

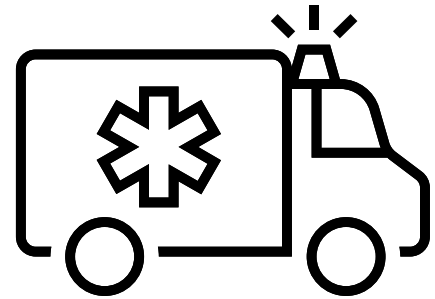
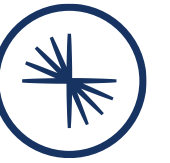


Modernizing Life Science and Pharma with Data Streaming



Kai Waehner,
Global Field CTO
Confluent

Real-time Data beats **Slow Data** in the Healthcare Value Chain

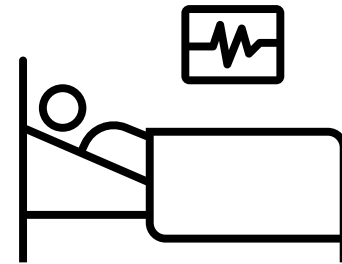


Emergency

Sensor Diagnostics

Intelligent Routing

ETA Updates



Patient Care

Diagnosis

Treatment

Connected Health

Value-Based Care



Insurance

Member Enrollment

Claim Processing

Omnichannel
Patient Experience



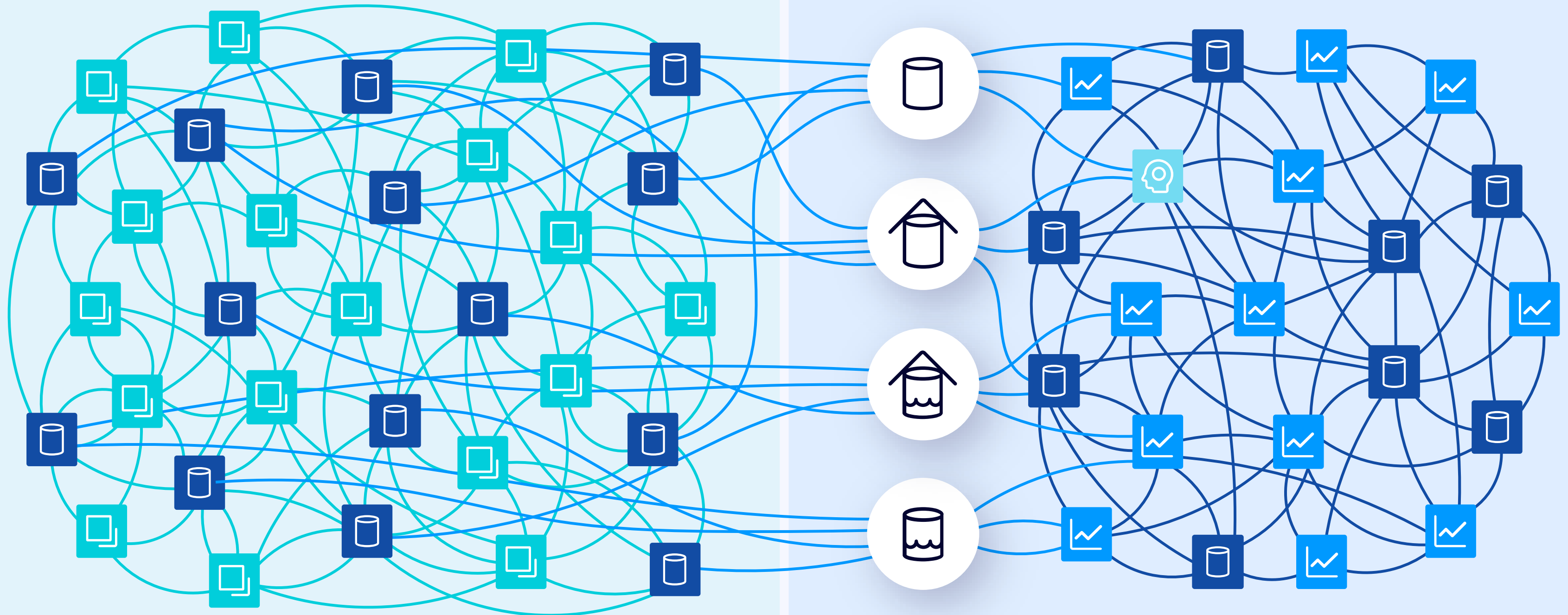
Cybersecurity

Threat Detection

Incident Response

Data Privacy
Protection

As Data Needs Multiplied, Data Complexity Escalated



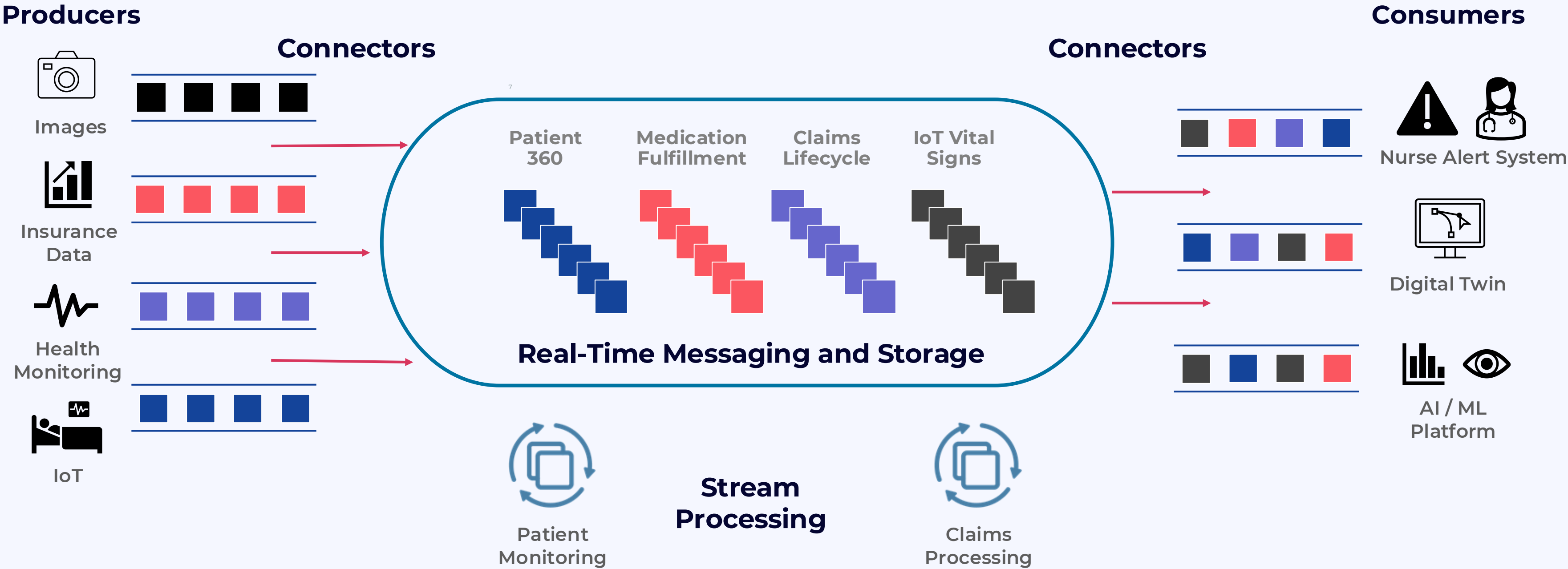
OPERATIONAL ESTATE

Serve the needs of applications to transact with customers in real-time

ANALYTICAL ESTATE

Support after-the-fact business analysis and reporting for various stakeholders

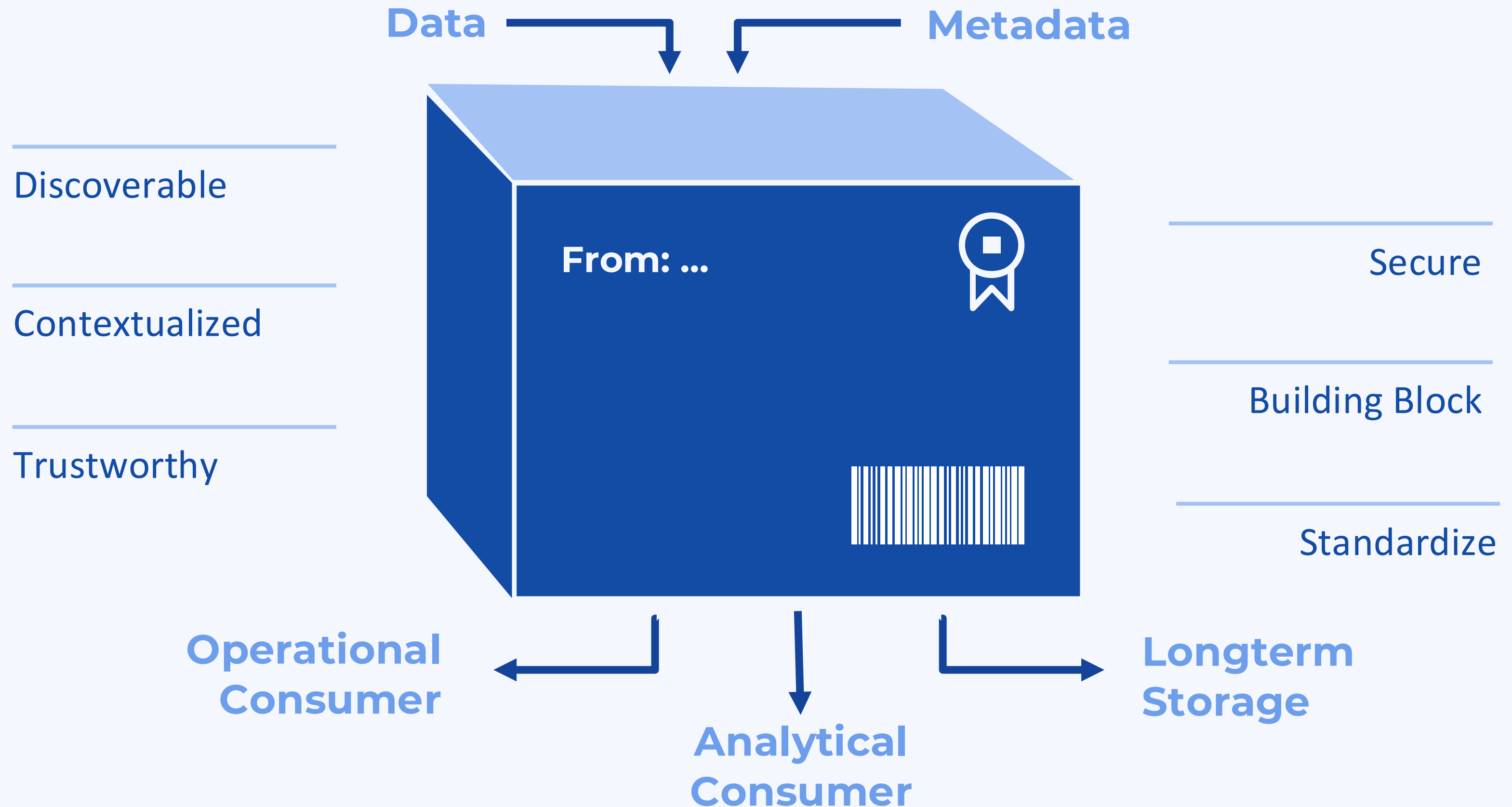
Event-driven Architecture with Data Streaming in Healthcare





Data as a Product

More than just raw data... And policies, integrity constraints, documentation, lineage, quality metrics, and SLA guarantees

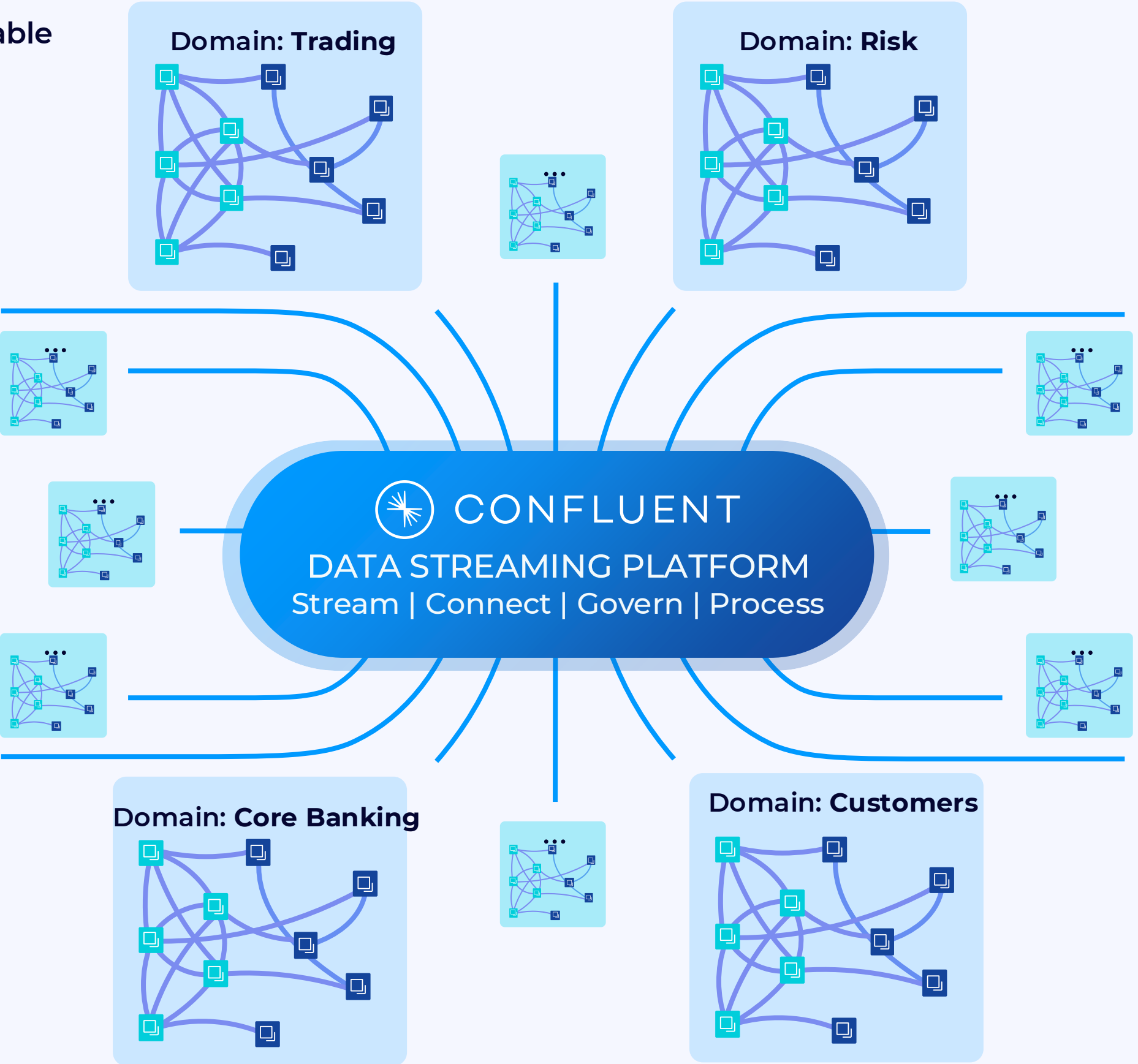
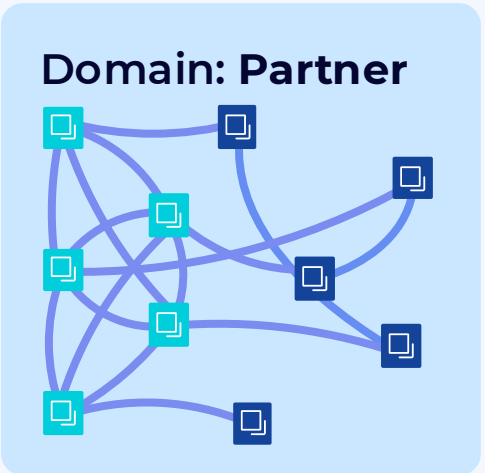
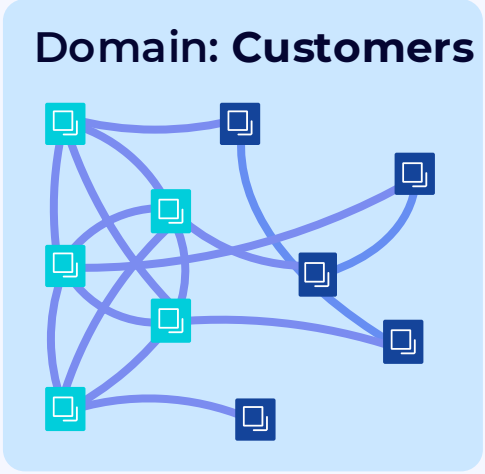
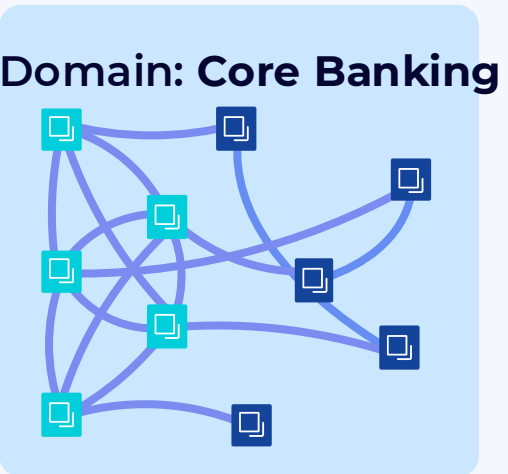
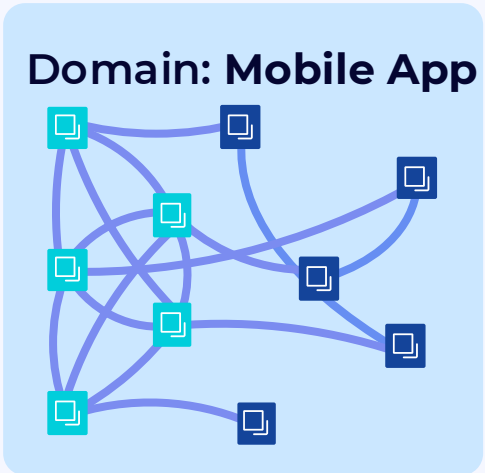
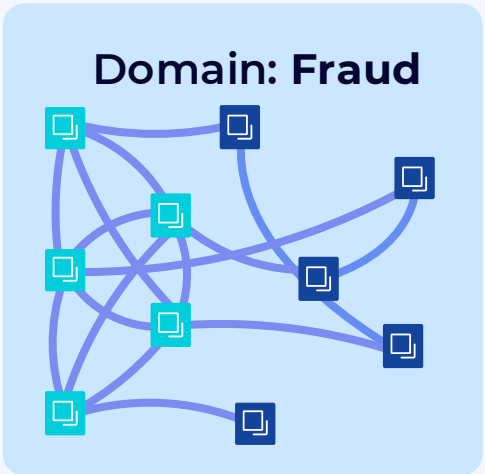
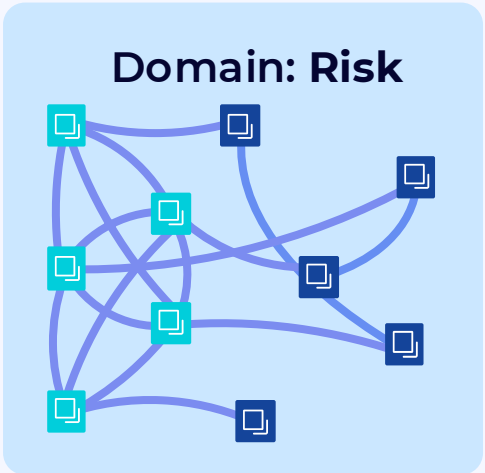
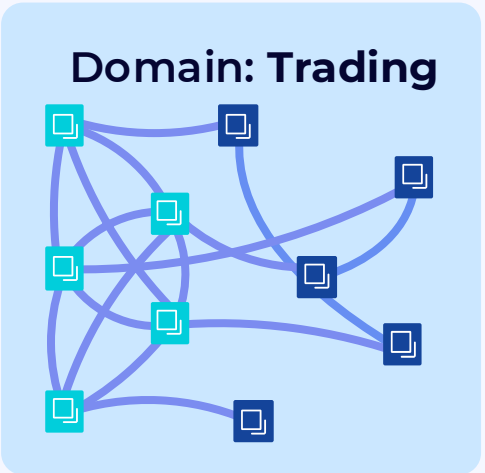
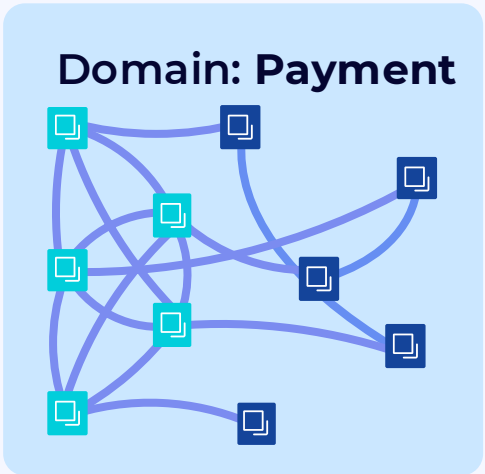




Data Product Topic/Table

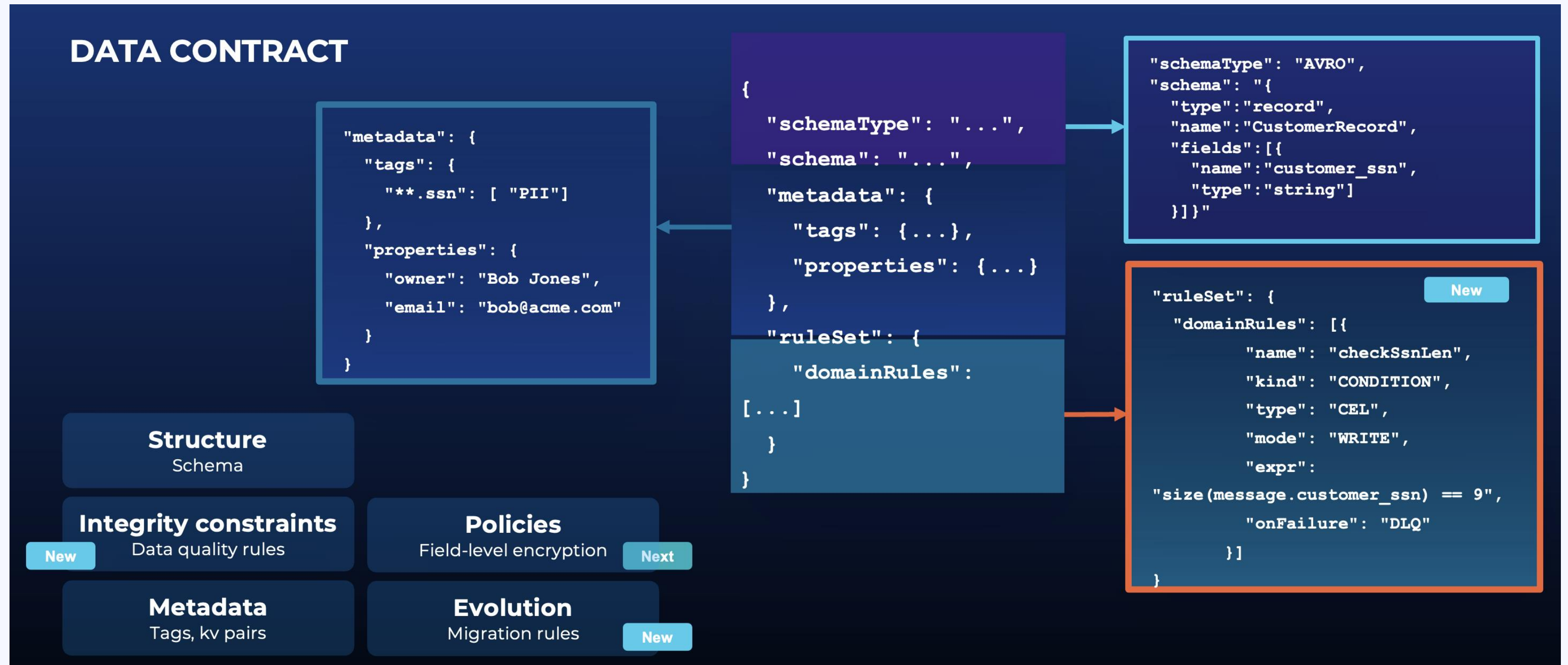


Internal Domain Topic/Table



Data Quality Rules for Data Contracts

Establish and enforce data contracts across CP and CC



Data Portal to Discover, Explore and Build Real-time Data Products

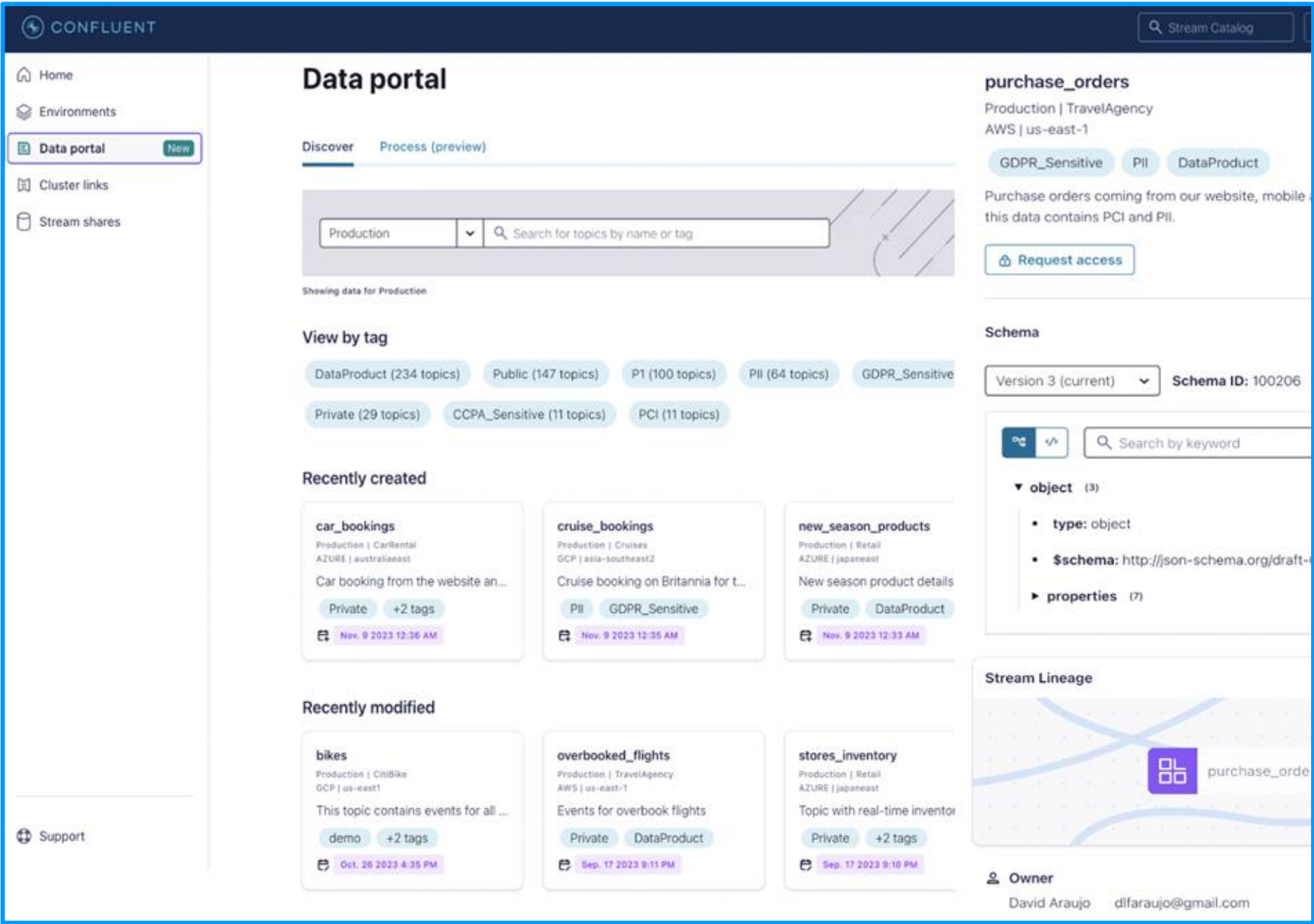
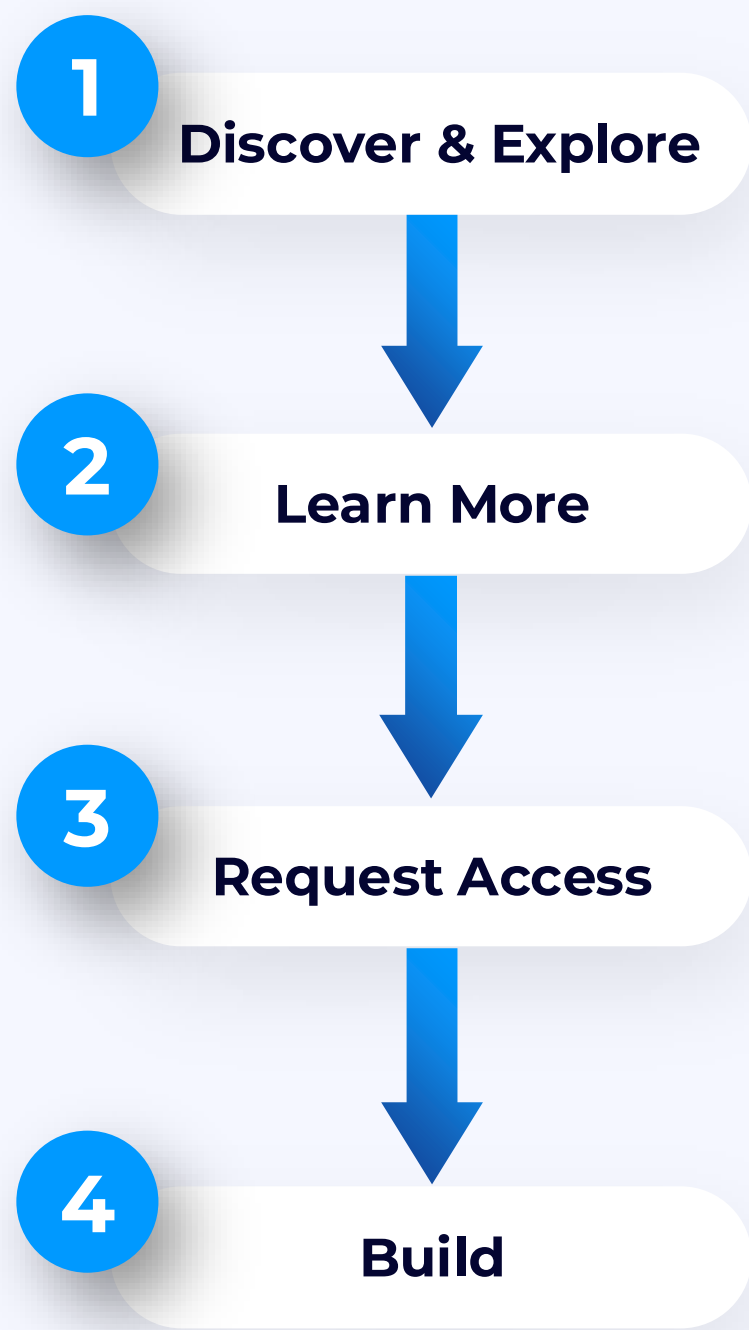


FIGURE 1

Forrester Wave™: Streaming Data Platforms, Q4 2025

THE FORRESTER WAVE™

Streaming Data Platforms
Q4 2025

*A halo indicates above-average customer feedback. A double halo indicates that the vendor is a Customer Favorite.

The Forrester Wave™: Streaming Data Platforms, Q4 2025

Confluent Named a Leader in Streaming Data Platforms

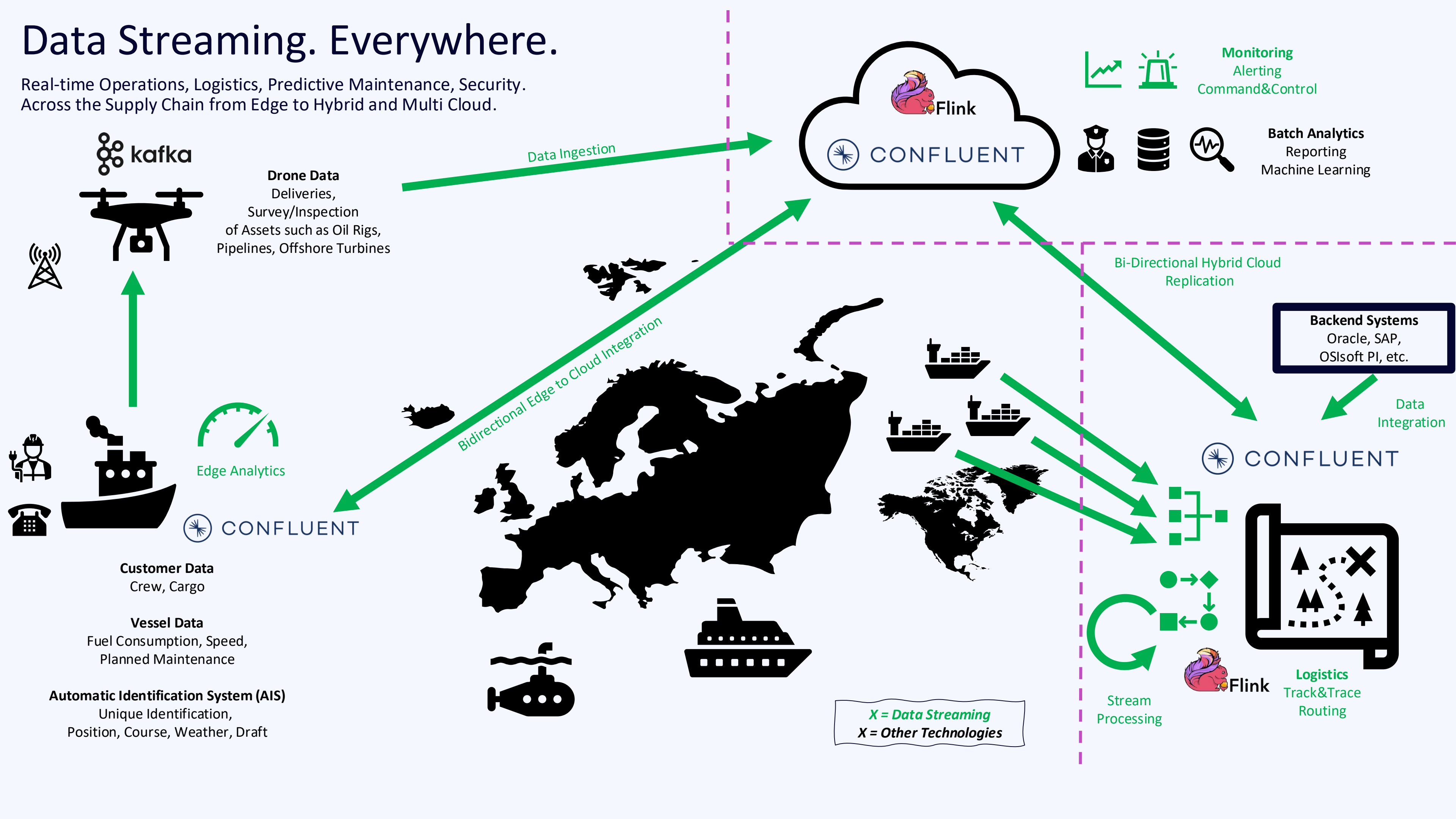
FORRESTER

"Confluent's strategy is to **set the standard** for what an enterprise-grade streaming data platform should be."

"Confluent is an ideal fit for enterprises that wish to expand their streaming data use cases with **enterprise-level governance, tooling, and ongoing innovation.**"

Data Streaming. Everywhere.

Real-time Operations, Logistics, Predictive Maintenance, Security.
Across the Supply Chain from Edge to Hybrid and Multi Cloud.



Data Streaming vs. Lakehouse



Data in Motion

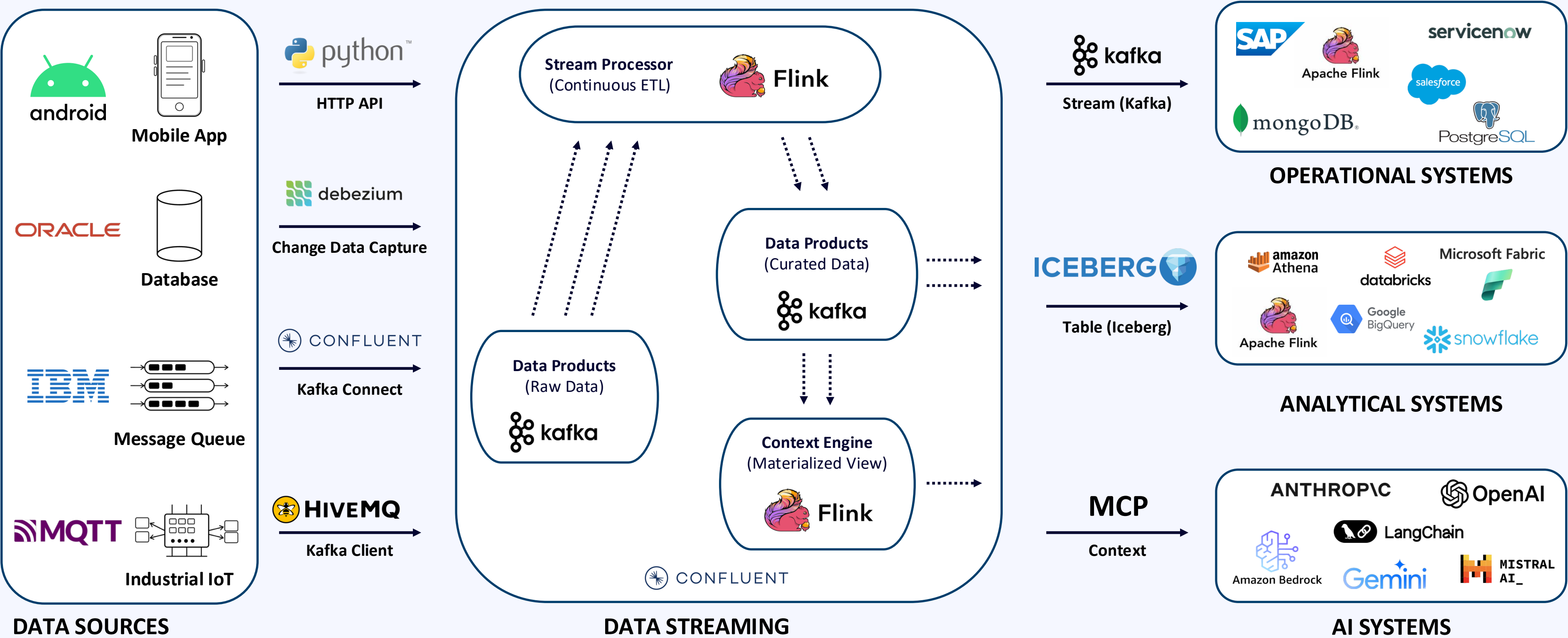
- Continuous Processing
- Real-time Analytics and Monitoring
- Live Event Processing and Alerting
- Transaction Processing
- ML Model Inference
- Contextual Agentic AI Execution

Data at Rest

- Historical Data Analysis
- Batch Processing and Reporting
- Near-Real-Time Analytics
- Business intelligence
- Long-term Storage and Retrieval
- ML Model Training
- Agentic AI Infrastructure

Shift Left Architecture 2.0

with Apache Kafka, Flink, Iceberg and MCP



Cardinal Health (Healthcare Manufacturing)

From 1 Kafka Topic in Confluent Cloud to 50+ Use Cases

CardinalHealth

About Cardinal Health

Essential to care™



**We deliver products and solutions to
improve the lives of people every day.**

We are a distributor of pharmaceuticals, a global manufacturer and distributor of medical and laboratory products, and a provider of performance and data solutions for healthcare facilities.

With more than 50 years in business, we are building on our expertise in distribution, products and solutions to innovate and create customer-centric solutions that address healthcare's most complicated challenges.



\$226B
of revenue in
FY24

Serve
~90%
of U.S.
hospitals



Serve
60K+
U.S. pharmacies

Digital
ecosystem to
support
medication
adherence
reaches

23M+
patients &
60+
payers

Operations in
30+
countries with
~48K
employees
worldwide



Provide
3.4M+
patients with
46K+
home
healthcare
products

Fortune
14
company

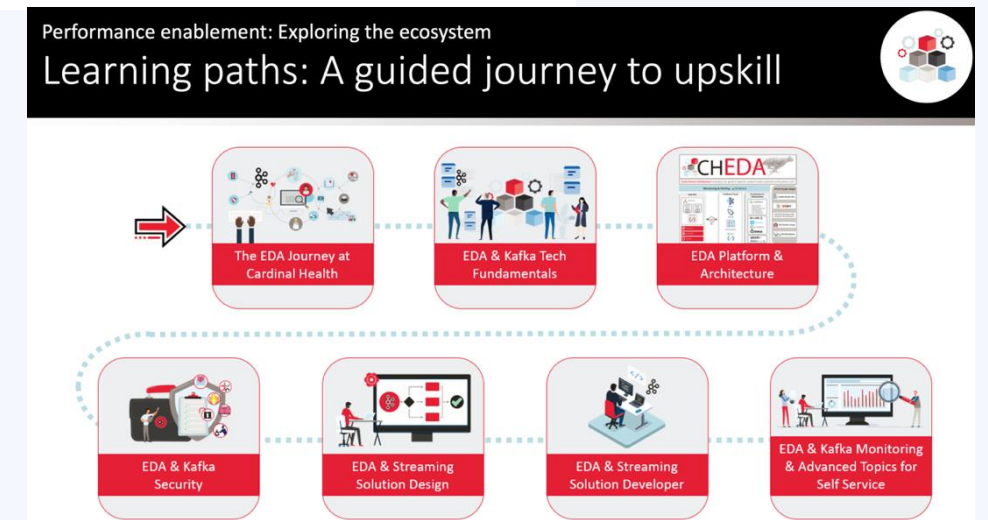
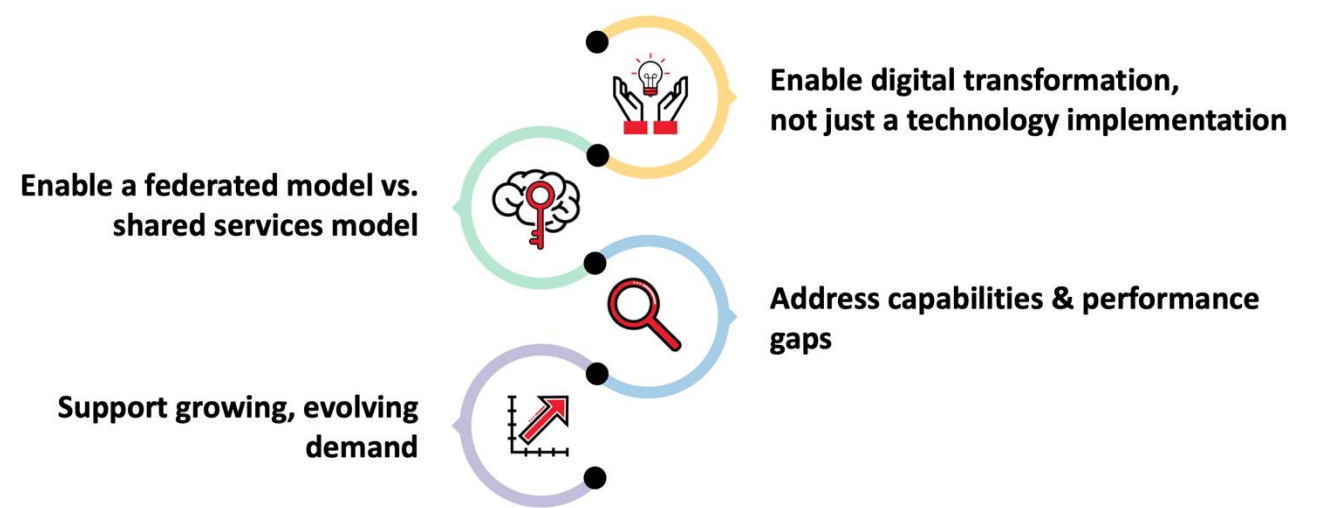
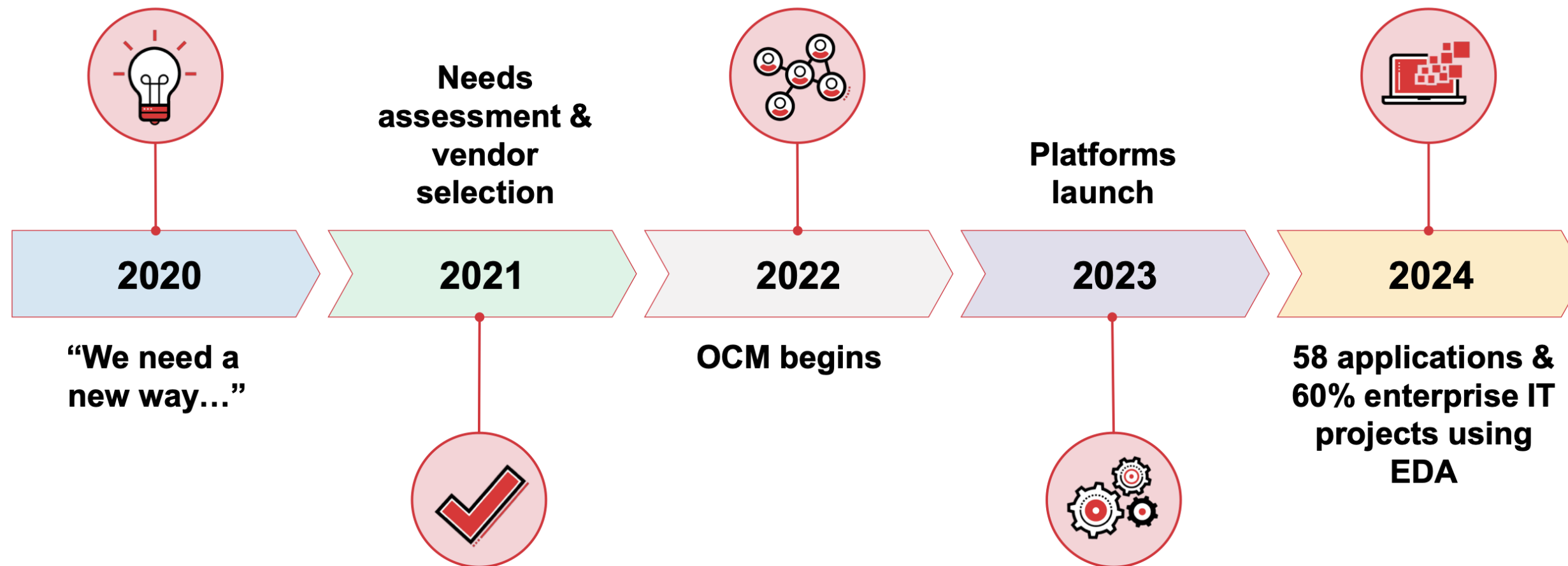


Serve **10K+**
specialty physician
offices & clinics



Cardinal Health (Healthcare Manufacturing)

From 1 Kafka Topic in Confluent Cloud to 50+ Use Cases



CareFirst BlueCross BlueShield



- Health insurance provider for millions of Americans
- Patient-centric, virtual-first primary care practice
- Confluent as integration platform to drive the innovation behind moving CareFirst toward a cloud-first, API-first approach and enabling distributed data throughout the organization
- Internal Kafka-as-a-Service enabling repeatable, scalable, and cost-effective patterns

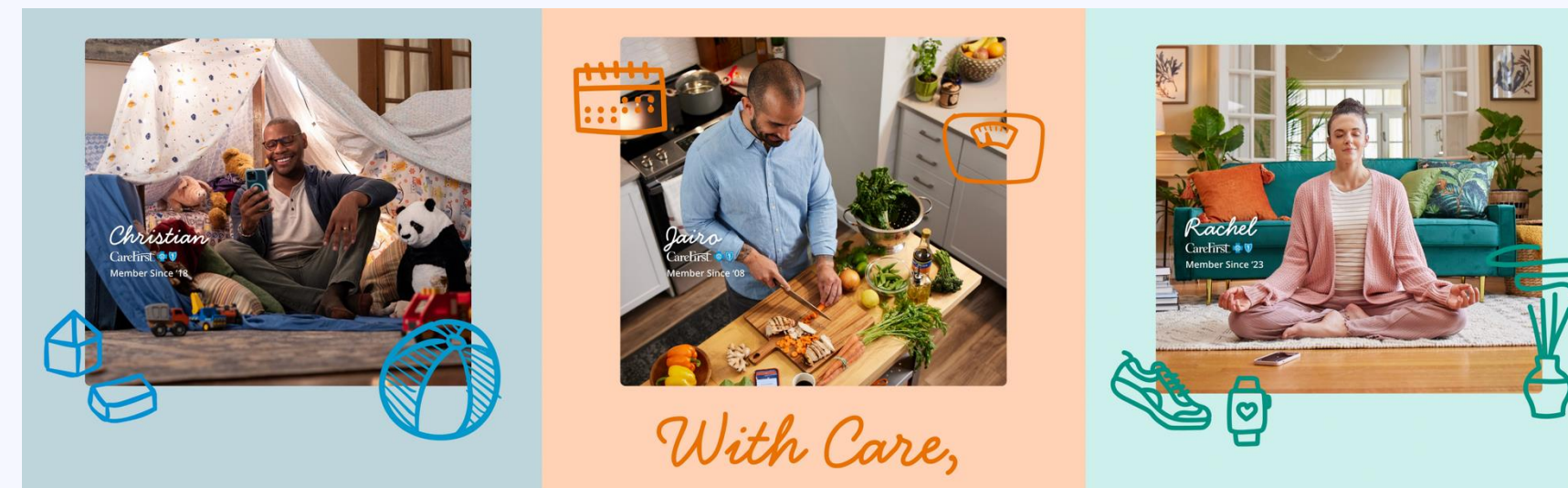


CloseKnit: A new patient-centric, virtual-first primary care practice.

Compassionate care for over 100 conditions through an easy-to-use app. 24/7/365. CloseKnit's care teams offer preventive and urgent care, behavioral and mental health, chronic condition prevention, medication management and more. [Learn More](#)

Use Cases around the Modernization of CareFirst's Claims Platform

- Member enrollment (API)
- Provider data updates (Streaming)
- Data analytics for mental health (Batch)



City of Hope - Predictive Sepsis Detection in Real-Time



- Private, non-profit clinical research center, hospital and graduate school located in the US
- Real-time prediction model that helps prevent the risk of deadly sepsis in bone marrow transplant patients

Data Streaming Platform

- Powered by Confluent Cloud on Microsoft Azure
- Five different Kafka topics: vitals, lab results, medication orders, ADT and substance administration
- Kafka also serves as the backup solution. If the prediction model crashes



“When using predictive models in a clinical application, the data and results need to be as real-time as possible to ensure timeliness and accuracy”

spectrumK – Processing E-Prescriptions



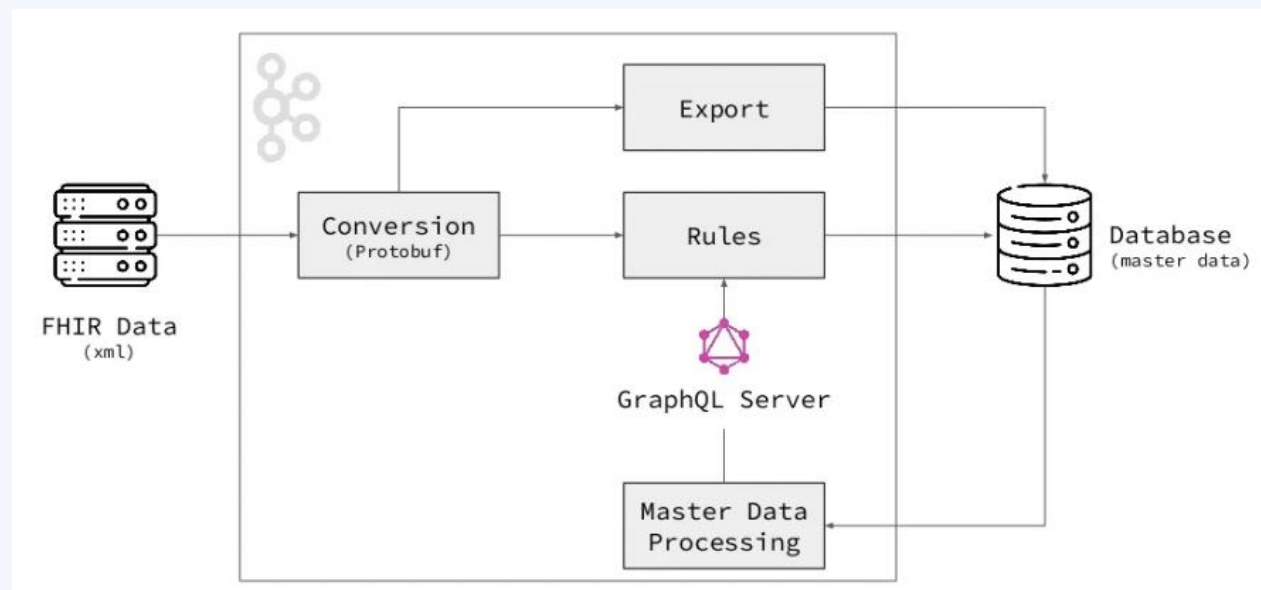
Healthcare service provider in Germany

Event-based system for processing E-Prescriptions of Germany's health insurance system

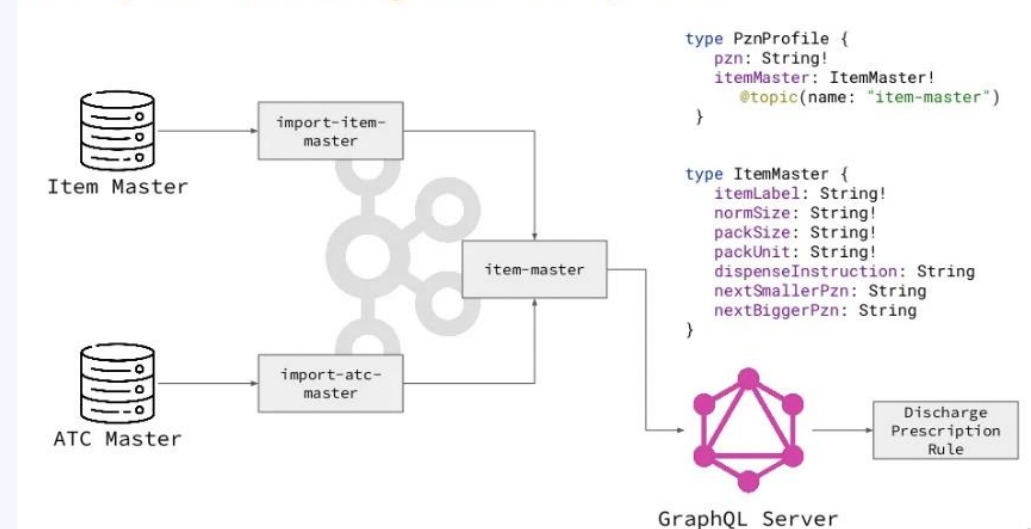
Technical details:

- Automatic conversion from HL7 FHIR schemas to Protobuf
- Integration of data sources through Kafka Streams
- GraphQL as the single interface for querying all sources

FROM PRESCRIPTION TO BILLING



Example: Discharge Prescription



FHIR

The billing schema (with dependencies) is described by:

- 4823 JSON files
- summing to 65MB
- and 1.548.506 lines

→ A custom Protobuf schema generator

- (more) comprehensible schema
- reduce message size by factor ~10
- existing tooling
- implementation for data conversion

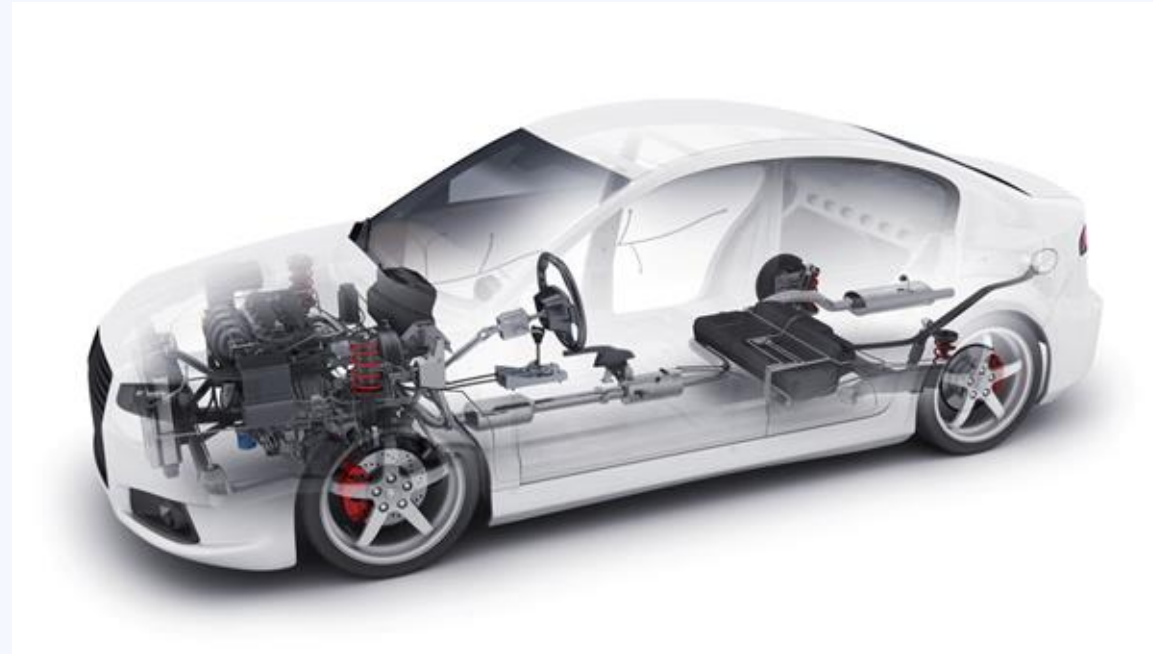
<https://www.confluent.io/resources/presentation/a-kafka-based-platform-to-process-medical-prescriptions-of-germanys-health/>

Confluent Completes Apache Kafka and Flink. Cloud-native. Everywhere.

Car Engine

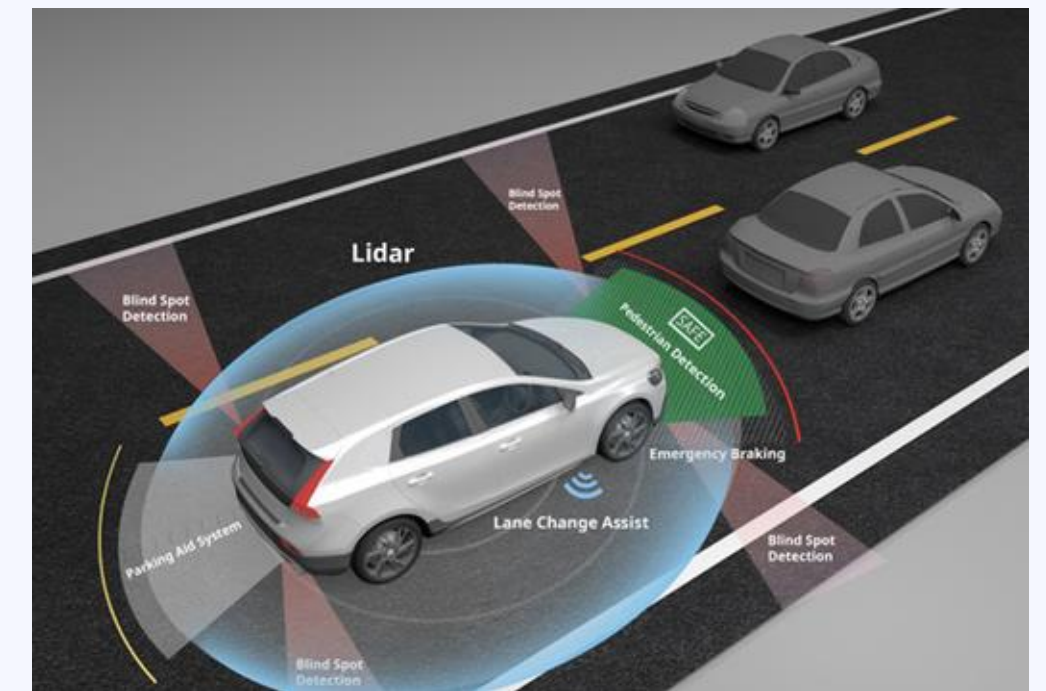


Car



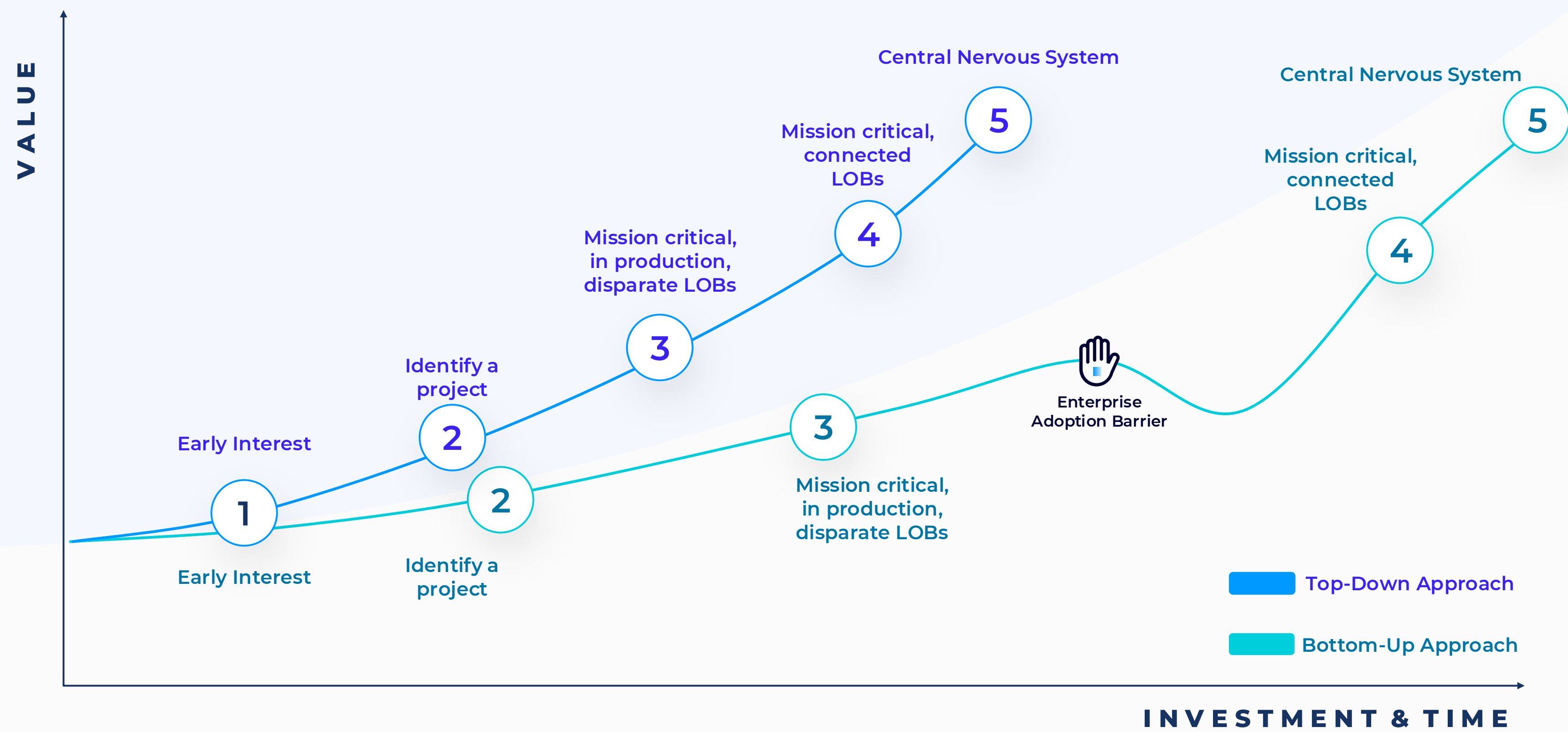
CONFLUENT
PLATFORM

Self-Driving Car



CONFLUENT
CLOUD

Data Streaming Maturity Model

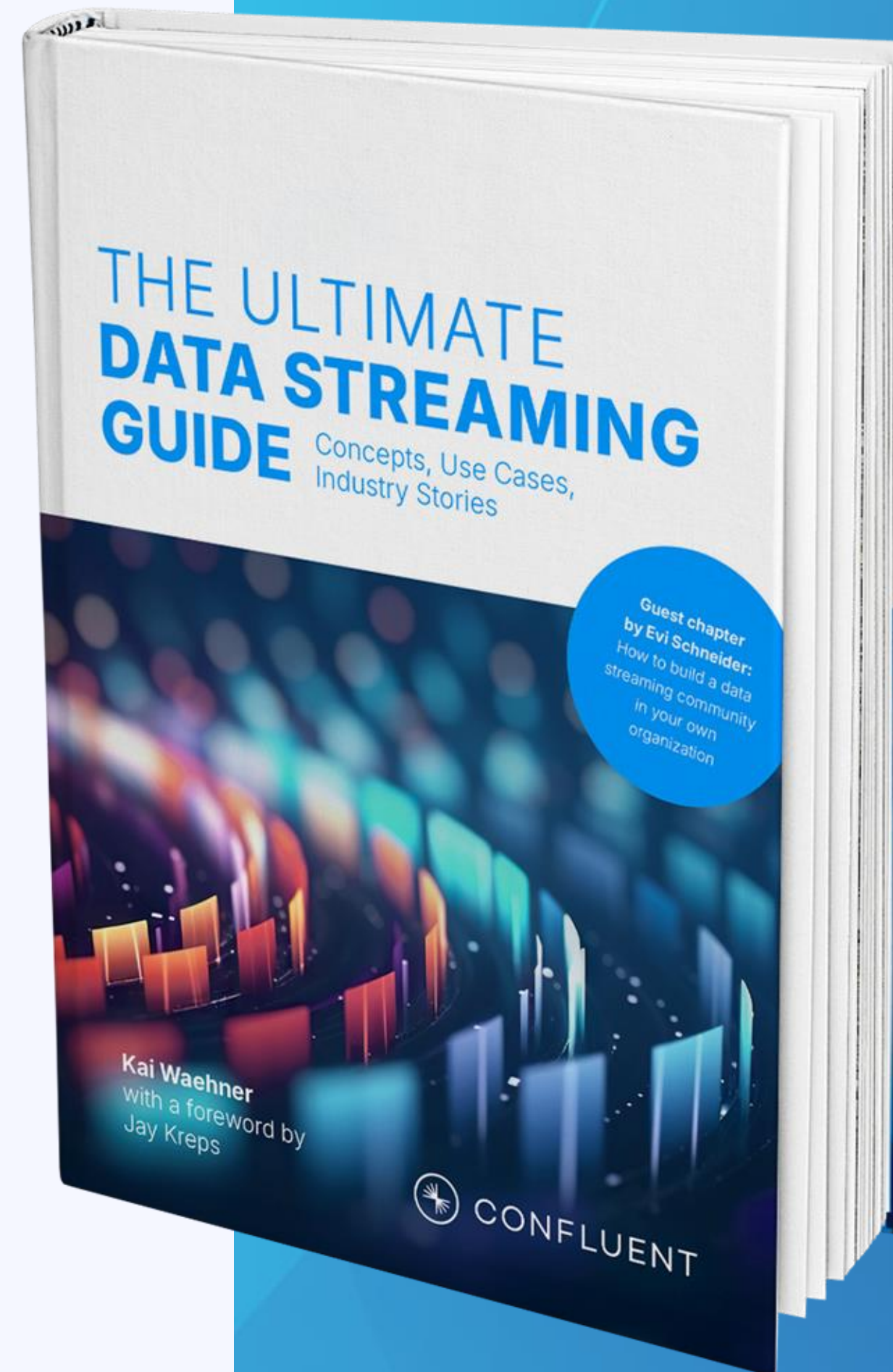


THE ULTIMATE DATA STREAMING GUIDE

Discover how businesses are leveraging real-time data for agility, scalability, and success.

Get your free eBook today—learn from real-world success stories and unlock your data's potential. Over 200 pages!

www.kai-waehner.de/ebook



Download
here!





Modernizing Life Science and Pharma with Data Streaming



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