load and failures

Replication manageability

- Flow-control monitoring: Monitors flow control triggers and throttling impact to help optimize cluster performance and throughput
- Multi-threaded applier statistics: Monitors replication throughput and lag to help diagnose issues and estimates catch-up time

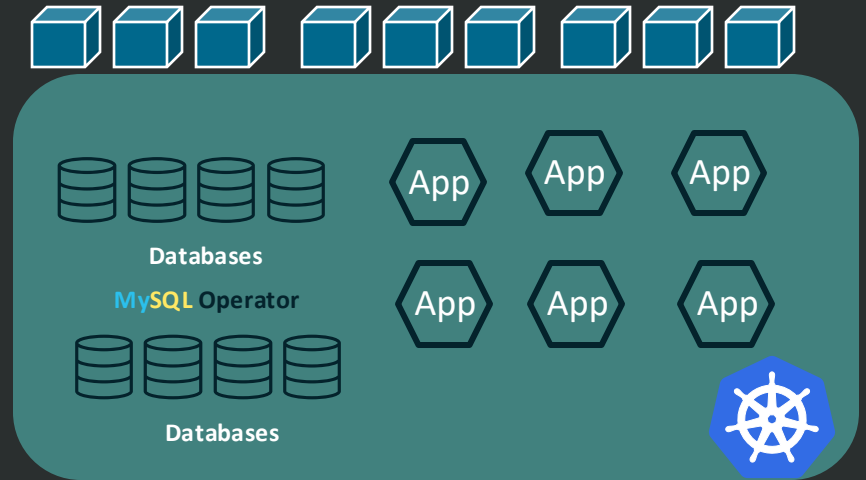
MySQL Operator for Kubernetes

Enterprise Backup & PITR

- Cloud-native backups (OCI, AWS, Swift)
- PITR via MySQL Enterprise Backup
- Full/incremental, CLI-customized recovery

Multi-Cluster DR

- Cross-cluster HA with InnoDB ClusterSet
- Manual switchover/failover with split-brain safety
- Seamless standby cluster deployment



HeatWave Cloud Service Improvements



HeatWave



HeatWave GenAI

- In-database LLMs
- Automated, in-database vector store
- Scale-out vector processing
- HeatWave Chat



HeatWave Lakehouse

- Query data in object storage
- Excellent performance and price-performance
- Optionally combine with data in MySQL



HeatWave MySQL

- Accelerate MySQL queries by orders of magnitude
- Real-time analytics without ETL/analytics DB
- Advanced security features



HeatWave AutoML

- In-database ML
- Automated pipeline to build ML models
- Train models using data in database and/or object storage



HeatWave Autopilot

- ML-powered automation for HeatWave
- Automatically improves performance and price-performance
- Increases the productivity of DBAs and developers

High Availability in HeatWave MySQL

Less Downtime

- 86%* shorter unplanned failover downtime
- 83%* shorter downtime during maintenance
- Zero downtime configuration change for dynamically-settable configuration variables

More Resiliency

- Automatic replacement of failed read replicas
- Automatic replacement of secondaries failed due to foreign key collisions
- Transaction completion timeout for switchovers

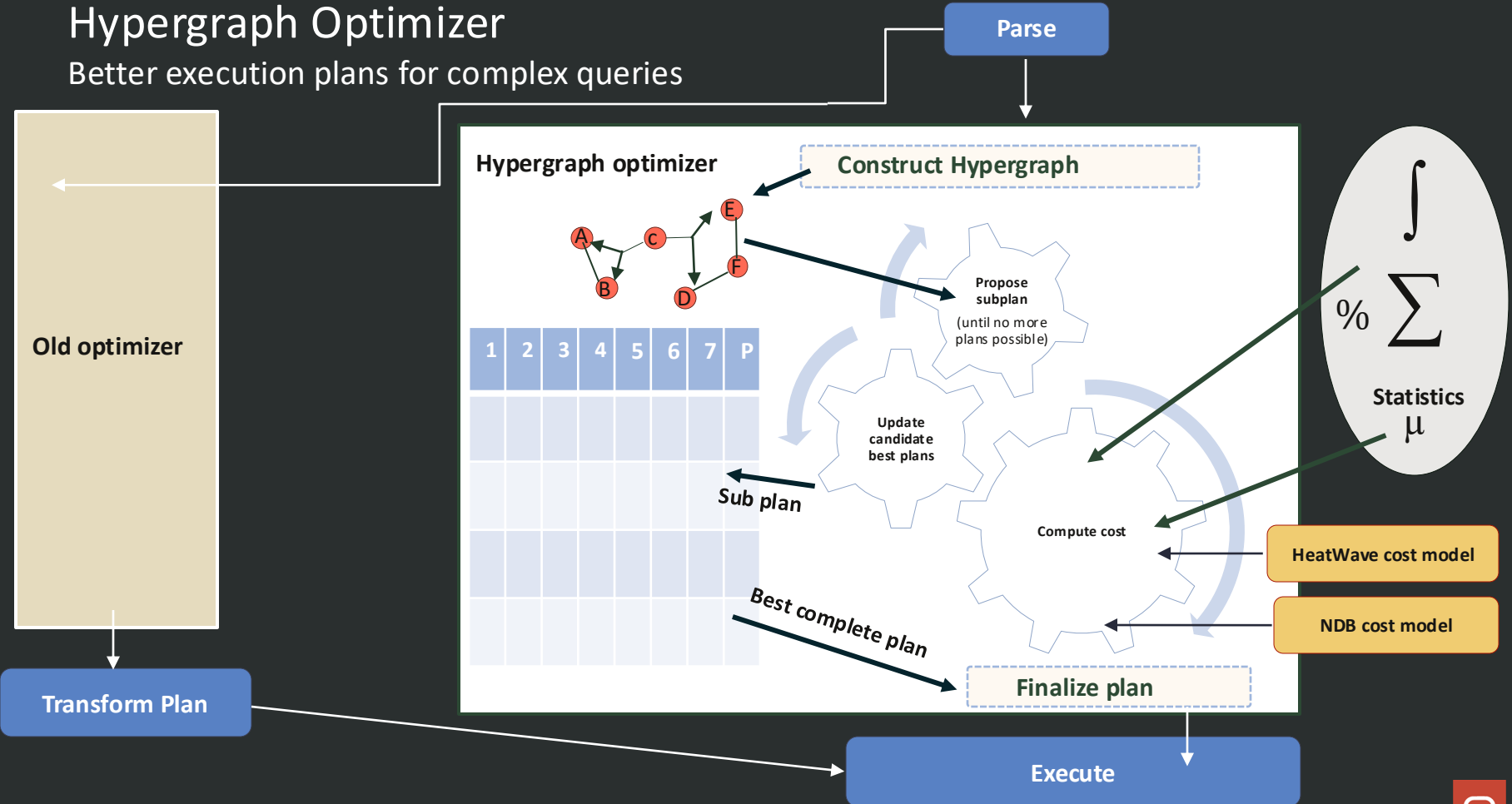
More Flexibility

- Database System Access Modes (read/write, read-only)
- Rolling updates for load-balanced read replicas

* Per internal testing

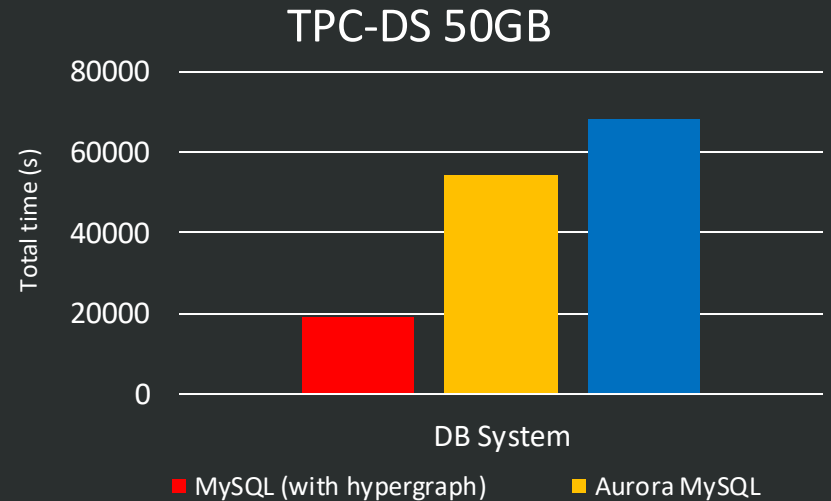
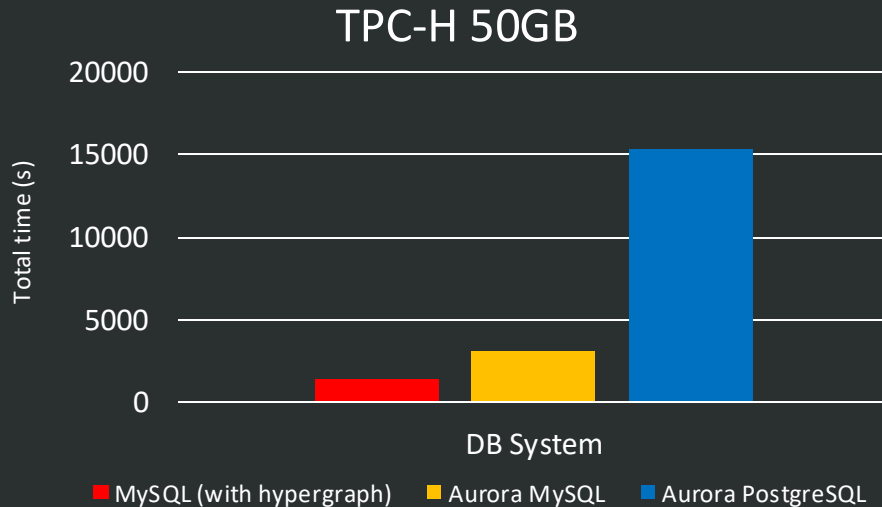
Hypergraph Optimizer

Better execution plans for complex queries



MySQL with Hypergraph

3x-12x faster than PostgreSQL; 2.5x faster than Aurora MySQL



- Data fits in buffer pool
- No secondary indexes
- Results are with foreign keys and histograms



Performance Optimizations for OLTP Workloads

Auto Indexing

ML-driven index suggestions with predictions

- performance prediction (per query and total workload)
- storage prediction
- explanation for the recommendations
- index creation time prediction

Automatic notifications based on workload

Bulk Load Enhancements

- Up to **30x faster** with secondary indexes
- Parallel CSV ingest & secondary indexes
- Expanded types: VECTOR, JSON, BLOB, etc

Performance gains

- 25% perf. gain in 8.0.35 vs 8.0.34
- Scales from 64–1024 connections
- Eliminating double write buffer
- ATOMIC I/O cuts disk writes ~50%

Optimize Warehouse Workloads

More workloads

- Native support for advanced **JSON** functions
- Enhanced **temporary table** management with optimized in-memory performance
- Improved support for **stored procedures** to embed logic and reduce app-database chatter
- Efficient **triggers and cursors** for row-level operations, logging, and business rule enforcement

Performance

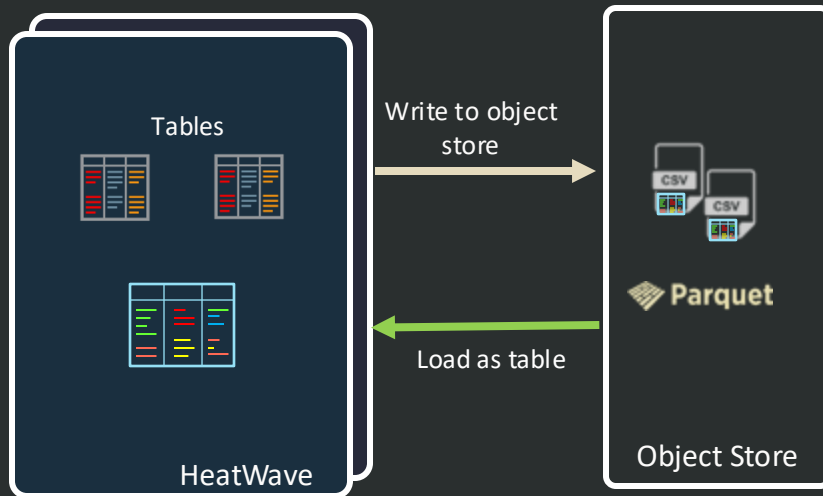
- **Auto zone** maps for automatic block pruning and faster table scans
- **Bloom-filter**-based indexes to accelerate joins and reduce false lookups
- Support for **partitioned tables**

Manageability

- **Autoload InnoDB** tables for automatic data movement into analytics engine
- **Auto Error Recovery** enables fast reload of data into HeatWave after DB restarts or failovers
- **DB Management Service integration** for easier monitoring and diagnostics
- **SQL Worksheet** with sample schema for easy onboarding, testing and running queries in a browser-based IDE

Results from HeatWave Can Be Written to Object Store

Enables building efficient ELT applications



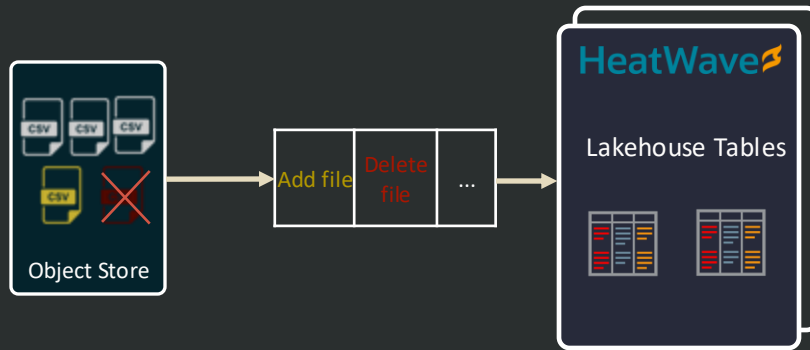
- Transform data at speed for downstream applications
- Create enriched and aggregated dataset for analytics and reporting
- Accelerate data pipeline for building medallion architecture



HeatWave Lakehouse Enhancements

Querying files in object store

- File changes incrementally updated in HeatWave
- Multiple tables can be loaded in parallel
- Elastic resizing of Heatwave



Modernizing Observability & Management



MySQL Enterprise Telemetry: Logging Support

OpenTelemetry Observability Framework

- Open standard for telemetry data
- Collect Traces, Metrics, Logs to monitor MySQL

NEW Logging Support

- Eliminate Log Agents with Direct-to-Collector Approach
- Correlate log data with traces and metrics
- Rich context for analyzing system behavior



- Log collection and correlation
- Improved observability
- Easier troubleshooting



Cloud Services for MySQL Monitoring

Monitoring & Diagnostics

Unified fleet monitoring and management for on-prem and cloud databases

- Monitor heterogeneous fleet (MySQL, Oracle)
- Detailed availability, performance, and configuration metrics for DevOps

Easy load and performance analysis

- Quickly identify expensive queries
- Visualize query activity for fast troubleshooting

AIOps

SQL insights

- ML driven performance diagnostic insights based on curated SQL data
- Insights provided at SQL, database, and fleet levels
- Interactive dashboards to visualize, verify, and investigate problems

Smart capacity planning

- Forecast demand for changing workloads
- Machine learning seasonality models
- Automatic prediction of near-term issues

Supports cloud and on-prem MySQL databases

Enterprise Manager for MySQL

Monitoring

Secure, Scalable Monitoring: TLS & Kerberos authentication, fleet-wide standardization with templates and groups

Deep Insights & Automation: Real-time performance analysis, metric extensions, and auto-remediation of incidents

Proactive Alerts & Integrations: Notifications via email, SNMP, webhooks, Slack; integrated with ServiceNow, Jira, PagerDuty, SCOM, Tivoli

Compliance

Compliance Monitoring at Scale: Evaluate MySQL replication and security practices across your fleet

Centralized Dashboards & Reports: Track compliance scores, violations, and get remediation guidance

Automation with Templates & Groups: Standardize compliance checks using Admin Groups and Template Collections

Host Security Compliance

All flavors of Linux

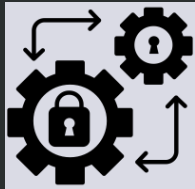
Security Content Automation Protocol (SCAP) XCCDF compliance benchmarks

- **PCI-DSS Compliance**
- **HIPAA privacy rules**
- **DISA STIG security controls**
- **Import XCCDF based policies**

GenAI



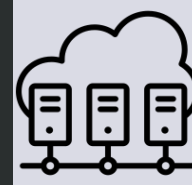
Rapid HeatWave GenAI Adoption Across Industry Segments



IT security
management



Online learning



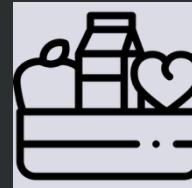
Big data and
cloud
engineering



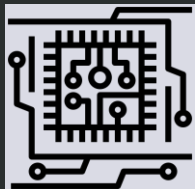
Telco



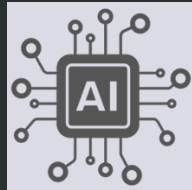
Data platform as
a service



Online food
delivery



Semiconductor
and technology
manufacturing



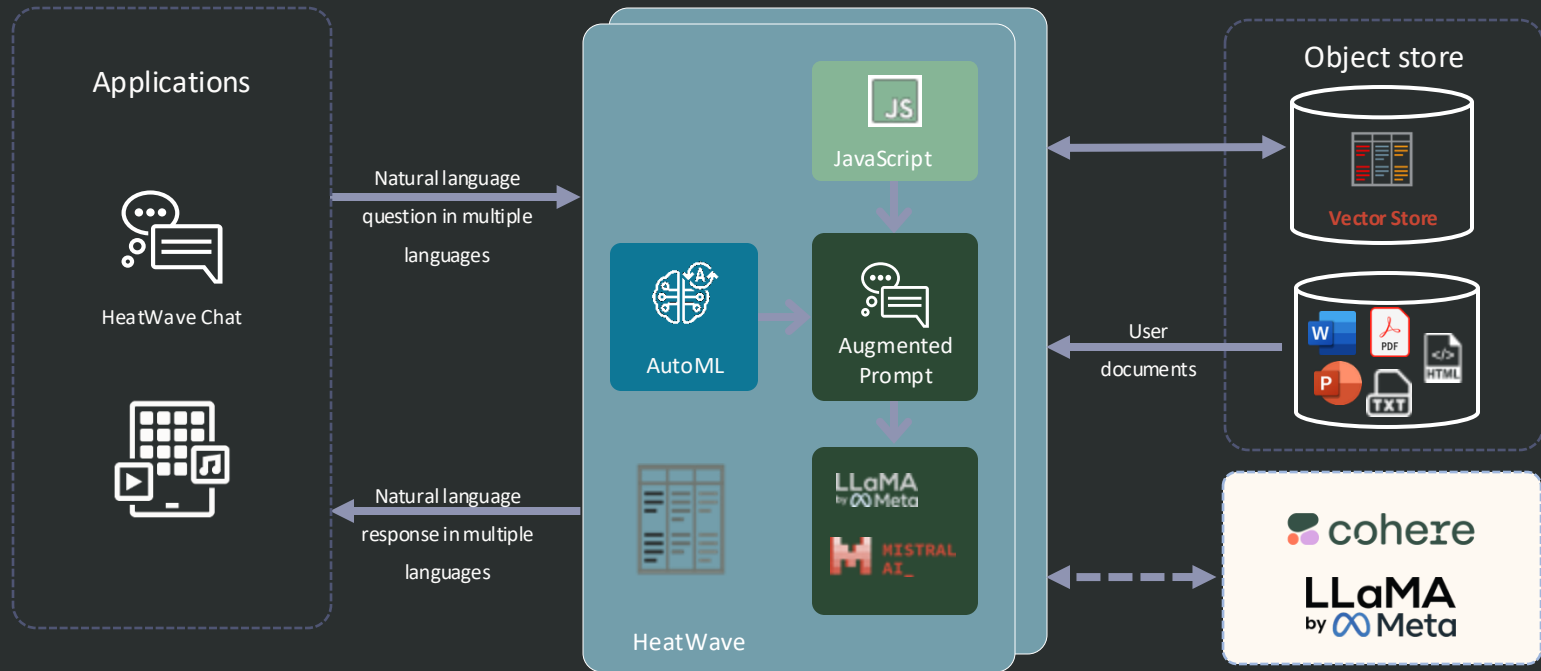
Big data and AI



Food and
beverage

In-database LLMs and In-database Embedding Generation

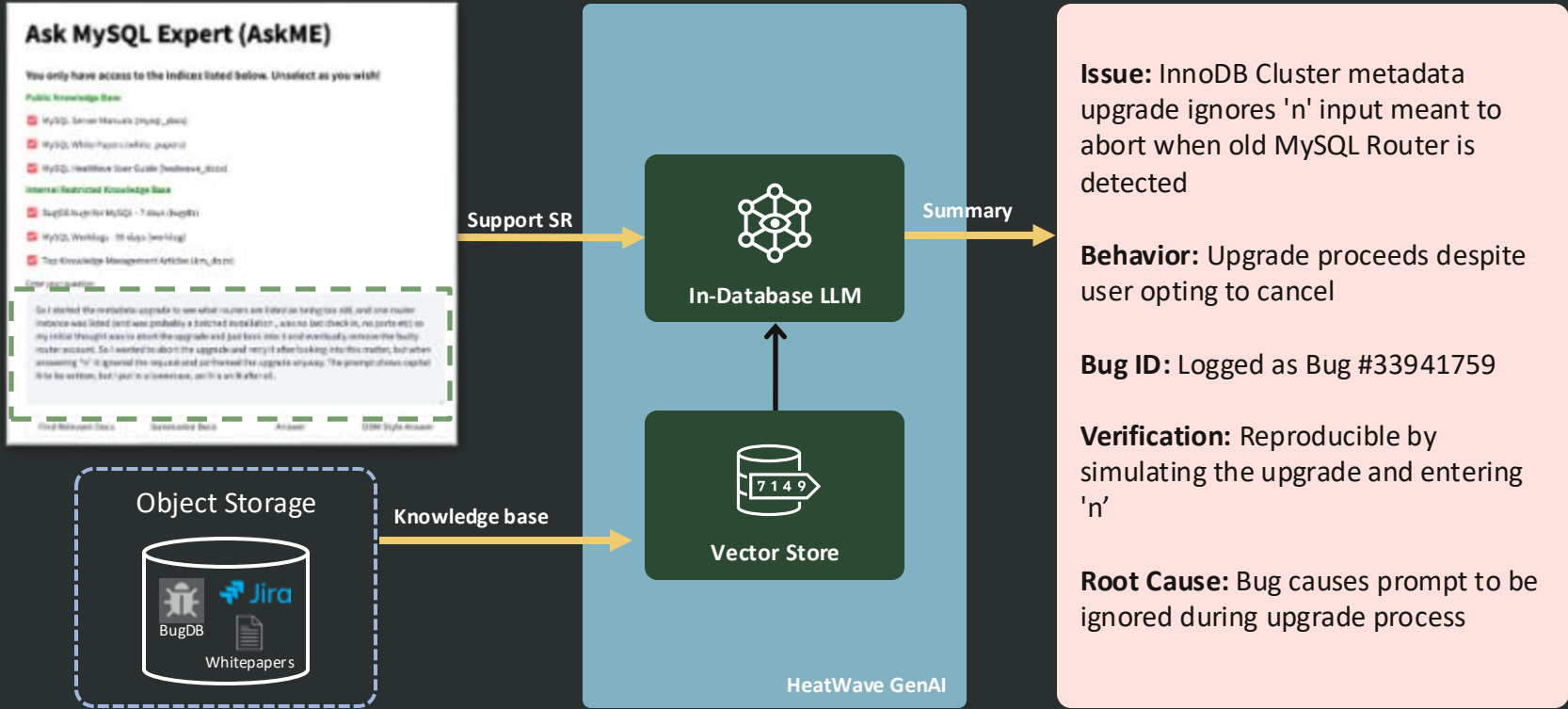
Easy to build applications without requiring other software or hardware



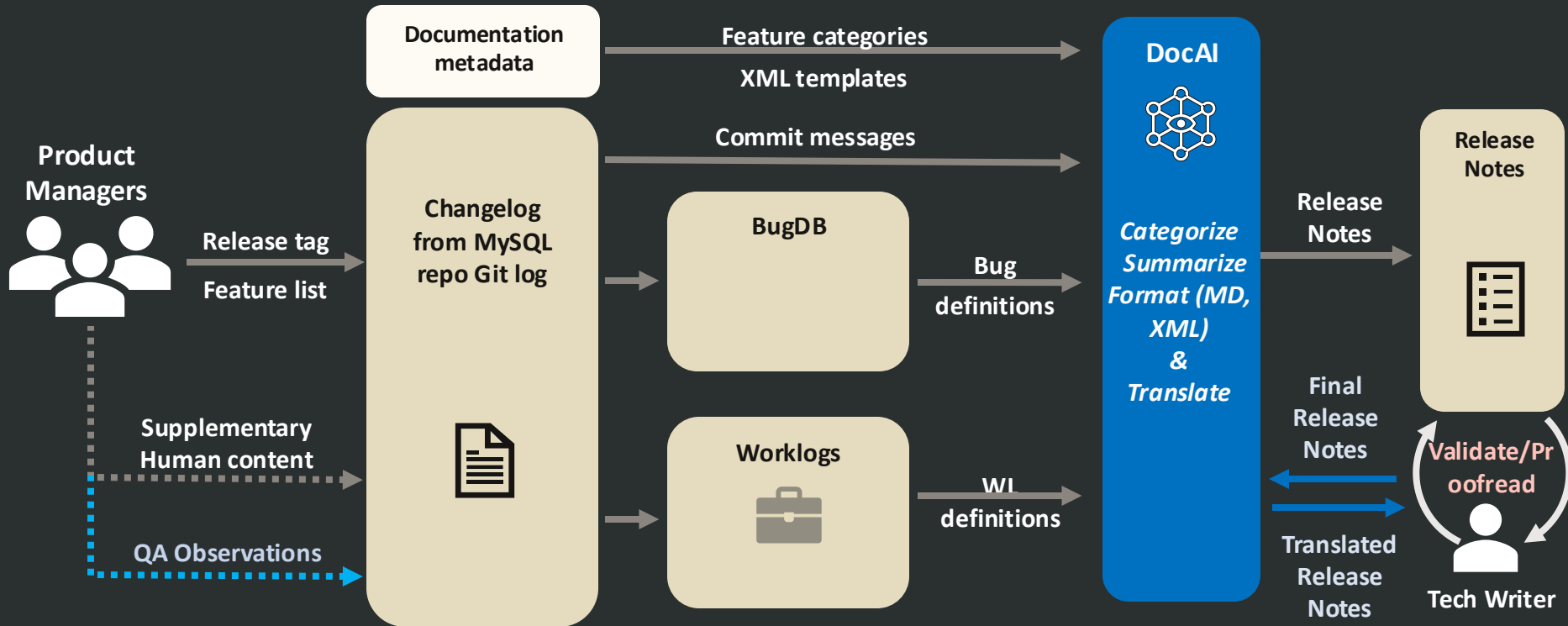
```
> CALL sys.ML_RAG("¿Qué es HeatWave?", @NL_response, @optional_search_parameters);
```



Use Case – MySQL and HeatWave Technical Support



HeatWave GenAI Assists in Generating MySQL Documentation



ALWAYS FREE HeatWave Service in OCI

- Run small-scale applications at no cost
- Available features
 - OLTP, Autopilot, JavaScript
 - Vector store, Vector processing
 - Machine Learning (AutoML)
 - Lakehouse (object store processing)
- Available now in all OCI accounts
 - 1 ECPU, 16GB memory with HeatWave node
 - MySQL storage: 50 GB, Lakehouse storage: 10 GB

**Coming soon:
In-database LLMs**



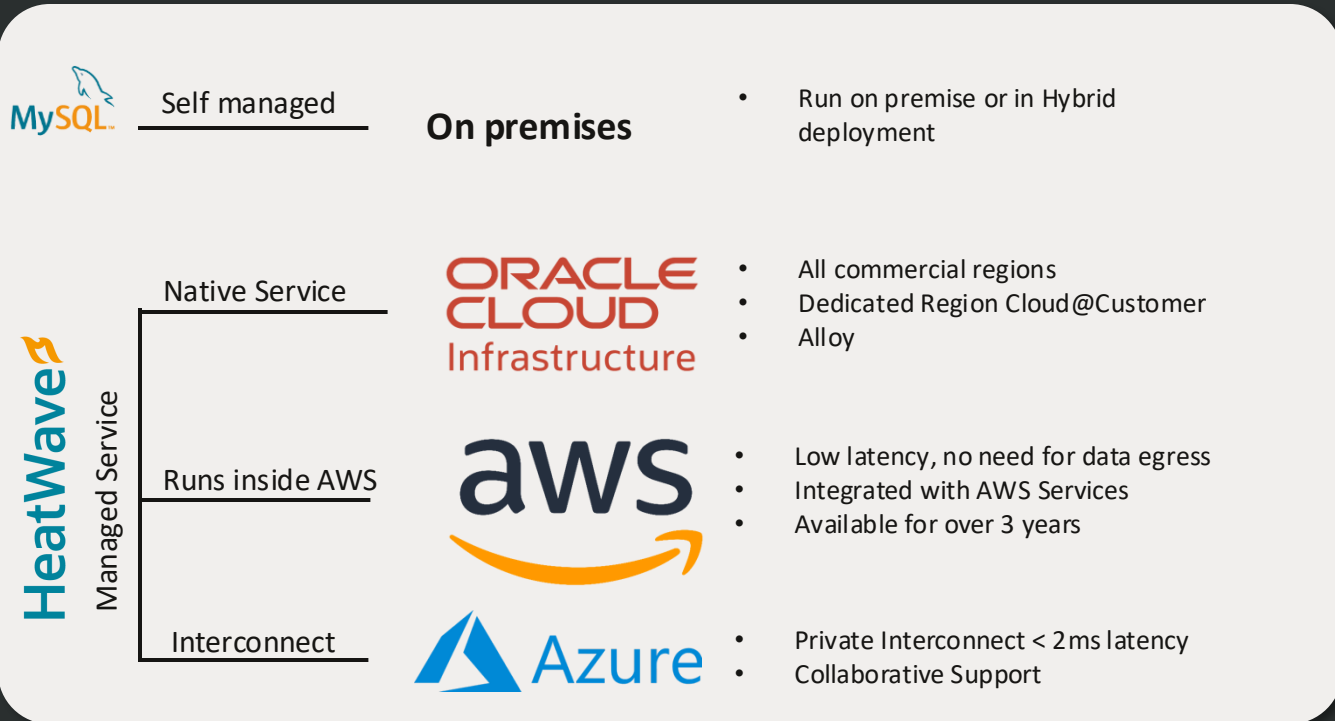
Start for free here:

- Oracle Cloud: <https://cloud.oracle.com/mysqlas/db-systems>
- Databases → HeatWave MySQL DB Systems

One Always Free DB system free-of-charge in the home region of each commercial tenancy



Deploy MySQL Applications Anywhere



Future Directions



High Level Roadmap

OLTP

- Enrich developer experience with more JSON functionality
- Further improve availability (e.g. during upgrade)

GenAI

- Handle more unstructured content (e.g. images)
- Natural language access for structured content

Analytics

- Process bigger workload per node/cluster
- More warehouse constructs (e.g. materialized views)



Thank You!

