



# FactoryTalk® DataMosaix™ Deep-dive

expanding **human possibility**®



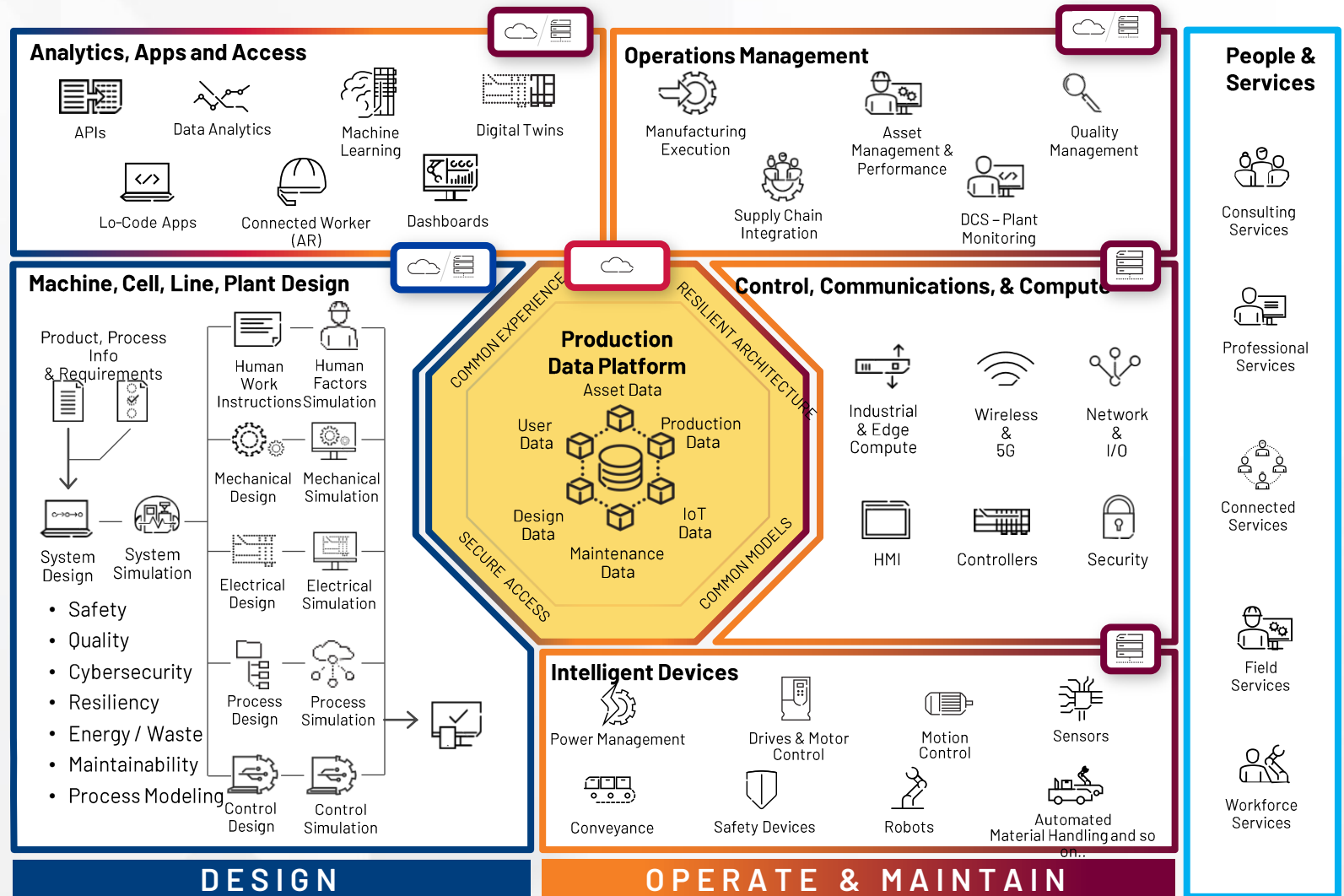
PUBLIC

# The Connected Enterprise<sup>®</sup> Production System

Transforming manufacturing  
throughout the lifecycle

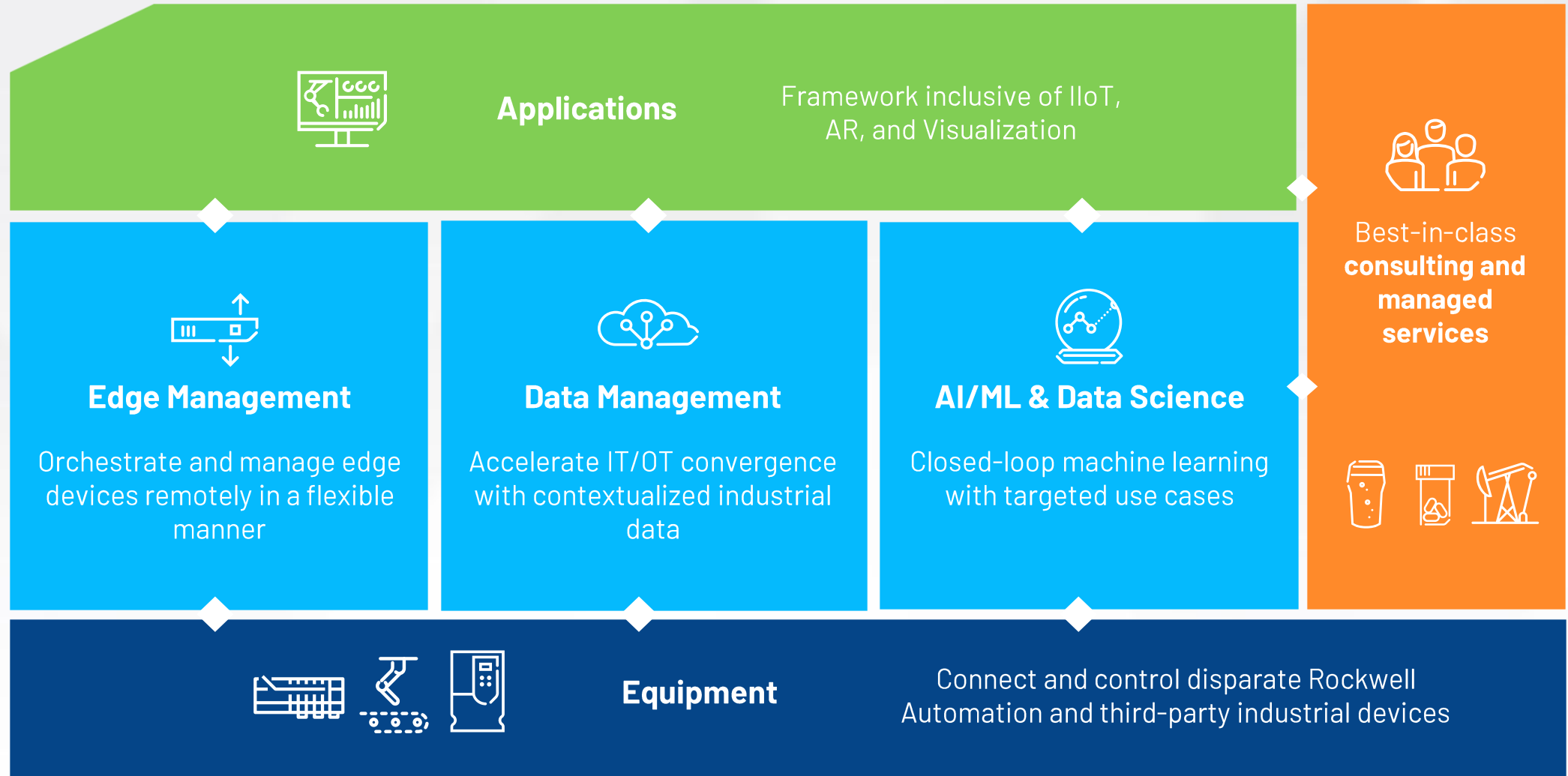
Using data and automation to  
connect people, processes and  
tools so they can operate at  
maximum capacity

Engineered for agility, scalability  
and security with data at its core

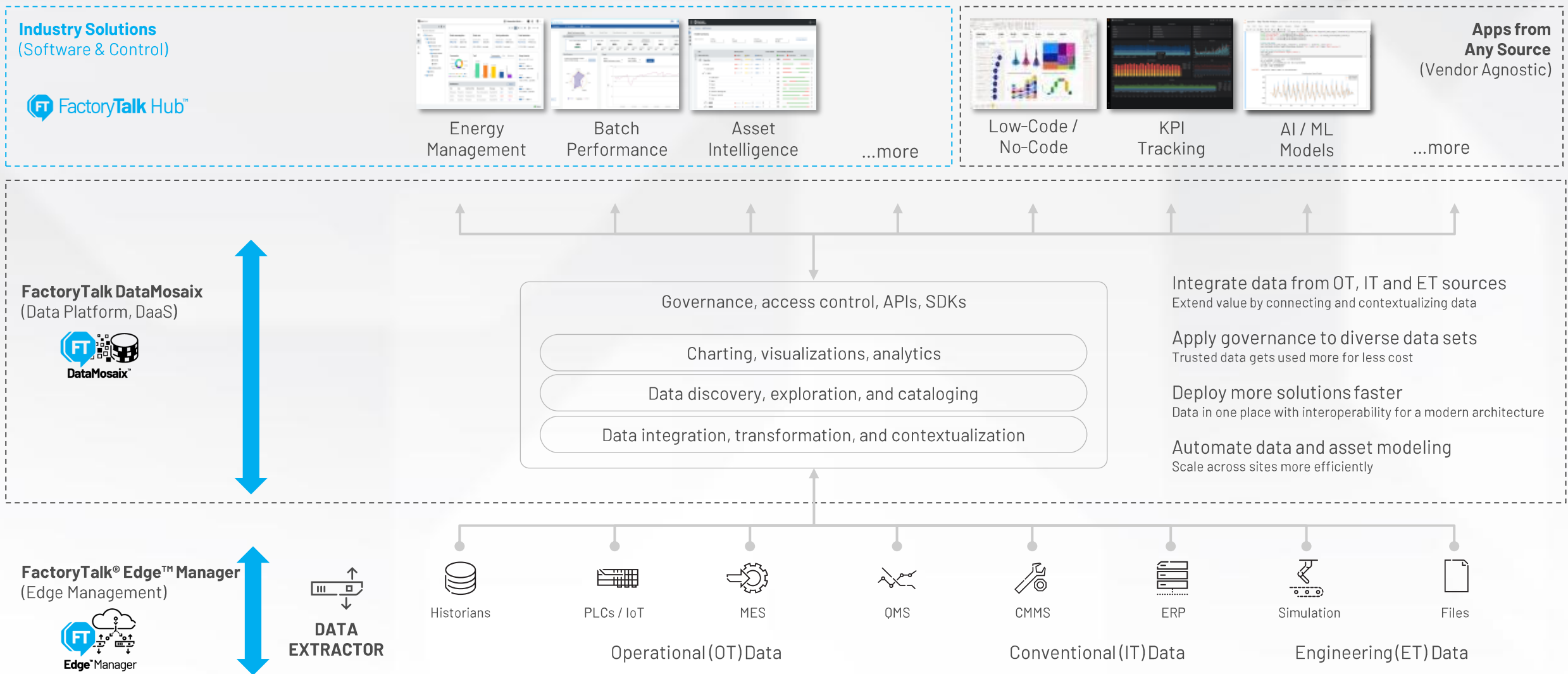


# FactoryTalk® Data, Edge and Analytics Platform

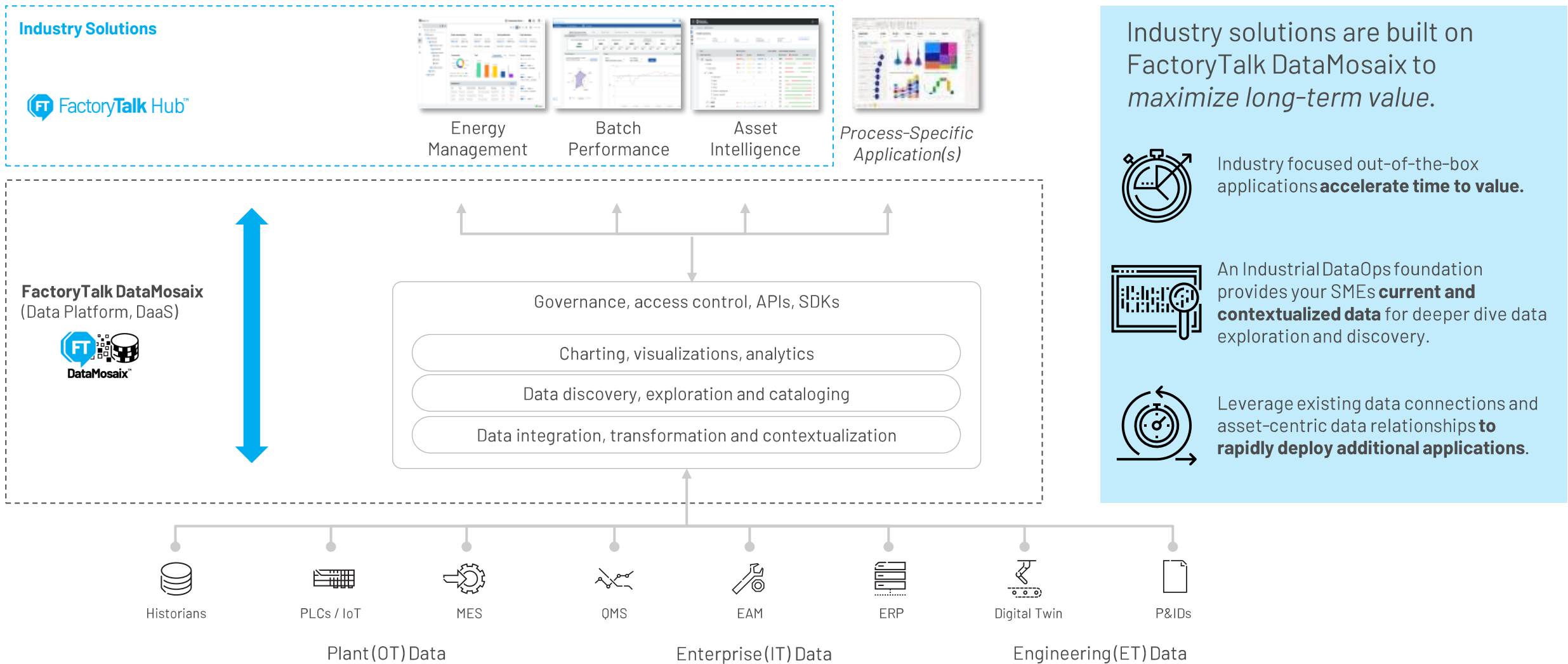
Comprehensive edge-to-cloud platform for business outcomes



# FactoryTalk® DataMosaix™ at the center of the app strategy

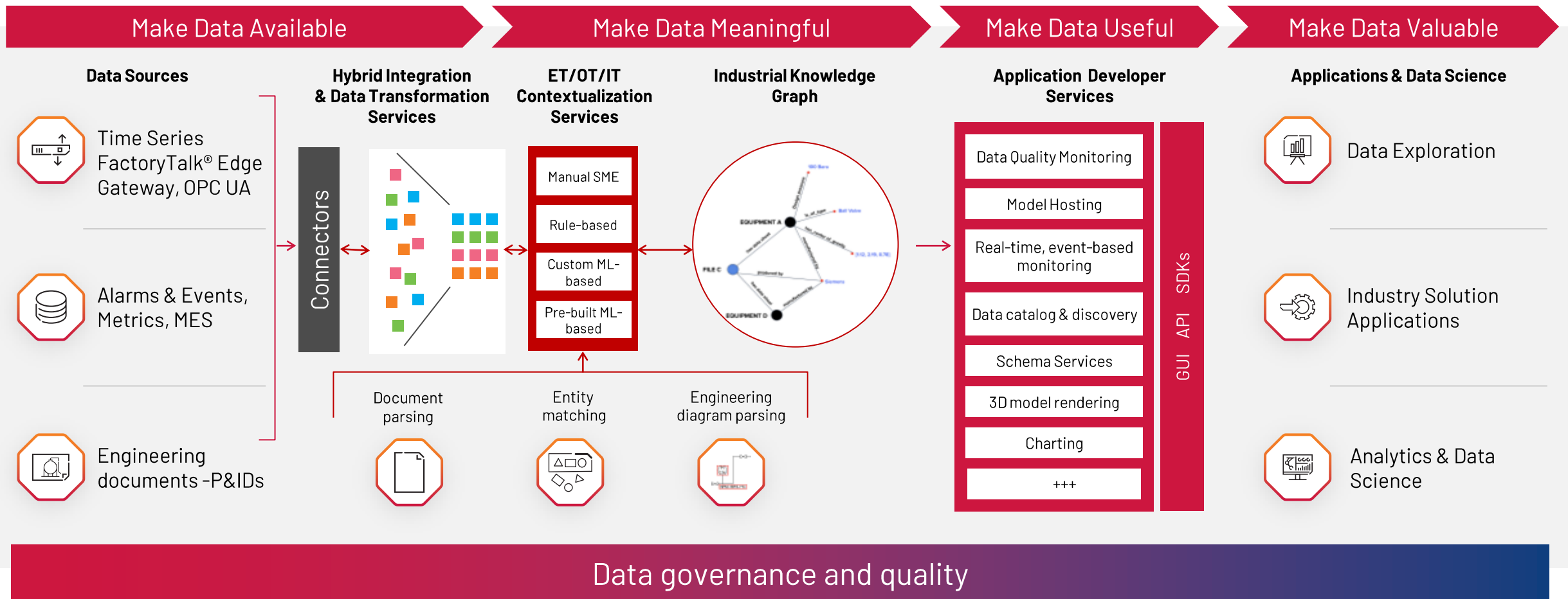


# Designed for scalability with FactoryTalk® DataMosaix™



# FactoryTalk® DataMosaix™ overview

Expose industrial data in an Industrial Knowledge Graph to realize value through apps and analytics



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# Data sources



Edge/On Prem



Rest calls with authentication



Raw Data Tables



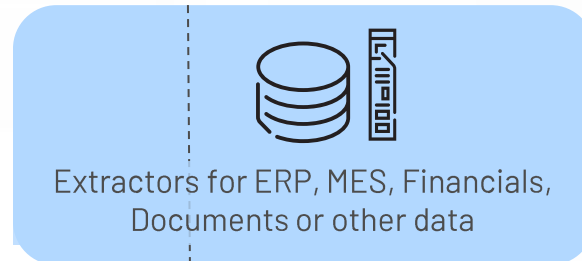
Transform

Time Series

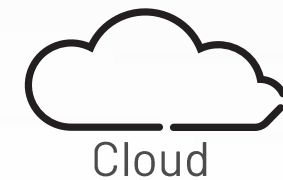
Events

Files

Assets



IT Data, Cloud or On-prem



Cloud



# Extractor categories

## Custom

### Custom using Cognite Extractor SDK

- Fully custom extractor for a specific customer
- Can connect to any data source
- Can be deployed anywhere
- Requires custom programming
- Customer is responsible for software lifecycle
- Up to the customer to arrange building a container for FactoryTalk® Edge™ Manager deployment

## Configurable

### Supported Rockwell Automation Extractor

- Requires configuration based on text files
- Requires detailed knowledge of the data source
- May require a SI/consultant to install/configure
- Rockwell Automation product with software lifecycle
- May be available for FactoryTalk® Edge™ Manager deployment
- May have a subscription fee for non-RA data sources

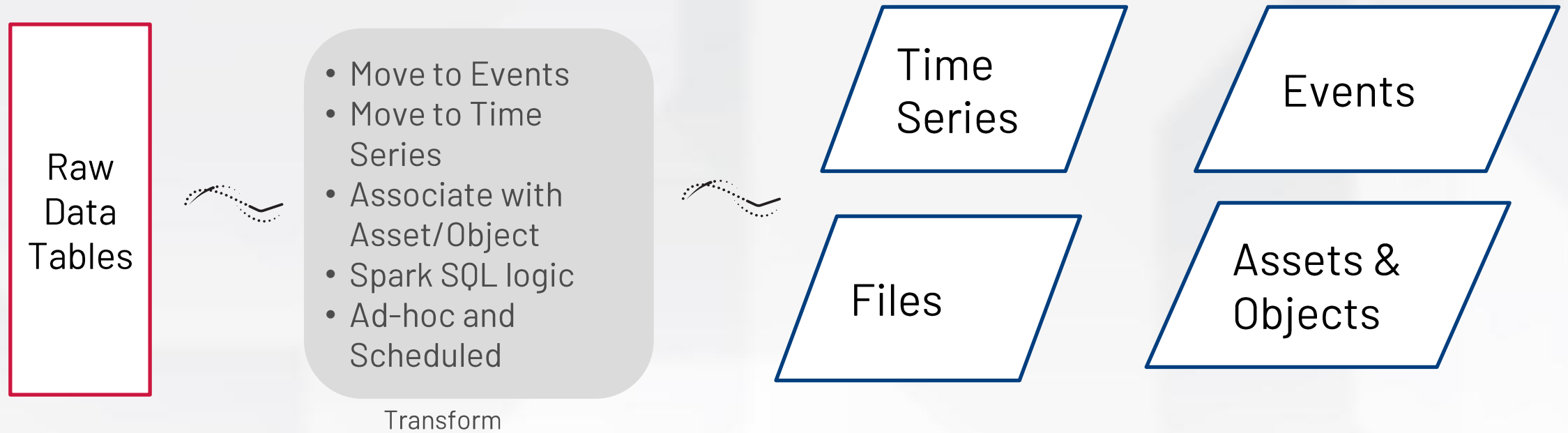
## Optimized

### Integrated Extractor

- Minimal configuration needed
- Targeted at a specific Rockwell Automation application data source
- Rockwell Automation product with software lifecycle
- Likely available for FactoryTalk® Edge™ Manager deployment
- May require FactoryTalk Edge Manager deployment (TBD)
- May have a subscription fee for non-RA data sources



# Integration and data transformation



## Example

ID	Source	Message	Time stamp
D2C	Palletizer	Alarm	2023-02-05 16:16
B77	Packer	Start packing Product X	2023-02-05 16:23

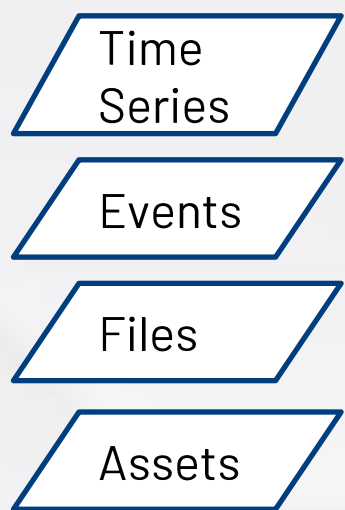
Select New Event  
Description = Message  
Start Time = time stamp  
Linked Asset = Source

*SQL Pseudocode*

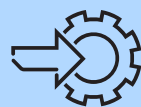
ID	Assets
001	Palletizer
002	Packer

Asset	Description	Start Time
001	Alarm	2023-02-05 16:16
002	Start packing Product X	2023-02-05 16:23

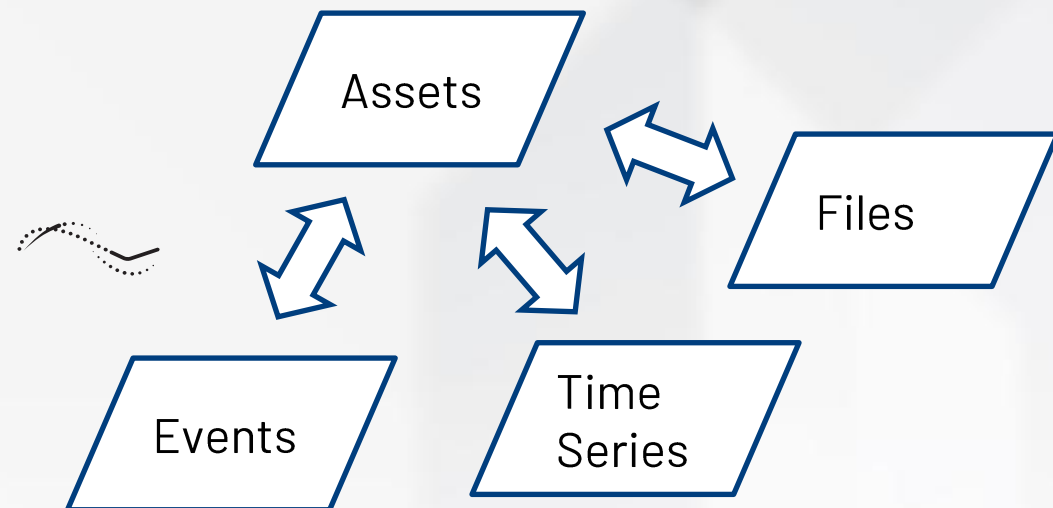
# Contextualization



- Link Time Series to Assets
- Link Events to Assets
- Link Files to Assets
- Ad-hoc or Scheduled
- Fuzzy search, multiple fields



Contextualization Engine



## Example

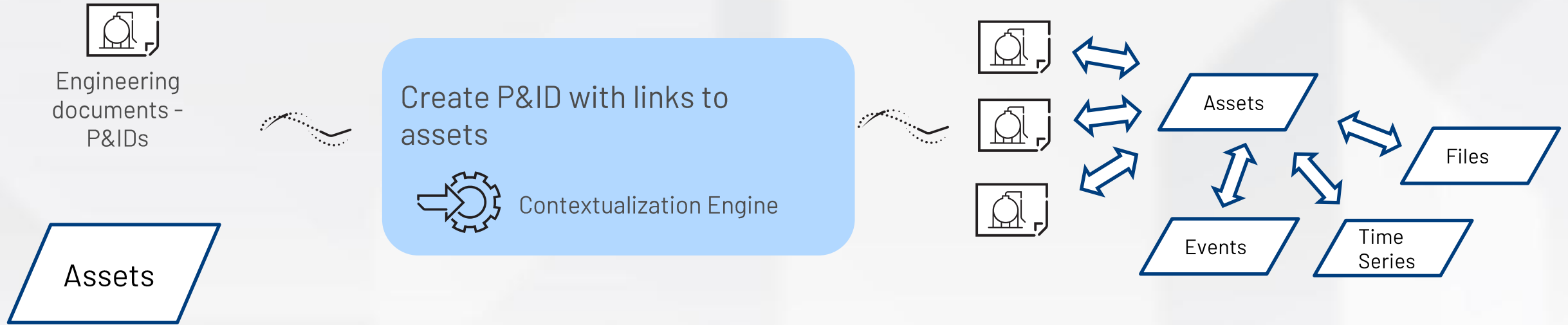
ID	Asset Name
001	Palletizer1
002	Packer2

Match Events to Assets  
Description = AssetName

Description	Start Time
Alarm Line1 Starved Palletizer	2023-02-05 16:16
Packing Product X Line2/Packer	2023-02-05 16:23

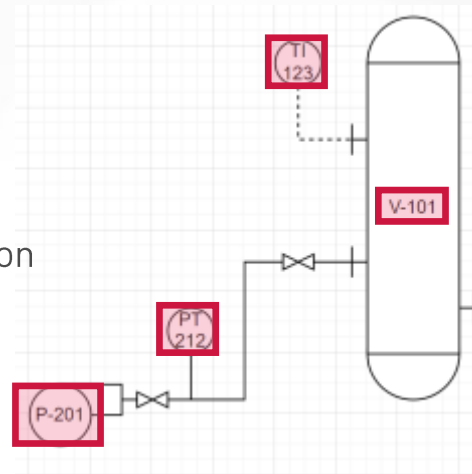
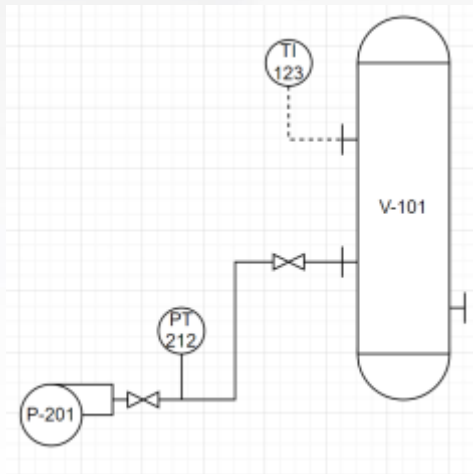
Does This Asset	Match this Event?	Confidence
Palletizer1	Alarm Line1 Starved Palletizer	70%
Packer2	Packing Product X Line2/Packer	80%

# P&ID contextualization



## Example

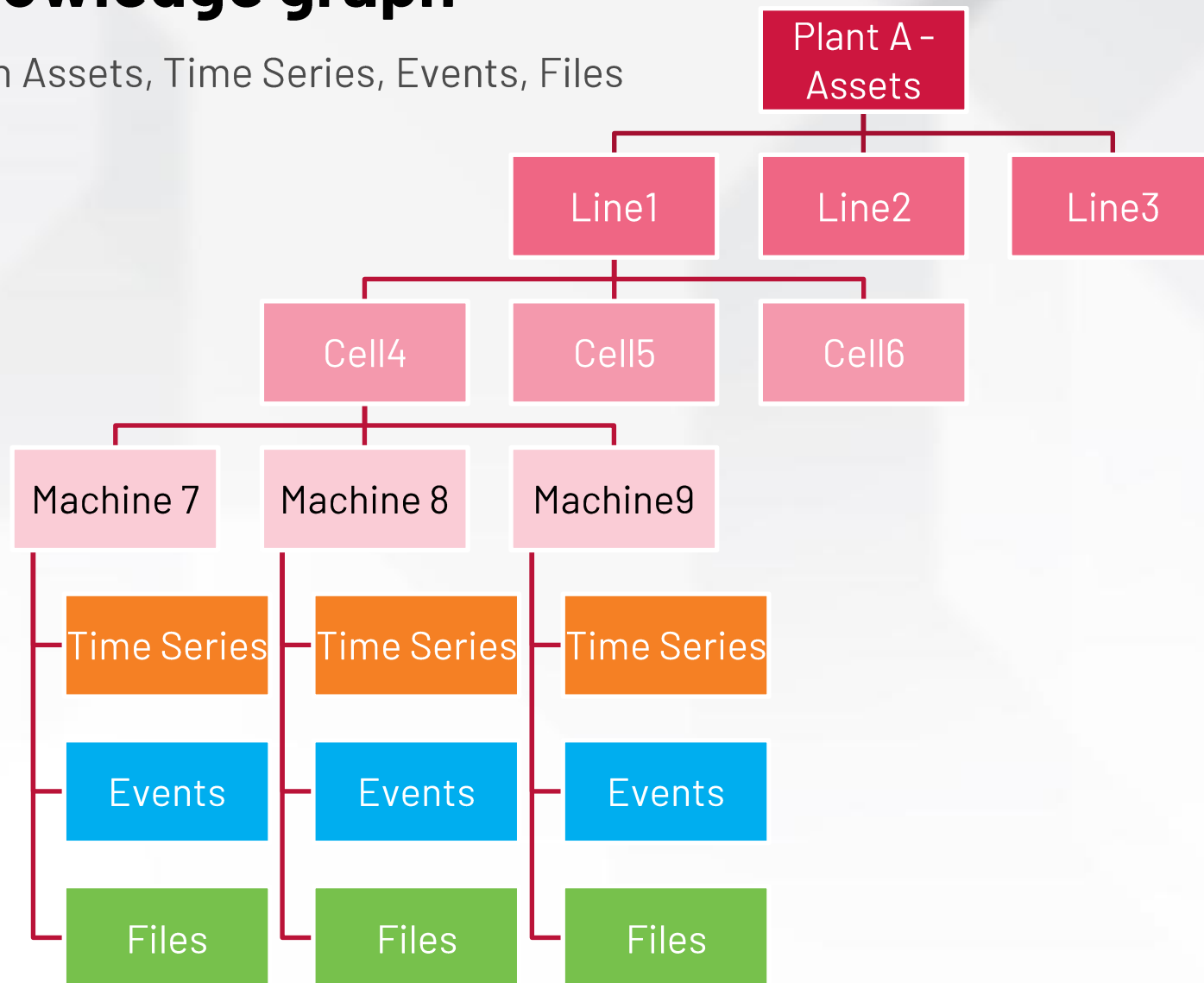
Asset Name
V-101
P-201
PT-212
TI-123



Asset: V101  
Capacity: X L  
Area: 51  
Time series: T degF  
Time series: pH  
Event: Level Alarm  
Event: Valve Open

# Knowledge graph

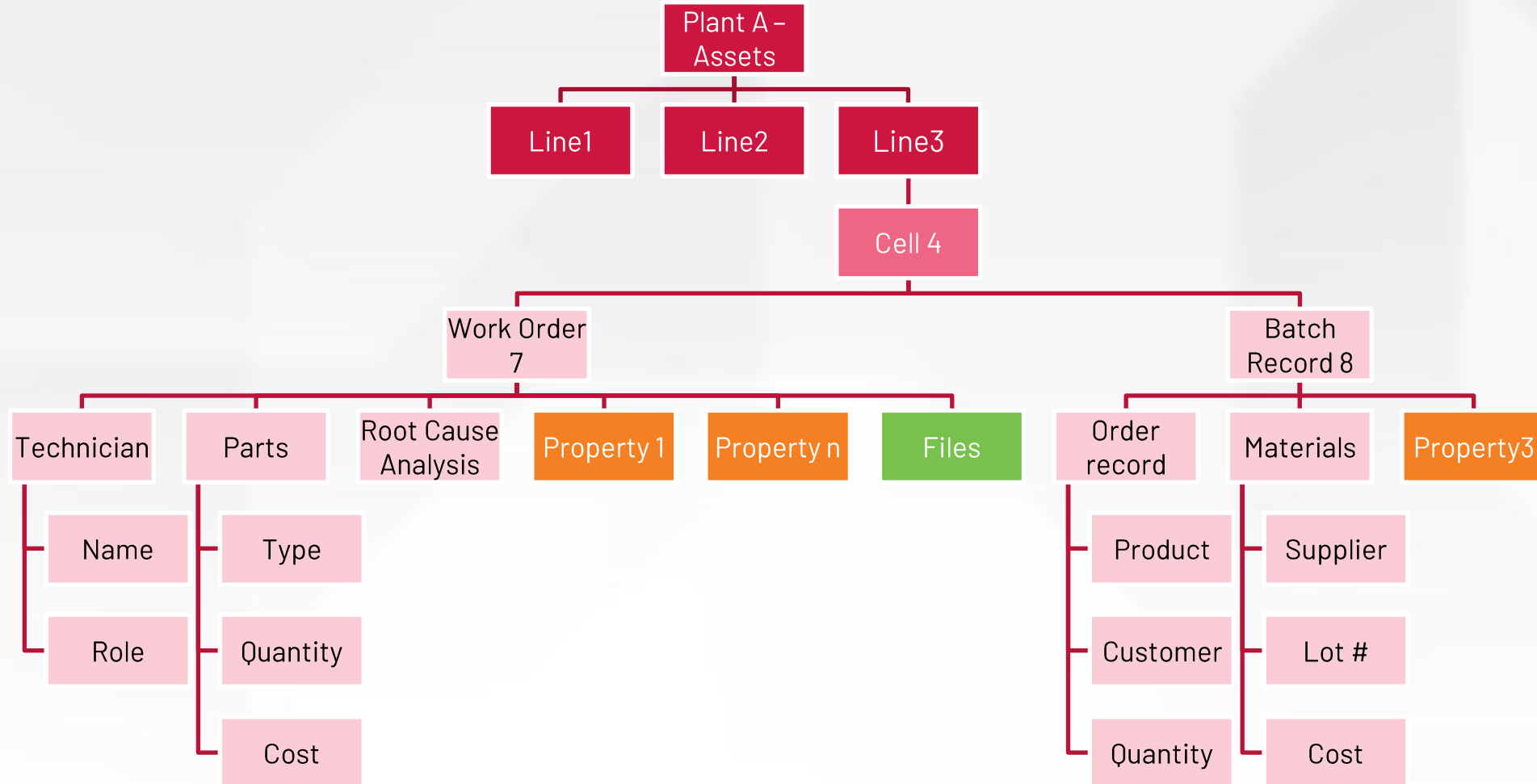
Links between Assets, Time Series, Events, Files



- Show me the Temperature trend for Machine 8 when the Alarm event occurred yesterday
- What alarms occurred when Machine 7 was producing Product X over the last week
- Show images/video feed of Machine 7 in the last 2 minutes before the Alarm event last night

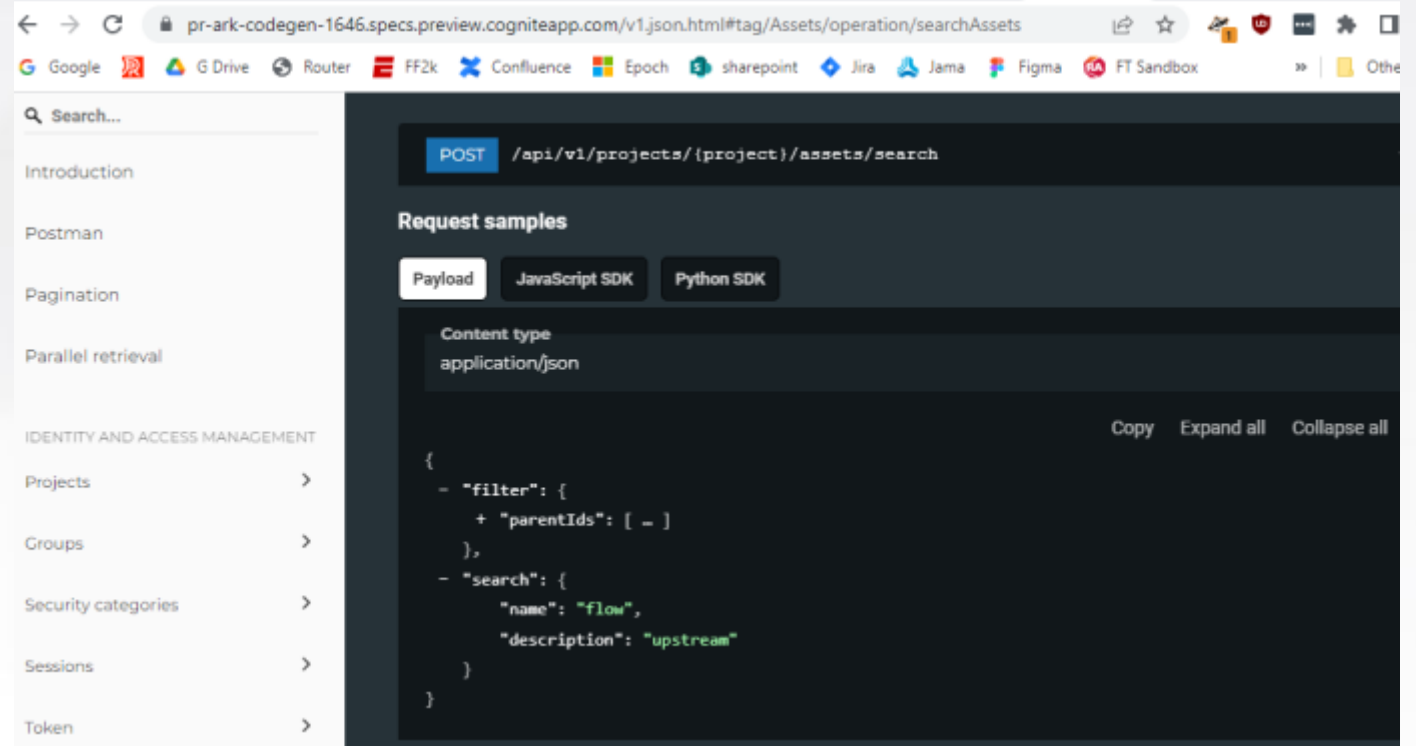
# Knowledge graph – flexible modeling

Model any structure



# Application developer services

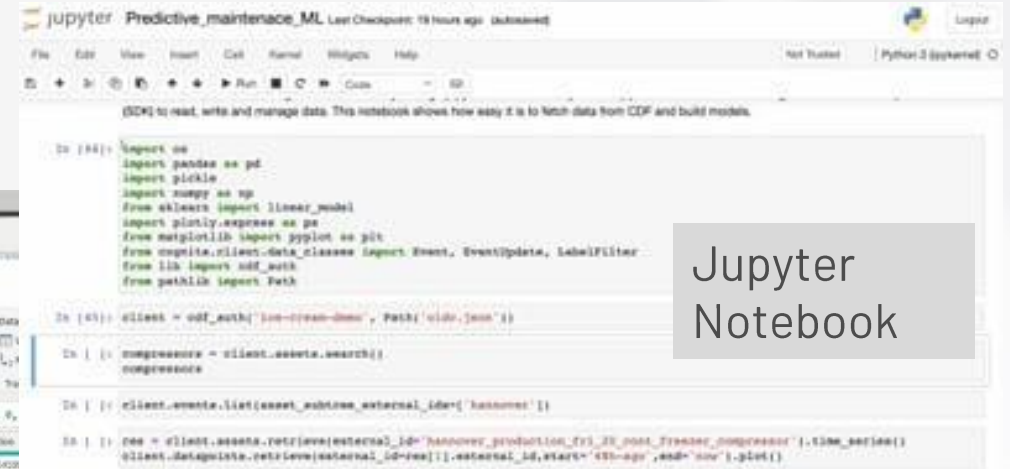
- Public git hub repos
- SDK for Javascript, Java, Python
- REST API
- GraphQL API for complex data models
- Extractor toolkit/sample code
- Extensive community and training material
- Connectors for Grafana, PowerBI and Jupyter Notebook available



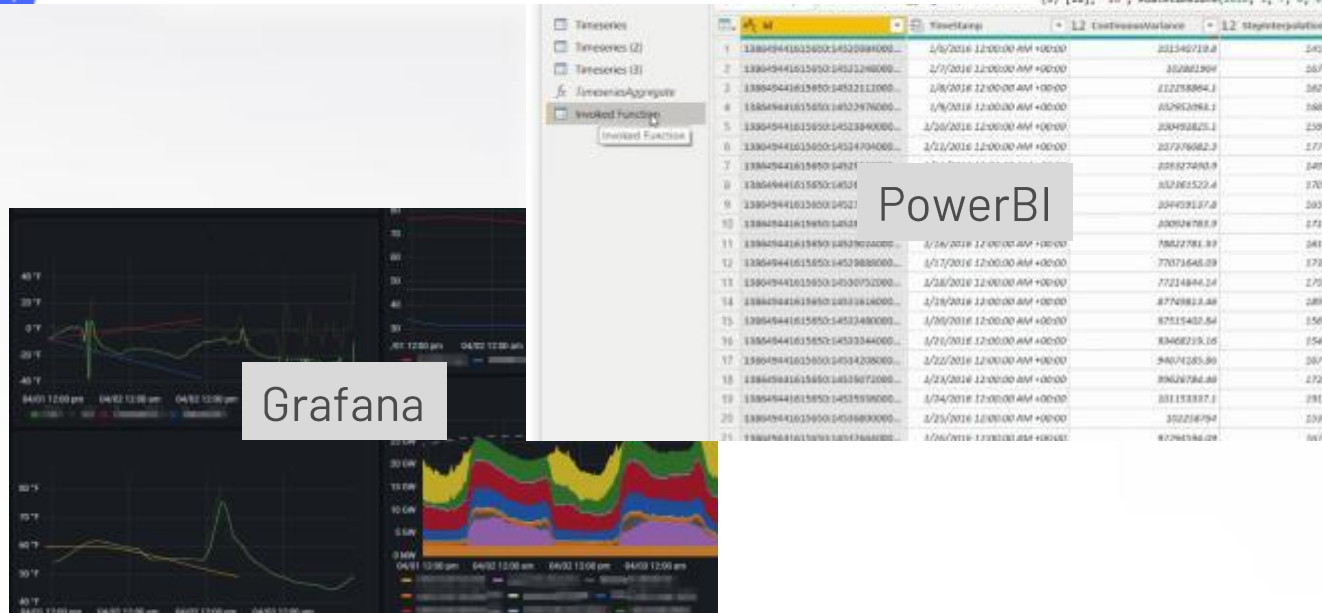
# Applications and data science



## Charts



# Jupyter Notebook



# PowerBI

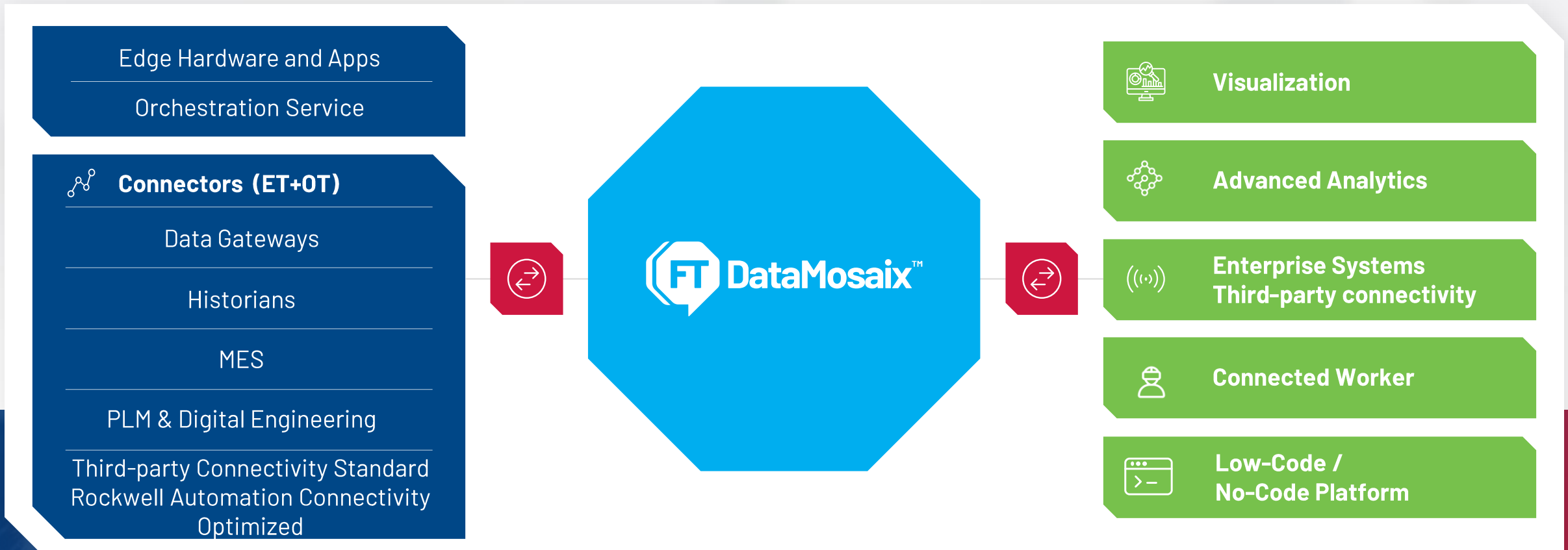


# Web App with High Charts



# Introducing FactoryTalk® DataMosaix™

Industrial DataOps Platform



# Factorytalk® Datamosaix™: Targeted offering use cases and powering industry solutions

## Use Cases



1 Flight Recorder (Historian)



2 Asset & Process Monitoring



3 Production Monitoring (OEE)



Future Use Cases...



### Visualizations and Analytics



### Rockwell Automation Data Hub



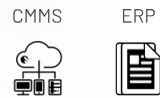
### Edge and integrations



#### Operational(OT) data



#### Conventional(IT) data



#### Engineering(ET) data



## Supported Industry Solutions

01

### Energy Manager

As a plant and sustainability manager, I would like to monitor my energy emission, power consumption, and manage it.

- Configurable plant asset model builder to create customized energy model hierarchies
- Preconfigured performance dashboards for energy and production information(energy consumption, energy demand and energy intensity)
- Billing dashboards for energy cost allocation
- Carbon Accounting, GHG emissions tracking and continuous emission monitoring

02

### APM for Mining

As a maintenance manager, I want to increase the uptime of my assets by analyzing real time asset data and understanding if corrective actions are needed

- Provide customers with a Unified Asset Performance Strategy.
- Maximize value realization from industrial physical assets for End Users.

03

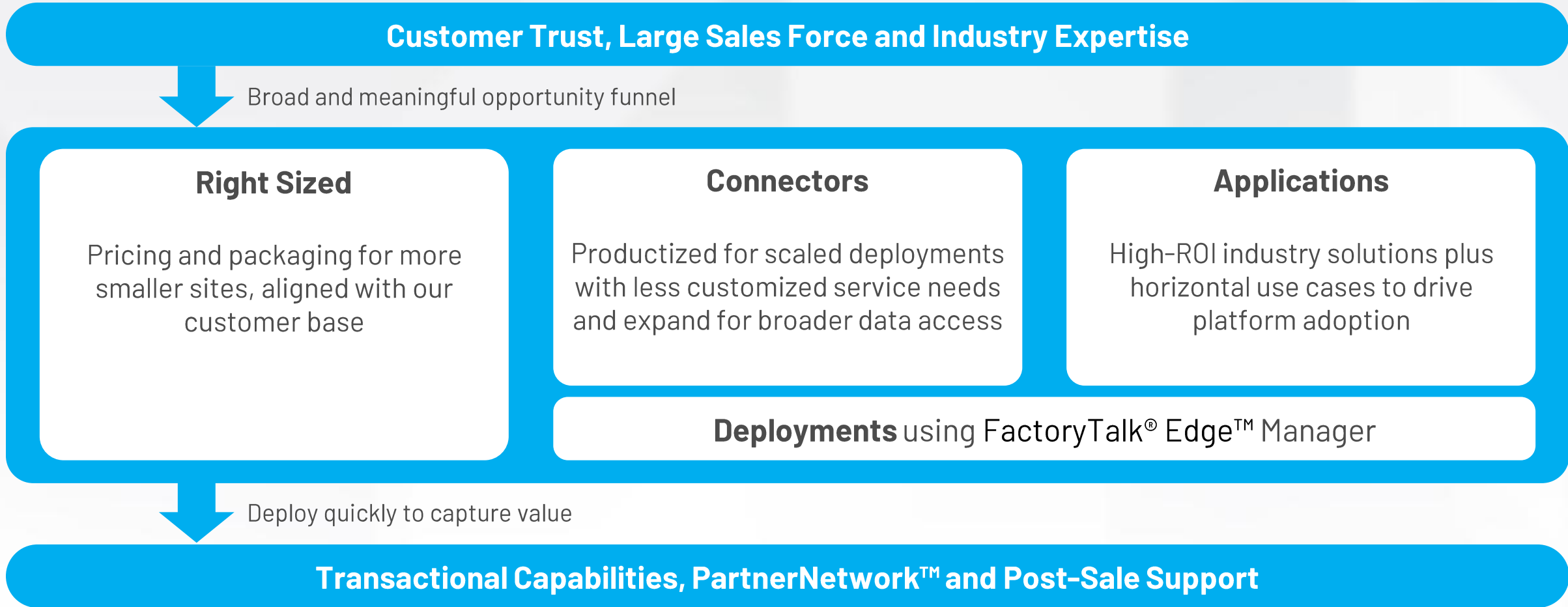
### Batch Analytics

As a process engineer and manager, I want to improve business performance and outcomes through better understanding and utilization of your processes and information.

- Consistently produce batches within quality specifications
- Batch comparison
- KPI monitoring & alerting
- Root cause analysis
- Advisory process control

# Rockwell Automation value differentiation

Added value on top of Cognite Data Fusion



# Buy or build for industrial DataOps?

Balance what is important to your business for flexibility, sustainability and time to value

## Build Your Own

- Highly customized even when using standard components
- Significant upfront costs
- High annual operating costs which are likely to grow over time
- IT-centric approach lacks OT domain expertise
- May be inflexible or unsupportable in future

## Industrial DataOps

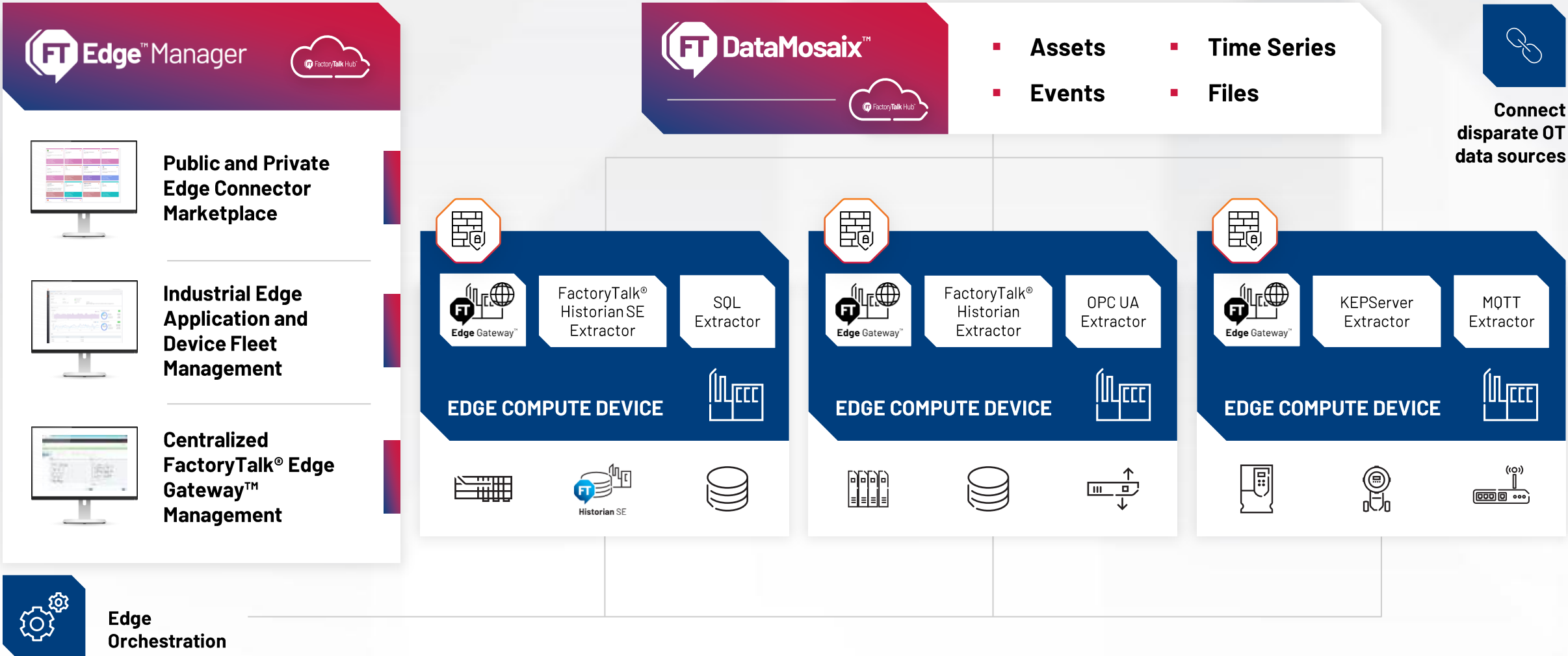
Common to well designed and built solutions

- Customer owns the data and only the customer controls who has access to the tenant and the data within it
- Visualize and reuse data across sites, roles and applications
- Extract data to enterprise data lake
- Standard APIs to connect to other systems you've bought or built
- Can usually be counted towards your enterprise cloud commitments

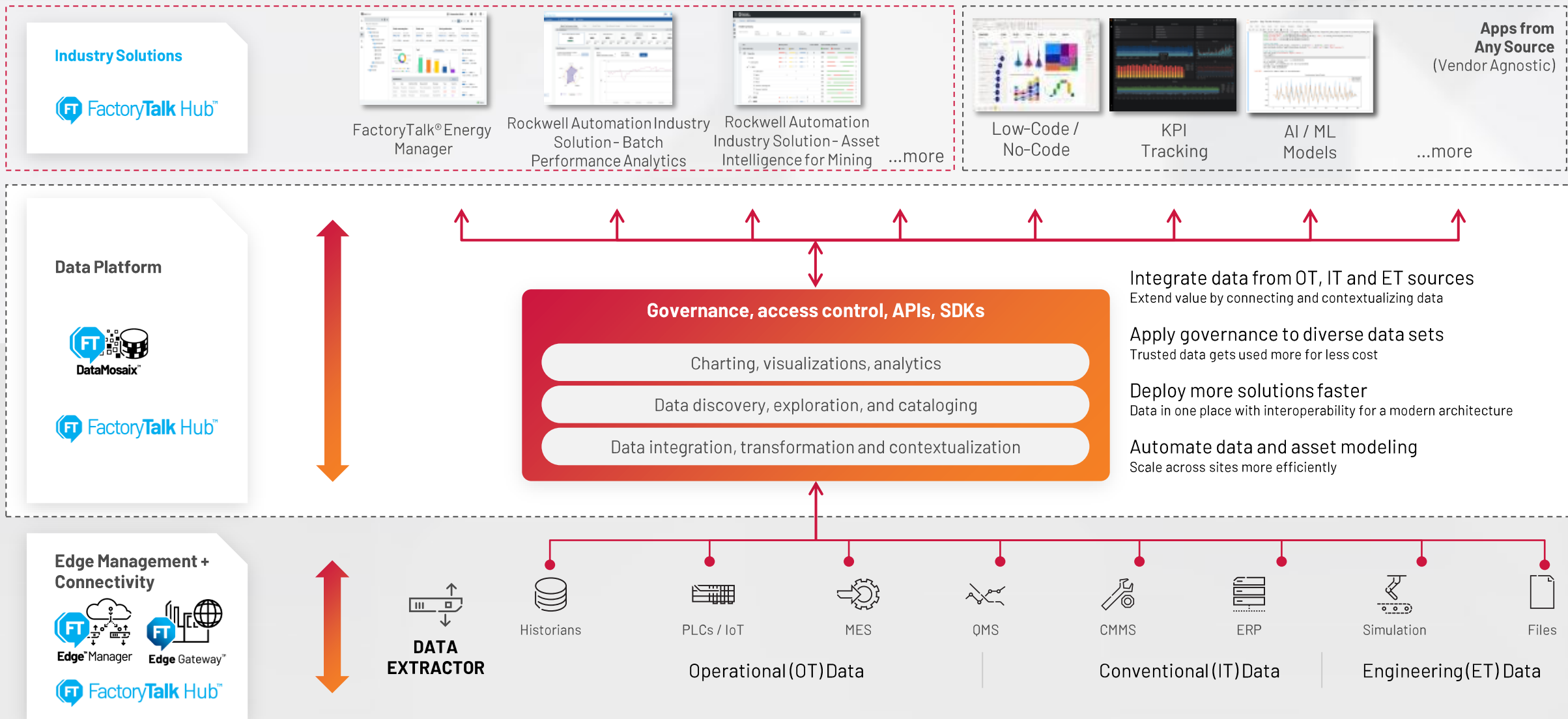
## FactoryTalk® DataMosaix™

- Faster to implement and get value
- SaaS approach keeps spending consistent, vendor accountable and reduces security risk
- Built in OT data types and lineage in an IT friendly framework
- Data collection and storage are optimized for you

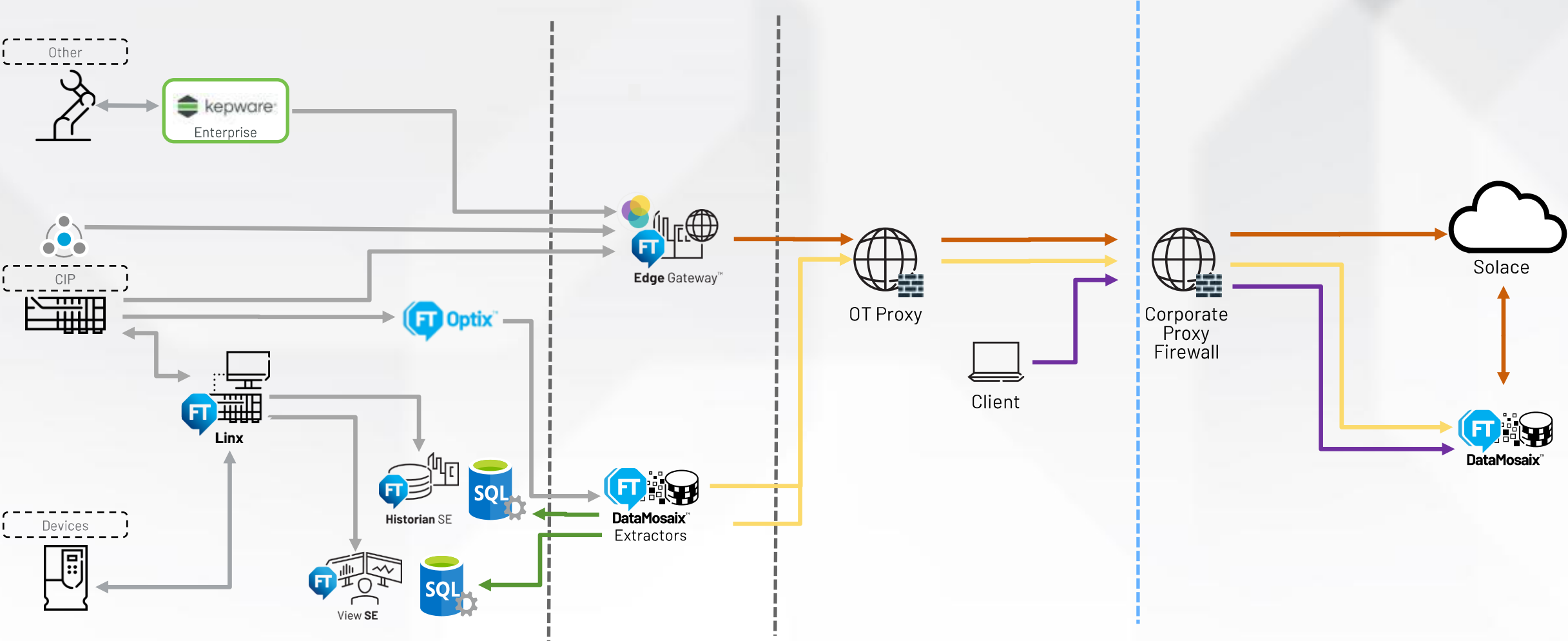
# Scalable connectivity with FactoryTalk® Edge™ Manager and FactoryTalk® Edge Gateway™



# FactoryTalk® DataMosaix™ at the center of a scalable app strategy



# Simplified FactoryTalk® DataMosaix™ data diagram





# Connectors/Extractors

## GA Connectors

- FactoryTalk® Historian via OSI PI extractor
- SQL Databases via ODBC
  - MS SQLServer
  - Oracle
  - Postgres
- OPC UA
- FactoryTalk® Edge Gateway™ via MQTT

## Future Planned Connectors

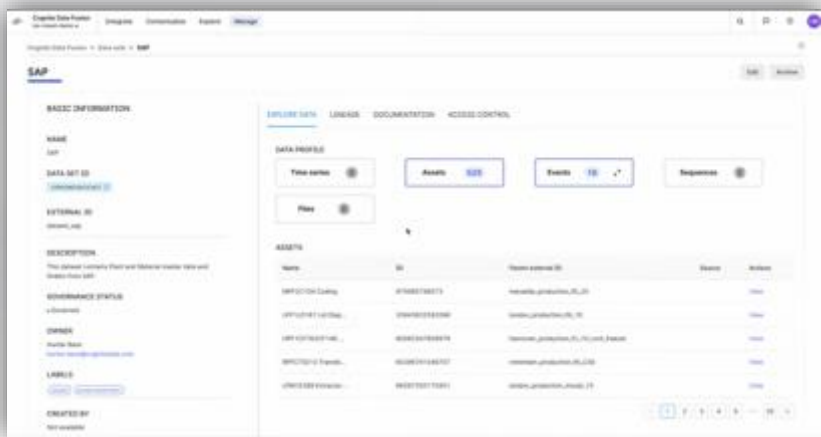
- Extractors managed by FactoryTalk® Edge™ Manager
- First class FactoryTalk® Edge Gateway™ user experience
  - Smart Objects data models
- Specific extractors for Rockwell Automation Products
  - FactoryTalk® Metrics
  - FactoryTalk® ProductionCentre®
- Improved FactoryTalk® Historian extractor
  - Asset Framework models
- OPC UA
  - Data and models
  - Companion specs

# Industrial DataOps and IIoT: Better together

FactoryTalk® DataMosaix™ connects scalable data management to visualization and analytics from ThingWorx®

**FactoryTalk DataMosaix**  
Industrial DataOps Platform

**ThingWorx**  
Industrial IoT Platform



Make data **available**, **meaningful** and **useful** to many different applications

Make data **valuable** with **purpose-built** applications using consistent data

**Deploy more applications, in less time, for greater ROI when combining ThingWorx and FactoryTalk DataMosaix**

# Thank you



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