

QLDB Customer Use Cases

Eric Kraemer

Principal PM - QLDB



Amazon Quantum Ledger Database (QLDB)

Ledger

Fully managed ledger database service

Immutable



Append-only, immutable journal **tracks history of all changes**

Fully visibility into **data lineage**, available to users who were granted access by the ledger owner

Verifiable



All changes are **cryptographically chained** and **verifiable**

Verification can be performed through an API or by exporting the ledger blocks to S3

Serverless



Serverless, no need to provision storage or IO in advance

Scalable and highly available

Easy to use



PartiQL offers familiar SQL operators

ION data model is rich and expressive

Purpose-Built Databases



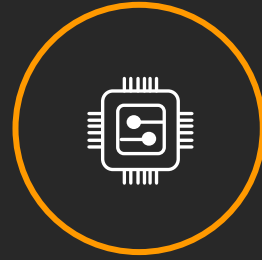
Relational



Key-value



Document



In-memory



Graph



Time-series



Ledger

Referential integrity, ACID transactions, schema-on-write

High throughput, low-latency reads and writes, endless scale

Store documents and quickly access querying on any attribute

Query by key with microsecond latency

Quickly and easily create and navigate relationships between data

Collect, store, and process data sequenced by time

Complete, immutable, and verifiable history of all changes to your data

Common Use Cases

Lift and shift, ERP, CRM, finance

Real-time bidding, shopping cart, social, product catalog, customer preferences

Content management, personalization, mobile

Leaderboards, real-time analytics, caching

Fraud detection, social networking, recommendation engine

IoT applications, event tracking

System of Record, Blockchain Alternative, Financial ledger

AWS Service(s)

Aurora, RDS

DynamoDB

DocumentDB

ElastiCache

Neptune

Timestream

QLDB

Key Challenges Faced by our Customers

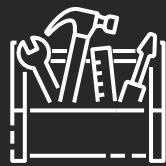


Audit tables

| | | | | | | | |
|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
| tx ¹ | tx ² | tx ³ | tx ⁴ | tx ⁵ | tx ⁶ | tx ⁷ | tx ⁸ |
| tx ⁹ | tx ¹⁰ | tx ¹¹ | tx ¹² | tx ¹³ | tx ¹⁴ | tx ¹⁵ | tx ¹⁶ |
| tx ¹⁷ | tx ¹⁸ | tx ¹⁹ | tx ²⁰ | tx ²¹ | tx ²² | tx ²³ | tx ²⁴ |
| tx ²⁵ | tx ²⁶ | tx ²⁷ | tx ²⁸ | tx ²⁹ | tx ³⁰ | tx ³¹ | tx ³² |



Resource
intensive



Difficult to
manage and scale



Error prone
and incomplete



Impossible
to verify

Our Customers

Typically choose QLDB as:

1

Database System of Record

- Require immutability in addition to strong transactional consistency and performance.
- Require ability to prove data integrity to customers, auditors, regulators
- Benefit from built-in data lineage

2

Blockchain Alternative

- Require cryptographically-backed event integrity but do not need decentralized access.
- Benefit from single-party, centralized data management.
- Benefit from the addition of a ledger database as a component of a blockchain solution.

QLDB: Use Case Categories

Common use cases for QLDB early adopters

**System
of Trust**

Systems of
Record

**Asset
Chain**

Distributed
Products
Lifecycle

**Financial
Ledger**

Payment &
Accounting
Systems

QLDB Customer: DVLA

Driver & Vehicle Registry

"System of Trust"

Challenge

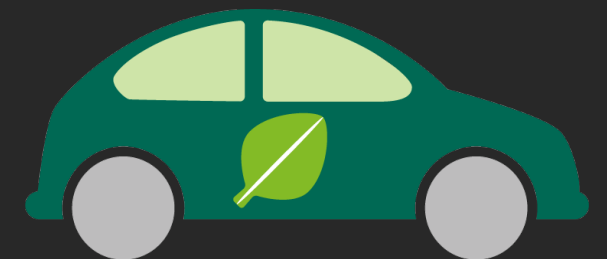
The data at the heart of some of the registers are changing, demand for data in government initiatives is growing and existing systems are built on traditional relational database technology with rigid schema.

Solution

Migrating from a legacy on-premises solution, DVLA is implementing QLDB for its serverless nature, immutability, and flexible schema. As other government departments request driver data, DVLA can verify the integrity and provenance of the information it is providing and stream it out to the respective departments.



Driver & Vehicle
Licensing
Agency



Osano

Data Privacy Platform Tracking System of Trust

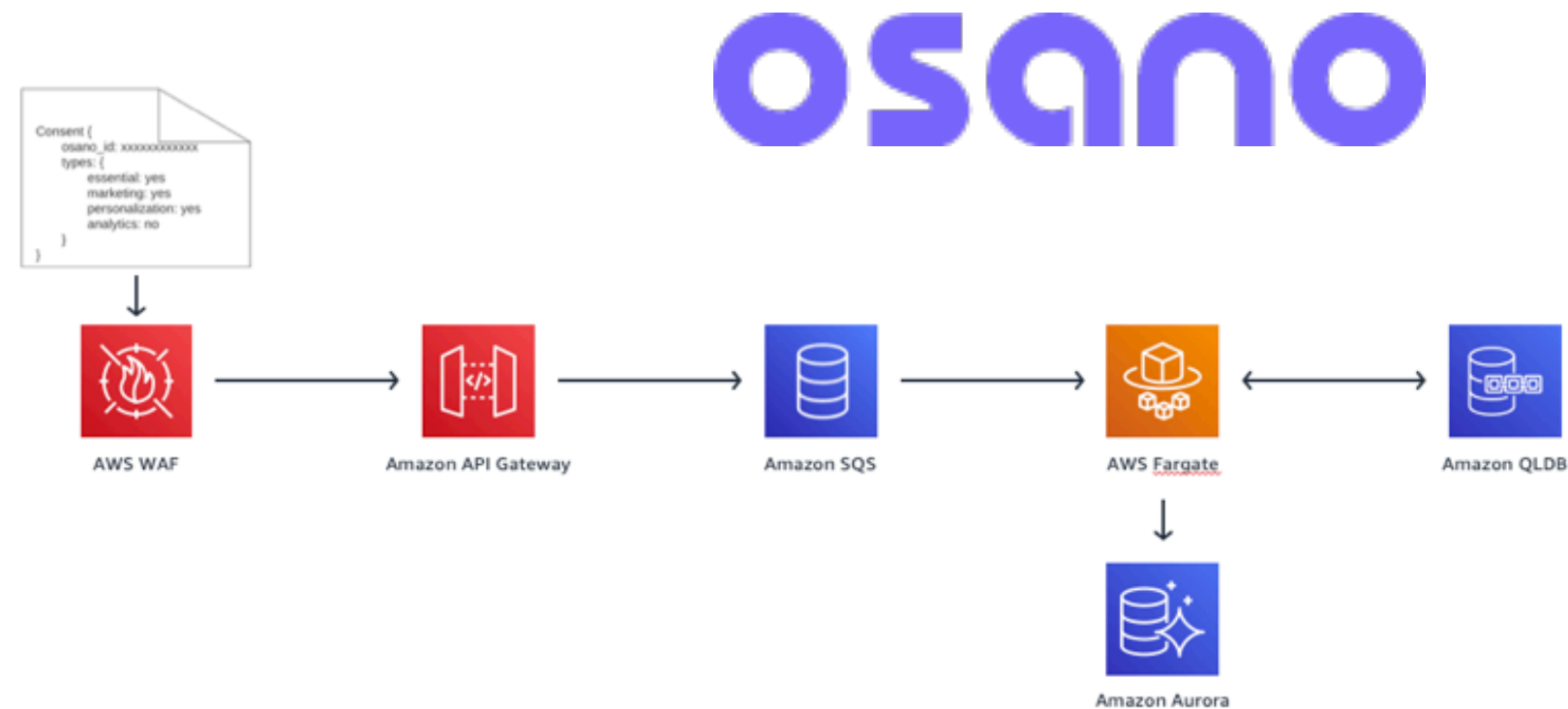
Challenge

Building a centralized ledger that will provide Osano, its customers (Web properties), consumers, and regulators with an immutable view of consumer actions related to consent to terms of services, tracking with cookies, and similar consumer decisions which are subject to regulation.

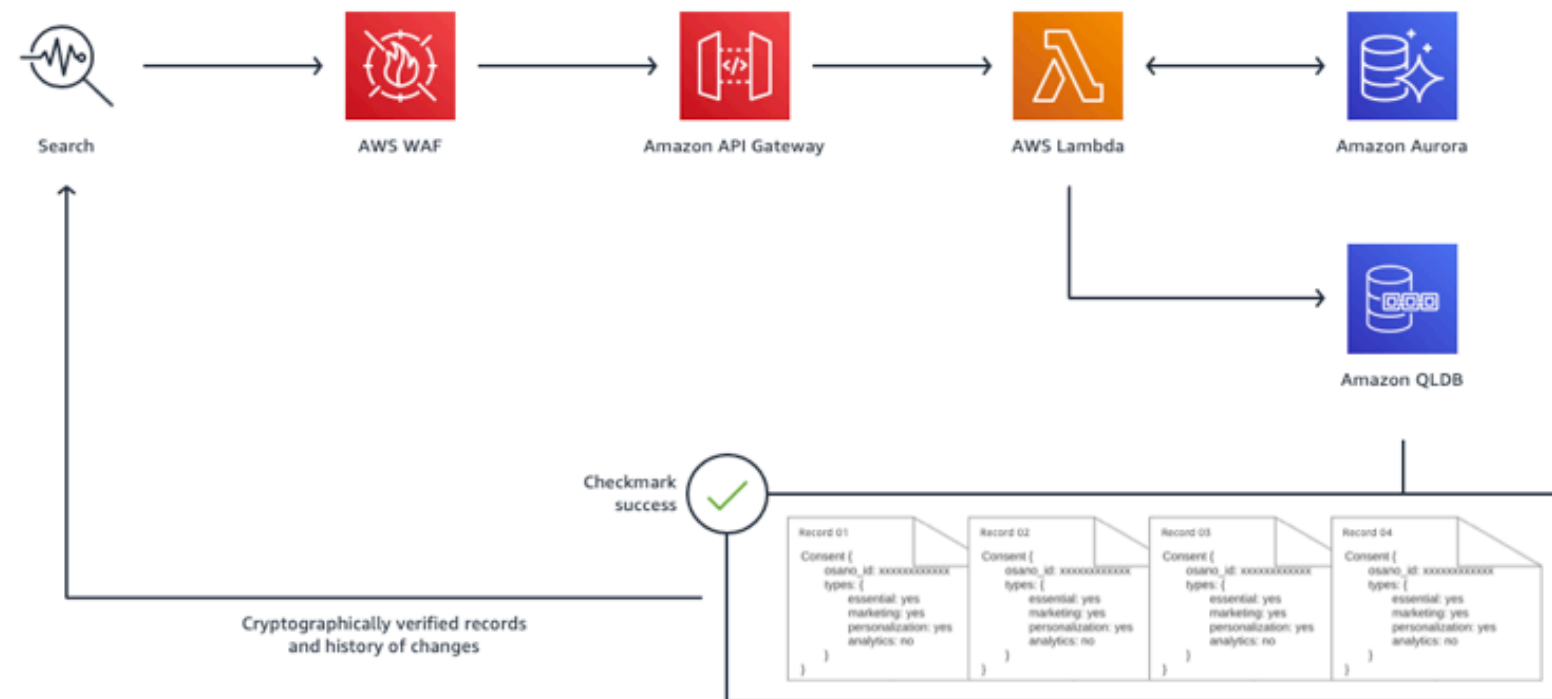
Solution

Osano leverages QLDB to record consumer decisions and any events or changes made to them, in a QLDB ledger. QLDB's verification API is then leveraged when Osano needs to provide irrefutable history of user decisions to the customers on Osano's platform.

Consent storage



Audit response



BMW

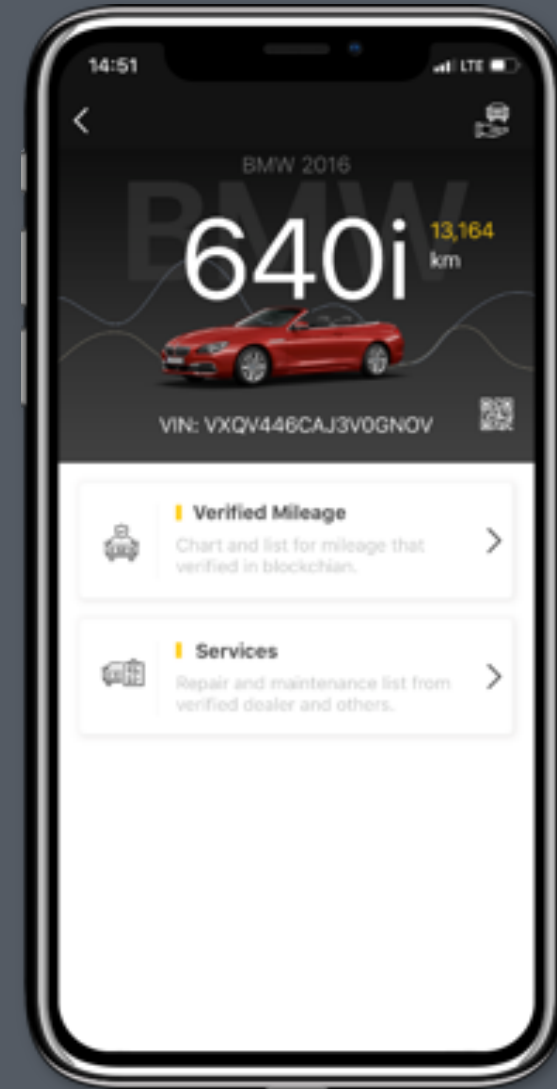
Digital Vehicle Passport Asset Chain

Challenge

BMW needs to track trusted, verifiable automotive data in order to get full transparency on transactions across multiple entities.

Solution

Started building a BMW Digital Vehicle Passport App that provides a transparent and complete history of vehicle data such as fueling, inspection, oil changes, diagnostics, repairs, tire changes, and sales across multiple partners. Amazon QLDB is at the core of this solution and provides BMW the verified data with a centralized trust



BMW GROUP

MediSci

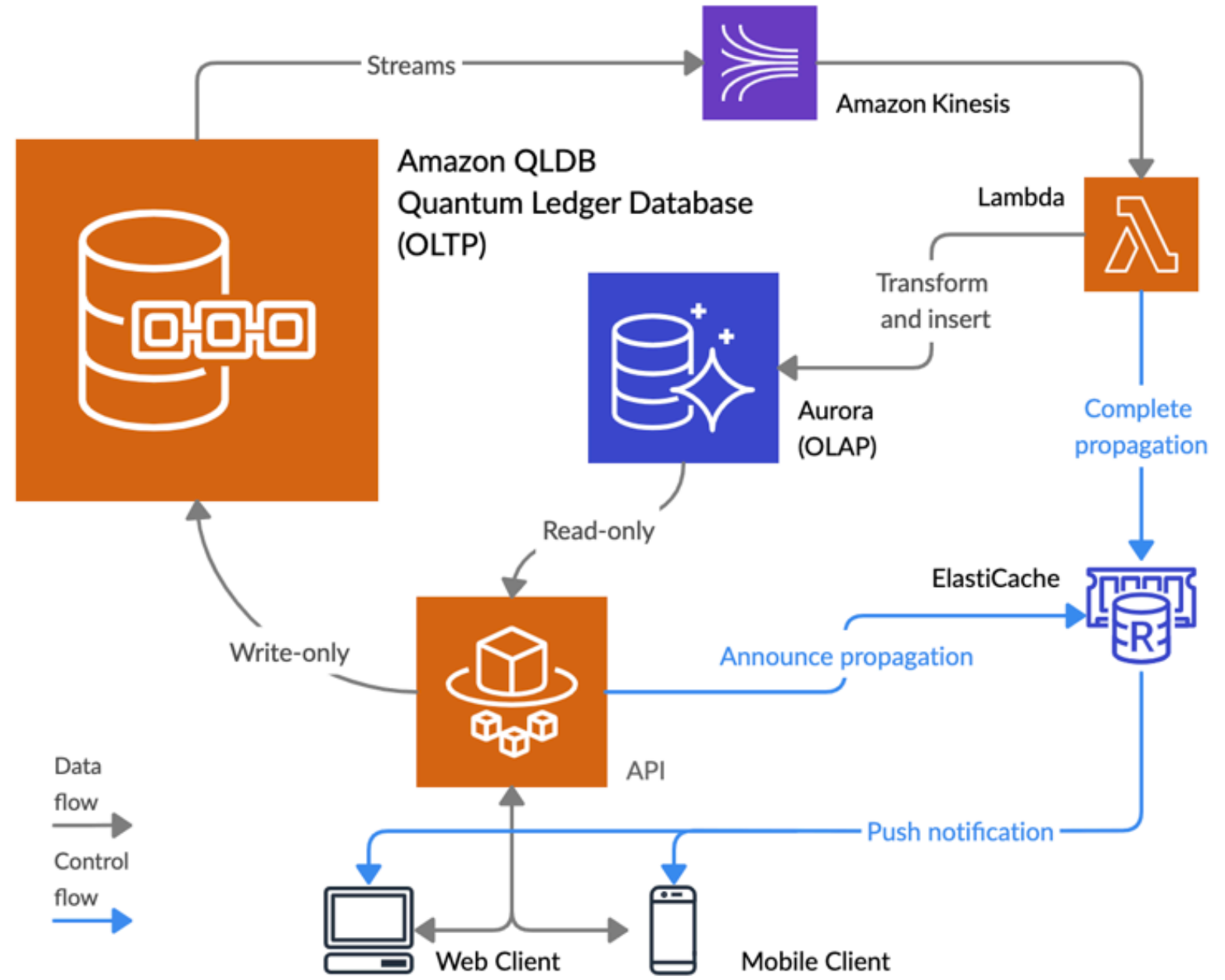
Data Privacy Platform Tracking System of Trust

Challenge

Building a platform to improve effective communication and transparency between frontline healthcare workers and life science product developers to help create better health outcomes for patients.

Solution

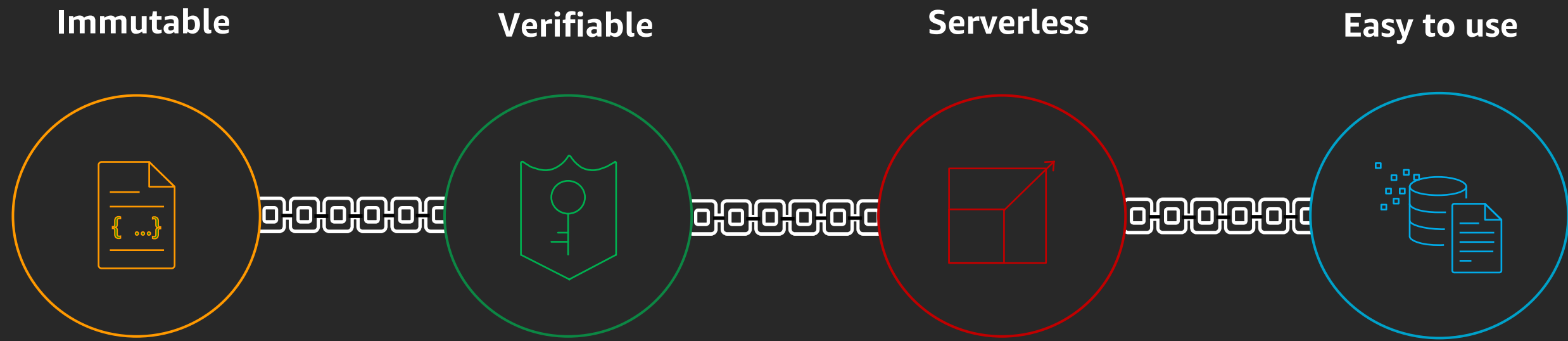
QLDB provides MediSci with a secure, immutable, and verifiable transaction log to simplify data verification and reduce counterparty risk to help streamline the cumbersome and costly drug, biologic, device development, and FDA approval processes, all in an effort to create transparency between life science companies and frontline healthcare providers.



Summary

Why QLDB Matters to Customers

- **Trust: Data with provenance at scale**
- **Auditable: Lineage is built-in, not built-on**
- **Strong transactional consistency (serializable) at scale**



Thank you!

Eric Kraemer

erickrae@amazon.com

Nate Welshons

natewel@amazon.com

