

OCTOBER 24, 2023

Empowering infrastructure teams from edge to enterprise

Connecting operations

John Krajewski

AVEVA

How we support infrastructure market and business imperatives

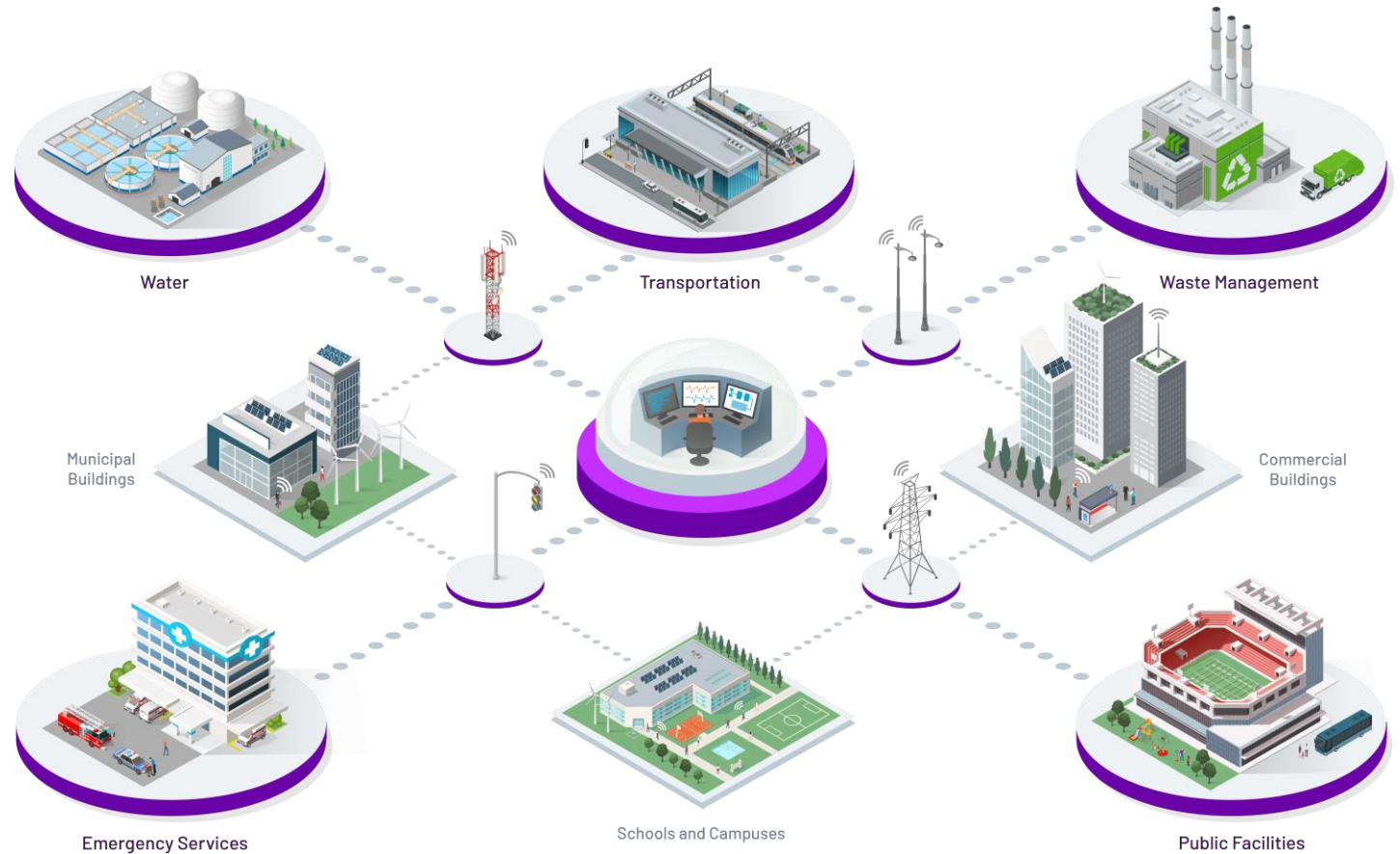
Visibility and multi-org collaboration enabled through agnostic **connectivity, visualization and sharing**

Addressing city challenges

- Data silos hampering coordinated response
- Supporting multiple entities and stakeholders
- Integrating disparate systems
- Optimizing workflows and efficiencies

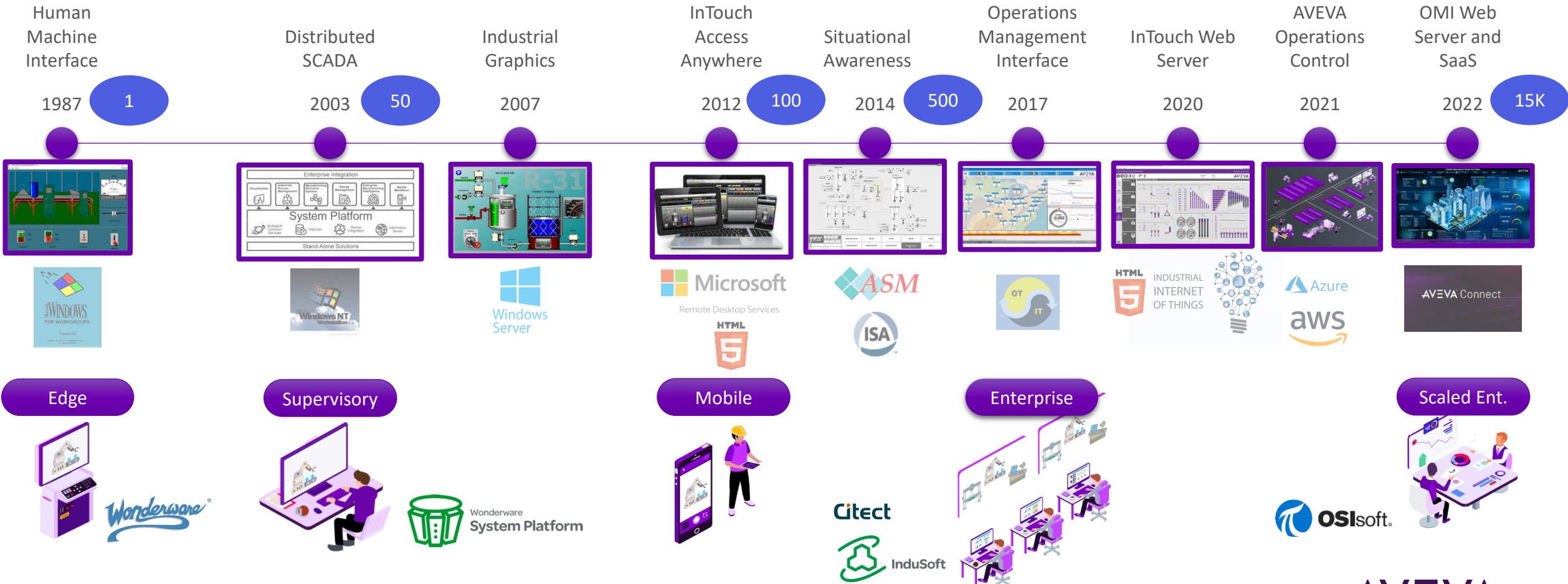
Addressing business imperatives

- Operational agility and resiliency
- Operational efficiency
- Transformation of work
- Asset reliability and safety
- Sustainability and net zero



Technical evolution to unified operations platform

Proven history of market-leading innovation



AVEVA™ Operations Control

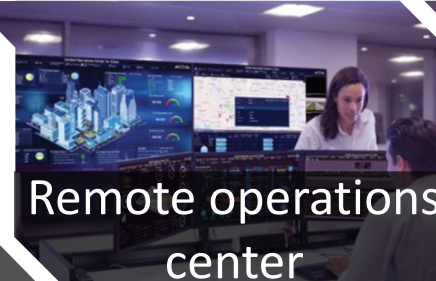
Evolving HMI/SCADA to operations control

Unified Operations Center (UOC)

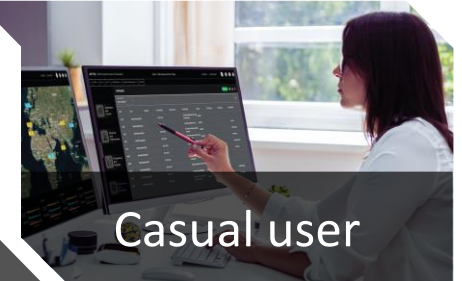
Long-term focus
(up to one year)
Enterprise view
IT/OT convergence



Command center



Remote operations center



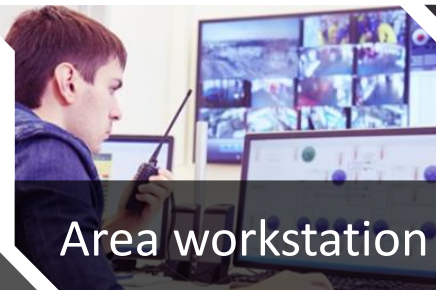
Casual user

AVEVA Operations Control Supervisory

Medium-term focus
(up to one week)
Process view
OT convergence



Control room



Area workstation



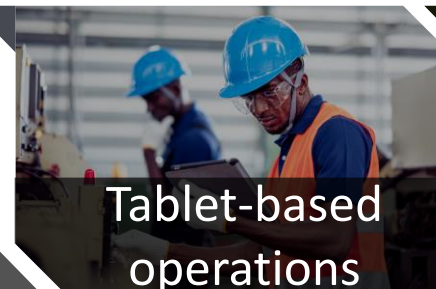
Mobile supervisor

AVEVA Operations Control Edge

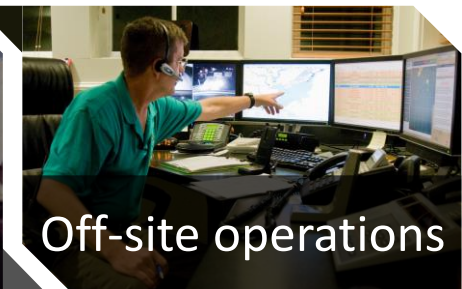
Short-term focus
(up to one shift)
Work cell view
Control convergence



Panel-based operations



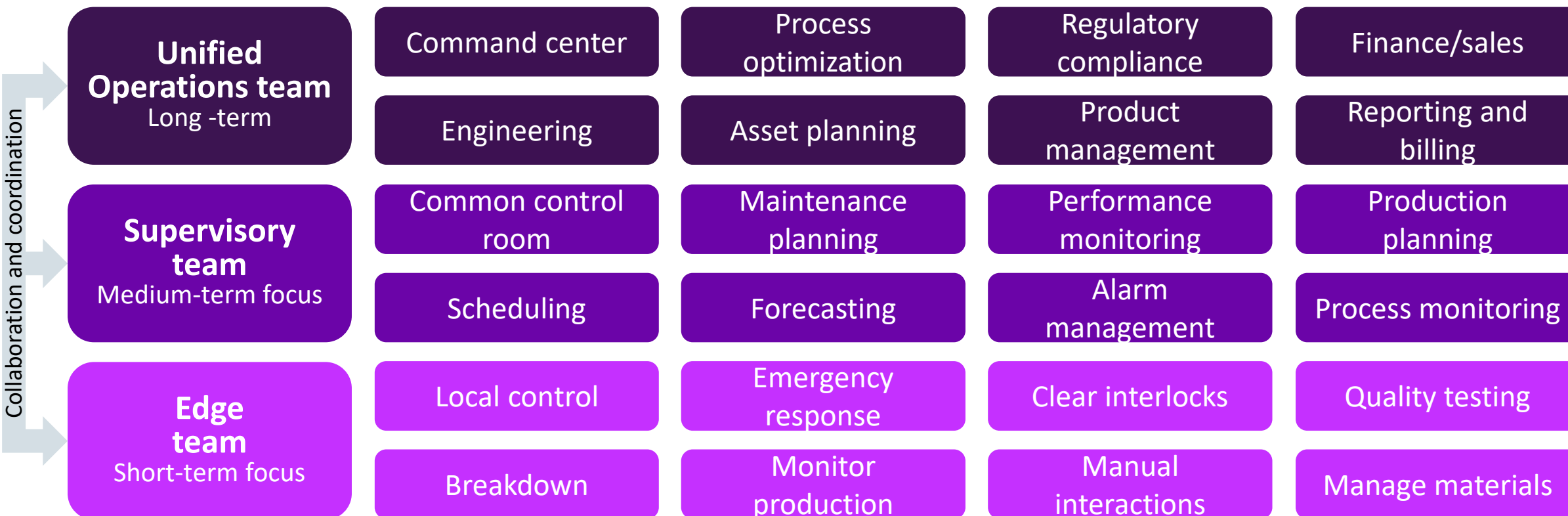
Tablet-based operations



Off-site operations

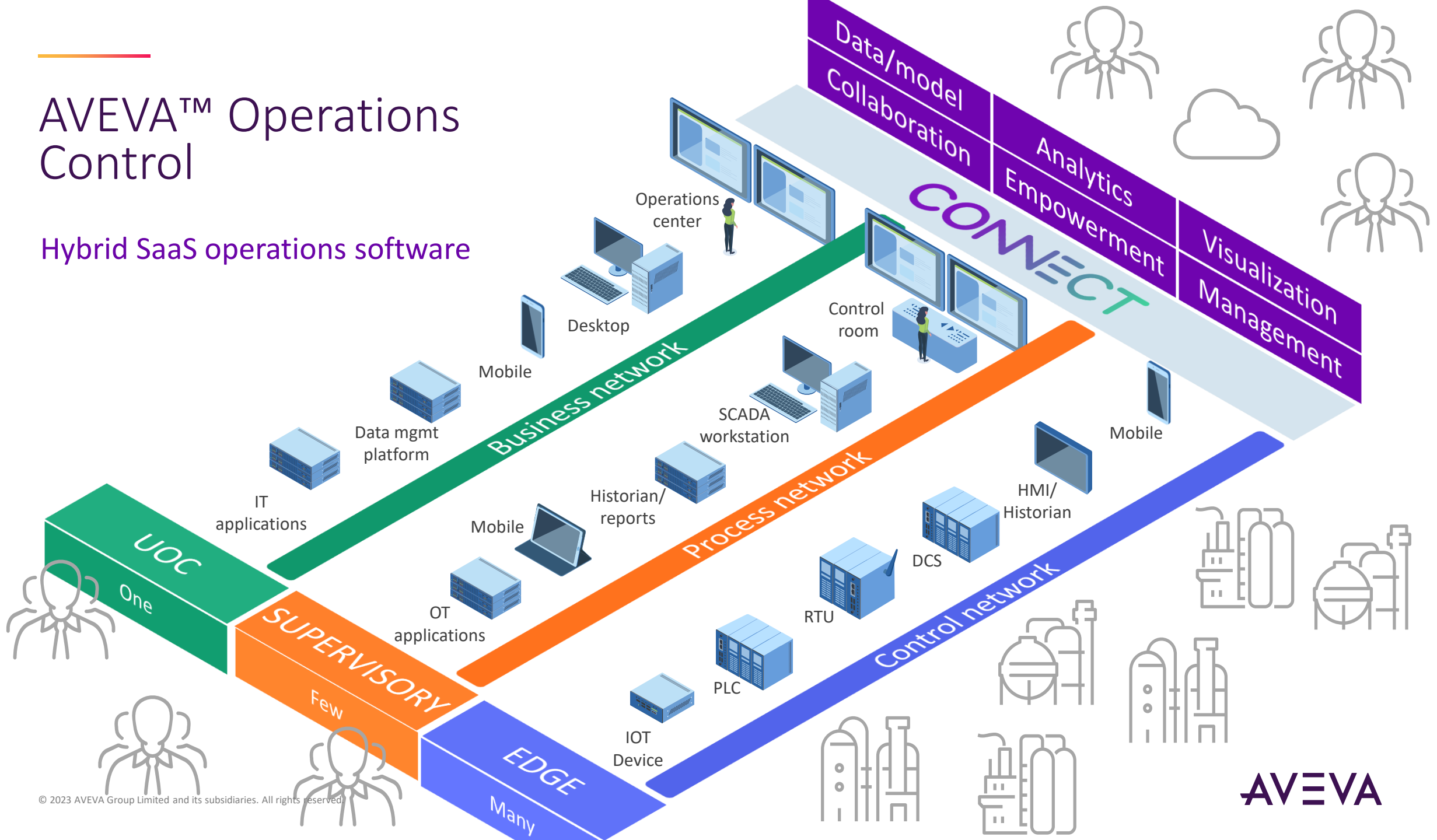
Various cross-departmental activities

Driven toward a common goal through coordination



AVEVA™ Operations Control

Hybrid SaaS operations software



AVEVA™ Edge operations for infrastructure



AVEVA™ Edge operations scope

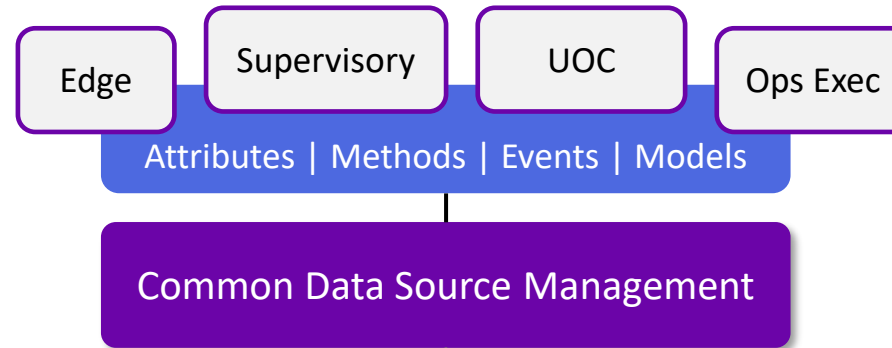
Human machine interface/industrial internet of things

- Connectivity – Open standards, proprietary protocols (PLC/RTU/DCS)
- Process Visualization – Situational awareness driving informed action
- Alarming - Often the first indication for production personnel that something is wrong
Business logic - Customize the functionality and appearance of your human machine interface
- Data storage - Store and log all of the data that the HMI/IIoT system aggregates.
- Footprint – Operating on small embedded computing devices up to industrial PCs



Integration of diverse data sources

A unified data source management feature across the portfolio



Expanding beyond traditional device integration

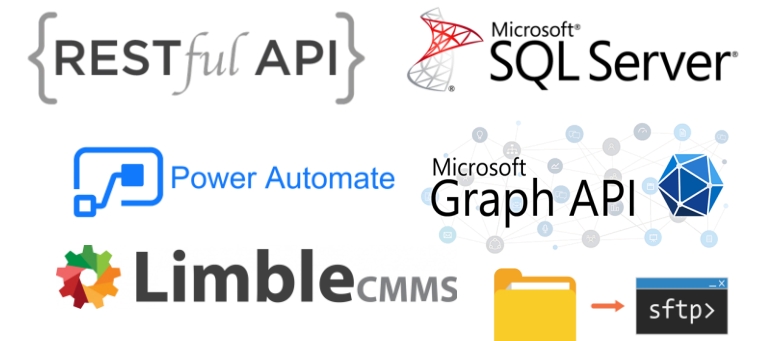
Control systems and sensors



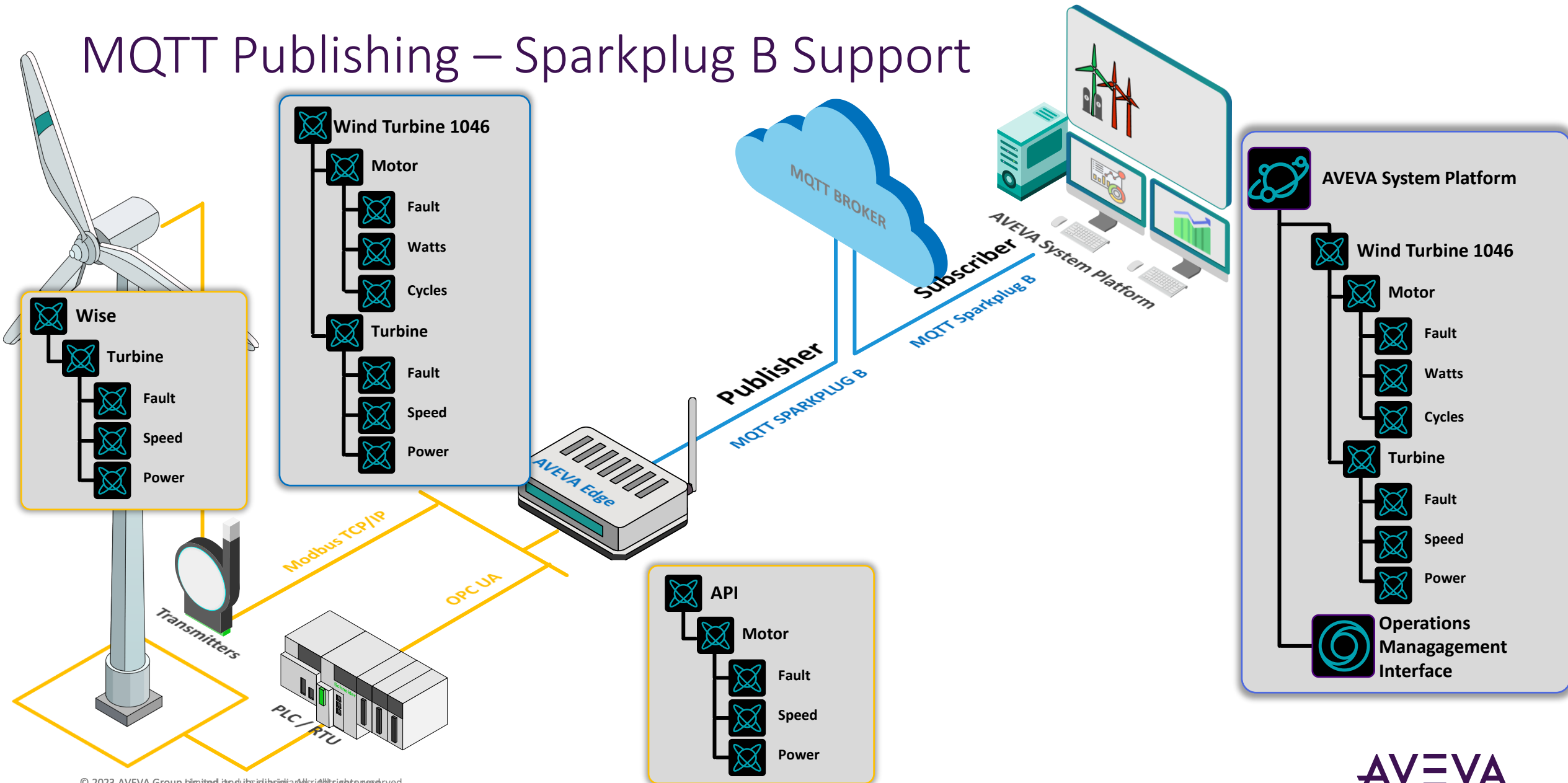
Autonomous systems



Software and services

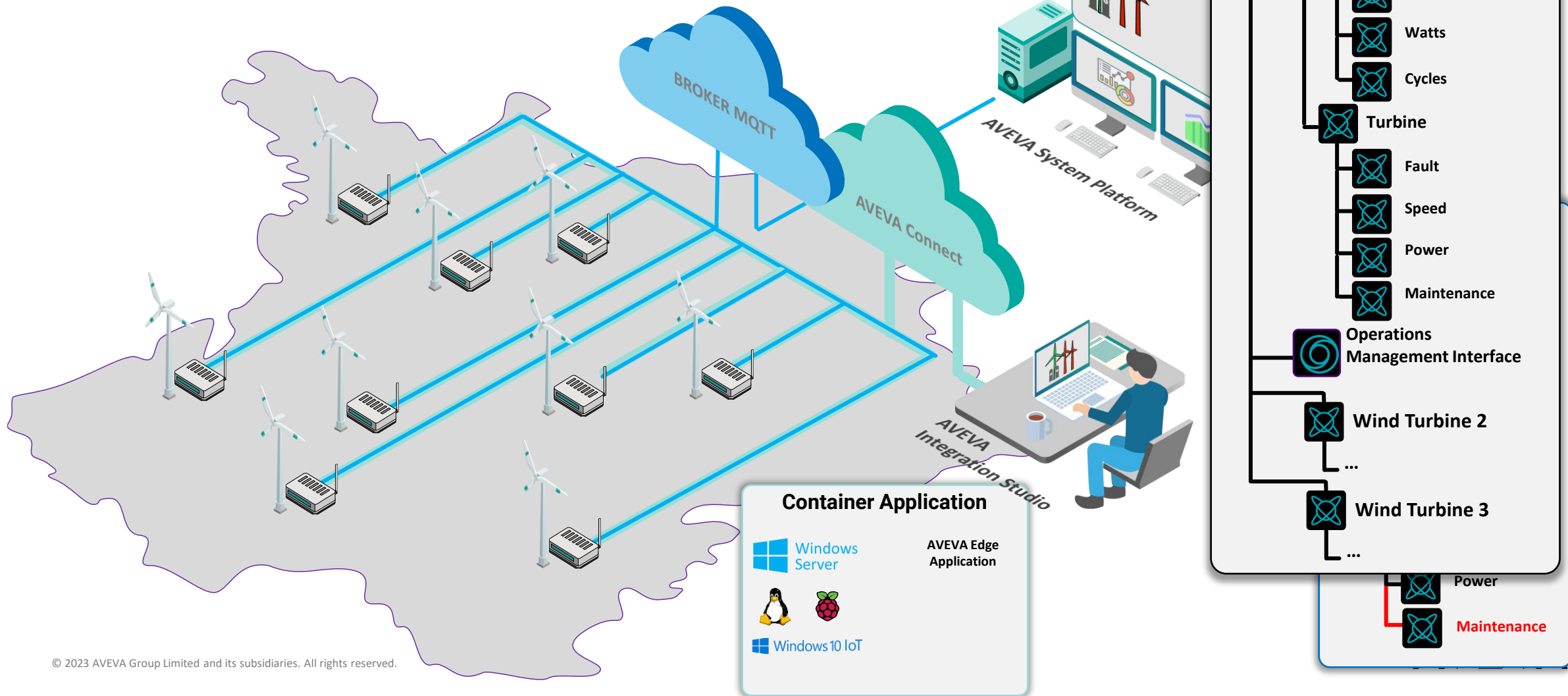


MQTT Publishing – Sparkplug B Support



AVEVA™ Edge management services

Centralized management of sites



Basics

Content

Advanced

Process Examples

Situational Awareness

Meters

Styles

Dashboard 1

Dashboard 2

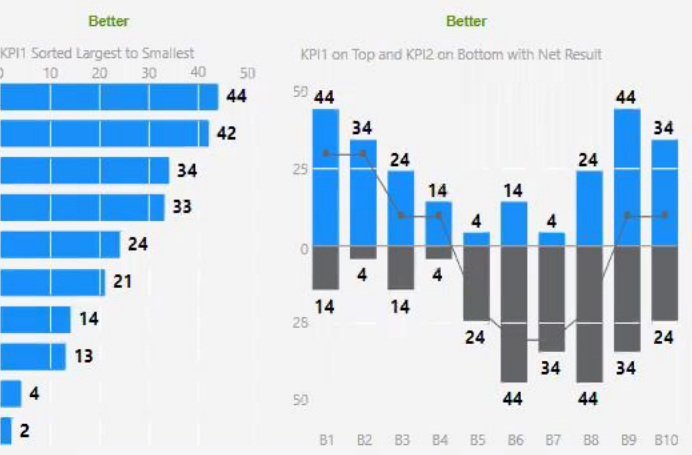
Dashboard 3

Situational Awareness Overview

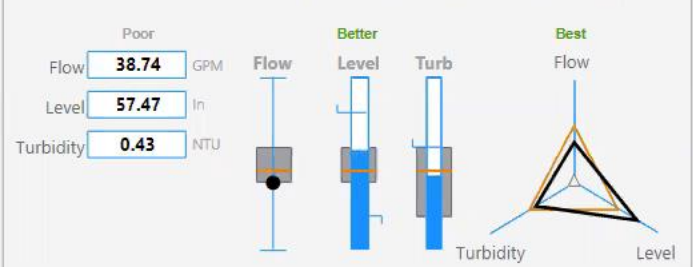
Which visualization style gives the best understanding how FIT123 is performing?



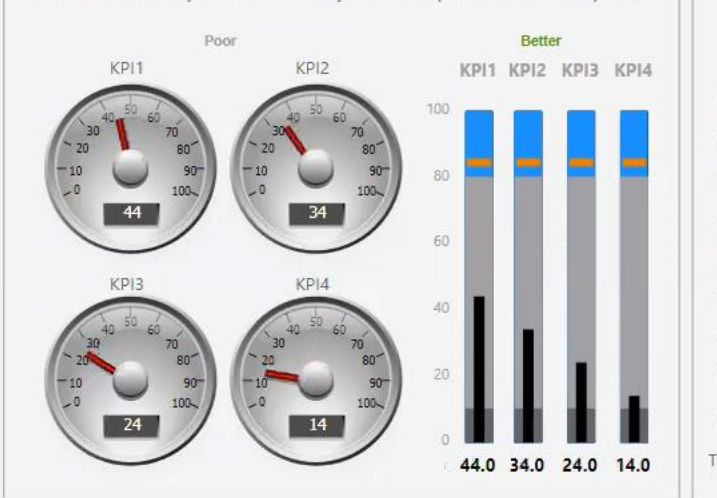
Which visualization style best communicates data patterns and relationships in real time?



Which style best communicates how well the Filter 100 process is performing?



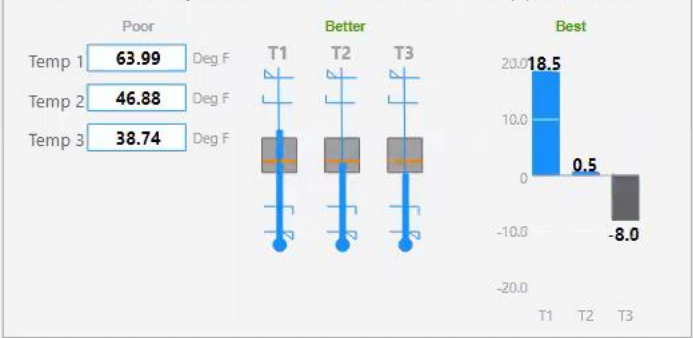
Which visualization style best allows analysis and comparison across multiple KPIs?



Which visualization style best allows analysis and comparison across multiple...



Which visualization style best communicates overall control loop performance?



Supervisory operations for infrastructure

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Supervisory operations scope

Supervisory control and data acquisition

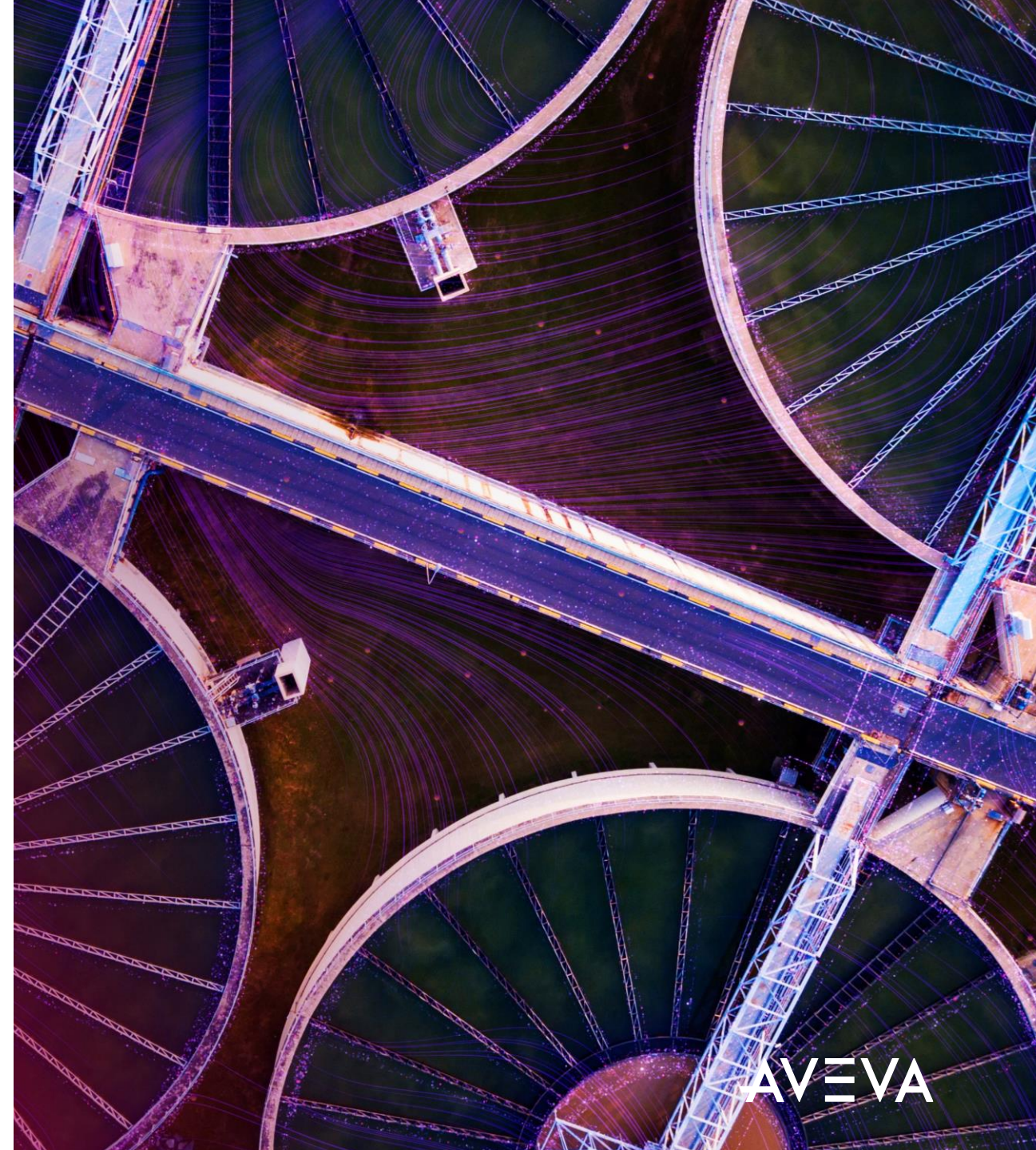
- **Extension of AVEVA Edge** – Connectivity, process visualization, alarming, business logic, data storage
- **Scale** – Aggregate information from many edge systems and equipment – up to millions of tags
- **Scope** – Operations extend across vast geographical boundaries
- **Longer time horizons** – Execution of production and maintenance plans/schedules
- **Availability** – Fault tolerance, redundancy, and disaster recovery are core expectations
- **Footprint** – Operating on industrial PCs and up to/along with cloud computing infrastructures



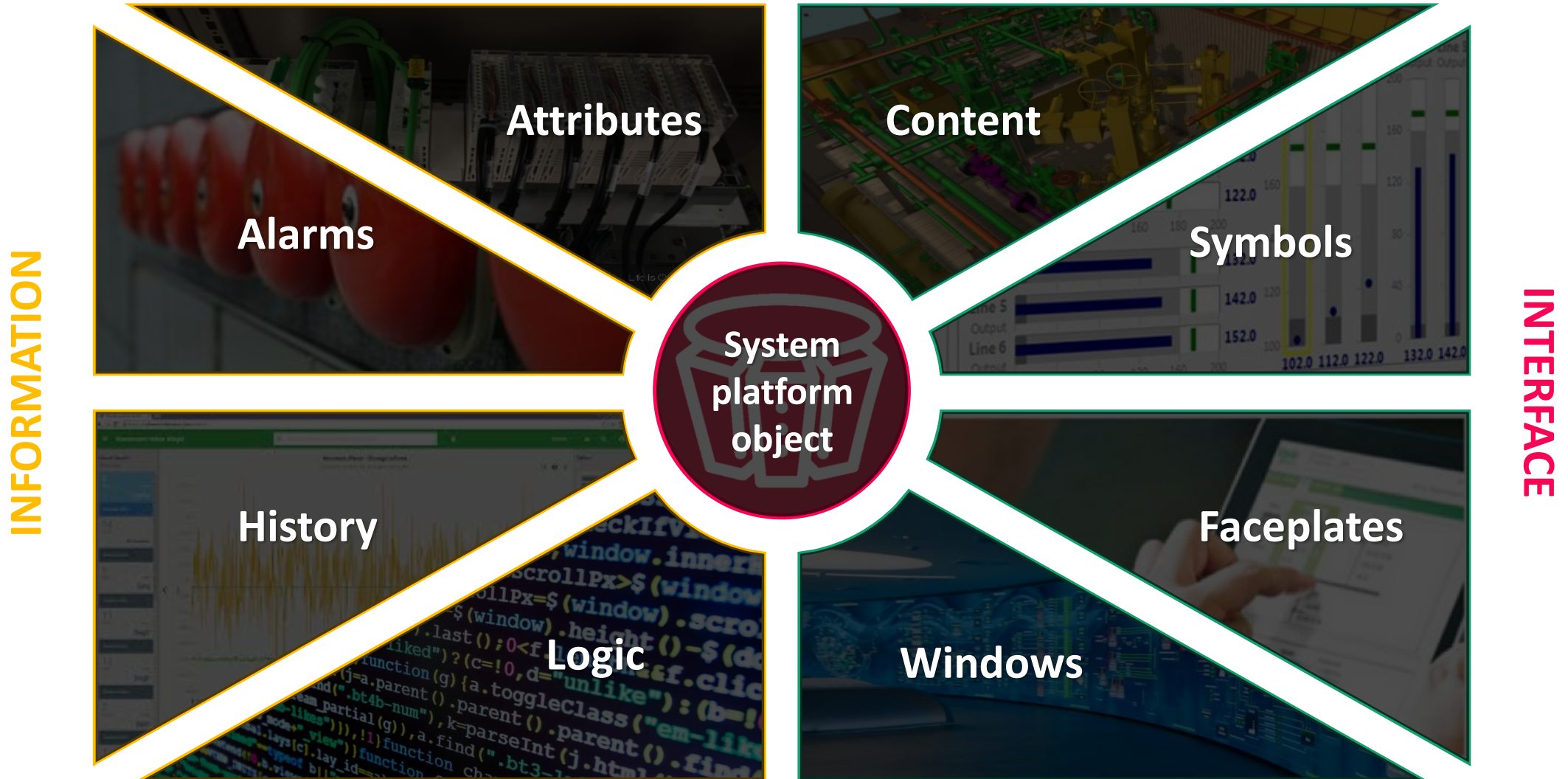
Operational technologies

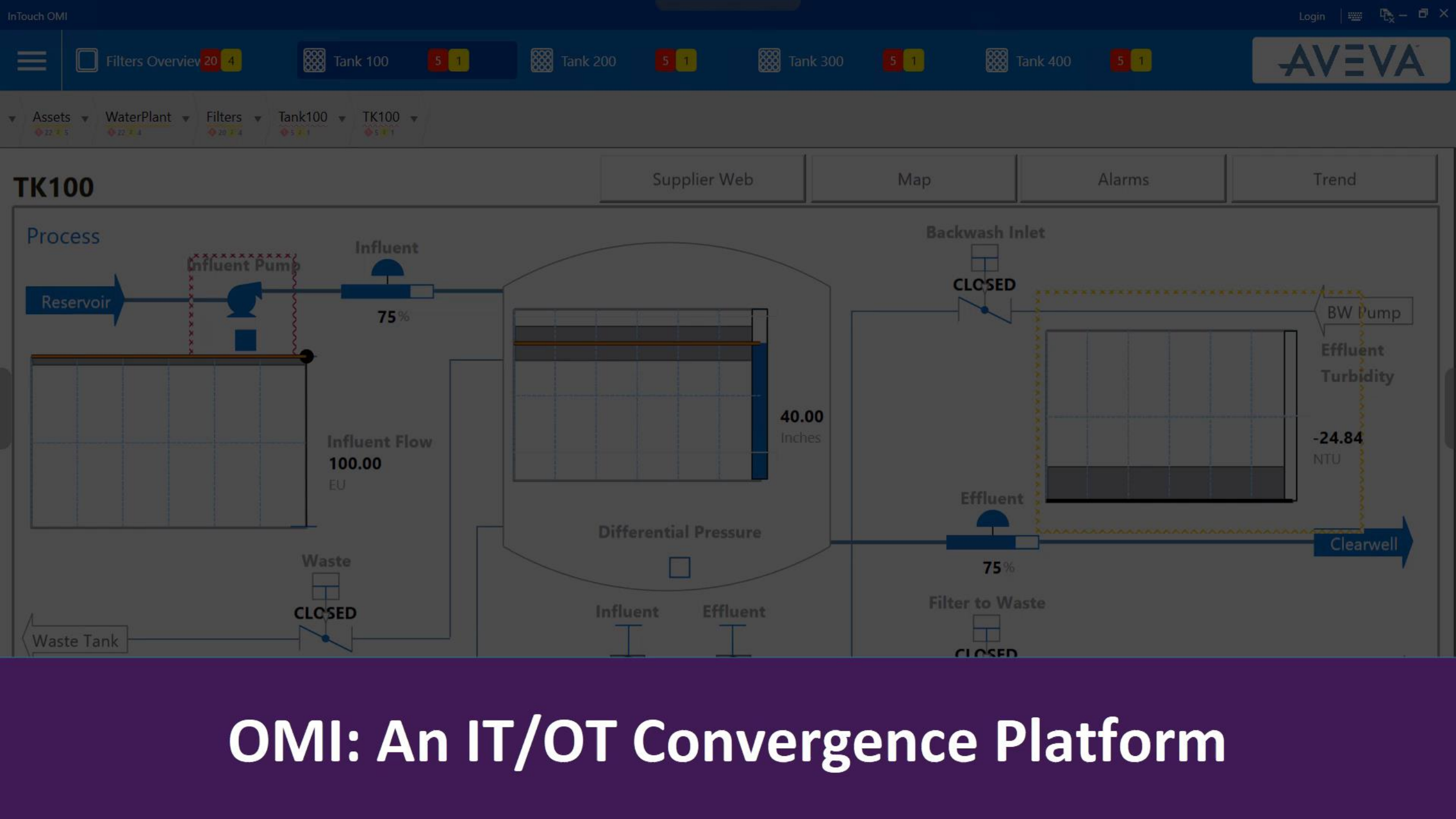
From hardware to software

Sensors	Devices	PLC	RTU
DCS	IIoT	HMI/SCADA	Collaboration
Historian	Trending	Advanced analysis	Vision/camera
Alarm management	Logbook	Workflow	Gateways
AI/ML	Training	Issues management	More...



Operational digital twin – increasing scope





OMI: An IT/OT Convergence Platform

Unified operations for infrastructure

AVEVA



Organizations increasingly require the ability to rapidly study operational conditions to make key business decisions.

How do we **increase visibility into operations** globally?

How do we ensure **availability and reliability of assets**?

What can we optimize to meet **sustainability goals**?

Where do we need to **make decisions now**?

How do we improve the range of **subject-matter expects**?

How can we **improve our responsiveness** to issues?



Drive to unify

Transform operations by increasing visibility and accessibility to context-driven actionable information

Achieving value from data

To remain competitive, decision-makers require an enhanced layer of intelligence ensuring that an organization's data works in service to organizational goals.

Collaboration challenges

Organizations lack collaboration across different departments, information is dispersed in multiple systems and data sources, and decision-makers lack timely visibility into operations performance metrics.

Ideal solution

According to research by McKinsey, cross-functional operations transformations typically outperform their single-function counterparts by between 30 and 40%.

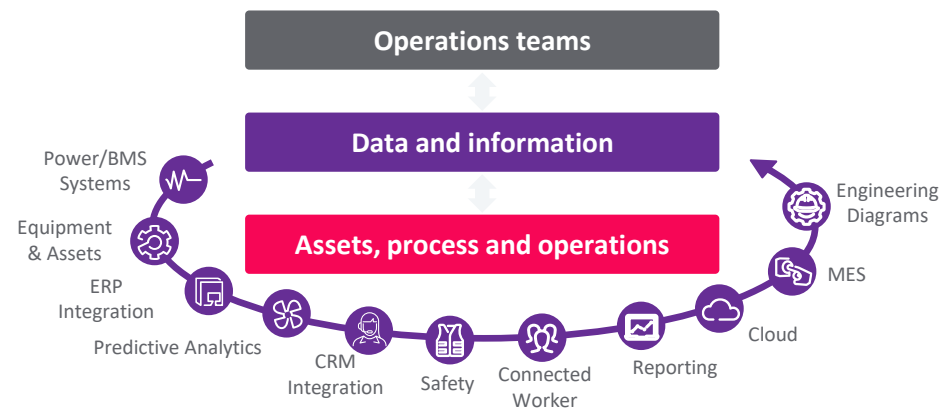
Unifying operations – convergence of IT, OT & ET

360° view of asset and operations life cycle

Reporting	Scheduling	Financials	EAM
Inventory	3D modeling	ERP	Mapping / GIS
Documents	Analysis	CRM	Schematics
Training	Health and safety	Standard operating procedures	Communications

OT/IT/ET Convergence

HMI / SCADA	Collaboration	OEE	Downtime analysis
Historian	Trends	Alarm management	PLC
Guided analytics	Advanced analytics	Vision system	Workflow
Batch	MES	Logbook	Energy management
Recipe	Quality	Simulation	Digital safety management



Relate disparate data sources and systems in context to each other

Reduce the effort required to identify insights between applications and data types

Provide actionable information to operations teams

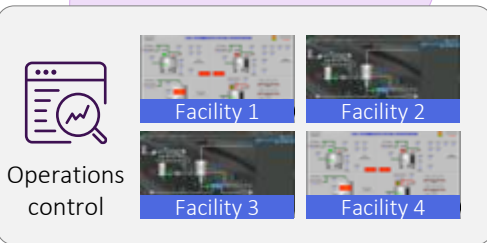
Scaling beyond traditional operations control

Enterprise visualization

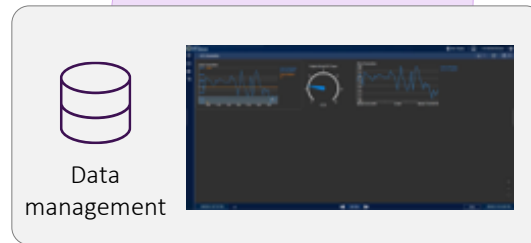
- High-level perspective
- Consolidated content
- Enriched data in context
- Connected workforce enablement
- Operating environment for decisions



Operations control



Data management



Maintenance

AI/ML

Engineering information

3D models

Financial and business

Weather

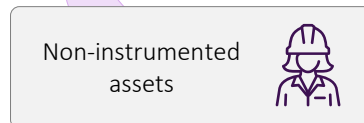
Other data systems

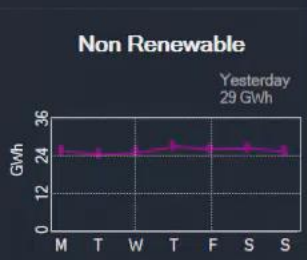
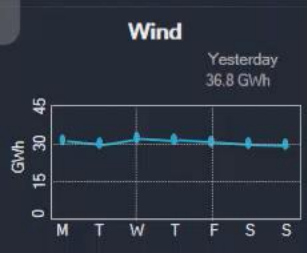
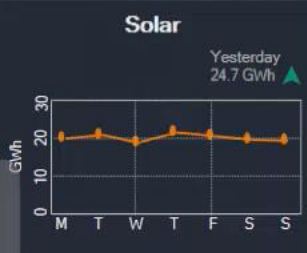
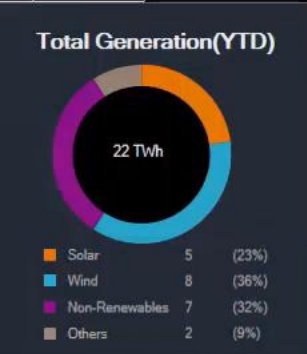
Wider information in context to operations

Instrumented assets

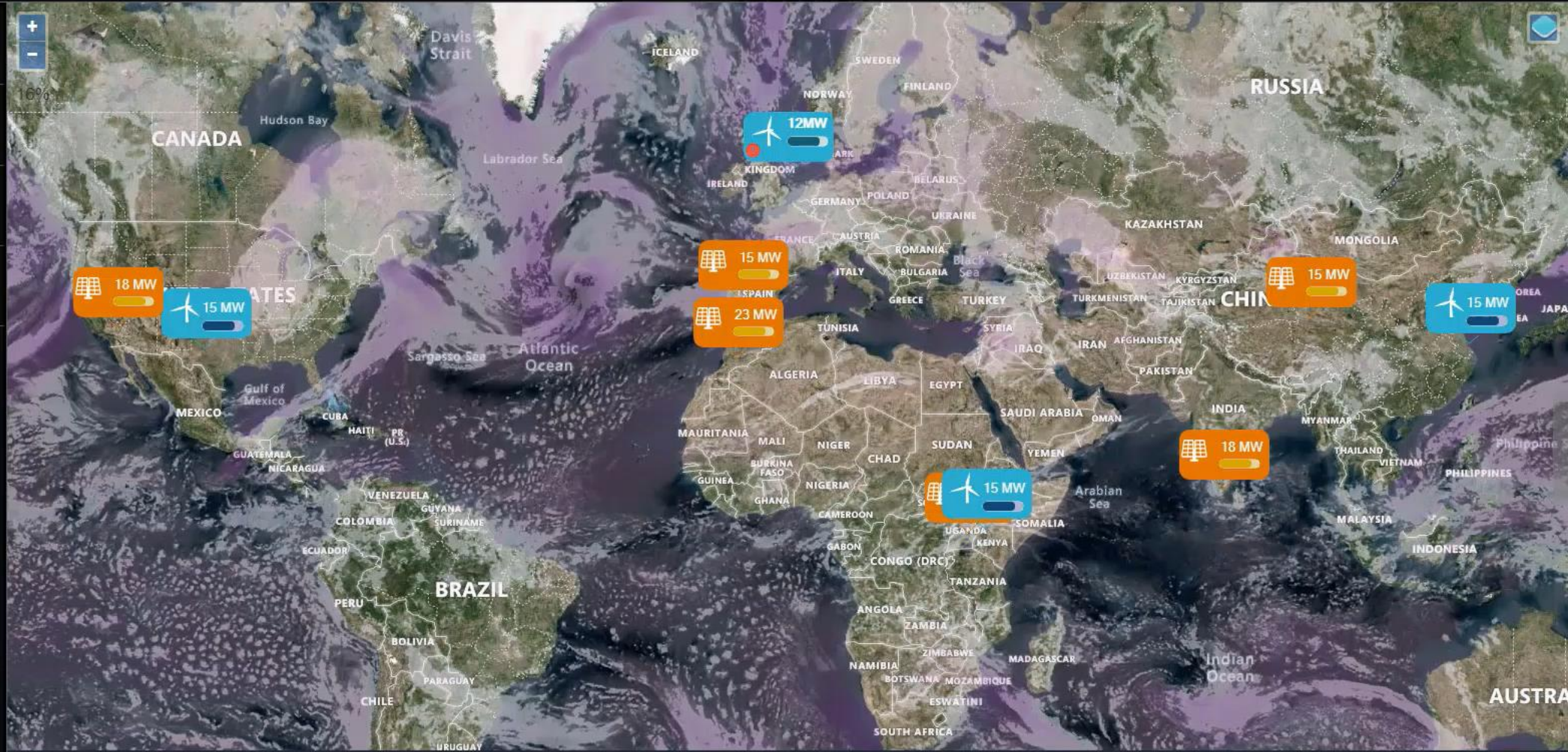


Non-instrumented assets





- OPERATION
- REVENUE
- FORECAST
- MAINTENANCE



Region	Total TWh	Solar %	Wind %	Non-Renewables %
North America	2.94 TWh	71%	61%	61%
Africa	3.99 TWh	72%	72%	72%
Europe	2.94 TWh	71%	71%	71%
Australia	1.89 TWh	74%	73%	74%
Asia Pacific	3.99 TWh	57%	58%	58%

Success stories

AVEVA

Gwinnett County DWR

United States of America

How a unified data platform helps improve performance and optimize water production by converging IT/OT/IloT systems for a multi-site water utility

Goals

- Realize sustainability goals while producing more than 70 million gallons of water a day for more than a million residents
- Improve visibility and insight across geographically dispersed operations
- Make smarter, more informed decisions and speed crisis response
- Minimize risk to people, assets and operations

Challenges

- To implement a single solution across half a million data points from multiple sites – spanning water production plants, distribution and transmission networks, and hundreds of water collection points – without disrupting critical services

Results

- Secure solution from plant floor to top floor provides easy access to relevant data by roles
- Situational awareness helps staff to make faster, data-driven decisions
- Improved redundancy and reliability
- Cloud-based analytics utilize machine learning to reduce energy consumption and increase performance
- Reduced total cost to operate by leveraging remote access and cybersecurity capabilities in order manage all operations from one system, accessible anywhere in the field



Industry: Water and wastewater

Solution: AVEVA™ Unified Operations Control, including AVEVA™ Insight and AVEVA™ System Platform with Operations Management Interface (OMI), and AVEVA™ Unified Operations Center

“Now we have a wonderful solution that people from all the levels - operations, maintenance, engineering, scientists - can access the data... from anywhere they are”

Sam Paul, Section Manager – Process Automation / SCADA Systems and Projects, Gwinnett County Department of Water Resources

AVEVA

Air Selangor

Malaysia

Improving operational efficiency for Malaysia's largest water operator

Goals

- Fast-track strategic initiative to digitalize and improve operational efficiency
- Create a central command center to manage complex water value chain in real-time
- Work with AVEVA ecosystem partner CTI Resources to deliver project on time and on budget

Challenges

- Gaining visibility across 1,000+ reservoirs, suction tanks and pump houses
- Remote assets required human intervention for operational decisions

Results

- Intelligent command center (ICC), leveraging AVEVA Operations Control, has enabled real-time monitoring and control, remote operation, pump and valve automation, and integration with online models and ERP systems
- Fully automated pump stations and valves for normal, startup and shutdown operation with anywhere, anytime access
- Reduction of 50% manpower when pump stations are fully automated
- Proactive situational awareness and analytics
- Reduced response times and operating costs
- Return on investment (ROI) of 5.8 years



Industry: Water and wastewater

Solutions: AVEVA™ Operations Control, AVEVA™ System Platform, AVEVA™ Historian

“But now with this new digital era we can do many statistics. We can add proactive situational awareness and analytics into our ICC and enable real-time remote monitoring and control, and even full automation of remote assets like our pump houses.”

Ahmad Fuad Bin Zainudin
Operations Services Head of Department, Air
Selangor





Learn more:

Qatar Foundation: EPC of SCADA System
Track: Infrastructure | Tomorrow AM

Increasing operational visibility for Qatar Foundation at Education City
Track: HMI/ SCADA User | Tomorrow PM

Visit these booths to chat with experts and see what's new
Expo: Operations Control – Edge & Supervisory, Ecosystem – Edge & IIoT

Questions?

Please wait for the microphone.
State your name and company.



Please remember to...

Navigate to this session in the mobile app to complete the survey.



Thank you!

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ABOUT AVEVA

AVEVA is a world leader in industrial software, providing engineering and operational solutions across multiple industries, including oil and gas, chemical, pharmaceutical, power and utilities, marine, renewables, and food and beverage. Our agnostic and open architecture helps organizations design, build, operate, maintain and optimize the complete lifecycle of complex industrial assets, from production plants and offshore platforms to manufactured consumer goods.

Over 20,000 enterprises in over 100 countries rely on AVEVA to help them deliver life's essentials: safe and reliable energy, food, medicines, infrastructure and more. By connecting people with trusted information and AI-enriched insights, AVEVA enables teams to engineer efficiently and optimize operations, driving growth and sustainability.

Named as one of the world's most innovative companies, AVEVA supports customers with open solutions and the expertise of more than 6,400 employees, 5,000 partners and 5,700 certified developers. The company is headquartered in Cambridge, UK.

Learn more at www.aveva.com