



No Data, No AI: Bridging the Gap in Smart Manufacturing for IIoT

Speakers



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Agenda

- **Introduction**
- **Discussion/Presentation**
- **Main Demo**
- **Q&A**



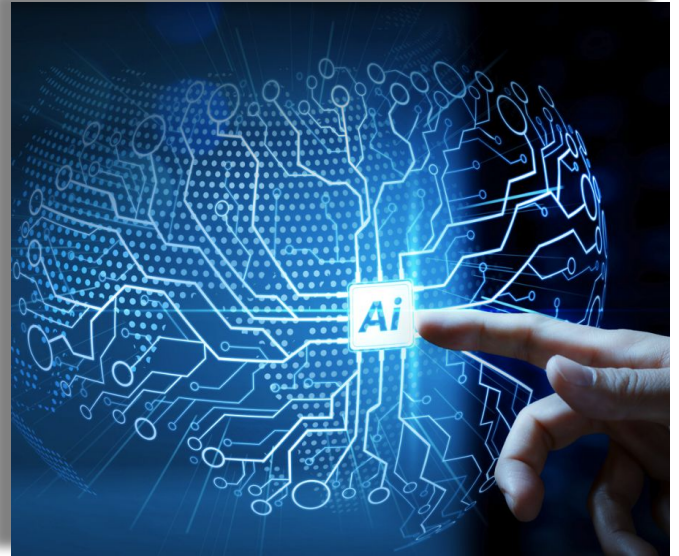
Introduction

- AI's dramatic rise is only set to continue in the coming years - [PwC predicts](#) that AI will contribute a staggering **\$15.7 trillion** to the global economy by the **year 2030!**
- Whether it is language processing chatbots or state-of-the-art diagnostic tools, AI is well and truly changing the texture and feel of the world around us.
- However AI needs data to function
- The quality of an AI's predictions and decision-making is only as good as its data set.
- Having good quality, normalized, contextualized and timely allow AI systems to perform their tasks efficiently



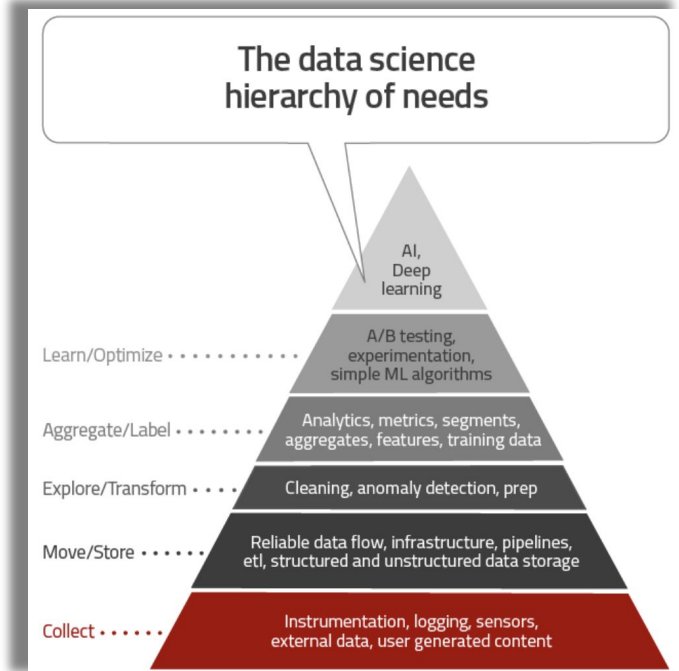
Key Use cases for AI

- By embedding IoT sensors into vehicles, sophisticated AI systems can support **connected cars** by predicting engine failure and optimizing battery performance.
- Modern **manufacturers** extensively rely on AI to design smarter products, predict machine failures, make product assembly more efficient using robots and cobots, and streamline supply chain management.
- **Oil and Gas** companies rely on AI for reservoir analysis, drilling optimization, anomaly detection in pipelines, safety monitoring, emissions reduction and much more.
- **Logistics companies** use AI for enhancing demand forecasting, damage detection, visual inspections, automated warehousing and other use cases.

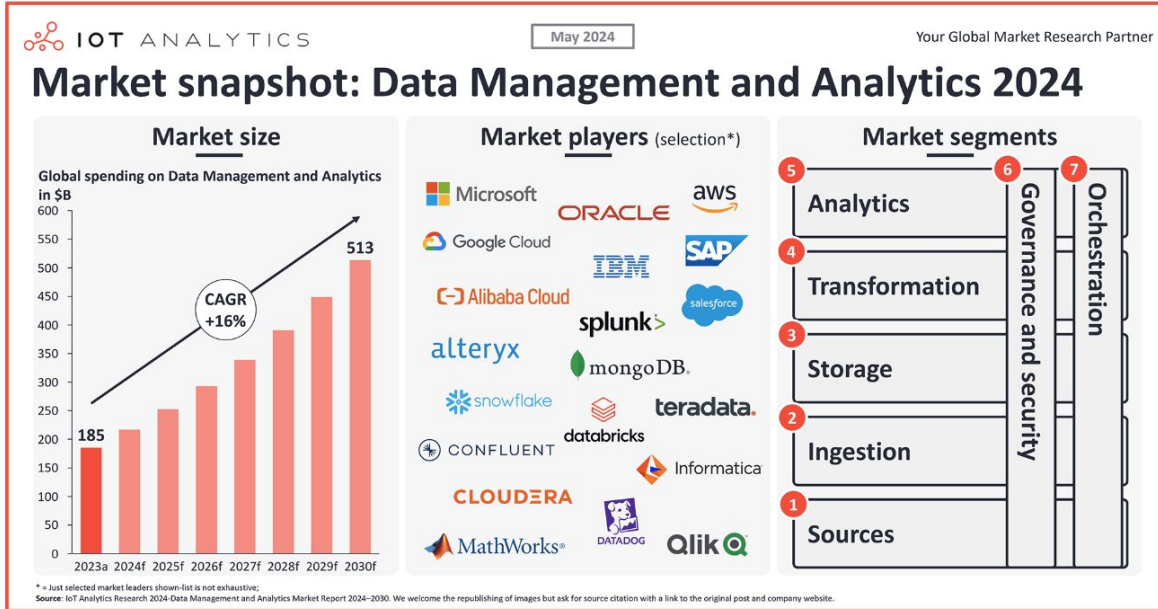


Data is the Lifeblood of AI

- Every step of the data science hierarchy needs good data to get to AI as illustrated to the right.
- At the core of every AI system lies a fundamental truth regarding data
- The quality and quantity of data it ingests are paramount to its effectiveness.
- In essence, data is the lifeblood that fuels AI algorithms, allowing them to learn, adapt and make decisions.
- All aspects of AI—machine learning models, continuous learning, generalization and predictive and descriptive analytics—are dependent on massive data sets.
- The more diverse and comprehensive the data, the better AI can perform.
- This is why data is often referred to as the "**training fuel**" for AI.

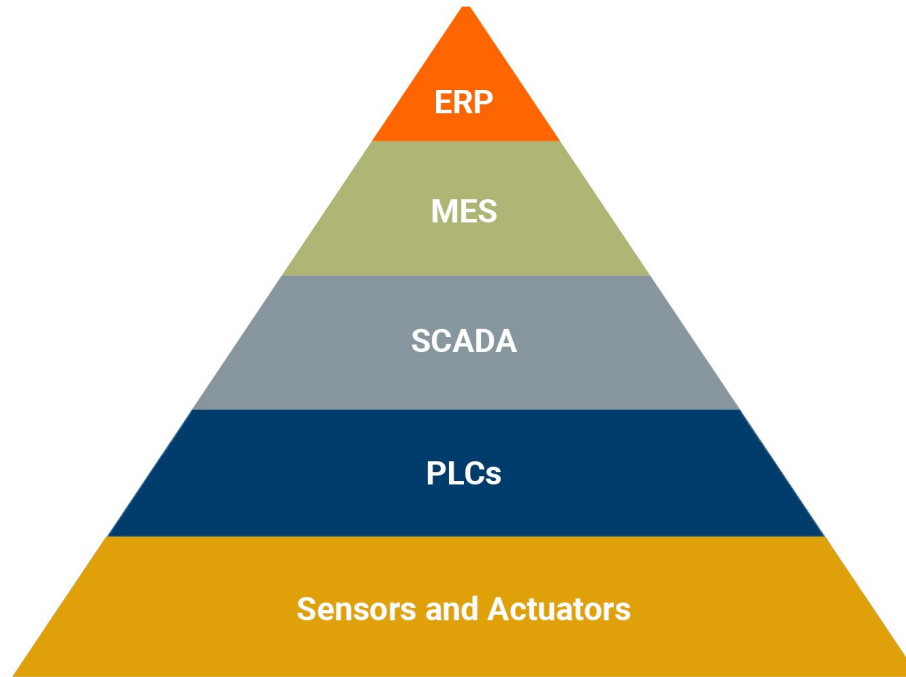


AI driving Data Management Market

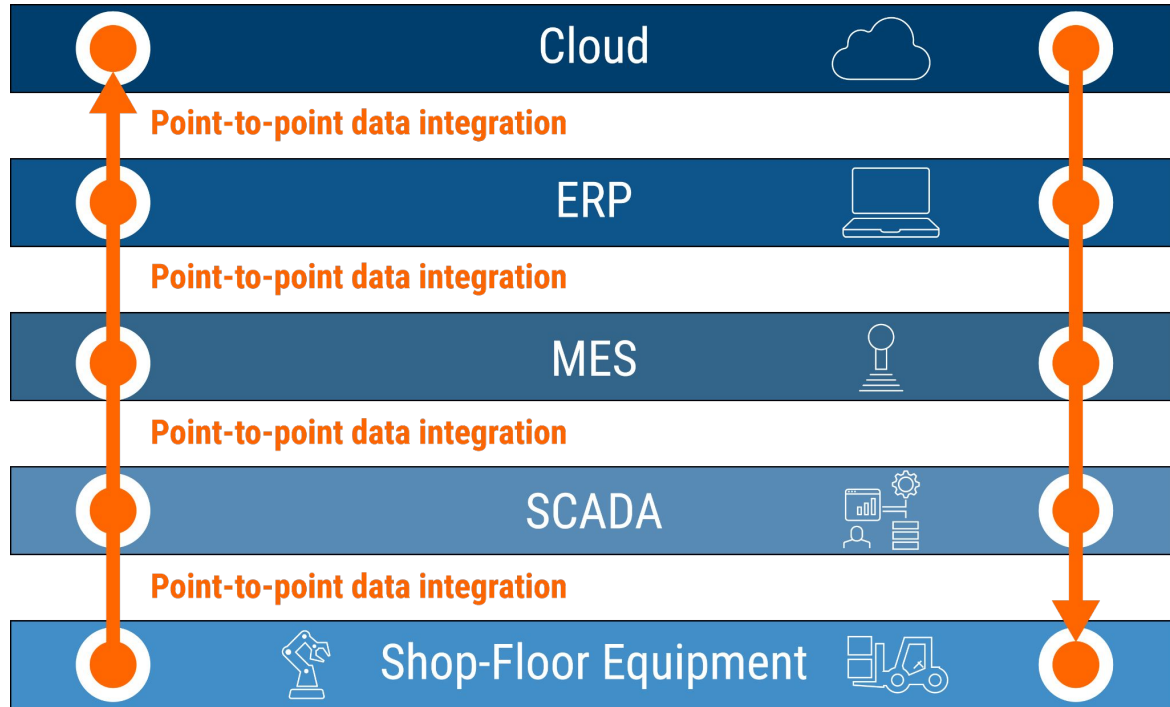


- AI is projected to drive significant growth in the data management market, which is expected to reach \$513.3 billion by 2030 – according to a new report by IoT Analytics.
- AI relies on robust data management across 7 key components to build effective AI models: sources, ingestion, storage, transformation, analytics, governance/security, and orchestration.

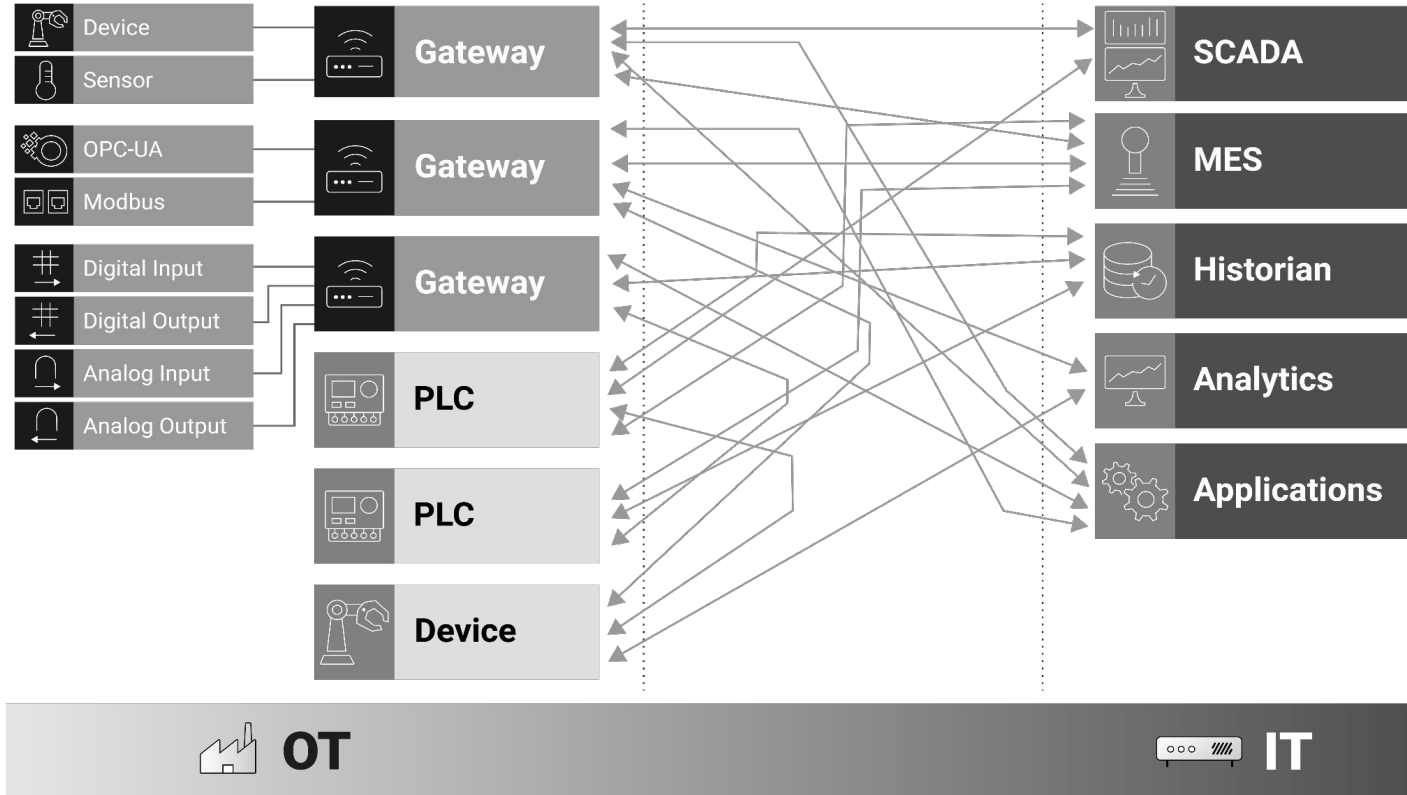
Computer Integrated Manufacturing (CIM) pyramid



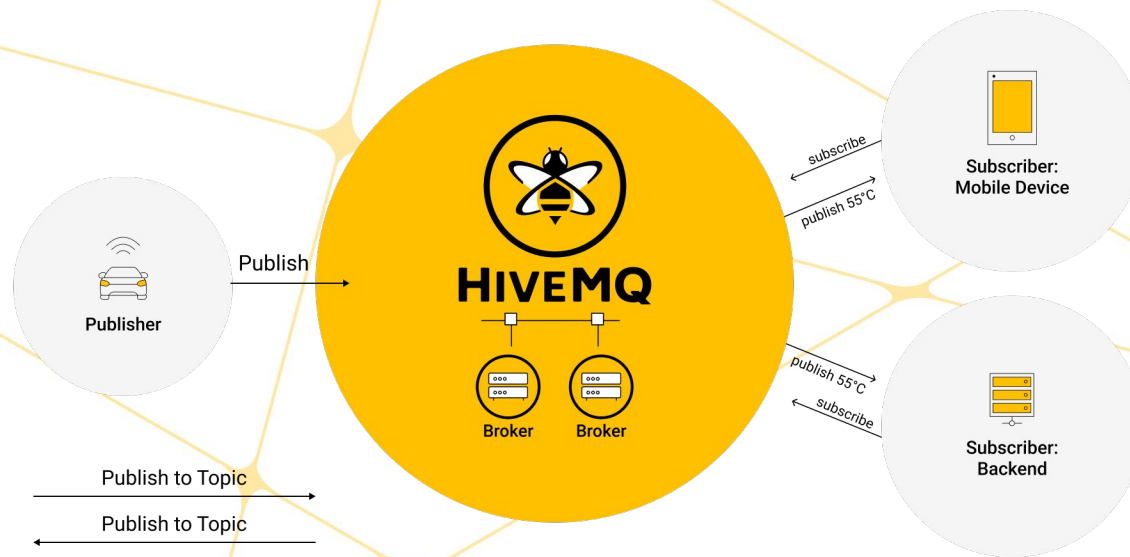
Traditional Industrial Data Integration



Traditional Industrial Data Integration



MQTT - the de facto IoT standard protocol

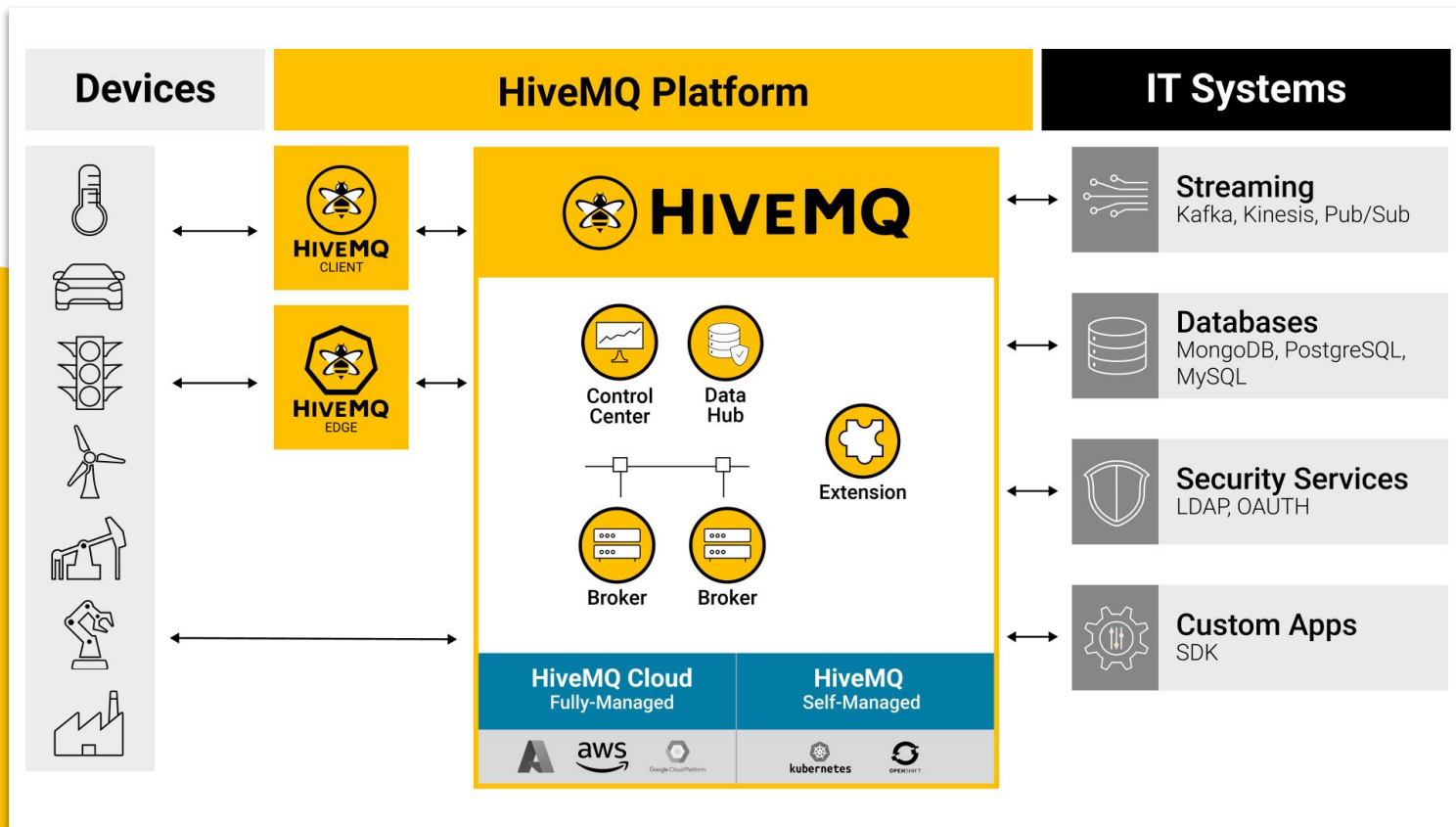


**Lightweight and efficient
publish and subscribe**

**Reliable bi-directional
data transport**

**Designed for devices
with stateful context**

The HiveMQ Platform



Key Industries



Connected Car & Mobility



Manufacturing & Industrial Automation



Transportation & Logistics



Energy

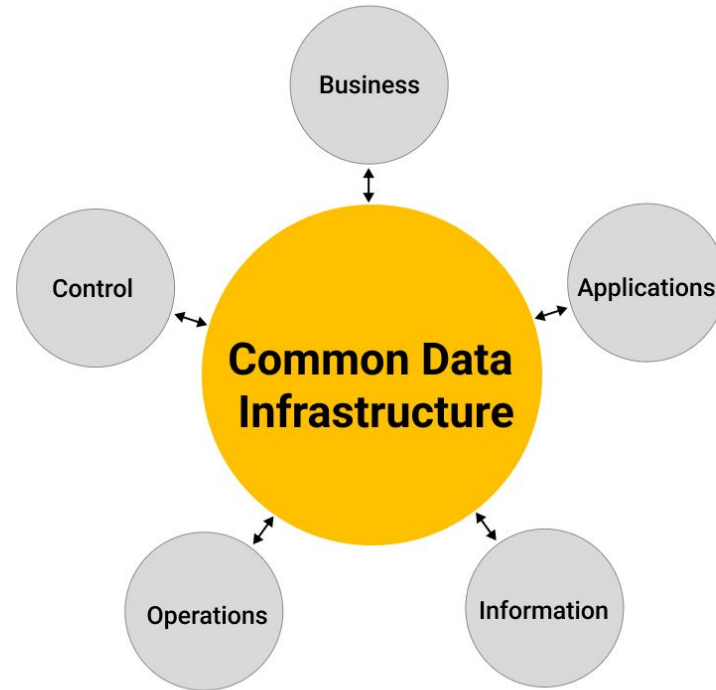


Unified Namespace

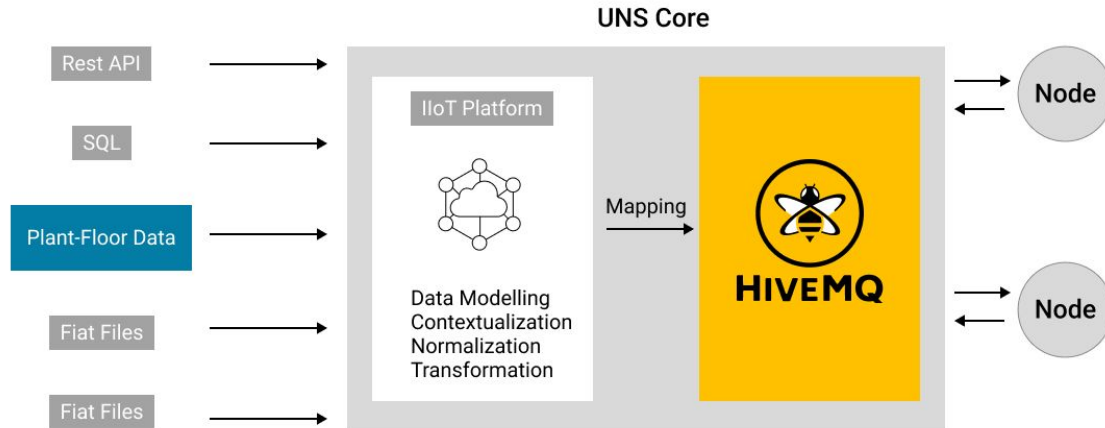


Foundations of Unified Namespace

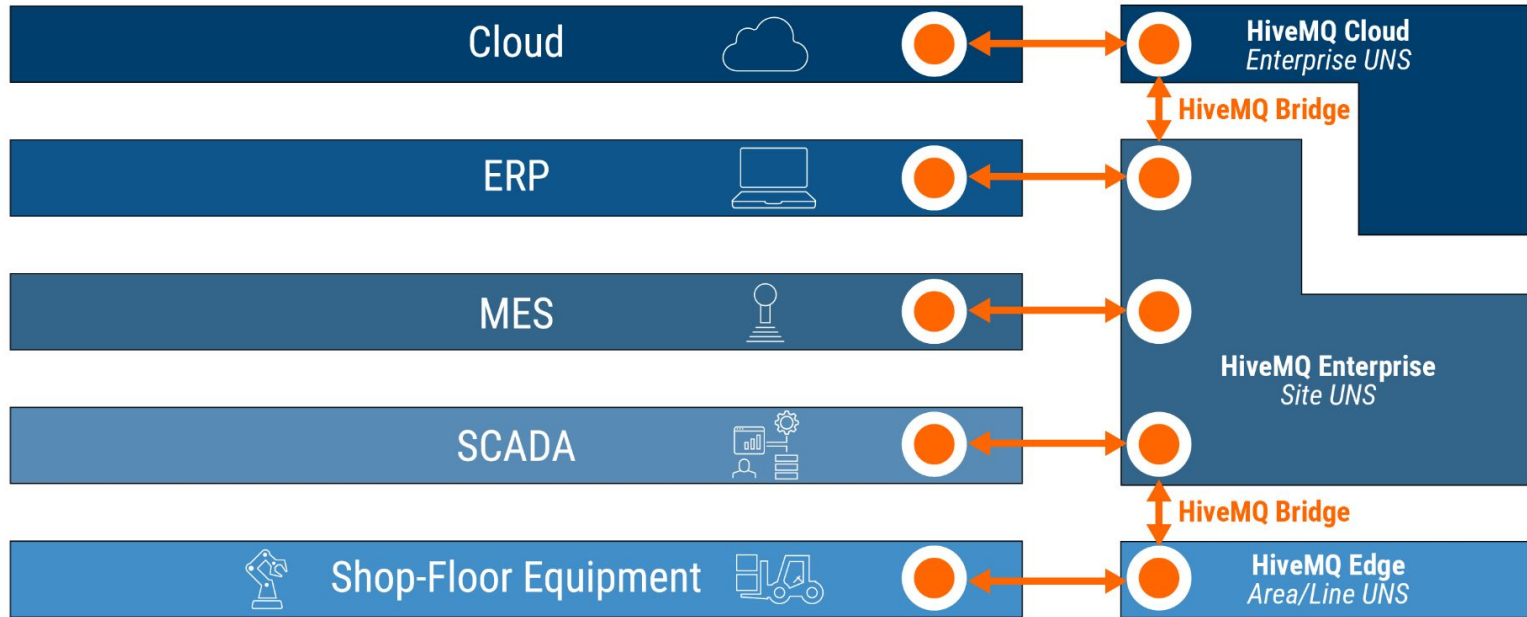
- Edge Driven
- Open Architecture
- Lightweight
- Report by Exception



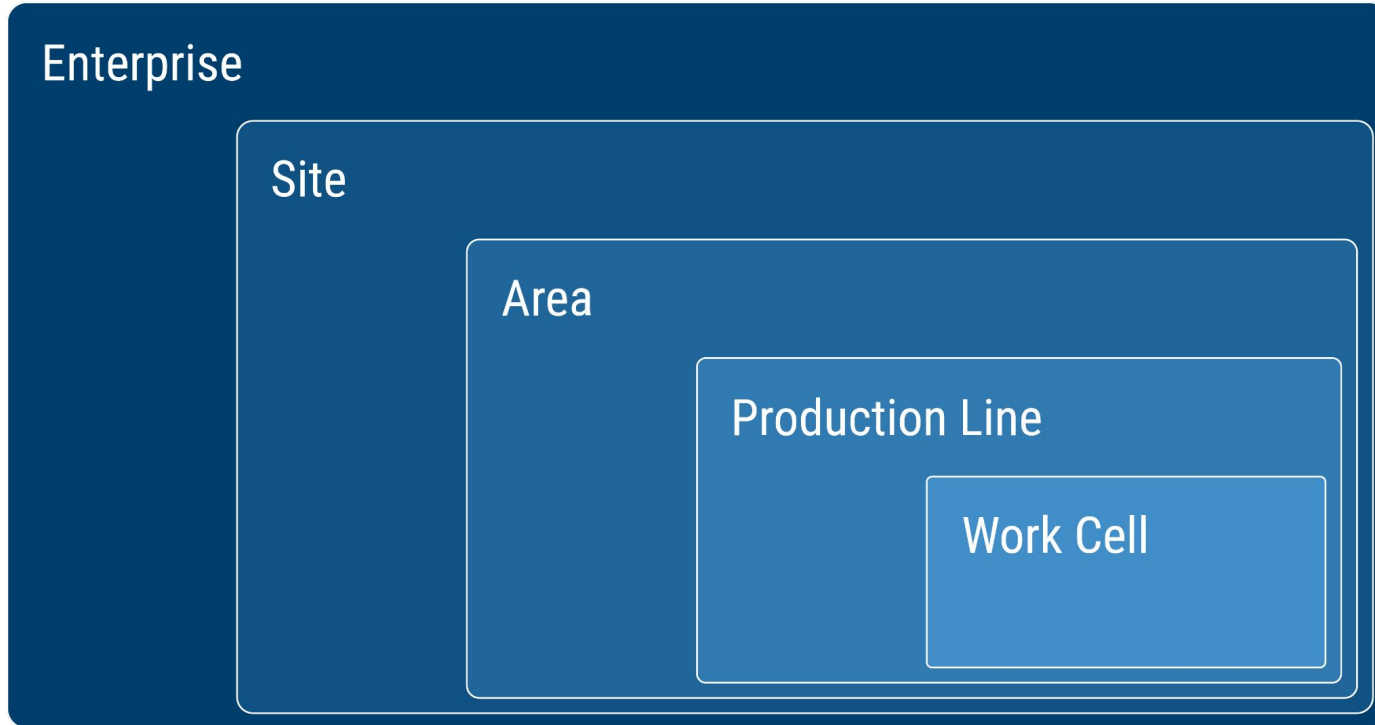
The Core of Unified Namespace



Reference Architecture Model



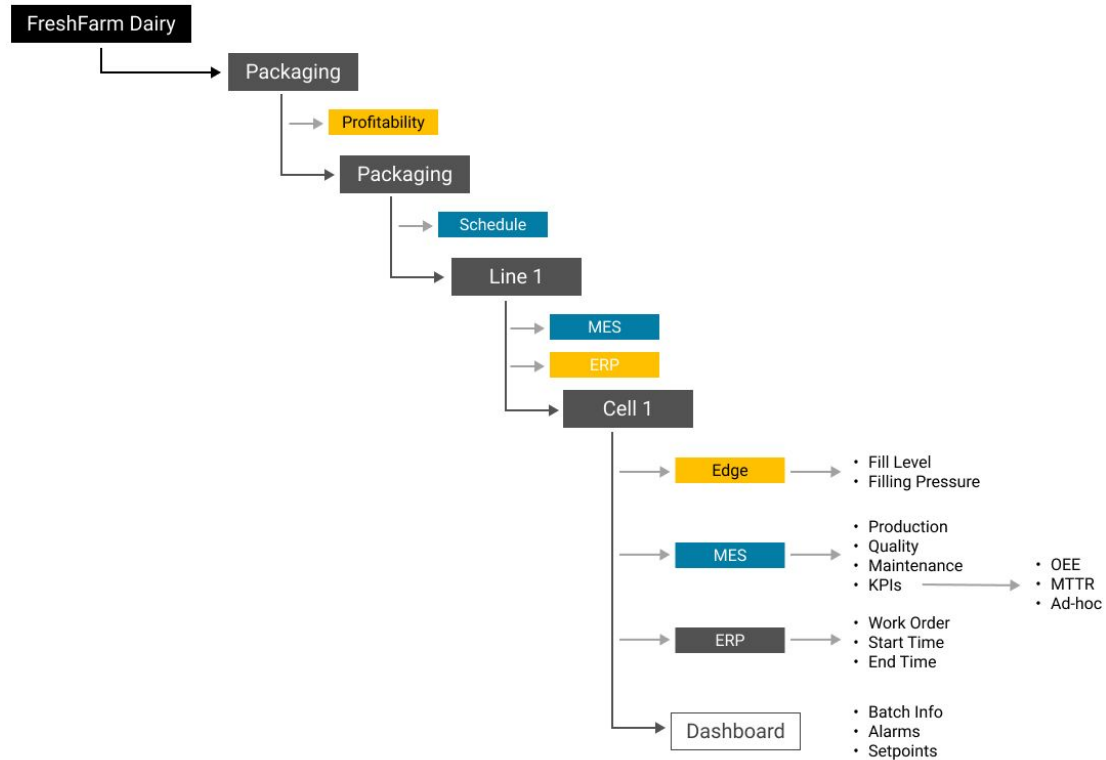
Best Practices for Structuring the UNS



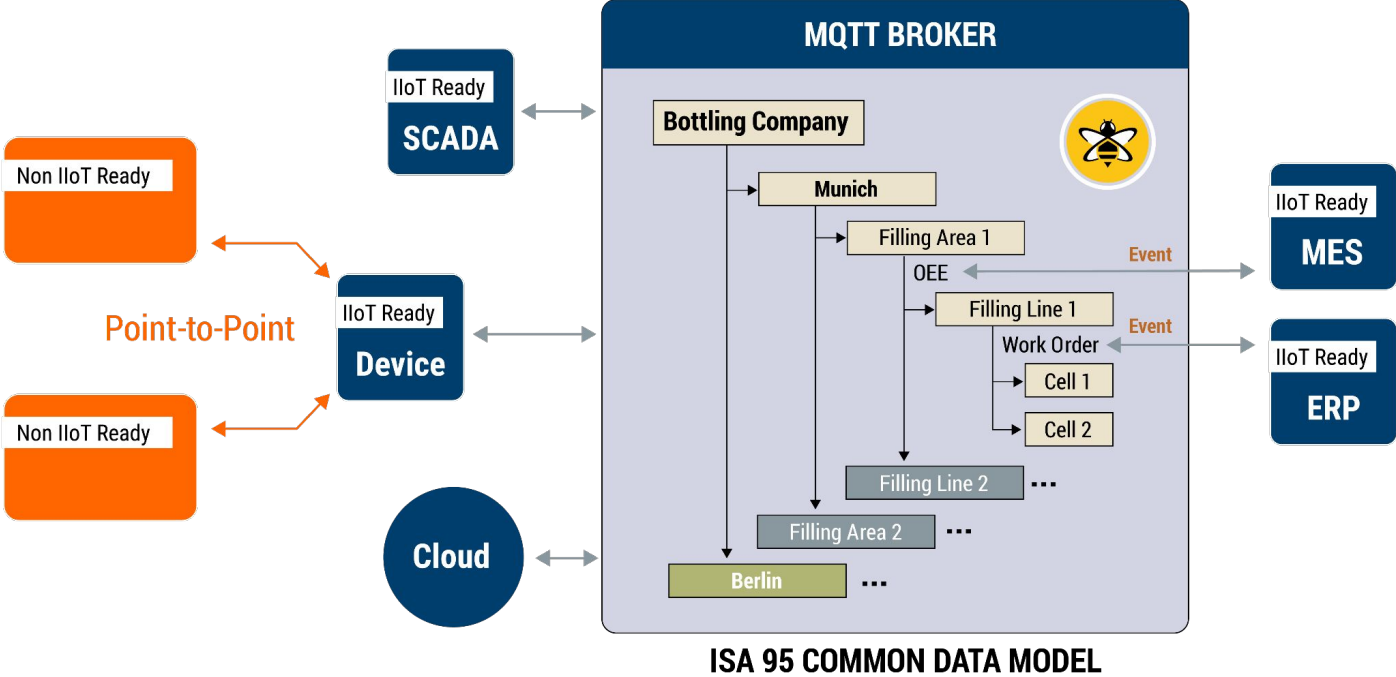
ISA 95 Common Data Model



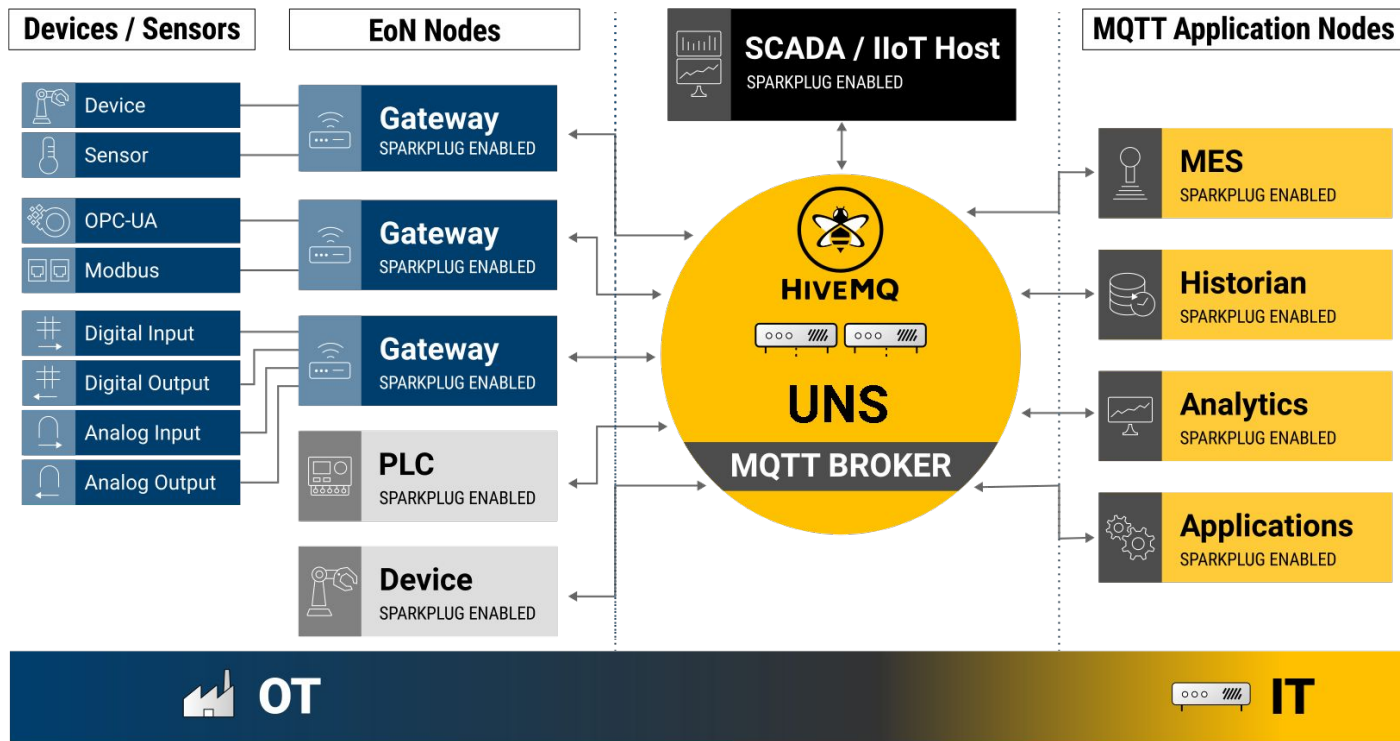
UNS Semantic Hierarchy



Example of a UNS Enterprise Structure



Where Does The Unified Namespace Live?



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Demo

Enabling Relevant IIoT Data for AI Use Cases



Q&A

Do you have any questions for our speakers?

