

MAY 2022

Seamless communication – the backbone of Industry 4.0

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AVEVA

Bring a smarter
future into
focus with the
Confidence to Operate
from edge to
enterprise



Collaboration



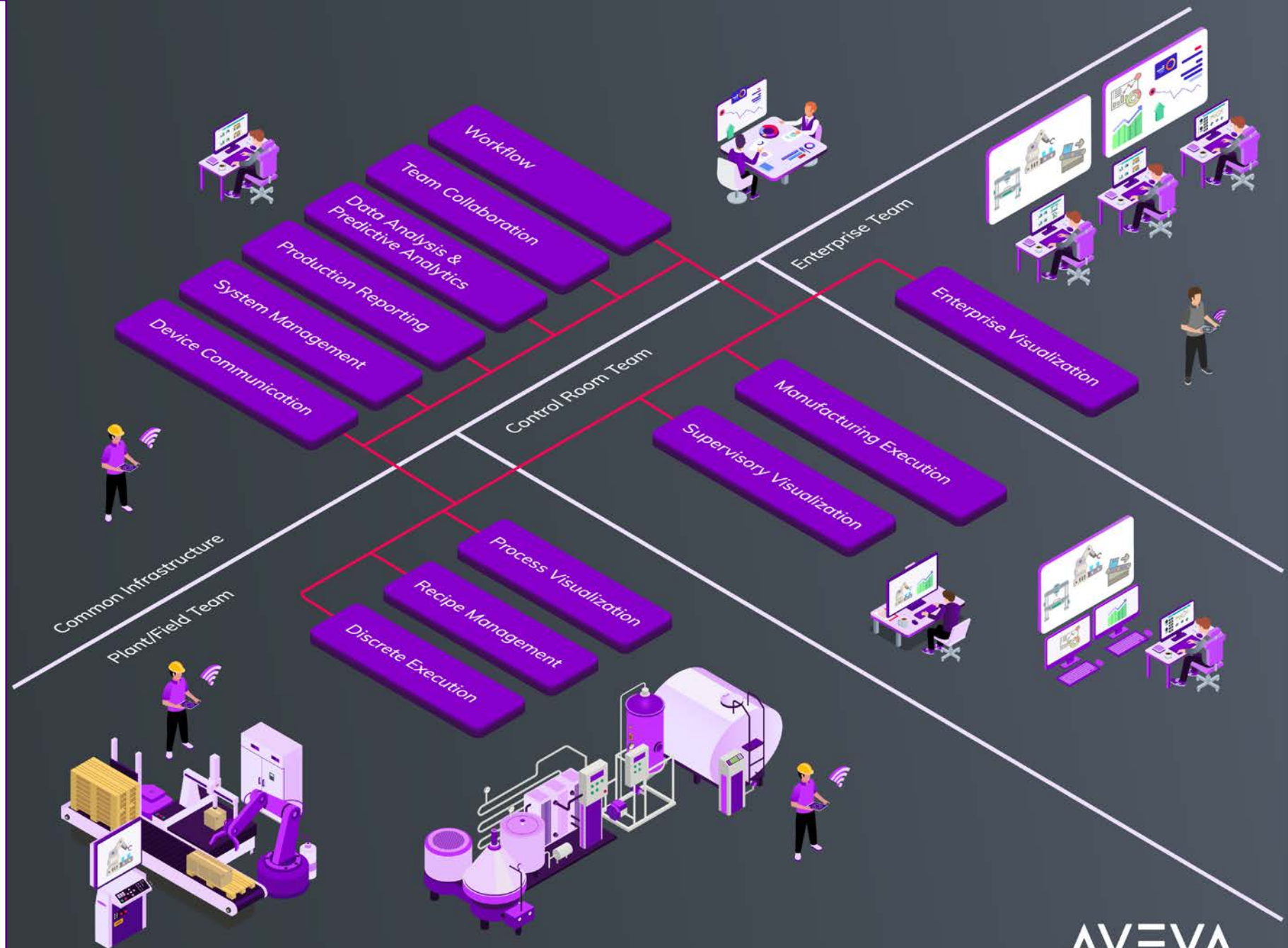
Line-of-Sight Visibility



Remote Work

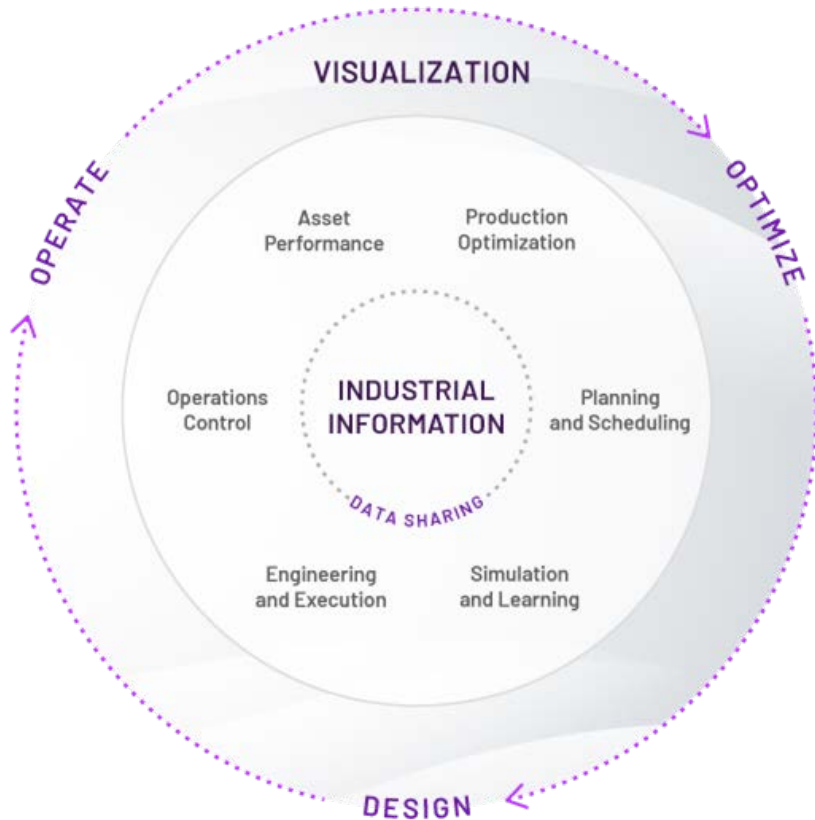


Standardization



AVEVA

The new business and technology imperatives



Provide remote 'digital' teams rich information and **decision support** to **collaborate** and work efficiently

Run **agile, continuously optimized** supply chains to protect the bottom line, using trusted shared data

Operate critical assets **reliably and safely** with reduced manual supervision

Re-plan CapEx and drive highest levels of **engineering efficiency**

Adapt operating models to enhance **energy efficiency** and **sustainability**



Connected Worker



Digital Twin



Artificial Intelligence



Cloud



Big Data

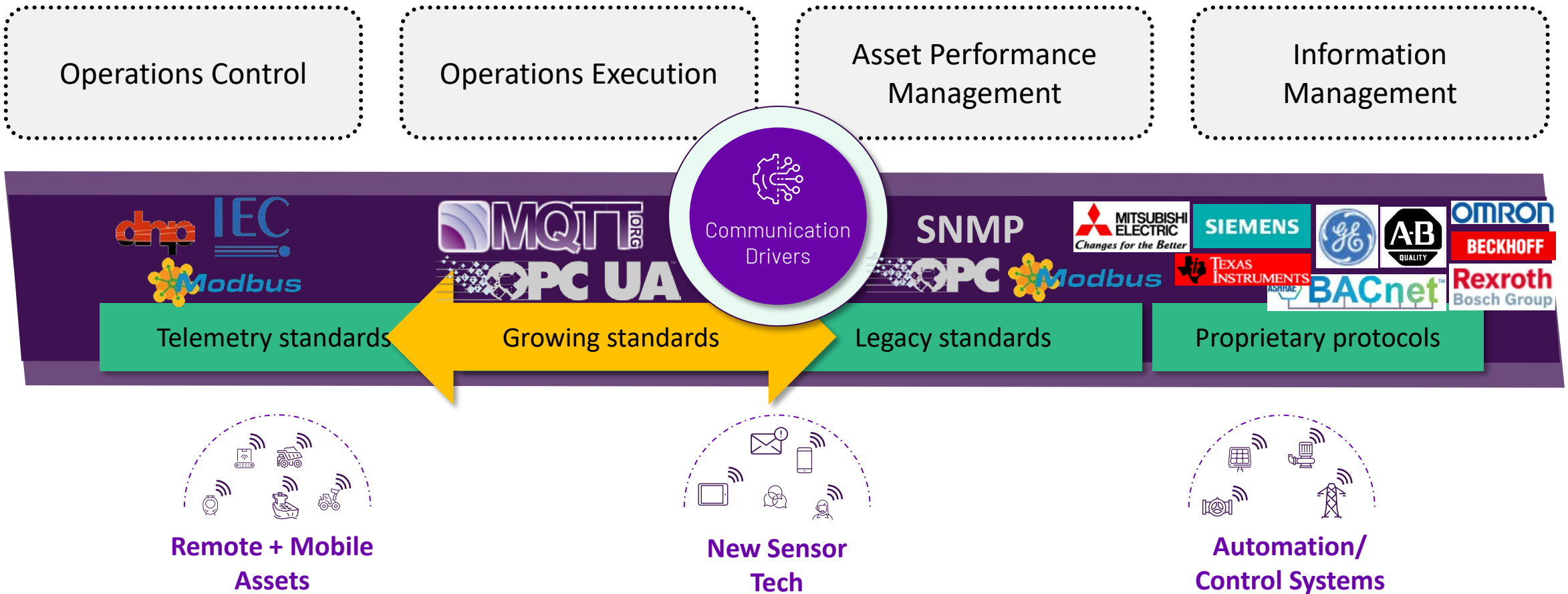


Industrial IoT/Edge

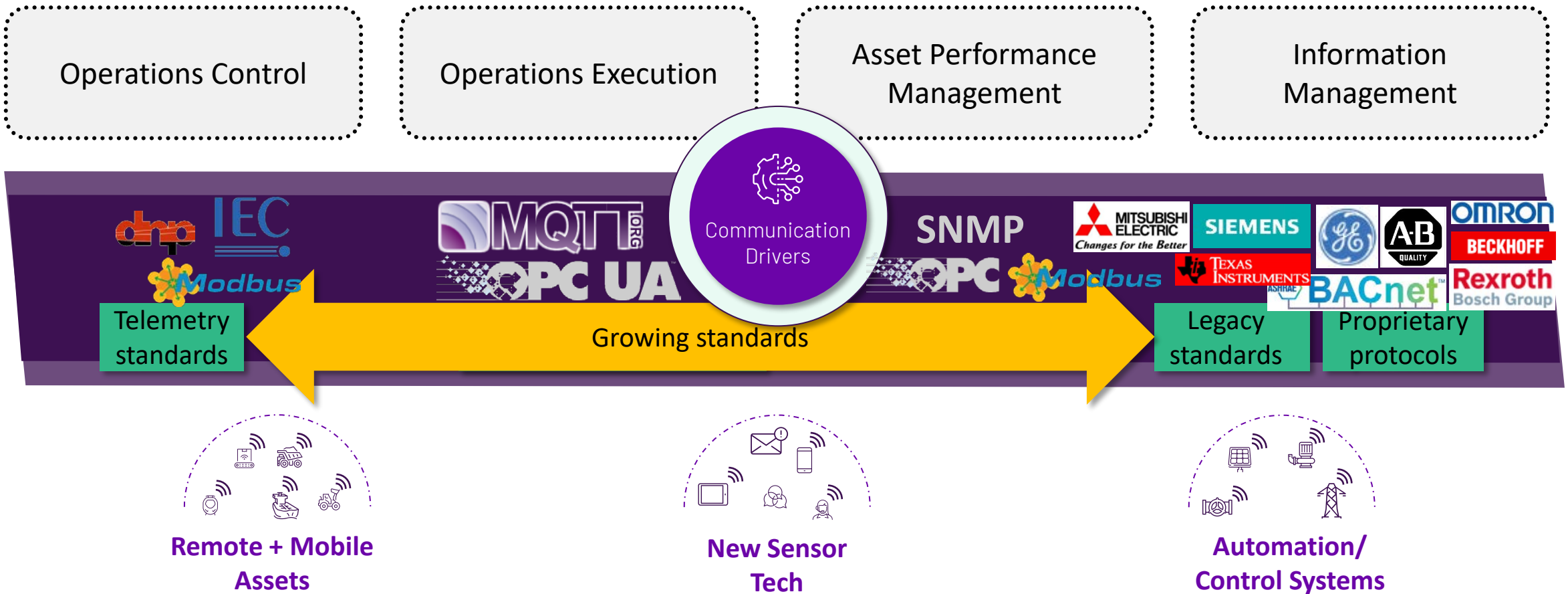
It all starts with data



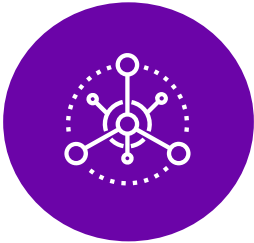
Communication Drivers



Communication Drivers

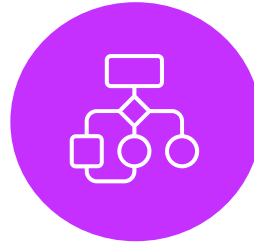


Why standards?



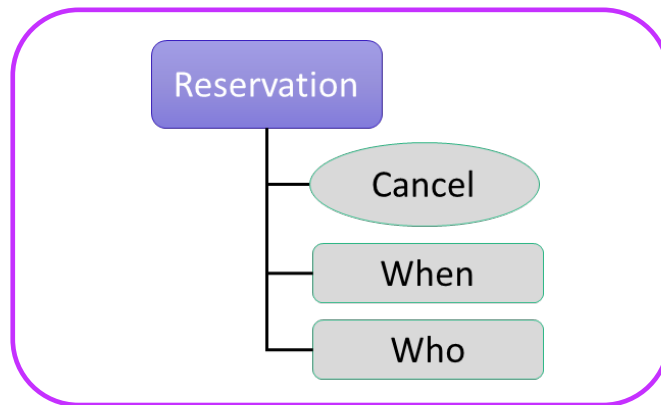
INTERCONNECTIVITY

mandates common
interfaces



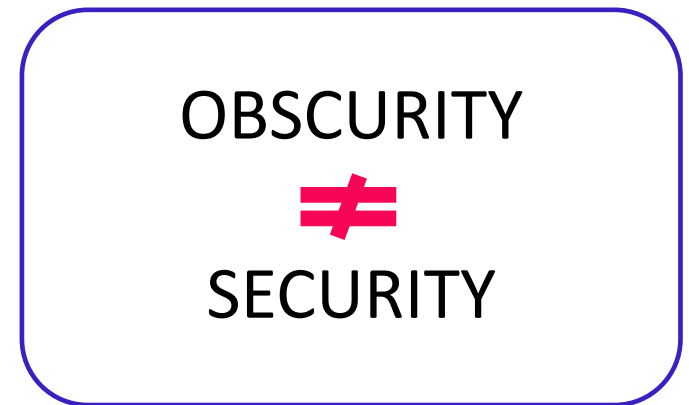
INTEROPERABILITY

mandates common
information models

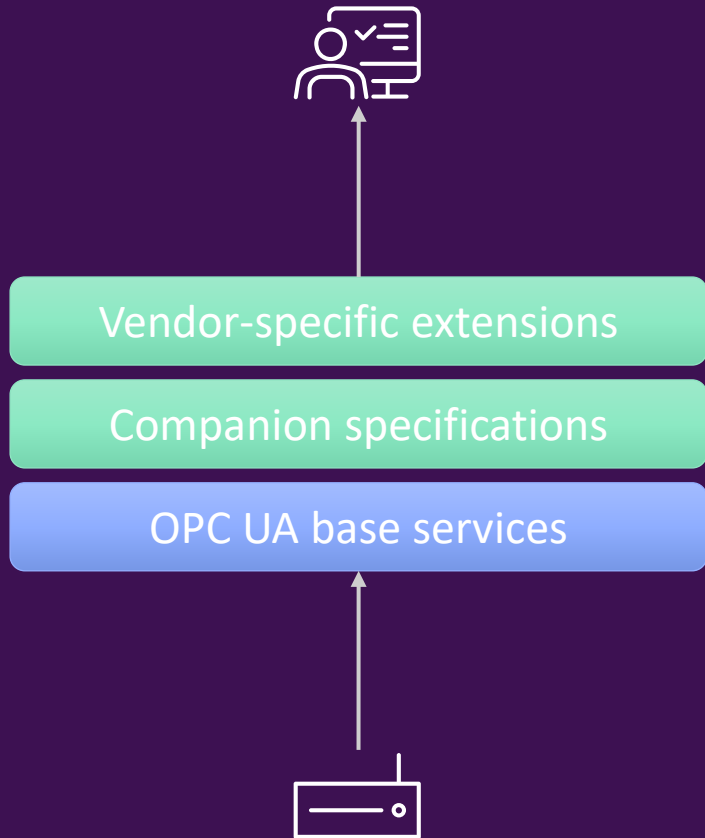


CYBER SECURITY

requires openness,
collaboration, not hiding

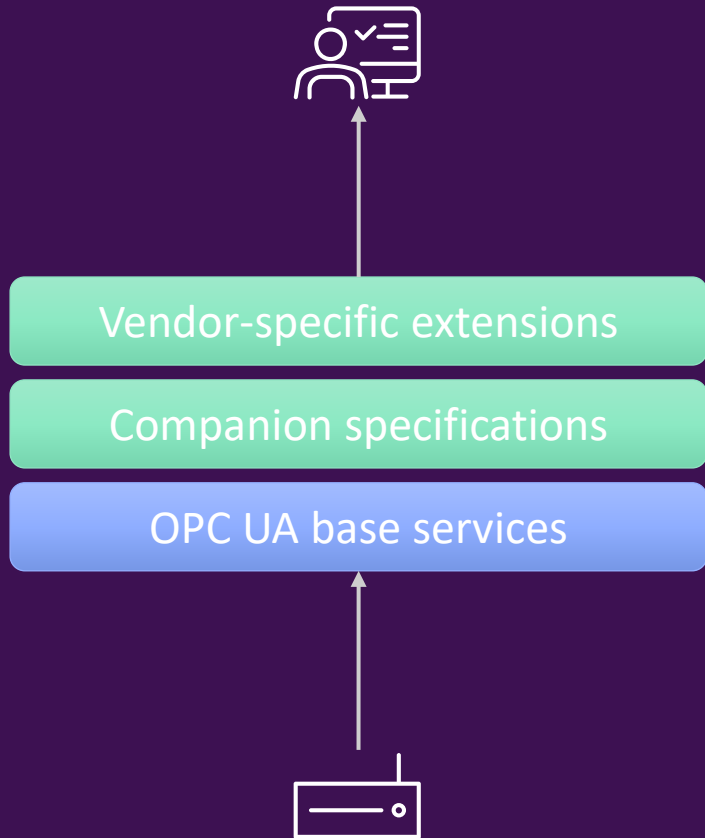


“What if provisioning a new asset would be as simple as plugging in a USB device to a laptop?”



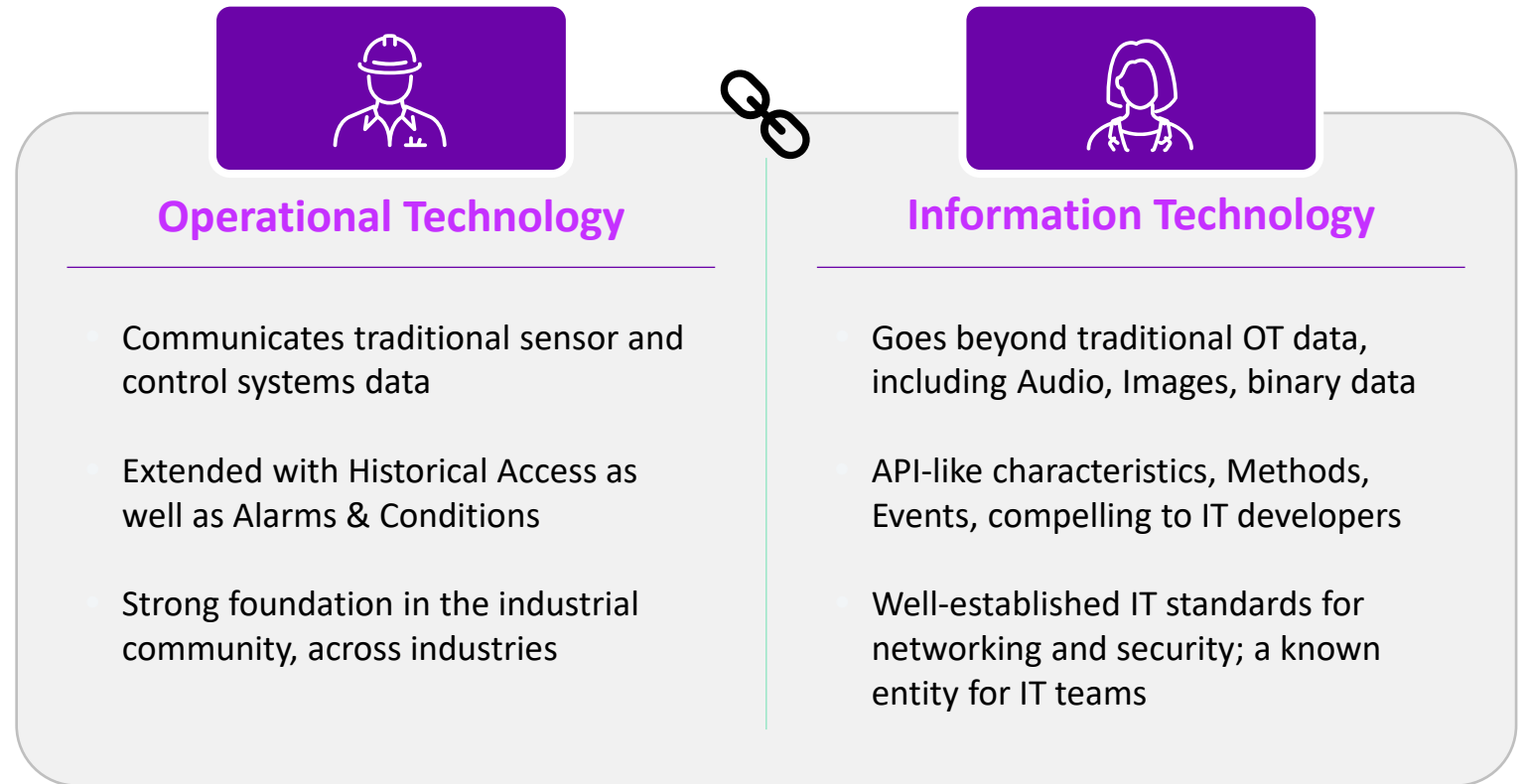
OPC Unified Architecture

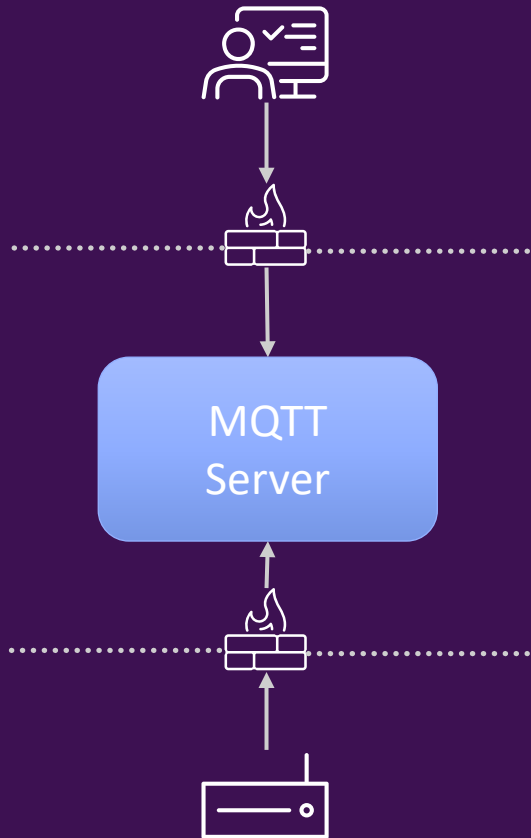
- A **client-server** communication protocol for industrial automation
- Includes an **information model** which provides structure and relationships
- Contemporary **cyber security** architecture, including authentication, authorization and encryption of data in transport
- Adopted by the industrial community as a key facilitator of interoperability and IT/OT convergence in context of **Industry 4.0**



OPC Unified Architecture

An IT/OT converged standard





MQTT

- A lightweight, highly scalable, **publish-subscribe** protocol that transports messages between devices
- Connects *indirectly* through a Server (a.k.a. Broker) which manages subscriptions for connected clients
 - Compelling security architecture, requiring no inbound connections to either publisher or subscriber networks
- Not constrained industrial context. MQTT is used by several social media services to publish and distribute posts, chat messages, etc.
- Industrial companion specification **Sparkplug** adds discoverability, information model



Vision for communication standards

Expand functional capabilities

Expand support for complex datatypes, events, OPC UA Methods, Alarms & Conditions, communications stacks

Discover, browse, provision

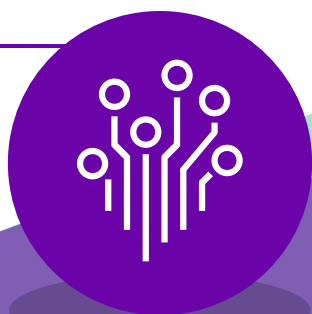
Auto-build content templates
Plug-n-play-like discovery and automatic provisioning of devices

Secure and reliable connectivity

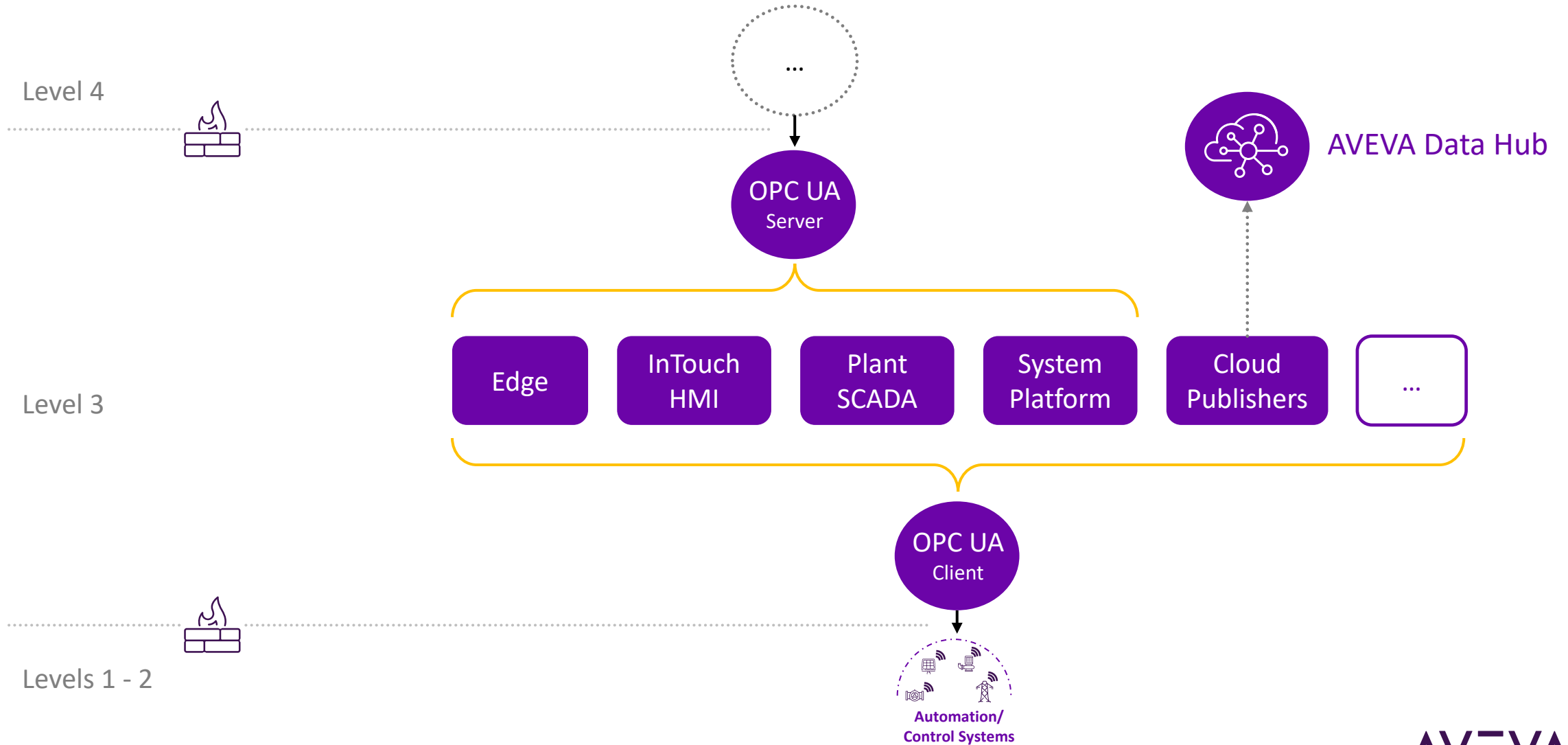
OPC UA and MQTT drivers for consumption and publication of basic data from and to devices and systems

Industry-specific specifications

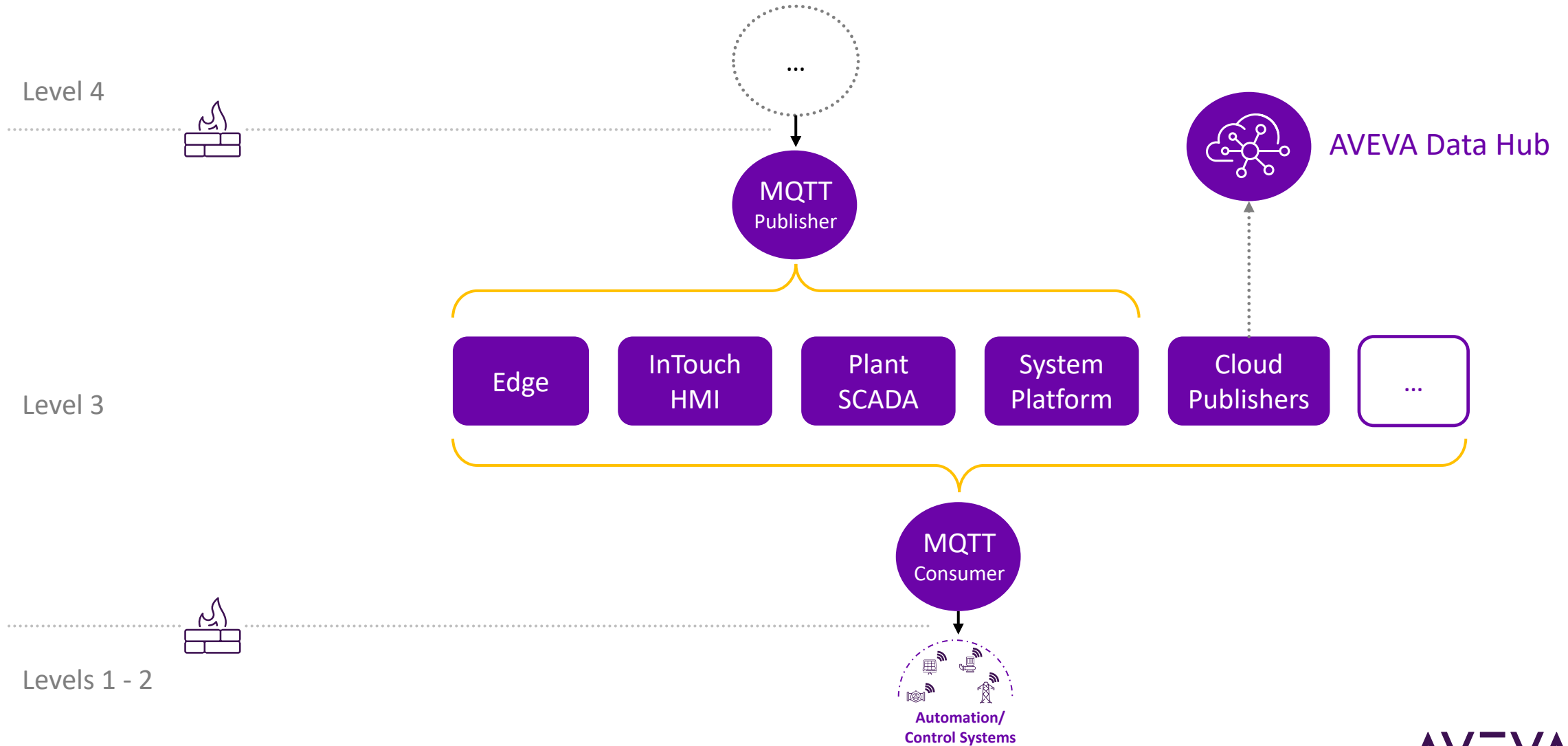
Standardized information models



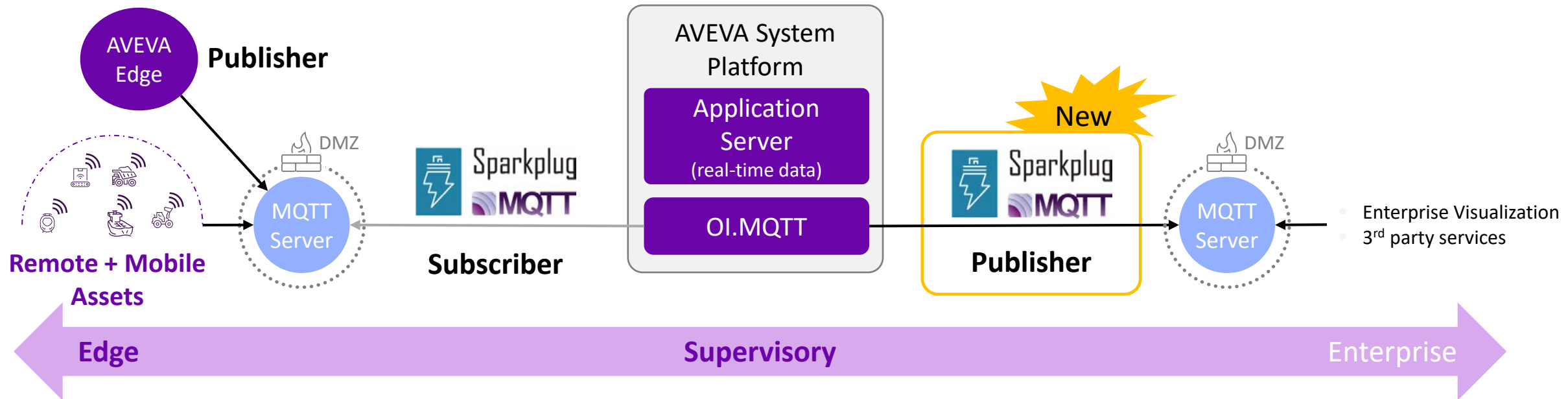
OPC UA driver



MQTT driver with JSON payloads



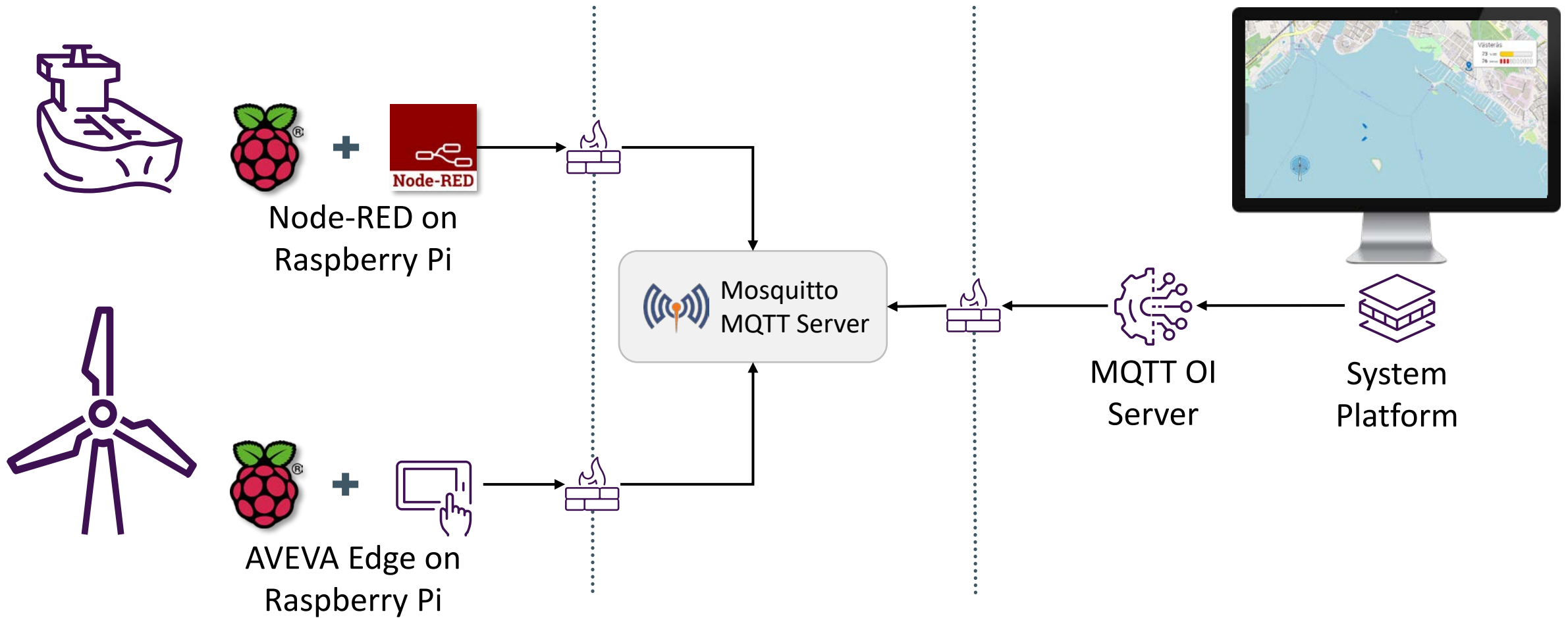
MQTT driver with Sparkplug payloads



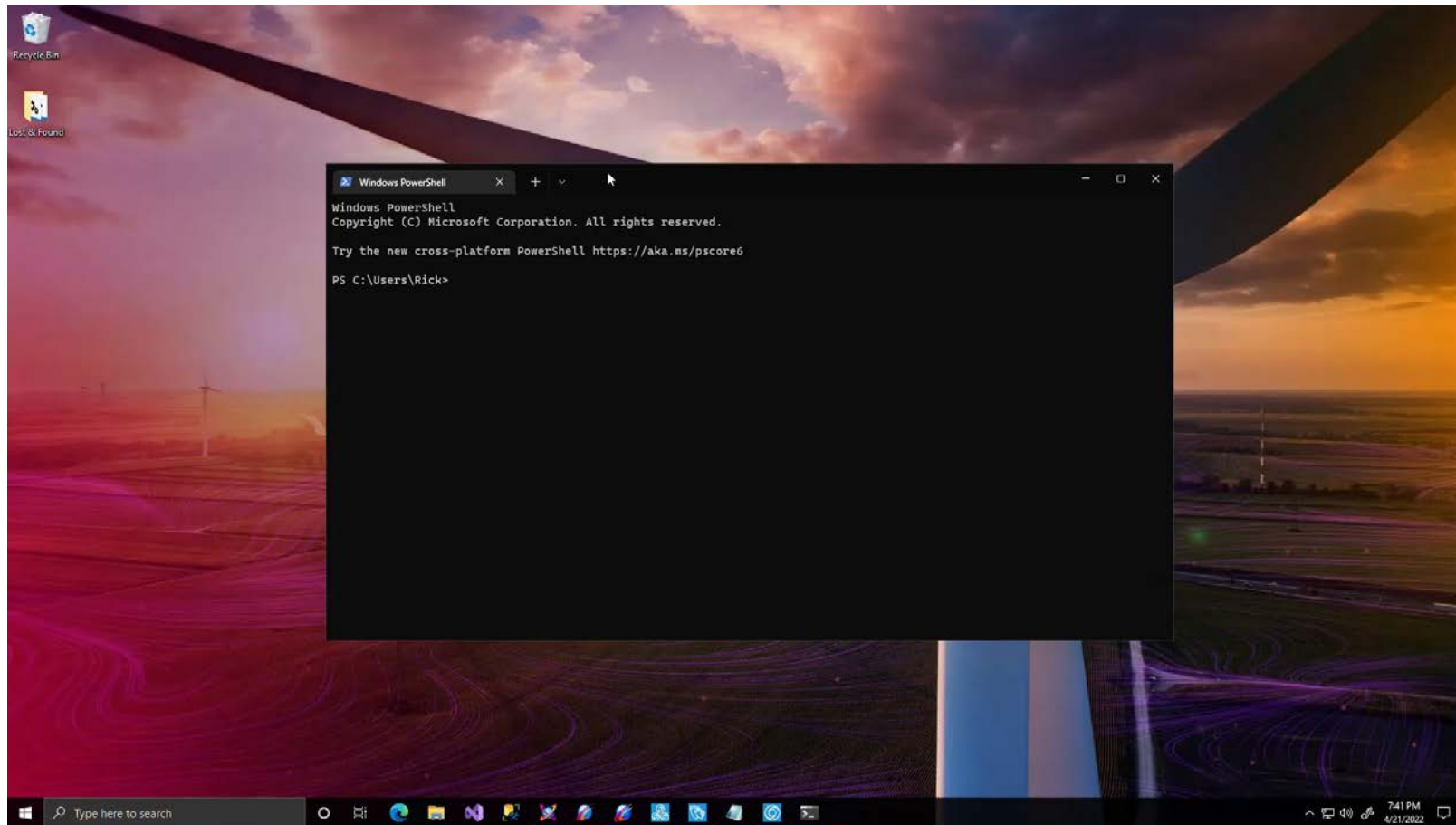
- Since previous versions, OI.MQTT can *subscribe* to Sparkplug formatted data from edge devices

- With CDP 2023, OI.MQTT can *publish* real-time data from Application Server in Sparkplug format (in addition to plain JSON)

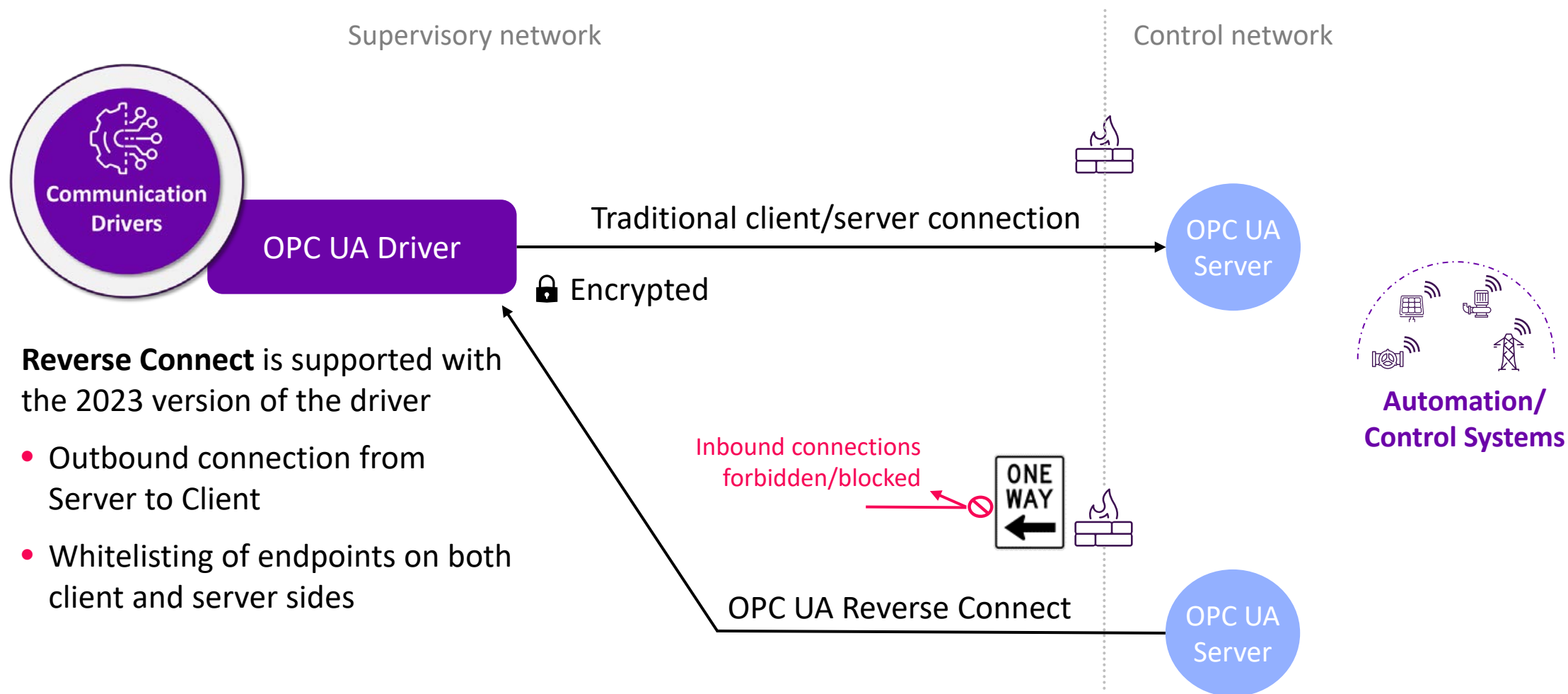
Demo



Demo



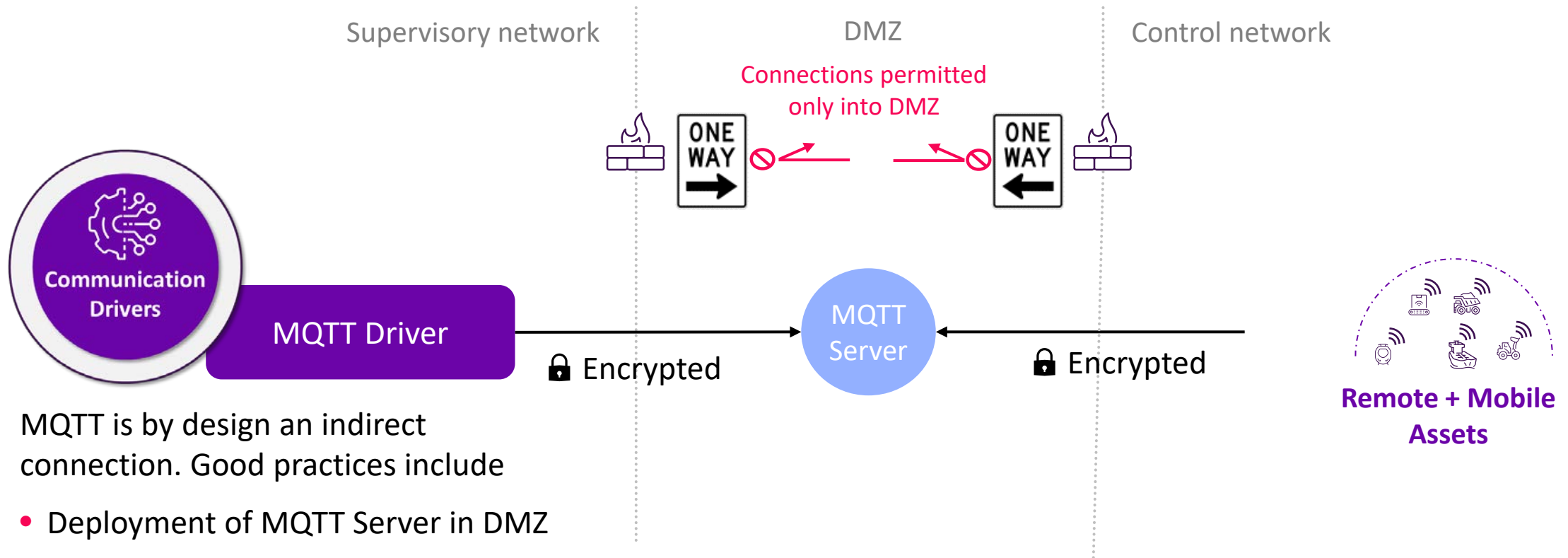
Secure network architectures



Reverse Connect is supported with the 2023 version of the driver

- Outbound connection from Server to Client
- Whitelisting of endpoints on both client and server sides

Secure network architectures



MQTT is by design an indirect connection. Good practices include

- Deployment of MQTT Server in DMZ
- Strict firewalls to permit only inbound connections to DMZ

“How is this impacting customer?”

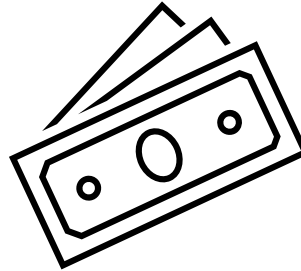
Main objective from customer's point of view



Main objective from customer's point of view



To earn money



Main challenges for cost effectiveness



Rapid deployment & Scalability

- Decreasing time to market
- Increased number of sensors and edge devices
- Increasing complexity
- Mixed environments



Maintenance

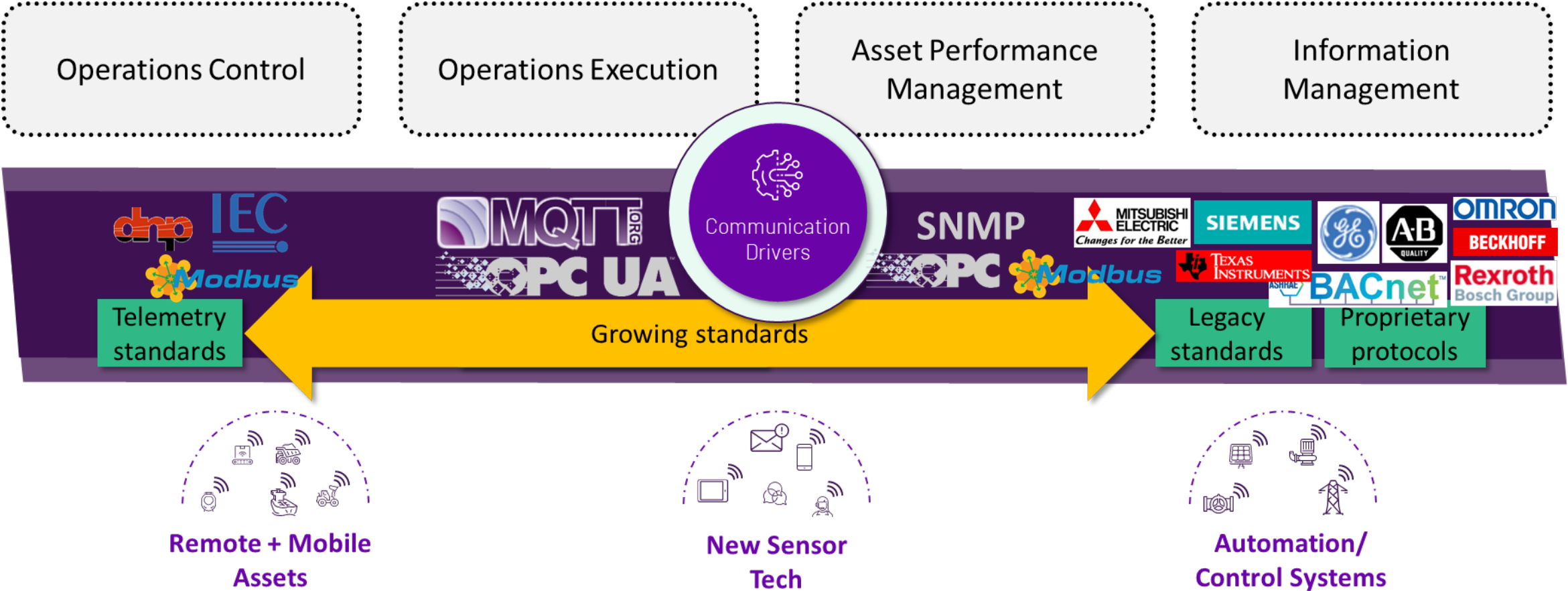
- Shorter software lifecycles
- Maintenance on scale
- Timely vendor support



Security

- Security by design
- Communication over public networks
- Quick response to new security vulnerabilities

Summary

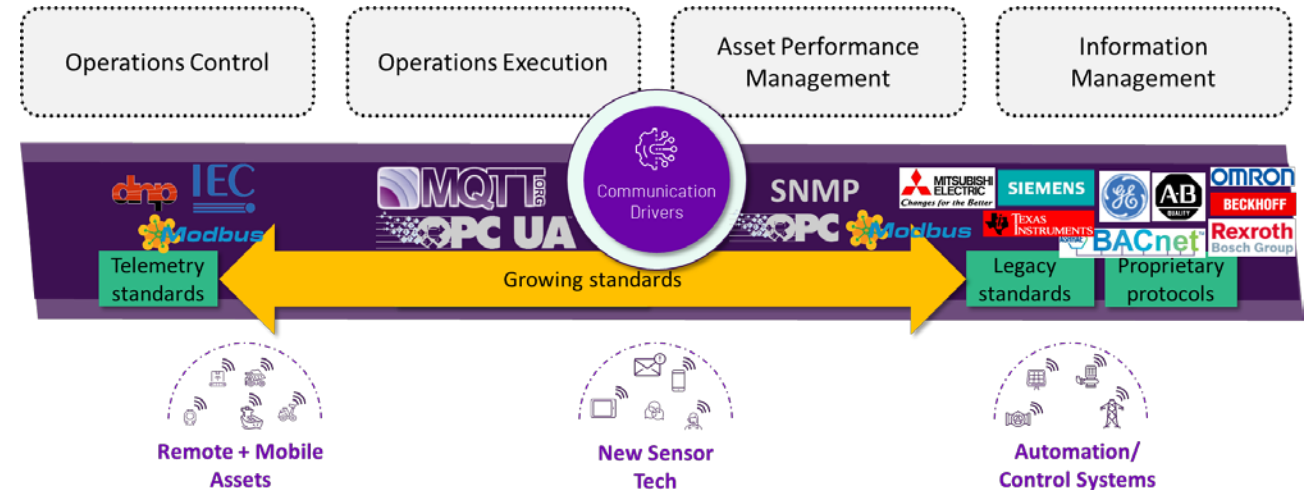


Summary

- Open industrial standards facilitate
 - Interconnectivity
 - Interoperability
 - Cyber Security ecosystem

- AVEVA Communication Drivers


- Incorporates open standards such as OPC UA and MQTT
- Supports a wide range of vendor protocols, domain-specific protocols and legacy standards
- Enables a unified operational platform across heterogeneous data landscapes




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