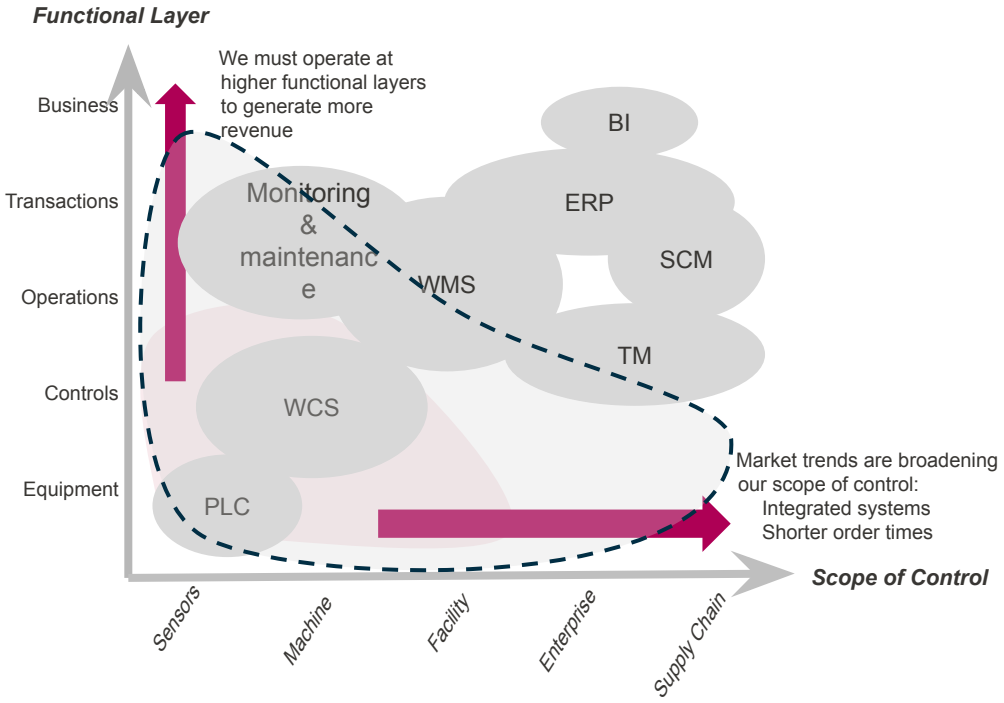
Project

A deep technical dive

Business Problem / Strategy
Become the premier MHI provider and Integrator



Current State of the Industry

- Fragmented landscape of point solution providers
- Takes an ecosystem of solutions

Position

- Dominant player in the Warehouse Execution System
- BUT on lower functional layers, and limited in scope

Extend Our Reach

- To address broader supply chain requirements, provide an integrated solution, Advanced Software focus on
  - Move to Cloud: Cloud systems, SaaS, Multi-Enterprise, Open platform
  - Consumer grade user interface
  - Big-Data
  - Distributed continuous flow fulfillment

Objective
A Holistic and Integrated Adaptive Architecture

Intralogistics Initiative

Distributed Continuous Flow
- Distributed Computation
- Operation Optimization
- On Demand
- **Adaptive Warehouse**

Key Technologies: Akka, Scala

Digitalization Initiative

Data Stream Processing
- Process vast amount of data
- Near real-time insights
- **Adaptive DSP**

Key Technologies: Kafka, Spark, Cassandra, InfluxDB, Prometheus, Grafana

Ecosystem Initiative

Cloud Systems & Deployment
- Next Generation User Interface
- Deployment & DevOps
- **Software as a Service**

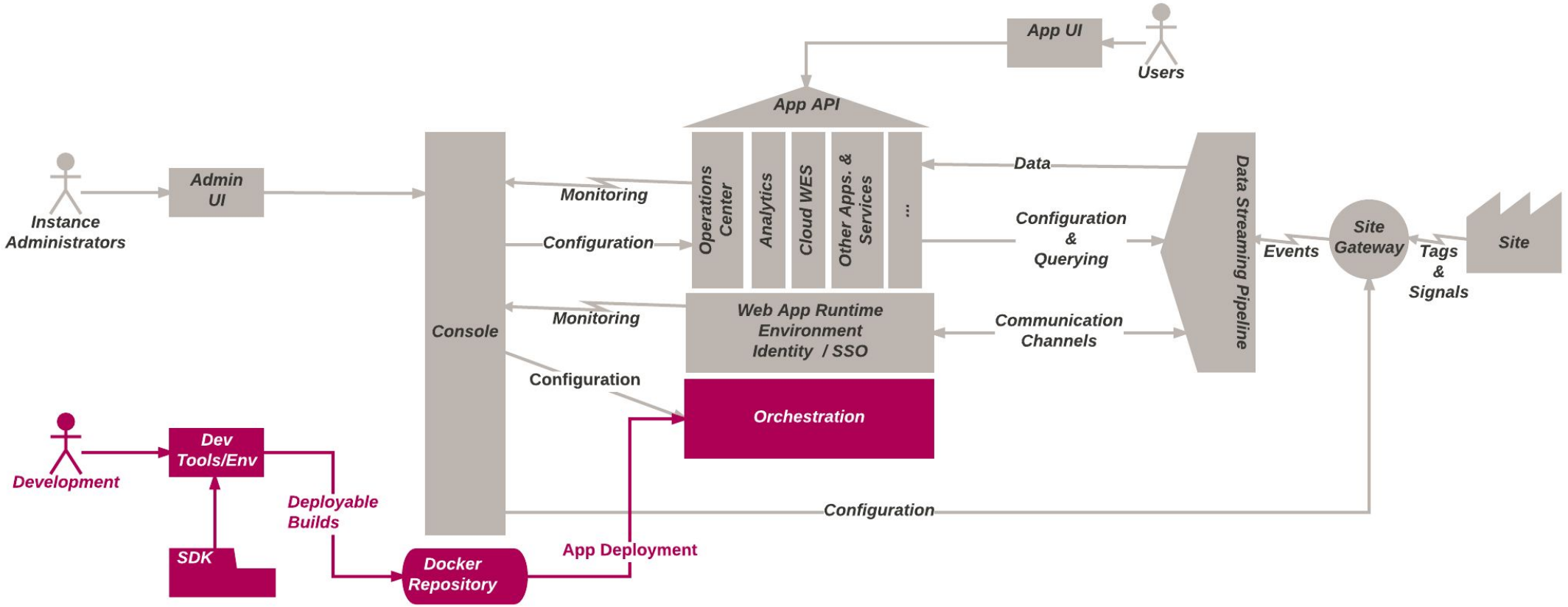
Key Technologies: Angular, Node, NPM, Typescript, Ansible, Docker, Kubernetes, Jenkins, AWS/GCP/Azurre

Multi-Enterprise System
- Secured data sharing
- **Integrated Supply Chain**

Key Technologies: Java, J2EE, Wildfly, MySQL, Kong, Keycloak

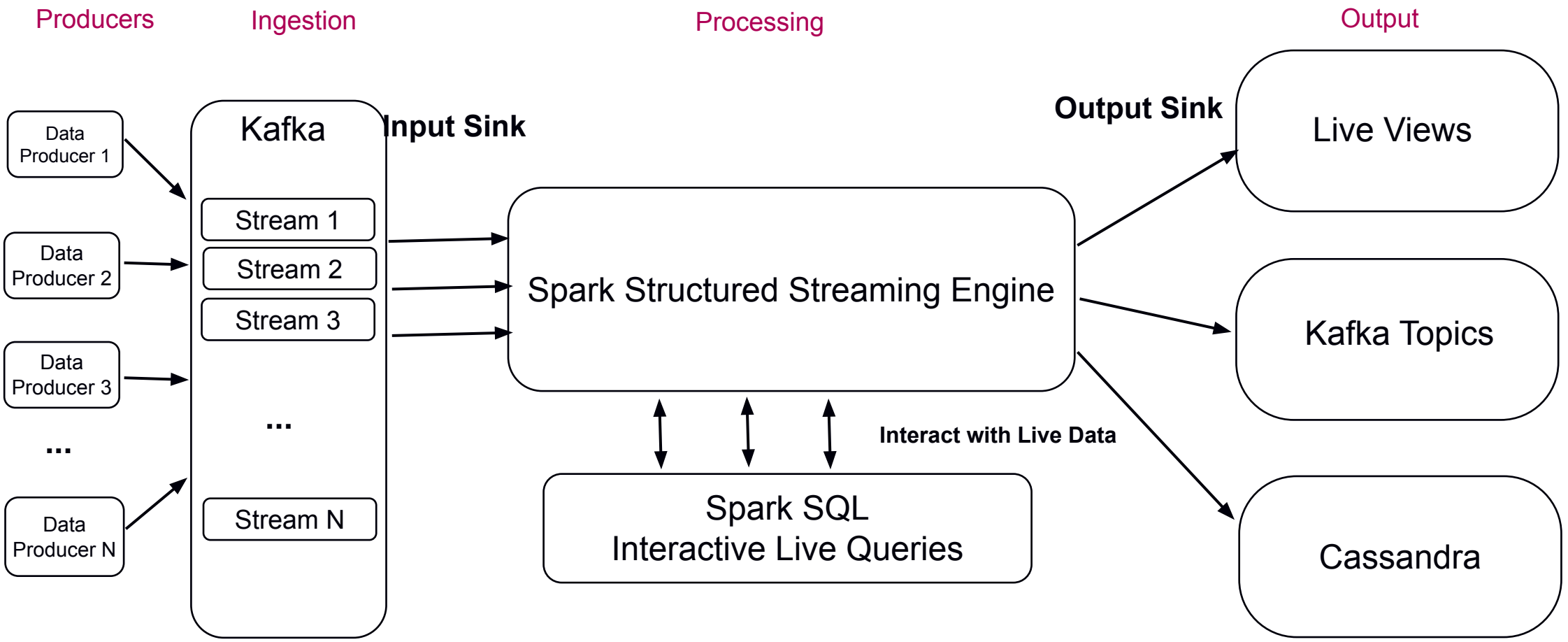
Cloud Systems

A single cloud-based platform to host all customers and their partners in a secure and cost-effective way. Run-time configuration broadens the customer base, reduces deployment cost, and simplifies upgrade. Meanwhile the integration in a single platform enables collaboration among customers across the supply chain to increase efficiency.

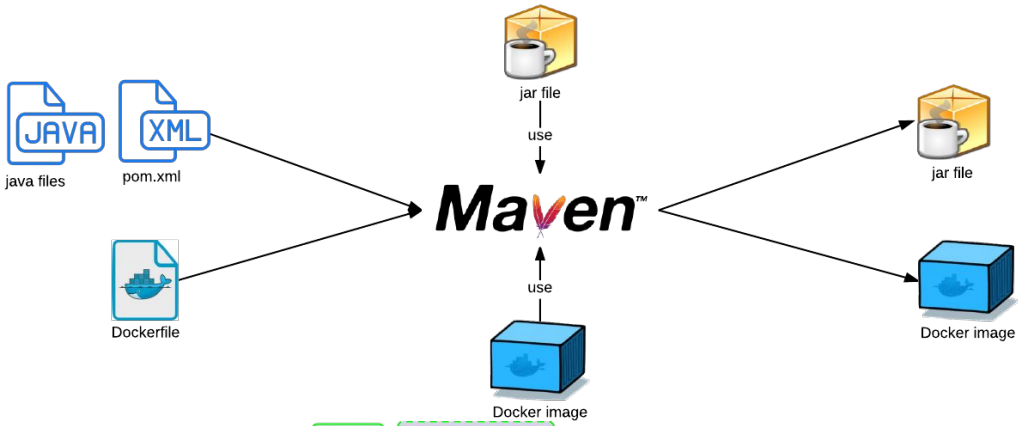


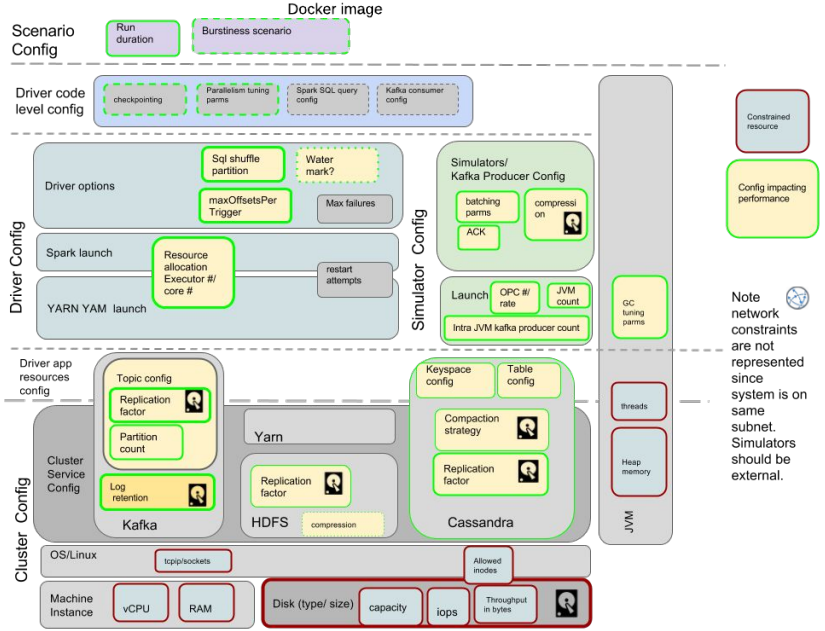
Data Streaming Processing

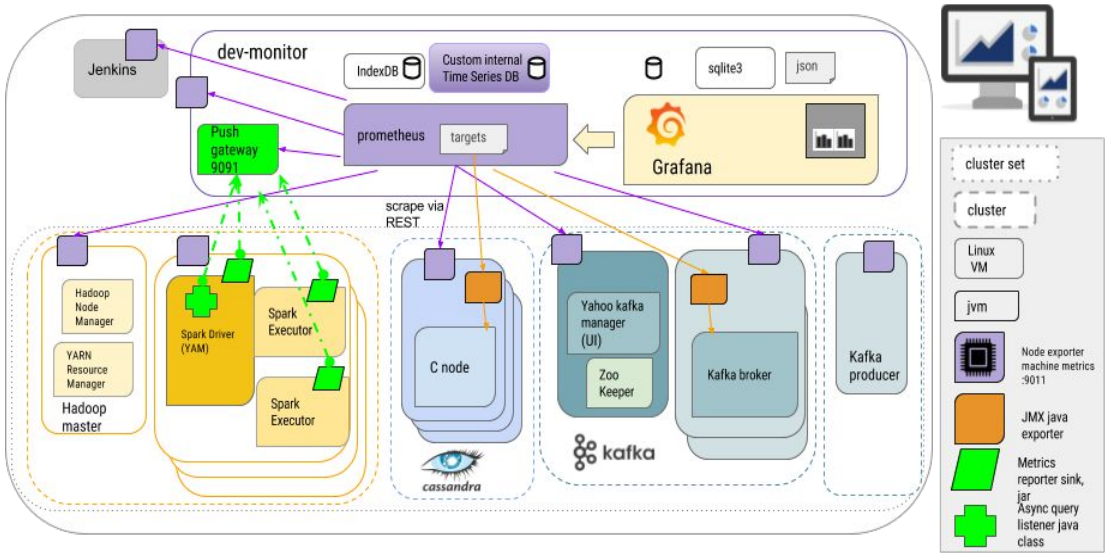
A configurable cloud-based data streaming service offering real time analytics to identify fleet and warehouse operating trends, provide key users and automated systems with actionable data to optimize operations, and proactively fix service equipment to avoid disruptions.



Cloud Systems / Dev Ops







Cloud Systems / User Experience

- Support each customer's requirements in brand, form, attribute, entity, workflow via configuration

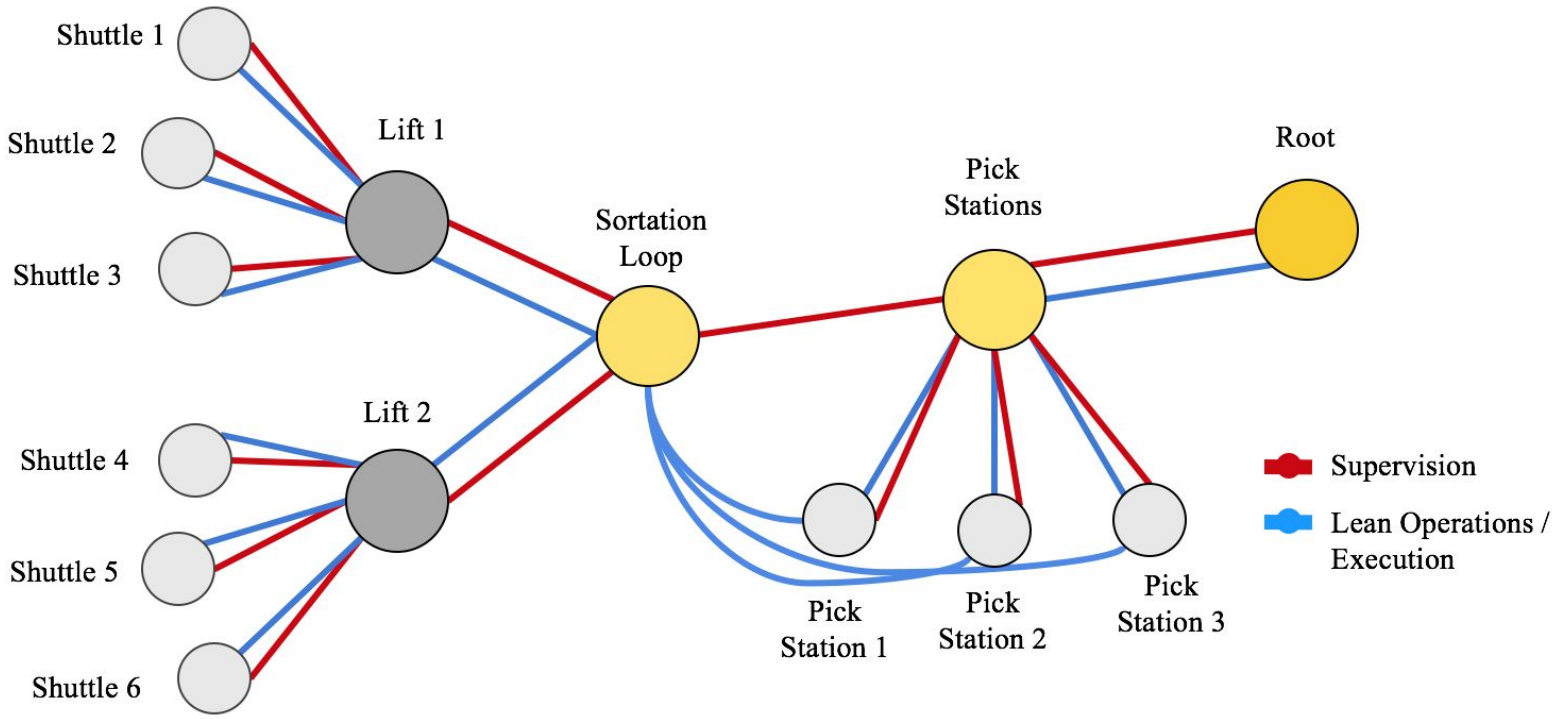
- **Differentiation**
  - Data driven UI
  - Separation of front and backend code
  - Zero delay compilation

- **Partners**
  - STILL, Egemin, DiQ

Distributed Continuous Flow

On-demand distributed computing order fulfillment to enable scalability, flexibility and reliability as e-Commerce and Omni-channel DCs demand shorter cycle time despite increasing volume, SKUs and order variability.

Switch order fulfillment approach from wave-based to continuous flow, maintaining all the advantages of batch processing while eliminating wave-based shortcomings such as low productivity during wave transitions/wave tails, longer cycle times, lack of flexibility for dealing with high priority orders and exception handling.



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