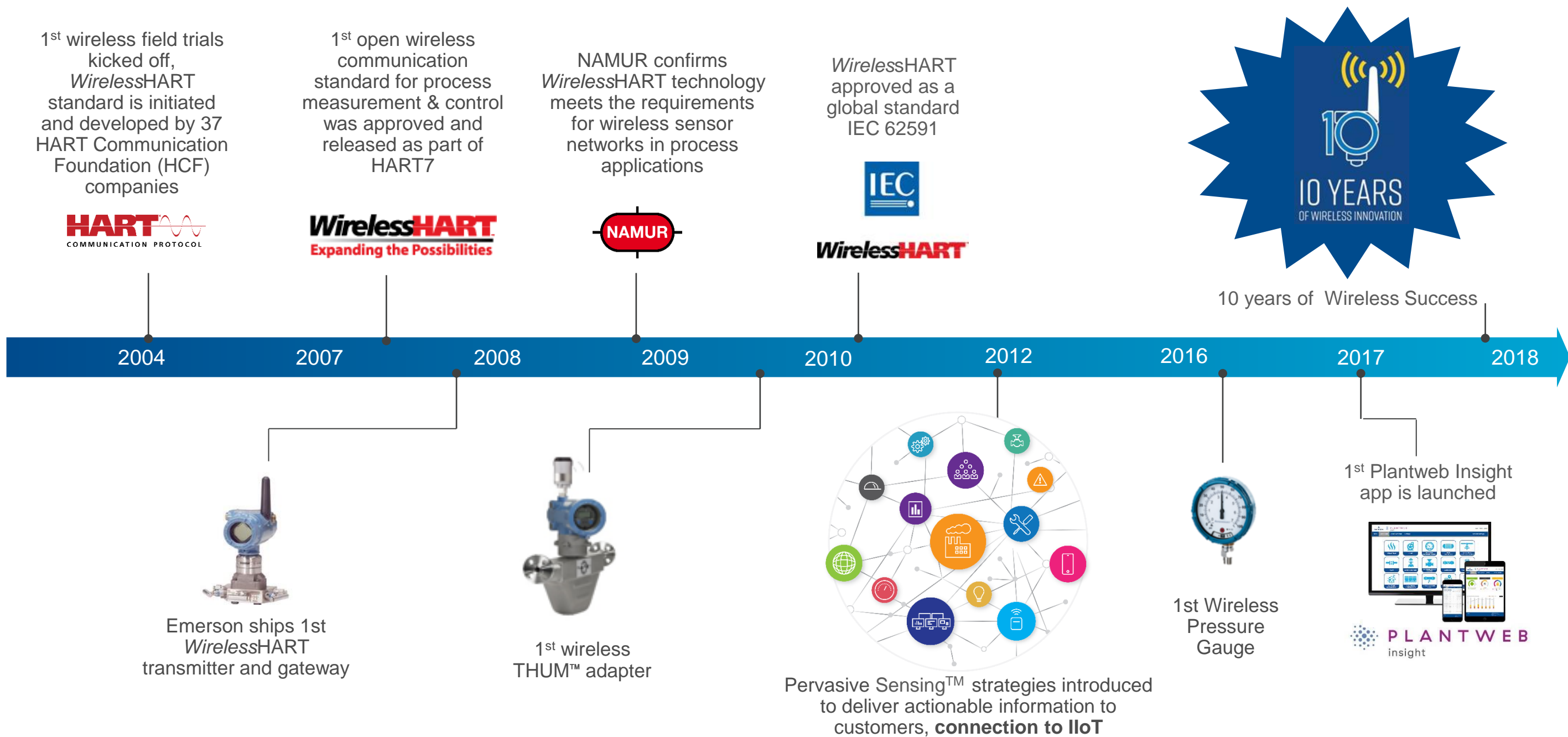


TECHNOLOGY OVERVIEW

Wireless with WirelessHART

Emerson's Wireless Evolution

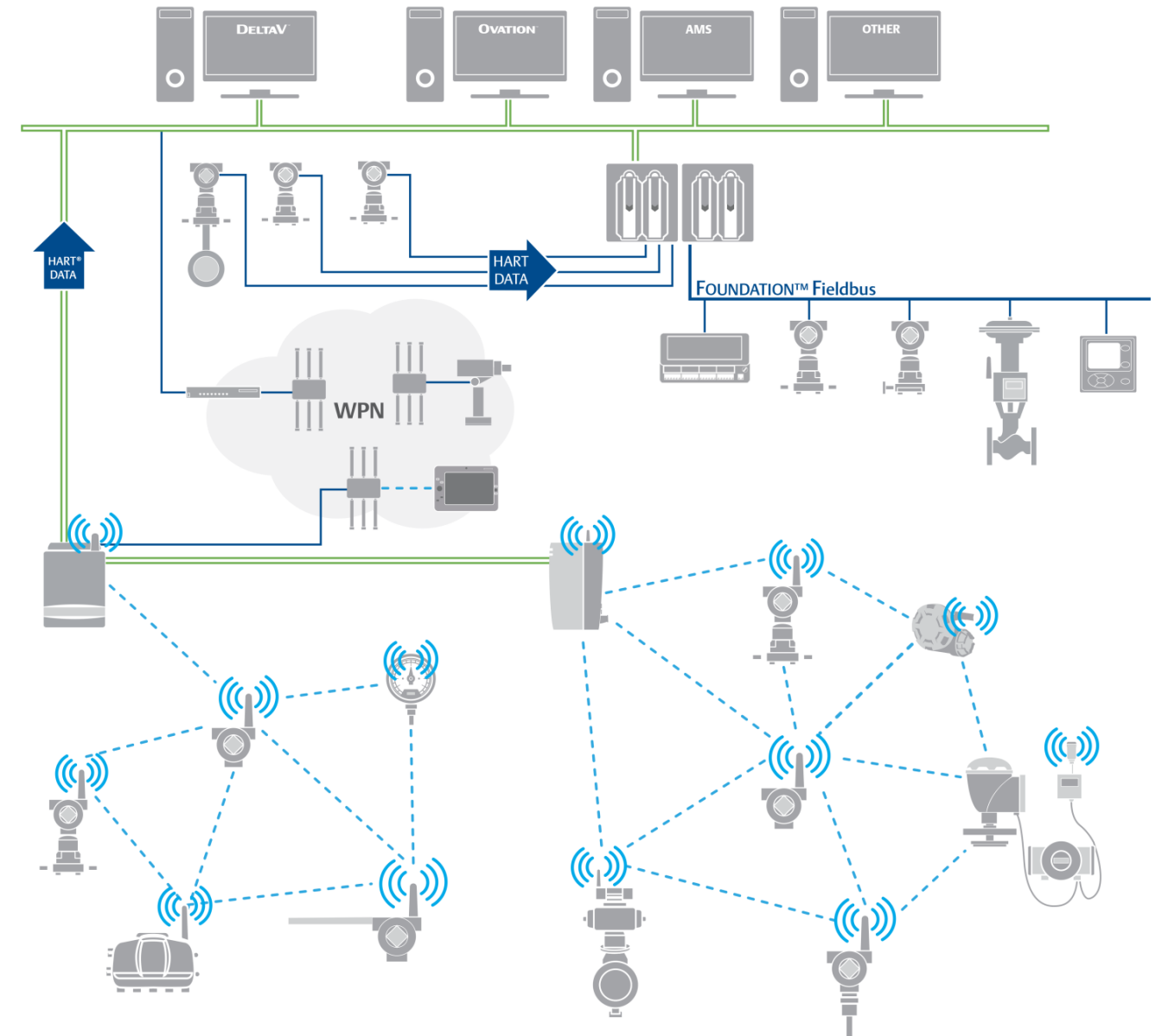


Hundreds-of-Thousands of Wireless Field Devices Installed Worldwide



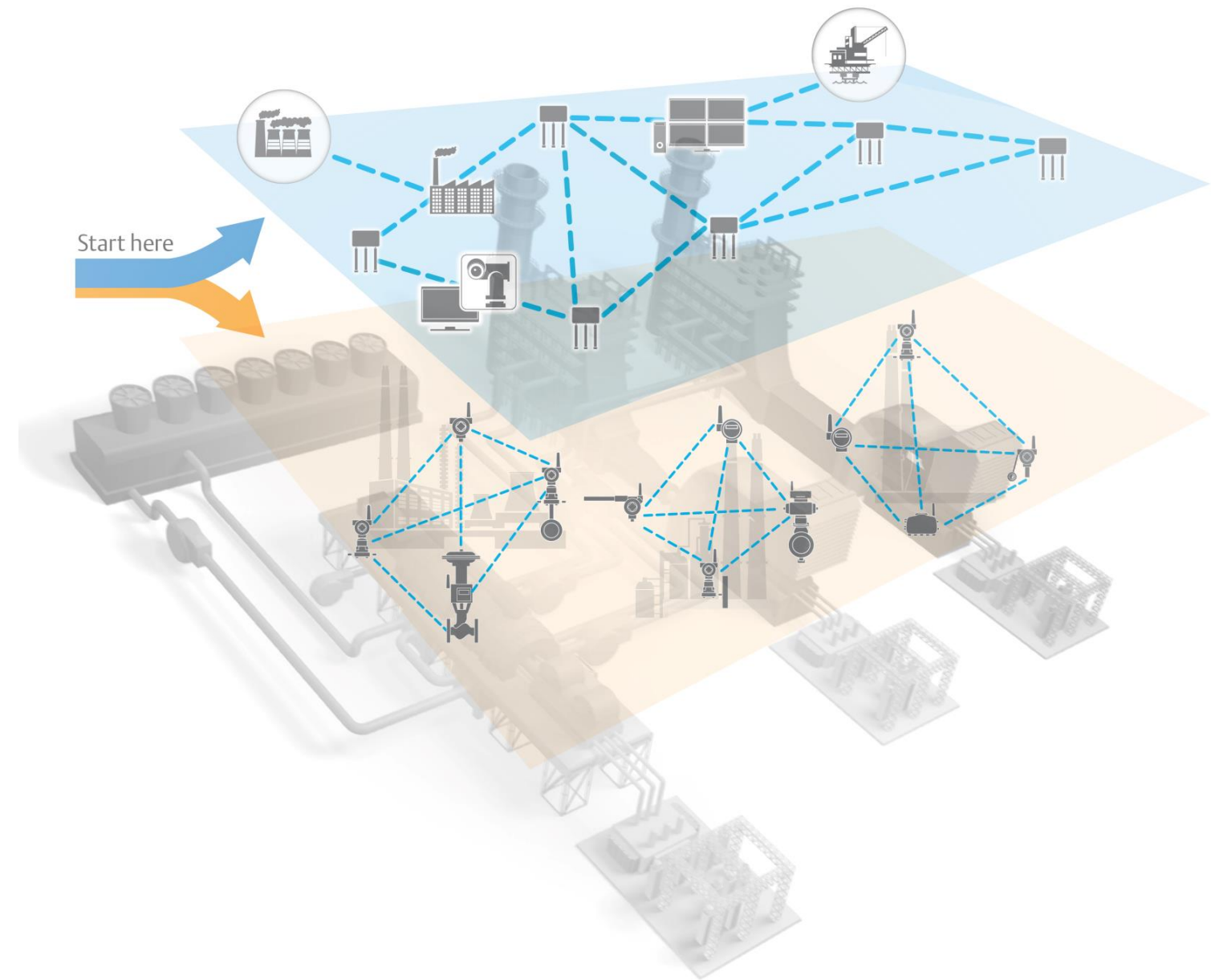
See Your Plant in a Whole New Way

- Wireless field network solutions help you touch more of your plant with predictive intelligence
 - **Eliminate “blind spots”** in your plant
 - Gives you visibility to **detect problems before they occur**
 - Plant-wide sensing **increases your monitoring reach and provides real-time data**



Easily Start and Scale Your Network

- Lower installation costs
- Low maintenance, non-intrusive and self-powered
- Elimination of site surveys
- Scalable



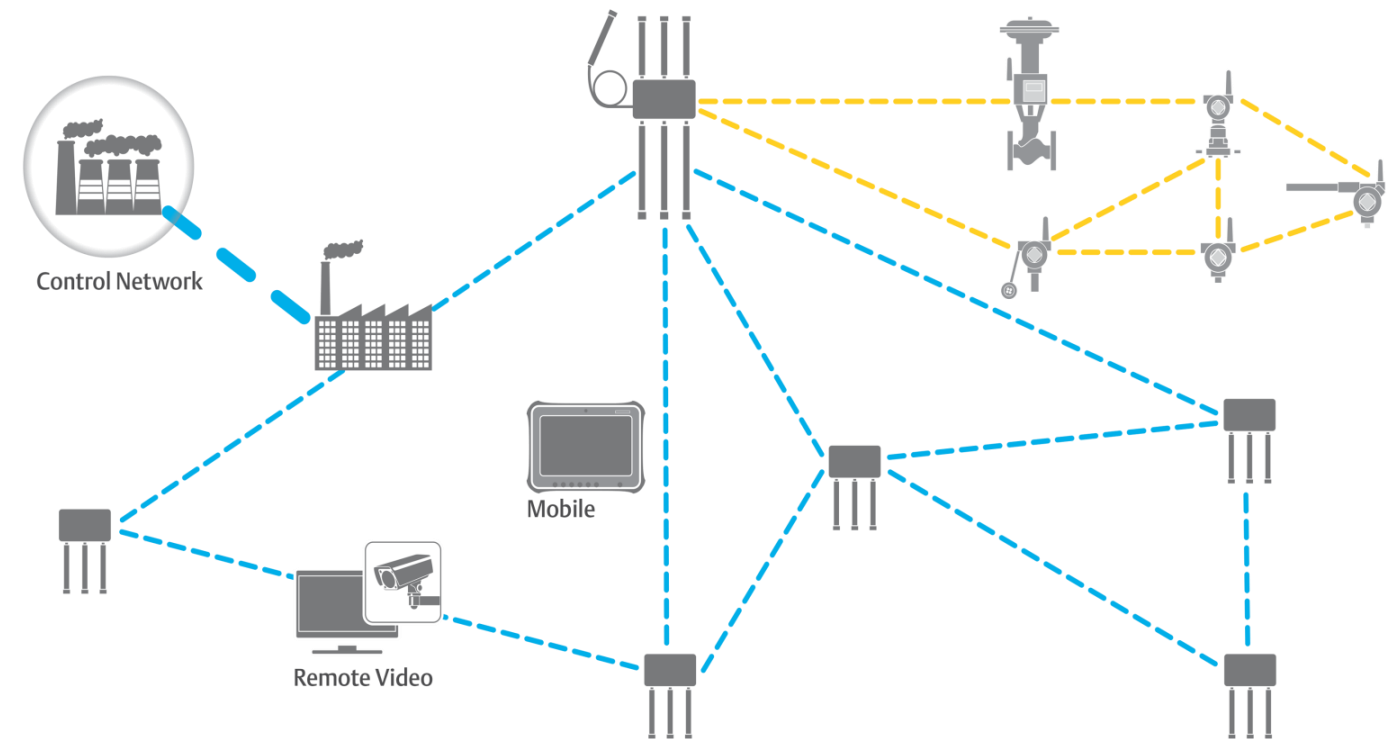
Secure Your Future with Wireless

- Key components all work together consistently and seamlessly
 - Open standards
 - Mesh technology is **self-healing and self-organizing**
 - **99% data reliability**
 - **Layered security** keeps your network safe
 - **Third party security verification**



Improve Productivity and Safety – for Your People and Your Plant

- Enable greater workforce productivity and safety regardless of skill or experience
 - **Less training needed**
 - **Constant connectivity**
 - **Avoid sending personnel into the field more often than necessary**



Putting Wireless to Work for You

Wireless Plant Applications

- Field Data Backhaul
- Mobile Workforce
- Control Network Bridge

Wireless Field Networks

- Difficult Process Monitoring
- Rotating Equipment
- Environmental
- Safety System Status
- Operator Safety
- On/Off Valve Position
- Process Start-Up



Network Infrastructure Key Components

Key components all work together to deliver a secure and consistent wireless infrastructure scalable to fit any need from a single application through plant-wide implementation



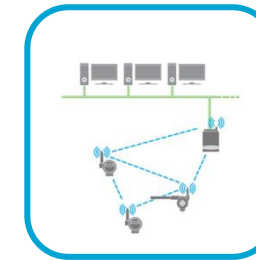
Mesh Access Points



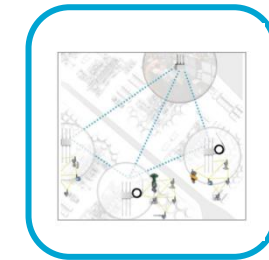
**Wired and Wireless
Devices**



**SmartPower
Solutions**



**Seamless Integration
via LAN to all Existing
Host Systems**



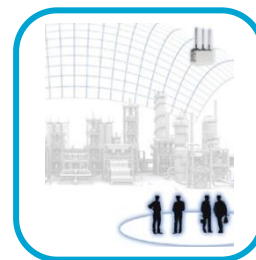
**Self-Organizing,
Adaptive
Mesh Routing**



**Wireless Mobile
Voice & Video**



Mobile Workforce



**Wireless Safety
Mustering**



**Wireless Personnel &
Asset Tracking**



**Wireless Remote Video
Monitoring**

Wireless Product Portfolio



**Pressure
Transmitters and
Gauges**



**Totalizing
Transmitter**



**Temperature
Transmitters**



**Discrete
Transmitter**



**Acoustic
Transmitter**



**Vibration
Transmitter**

Wireless Product Portfolio



Guided Wave Radar



**Vibrating Fork
Liquid Level Switch**



Tank Gauging



Position Monitors



**Corrosion Monitoring
Transmitters**



Gas Monitor

Wireless Product Portfolio



Gateways



THUM Adapter
*(*Explosionproof approval option
available in U.S. and Canada)*



Critical Asset
Monitoring



AMS Wireless
SNAP-ON™
Application

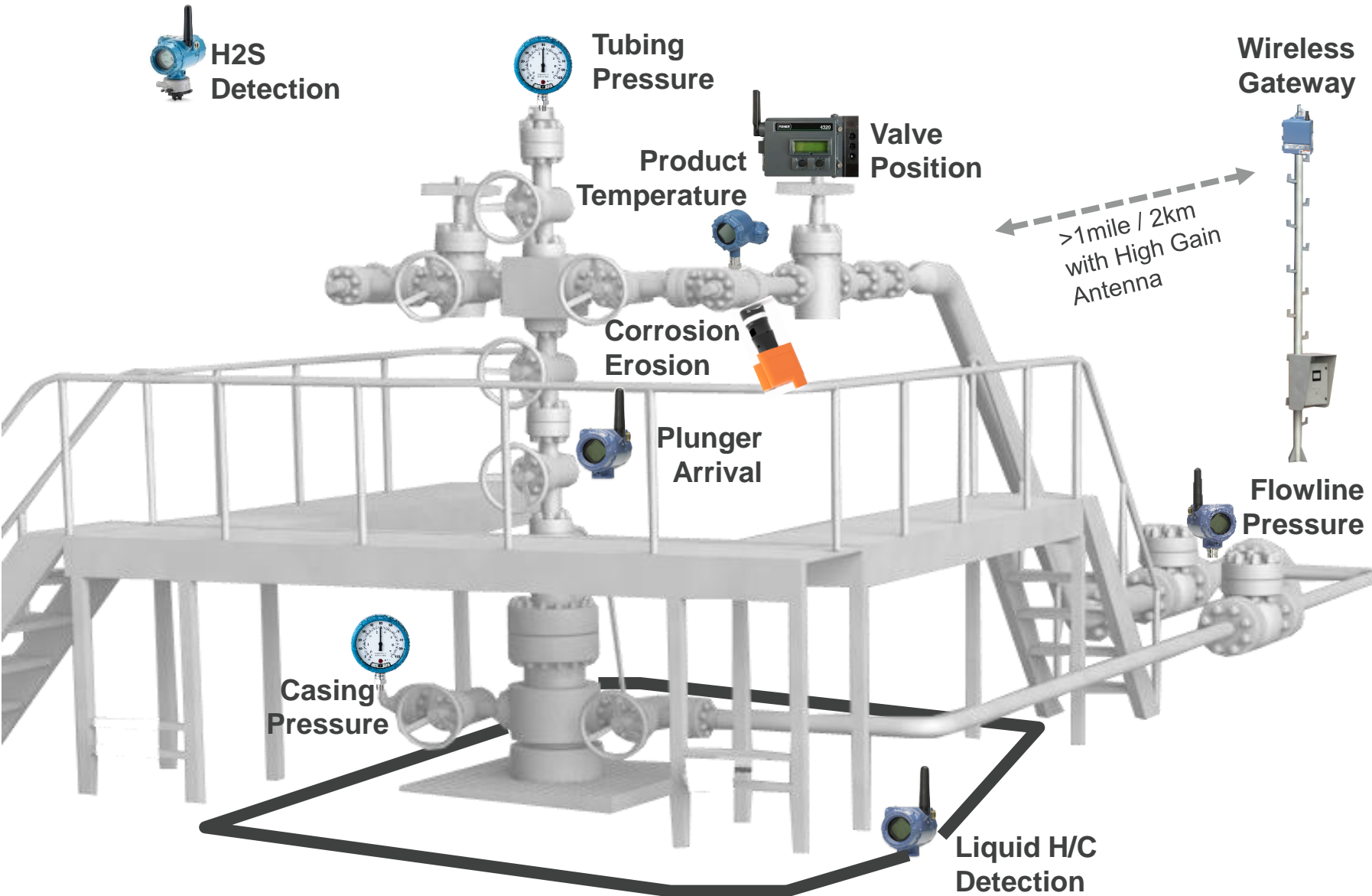


WirelessHART®
Power Meter



Emergency Relief
Valve

Wireless Wellhead Reduces Time, Cost and Complexity

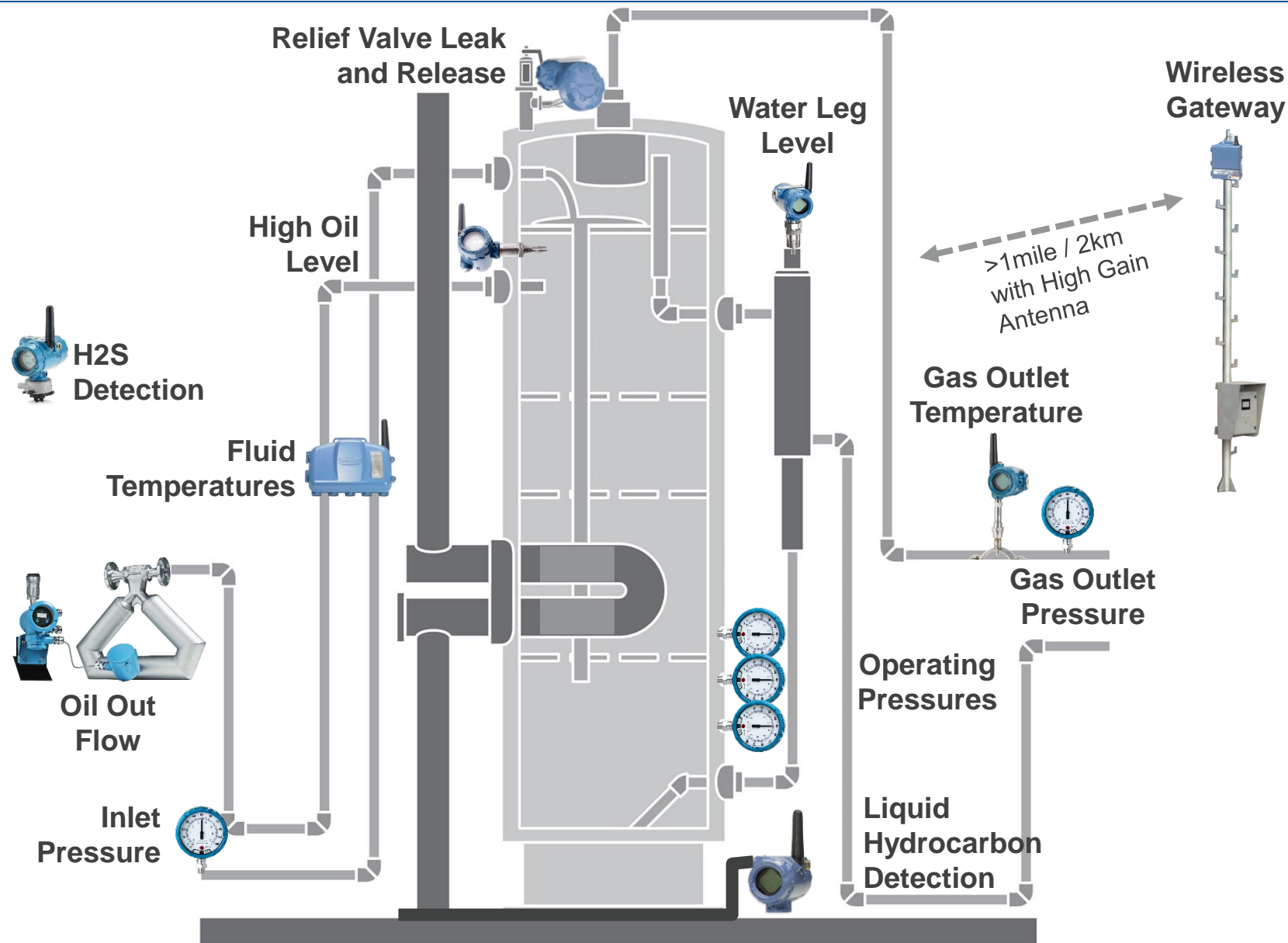


Wireless Wellhead

- Eliminate need for junction boxes and electrical conduit
- Simplify RTU Connectivity by eliminating physical connections to sensors
- Increase remote monitoring to reduce operator exposure to the field
- Respond faster to fugitive emission or leakage events
- Monitor erosion and corrosion to maximize effective life and avoid containment loss

Reduce Engineering Complexity, Installation Time, and Workover Effort

Vertical Heater Treaters

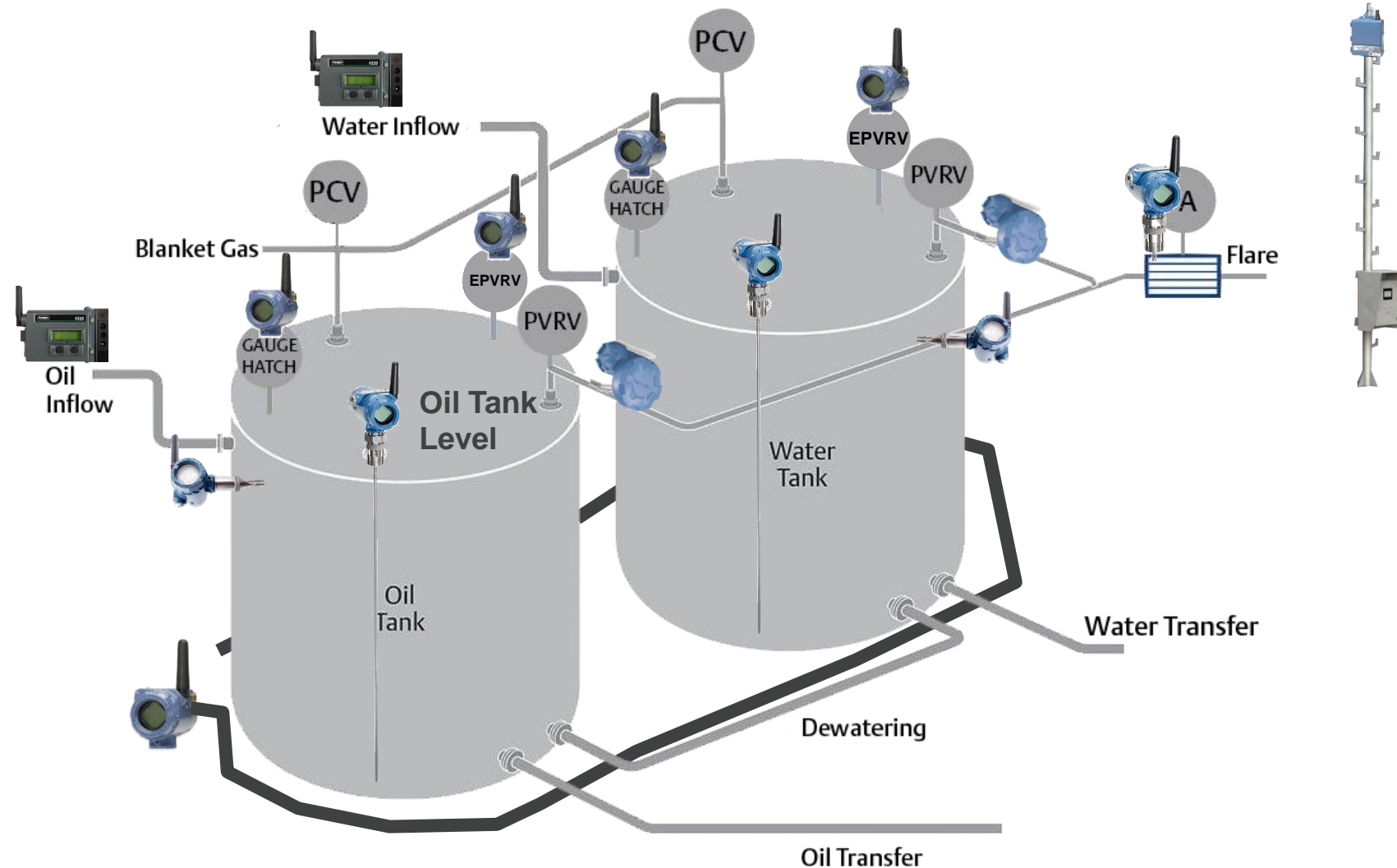


Wireless Heat-Treater

- Reduce need for junction boxes and electrical conduit
- Simplify PLC Connectivity by reducing physical connections to sensors
- Increase remote monitoring to reduce operator exposure to the field
- Respond faster to fugitive emission or leakage events
- Access stranded diagnostics on smart devices

Reduce Engineering Complexity, Installation Time, and Operator Exposure

Produced Liquids



Wireless Produced Liquids

- Reduce need for junction boxes and electrical conduit
- Simplify PLC Connectivity by reducing physical connections to sensors
- Increase remote monitoring to reduce operator exposure to the field
- Respond faster to fugitive emission or leakage events
- Access stranded diagnostics on smart devices

Reduce Engineering Complexity, Installation Time, and Operator Exposure

Lifecycle Services

Service technicians are factory-trained and certified on Emerson products. Our portfolio supports simple repairs to complex projects.

- Wireless Pervasive Field Network Services
- Wireless Start Up and Commissioning Services
- Educational Services



Plantweb™ Digital Ecosystem with Plantweb Insight



Today's Process Environment is Creating Opportunities to Improve Operational Performance



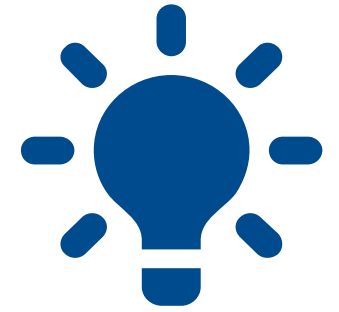
**Exponential
Growth in Data**



**Increase in Cyber
Security Threats**



**Shrinking of
Process Workforce**



**Focus on
Industrial Insights**



**Stricter Safety and
Environmental
Regulations**



**Acceptance and
Adoption of Wireless
Technology**



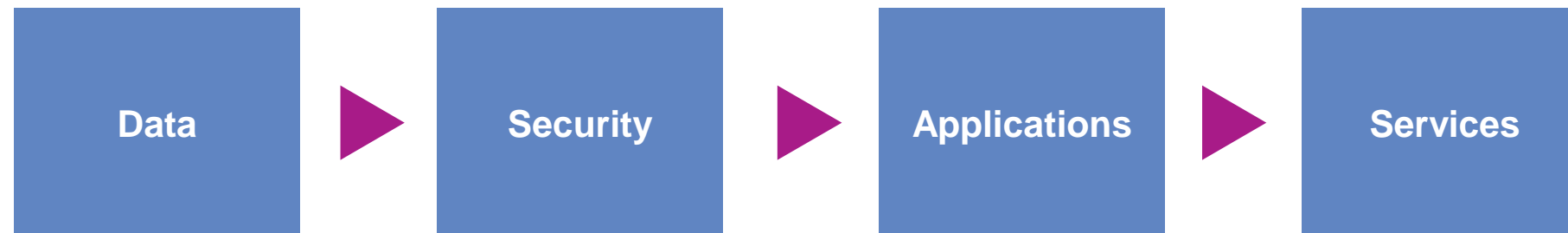
**Shift Toward
Predictive
Maintenance**

Emerson Introduces the Plantweb Digital Ecosystem for the Fourth Industrial Revolution

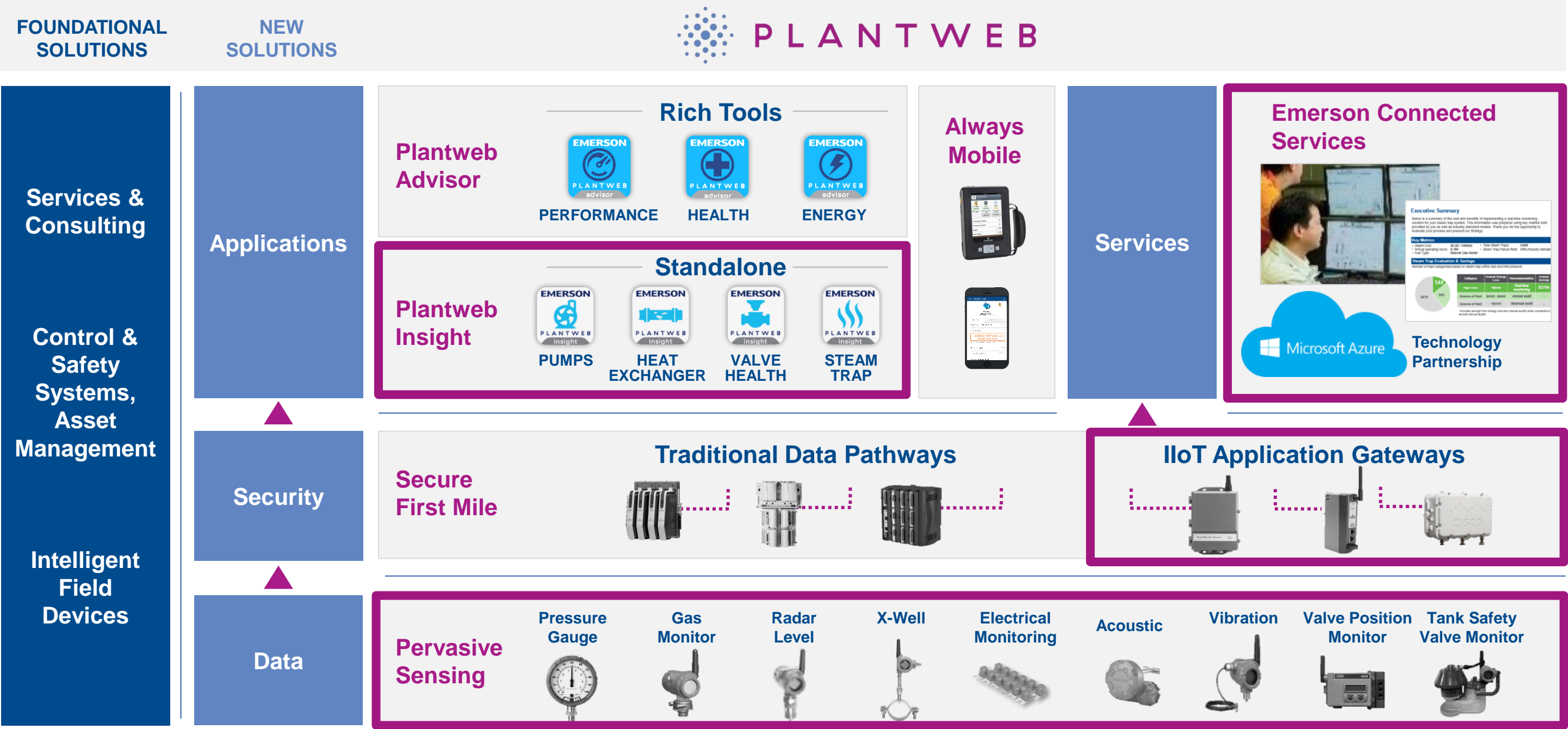


PLANTWEB

**The digital ecosystem that securely ties data, applications
and organizations together across the enterprise**



Plantweb™ Digital Ecosystem with New Solutions to Deliver the Industry's Most Comprehensive Industrial IoT Portfolio

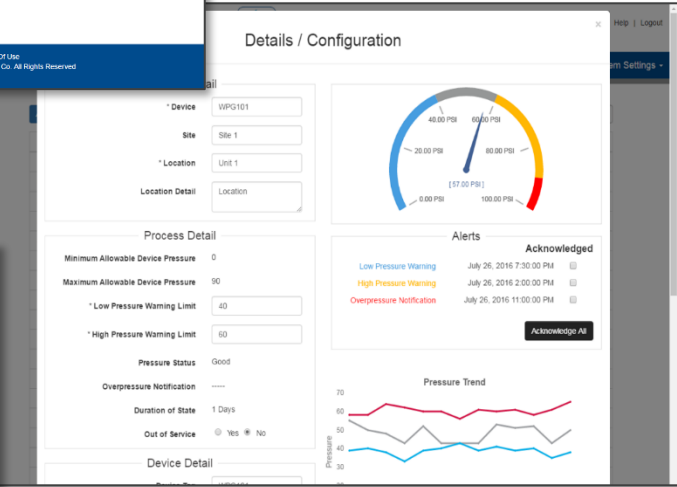


Plantweb Insight is an Application Package Focusing on Monitoring the Health of Plant Assets



The dashboard displays a table of pumps with columns: Asset #, Site #, Location #, Health Index #, Asset Status #, Description #, and Duration #. The table lists 18 pumps with their respective health indices and statuses.

Asset #	Site #	Location #	Health Index #	Asset Status #	Description #	Duration #
Pump101	Site 1	Unit 1	100%	Good	---	10 days
Pump102	Site 1	Unit 1	100%	Good	---	15 days
Pump103	Site 1	Unit 1	75%	Warning	Precaution	1 day
Pump104	Site 1	Unit 2	100%	Good	---	10 hours
Pump105	Site 1	Unit 2	100%	Good	---	25 days
Pump106	Site 1	Unit 2	60%	Warning	Low Pump Head	2 hours
Pump107	Site 1	Unit 3	45%	Critical	Low Seal Level	3 hours
Pump108	Site 1	Unit 3	50%	Critical	High Vibration	3 days
Pump109	Site 1	Unit 3	100%	Good	---	1 day
Pump110	Site 1	Unit 3	75%	Warning	Precaution	5 days
Pump111	Site 1	Unit 4	100%	Good	---	5 days
Pump112	Site 2	Unit 1	100%	Good	---	20 days
Pump113	Site 2	Unit 1	100%	Good	---	13 days
Pump114	Site 2	Unit 1	50%	Critical	High Seal Temp	6 hours
Pump115	Site 2	Unit 2	47%	Critical	Low Pump Flow	1 day
Pump116	Site 2	Unit 2	75%	Warning	Precaution	5 hours
Pump117	Site 2	Unit 2	100%	Good	---	20 days
Pump118	Site 2	Unit 3	100%	Good	---	12 days



Relevant Time **Asset Monitoring**



Abnormal Situation Identification



Pre-Packaged **Analytics**



Seamless Integration



Minimal Configuration



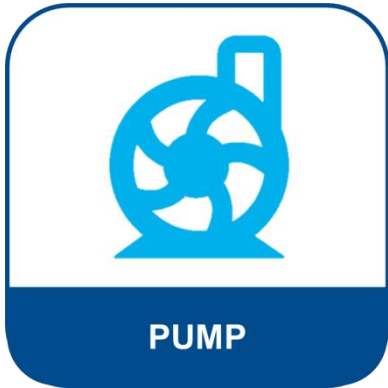
Simple, **Actionable Interface**

Portfolio of Applications Focus on Monitoring Essential Assets and Equipment



Identify Steam Trap Failures Instantly

Acoustic



Predictive Health Monitoring

Pressure
Temperature
Vibration
Level



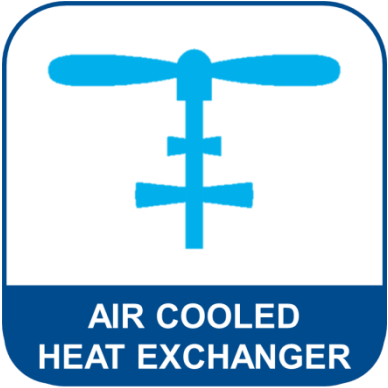
Know Before You Go

Wireless Pressure Gauge



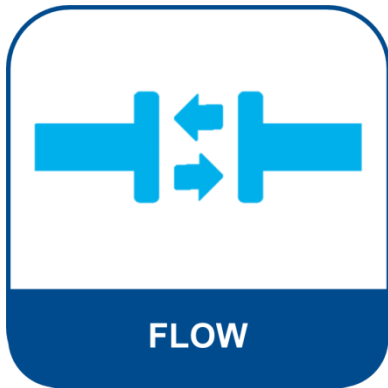
Predictive Health Monitoring

Temperature
Pressure
Flow



Predictive Health Monitoring

Temperature
Pressure
Vibration



Constant Temp Calculated Flow

Pressure



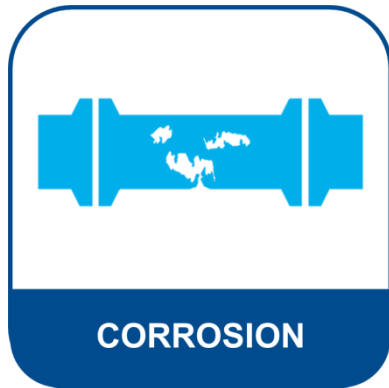
Know When PRD is Open and Closed

Discrete



Faster Reaction to Pulled Safety Shower

Pressure
Discrete



Identify Metal Loss Immediately

Non-intrusive corrosion



Wireless Network Management

All Wireless
Devices

Plantweb Insight Applications Leverage Pervasive Sensing Technologies to Fit Your Facility

Improve Reliability and Energy Efficiency

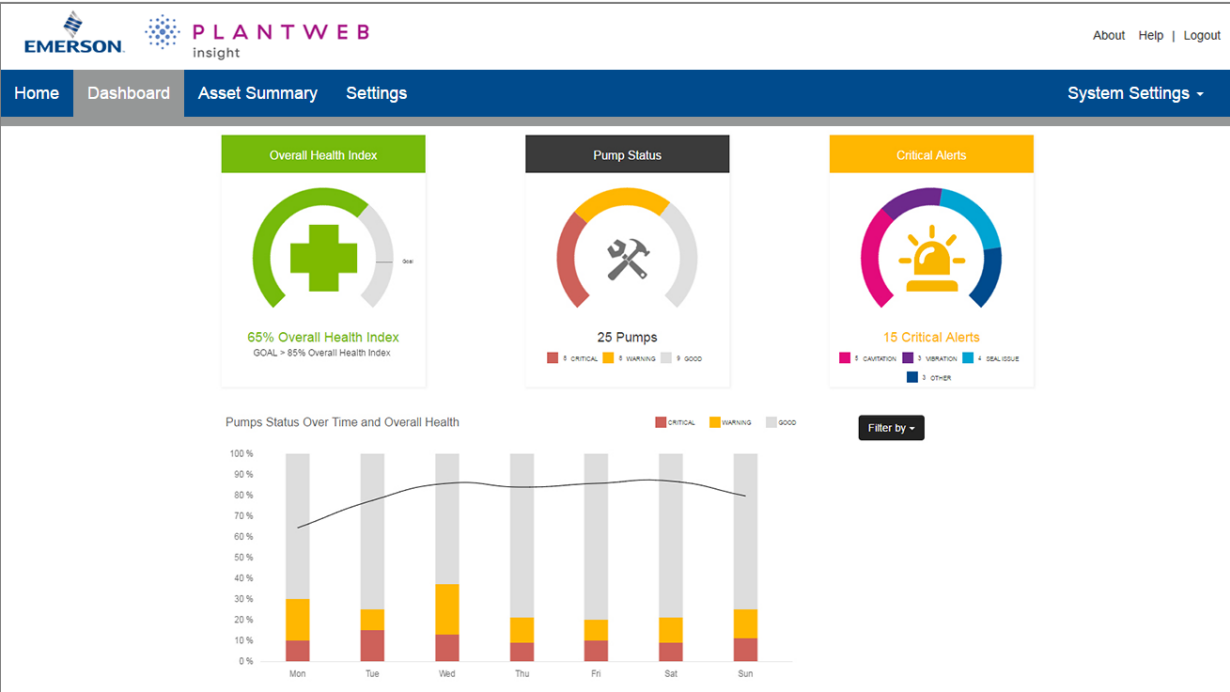
- Spot abnormal situations
- Recognize optimum maintenance times
- Reduce energy costs
- Identify and prevent failures before they occur
- Track asset health



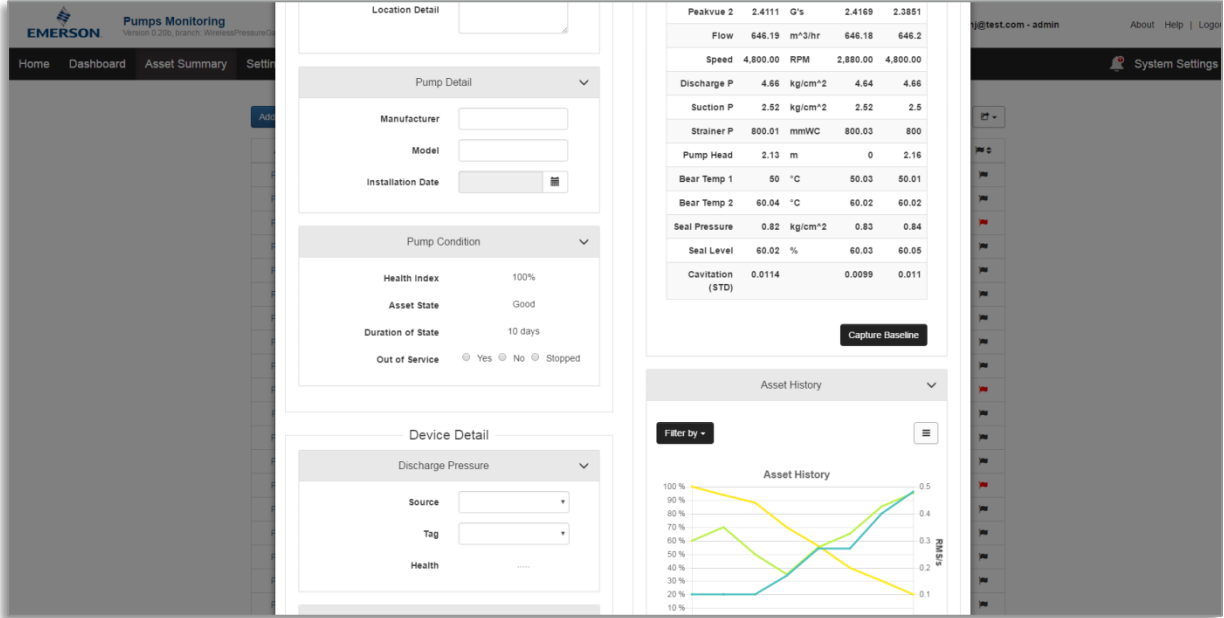
Improve Safety and Compliance

- Comply with regulations
- Identify leaking and sticking situations
- Gain real-time visibility
- Avoid potential safety hazards
- Reduce fines and environmental impact

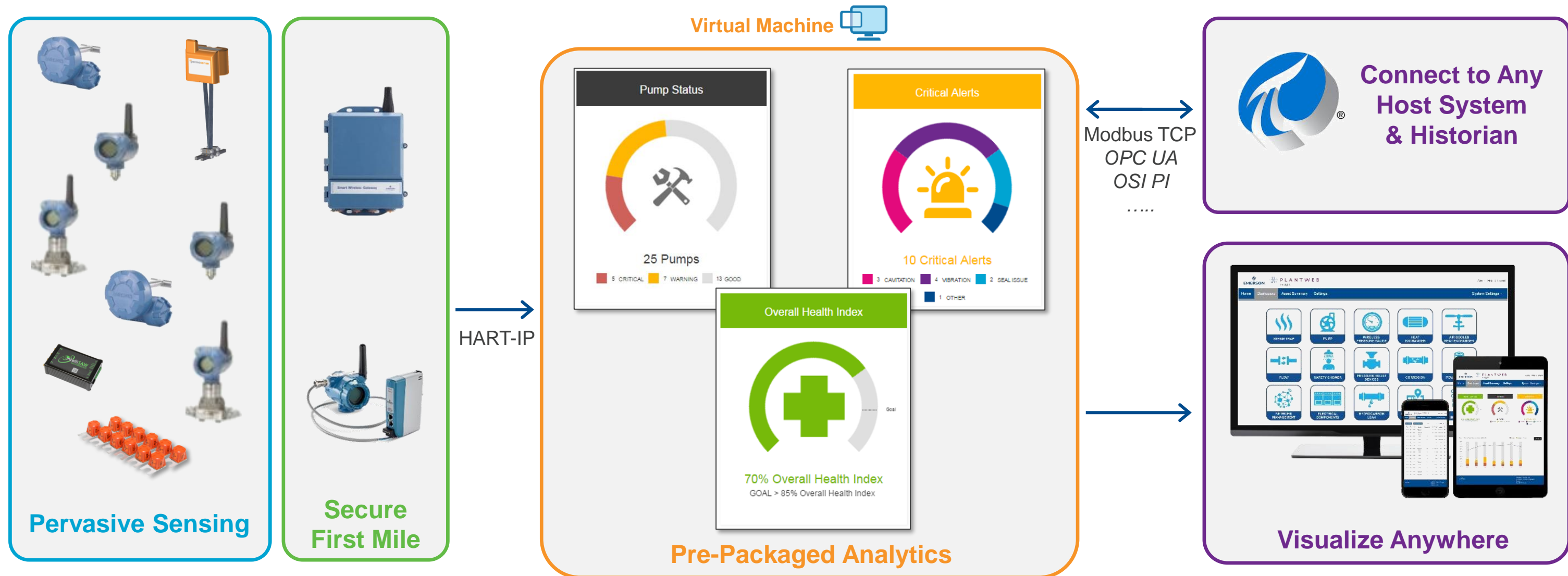
Pre-Built Analytics, Minimal Configuration, Intuitive Design and Consistent User Interface



Asset	Site	Location	Health Index	Asset Status	Description	Duration
Pump101	Site 1	Unit 1	100%	Good	-----	10 days
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Plantweb Insight Contains Pre-Built Analytics for Seamless Integration with Minimal Configuration



Minimal Barriers To Entry Create an Easy-to-Implement Solution with Fast Results
Independent of the Plant Control System