



**Hewlett Packard
Enterprise**



Intel Inside®.
Leistungsstarke Produktivität Outside.

IoT made Easy

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WHO IS PTC?

\$1.14B software company,
headquartered in Boston, MA

6,000 employees

28,000 active customers

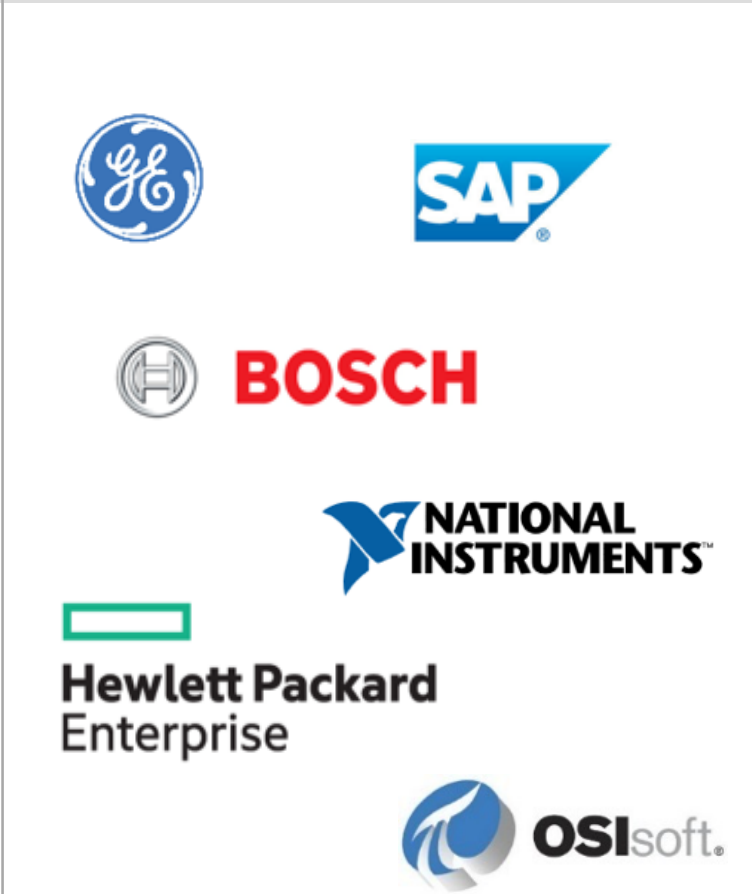
Pioneer in digital product
engineering since the 1980s,
today acknowledged leader for
the IoT

Partner of the world's leading
manufacturing companies
since the 1990s

PTC is uniquely positioned to help you succeed



<h3>Vision & Thought Leadership</h3>	<h3>Transformation Journeys</h3>	<h3>Partner Ecosystem</h3>
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Example for Real Time Edge Monitoring

The screenshot displays the FLOWERVE real-time monitoring interface for a pump system. The interface is divided into several sections:

- Navigation:** A sidebar on the left contains a "Select Menu 02 - Home" and a list of 13 items, including "02 - Remote Hydraulic Lab" (highlighted in red).
- Nameplate:** A table at the top center provides equipment details:

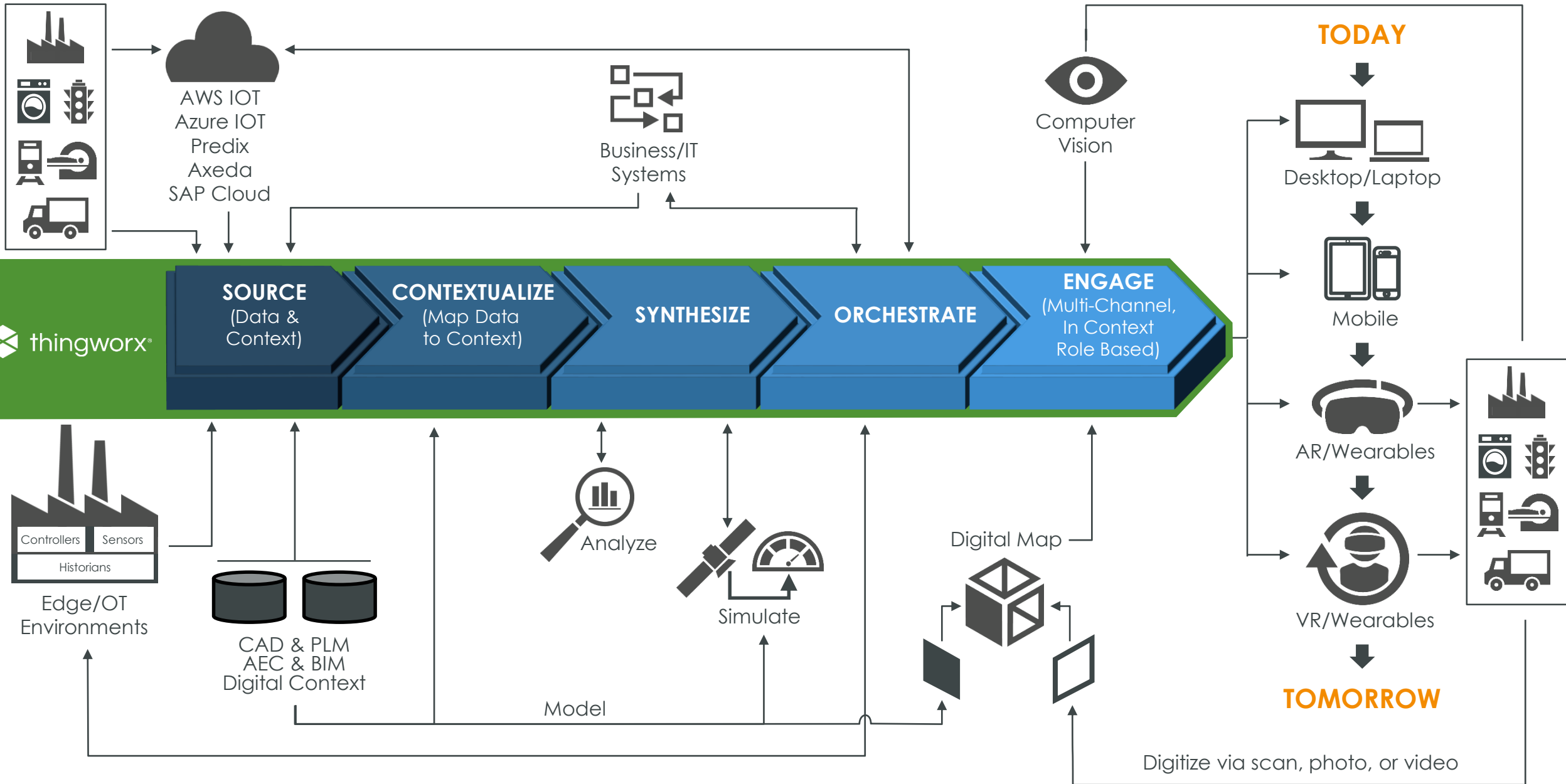
Customer	Flowserve	Unit	Power Lab A	Country	USA
Site	Demo Site	Equipment	PA5	Serial	456577
- 3D Model:** A central 3D model of the pump assembly is shown with various data points overlaid:
 - Flow: 26.26 gpm
 - Horsepower: 0.60
 - Voltage: 71.12, 3.99, -75.36
 - Current: 2.77, 3.29, -6.06
 - Vibration: Bearing Y (0.03), Bearing X (-0.14), Inlet X (-0.07)
 - Total Dev Head: 35.7 ft
 - Seal Temp: 89.6 °F
 - Discharge Pressure: 17.94 psi (Anomaly)
 - Delta Pressure: 14.59 (Anomaly)
 - Suction Pressure: 3.36 psi (Anomaly)
- % of BEP:** A circular gauge shows the pump is operating at 44% of its Best Efficiency Point (BEP).
- VALVE CONTROL:** Sliders for Suction Valve and Discharge Valve are shown, both set to "Reset".
- ANOMALY MONITORING:** A panel on the right displays six line graphs for Suction Pressure, Discharge Pressure, Delta Pressure, Bearing Y, Bearing X, and Inlet X. The first three graphs show a sharp drop in values, indicating an anomaly.
- FAILURE PREDICTIONS:** A section at the bottom left shows predicted failure times: Bearing Failure (295 Days), Impeller Failure (6 Days), and Mechanical Seal Failure (184 Days).
- ROOT CAUSE:** A section at the bottom right identifies the issue as "Cavitation" and provides the explanation: "The suction valve is closed or obstructed. Pump is operating in sub optimal state and could cause mechanical failure".

<https://www.youtube.com/watch?v=WNUdD-rFUvQ>

Industrial IoT Made Easy



Physical/Digital Orchestration

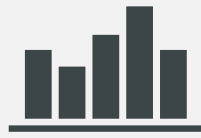


PTC ThingWorx - Complete IoT Platform Capabilities



CONNECT

- Edge Connectivity
- Native and 3rd party device cloud support
- Protocol adapters
- Kepware industrial connectivity



ANALYZE

- Real-time pattern & anomaly detection
- Automated predictions
- Simulation and prescriptive analysis
- Rule & alerts



IMPLEMENT

- UI Builder for Web, Mobile, AR
- Visual Application Modeling
- Run-time Services
- Edge Intelligence



MANAGE

- Asset Provisioning & Management
- Software & Content Management
- Visual Alert & Rules Management



EXPERIENCE

- Compelling visualisation for web, mobile and AR
- Leverage rich 3D animation and IoT data for experience creation
- ThingMarks for unique AR experiences for each associated device



SCALE

- Enterprise-ready Deployment Architecture
- Millions of connected devices



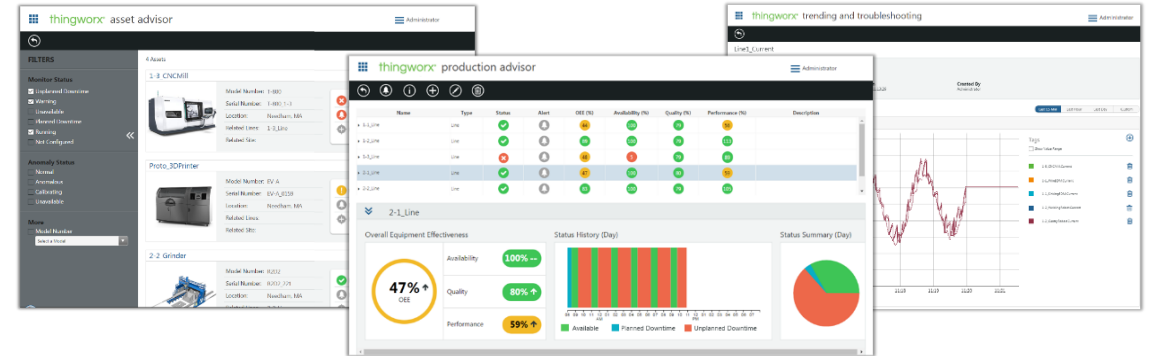
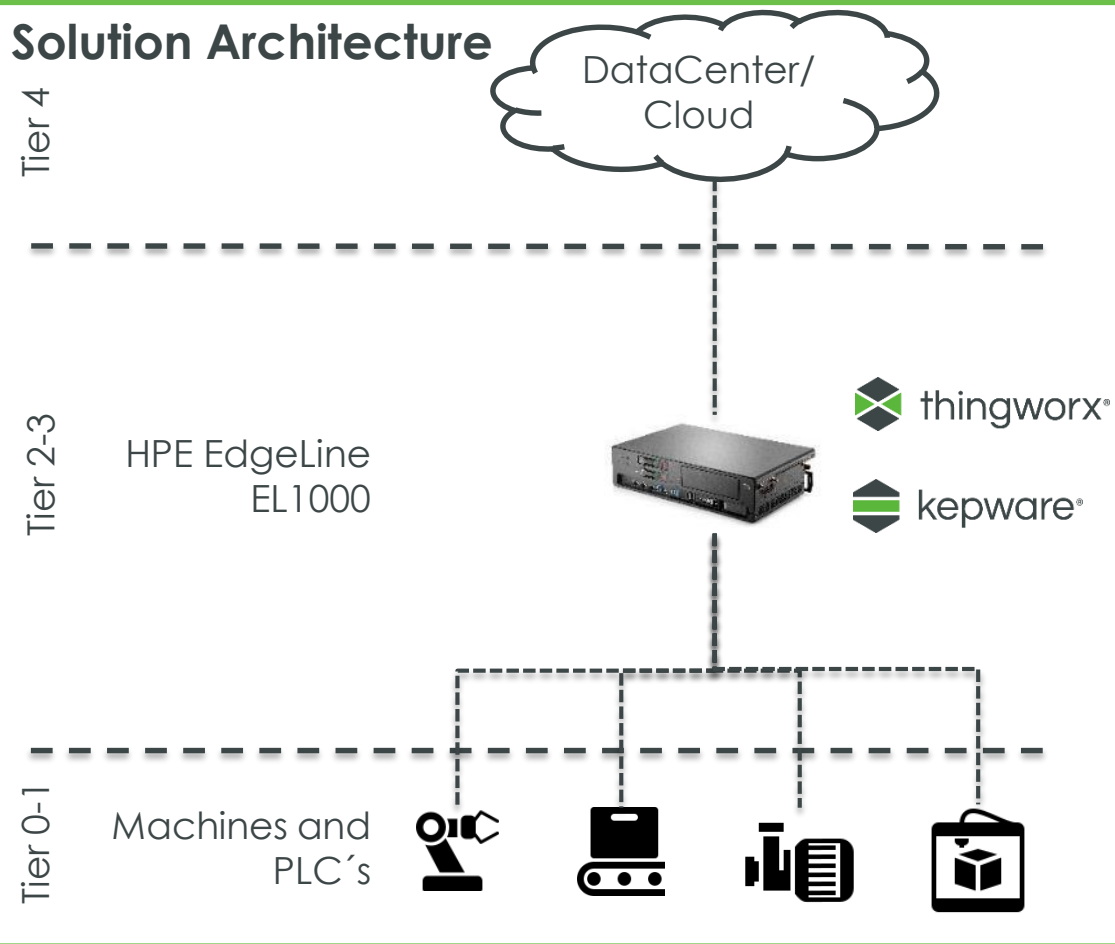
SECURE

- Advanced Device Identity and Authentication
- Platform-Wide Identity Management

UseCase Description

Discovers and monitors all critical (incl. IT) components of one or several locations in a consolidated view. Ensure reliable, legally compliant operations for a large, fast-growing portfolio of heterogeneous / multi-vendor collection of things, while driving down cost of operations per asset.

Solution Architecture



Solution Components

Hardware

- HPE Edgeline EL1000

Software

- PTC Thingworx
- PTC Kepware
- PTC Thingworx Apps for Manufacturing

Service

- Base Installation

Condition Monitoring

Access and visualize industrial runtime parameters of a tool, machine, manufacturing or assembly process.

Predictive Maintenance

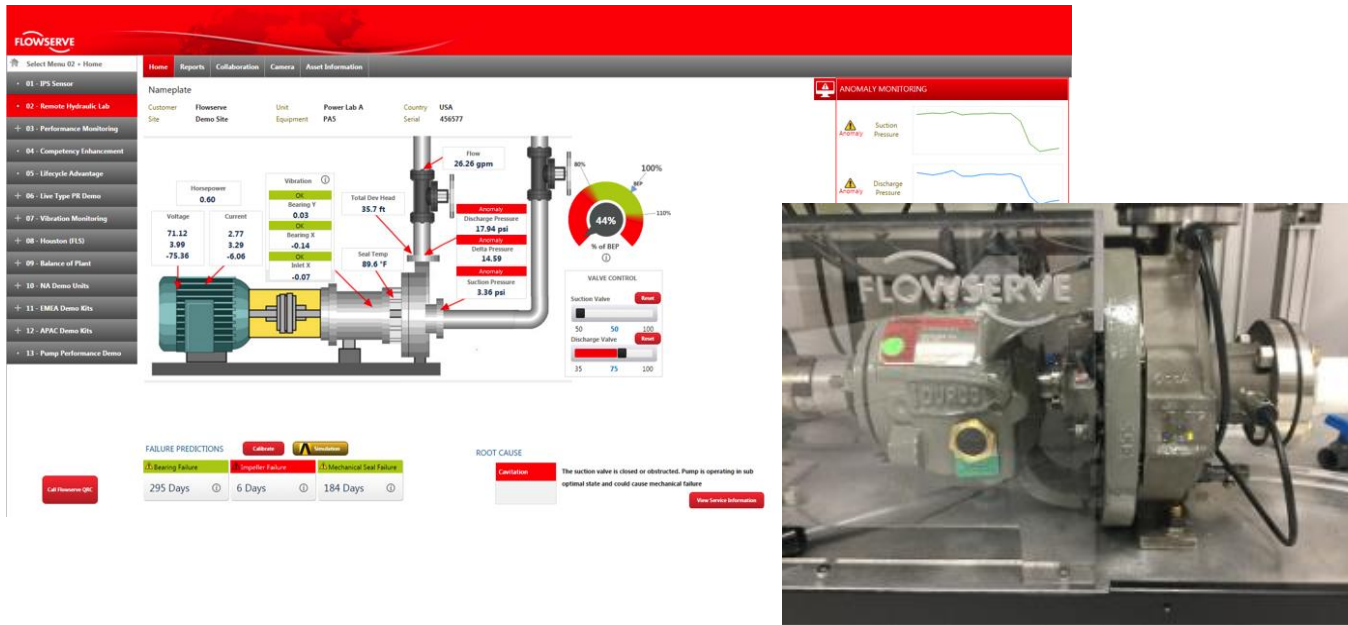
Collect and analyze industrial runtime parameters of a tool, machine, manufacturing or assembly process with the goal to identify recurring patterns preceding failures

Quality Management

Collect industrial runtime parameters and compare actual vs planned values to determine quality of the workpiece

Process Optimization

Optimize the production process across a heterogeneous machine infrastructure



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VISIT US AT THE FLOWERVE BOOTH (Z)

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CONTACT

IoT leicht gemacht

Vielen Dank!