

# DELIVERING BUSINESS VALUE

WITH SMART CONNECTED PRODUCTS  
PTC AND MICROSOFT

Ken Rawlings  
VP, Smart Connected Products



forum  
europe

PHYSICAL  
WORLD



DIGITAL  
WORLD

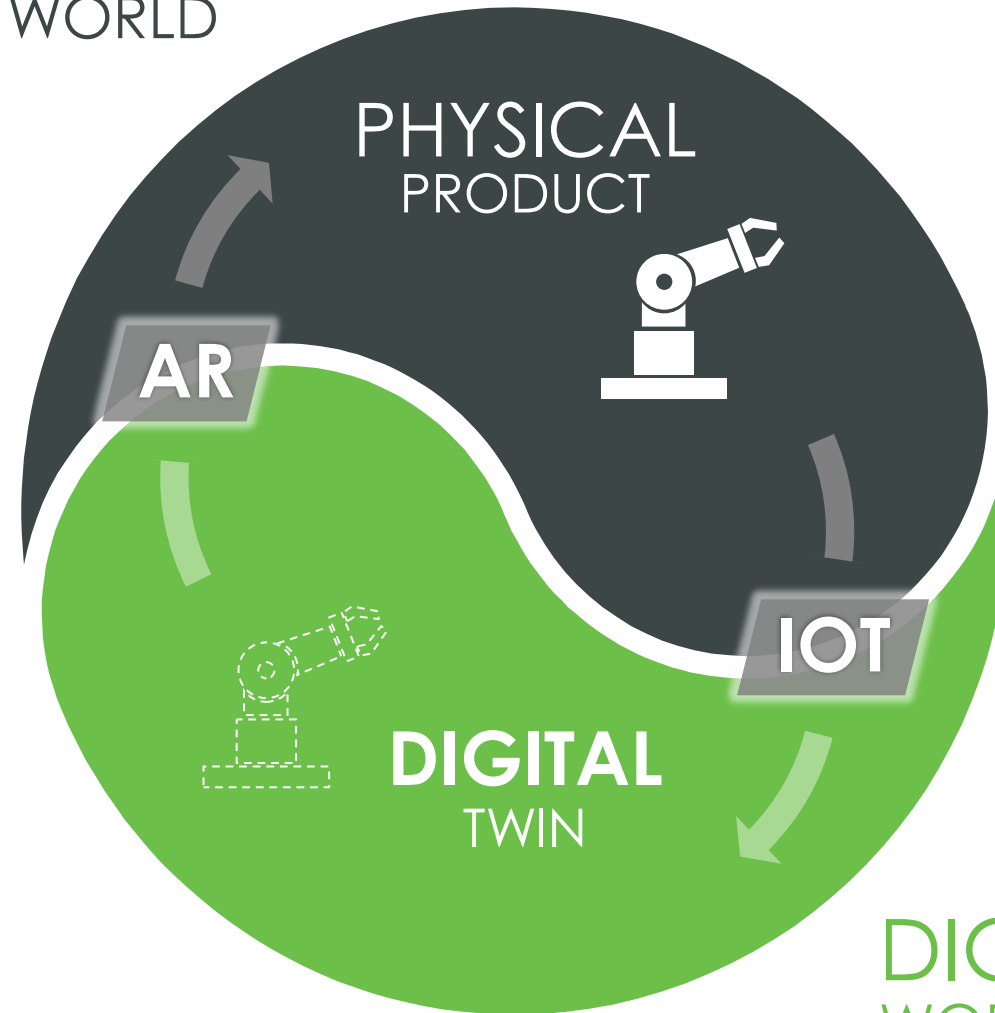
PHYSICAL  
WORLD



DIGITAL  
WORLD

PHYSICAL  
WORLD

SMART  
CONNECTED  
PRODUCTS



DIGITAL  
WORLD

# MAJOR TRENDS

“Traditional processes will fail companies that seek to optimize product value and customer experiences through software enabled IoT products.”

– Nate Fleming,  
Forrester



**40%**

of Top 100 discrete manufacturers plan to provide **Product as a Service** platforms

– IDC

**51%**

of research respondents who say IoT is critical to their **organization's future success**

– VDC Research

**70%**

of manufacturers plan to deliver **connected products** to market in the next 12 months

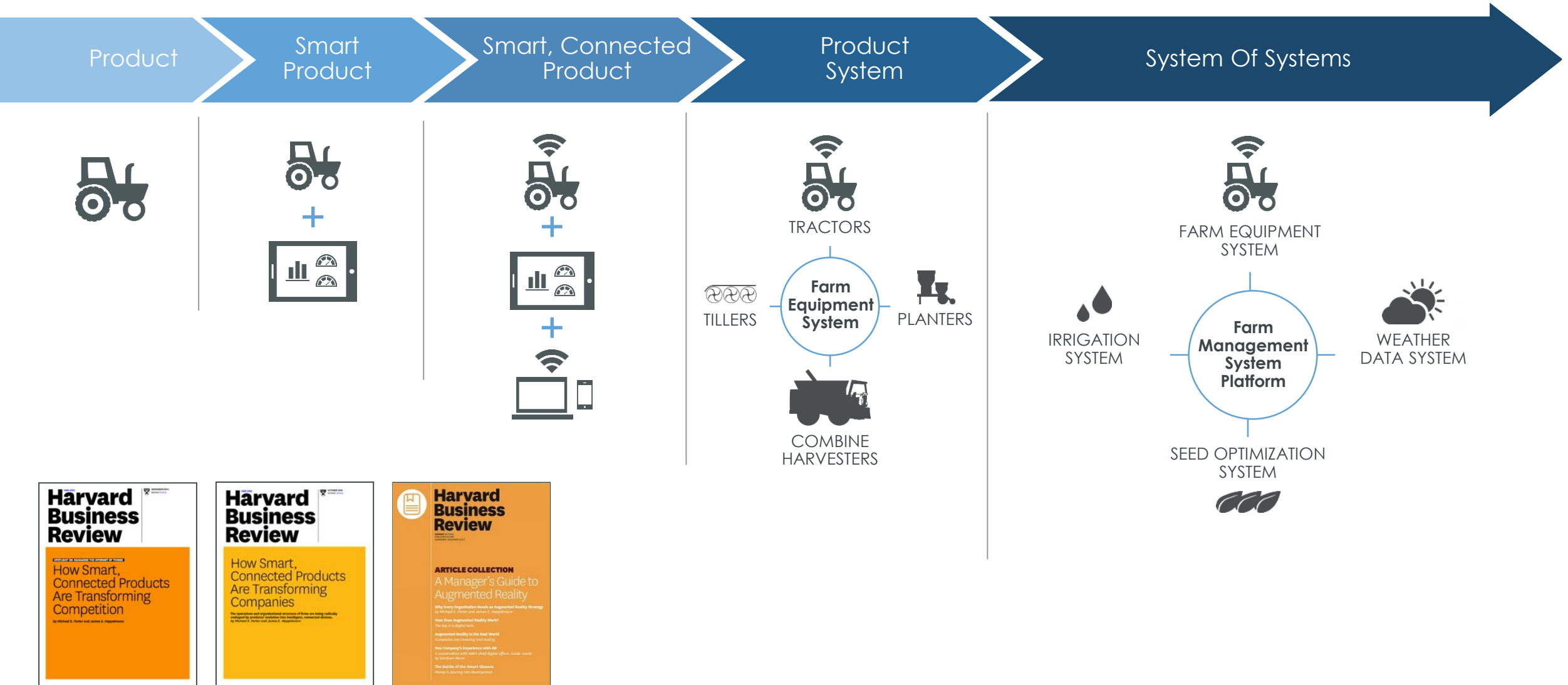
– IDC

## The Digital Thread

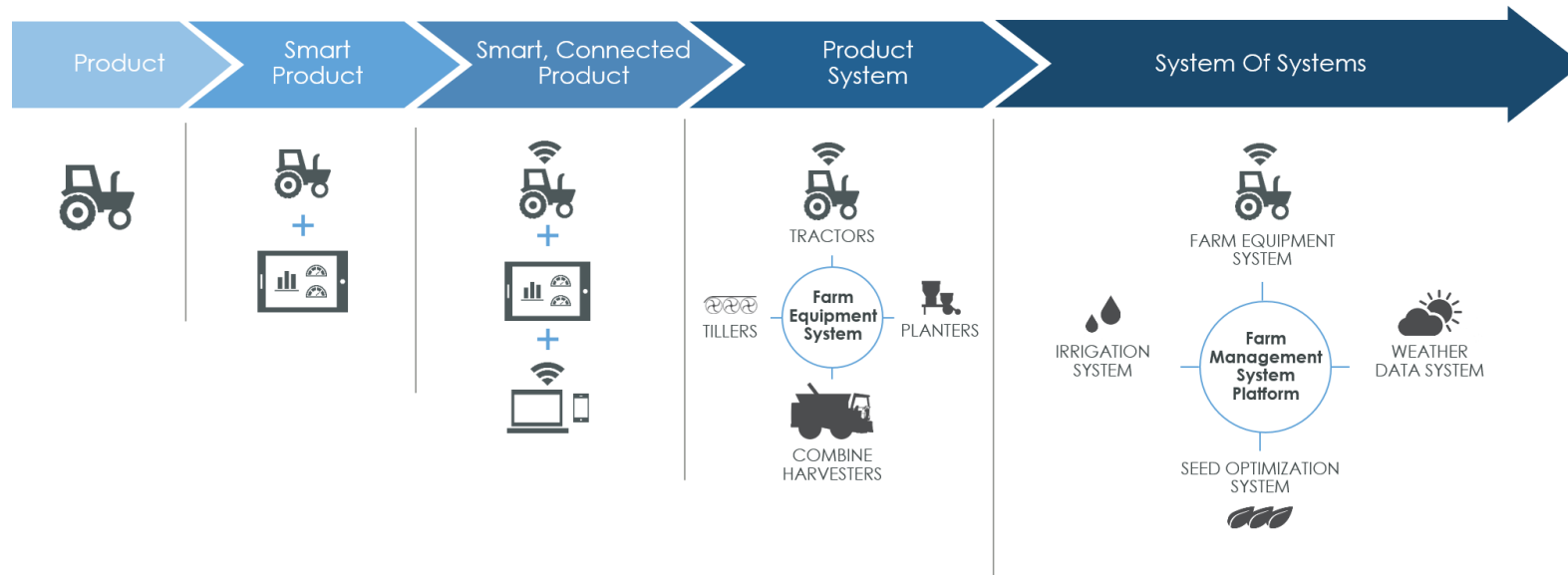
“Unleashing a seamless flow of data across the value chain that will link every phase of the product life cycle: from design, sourcing, testing, and production to distribution, point of sale, and use.”

– McKinsey

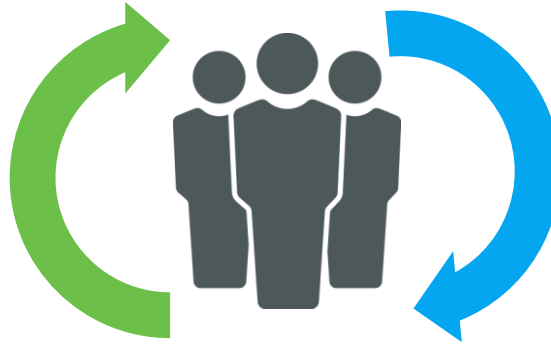
# SMART CONNECTED PRODUCT JOURNEY



**“...reinvent the way industrial companies design, manufacture, operate, sell and service things with the convergence of the physical and digital worlds”**



The Microsoft and PTC partnership accelerates Digital Transformation



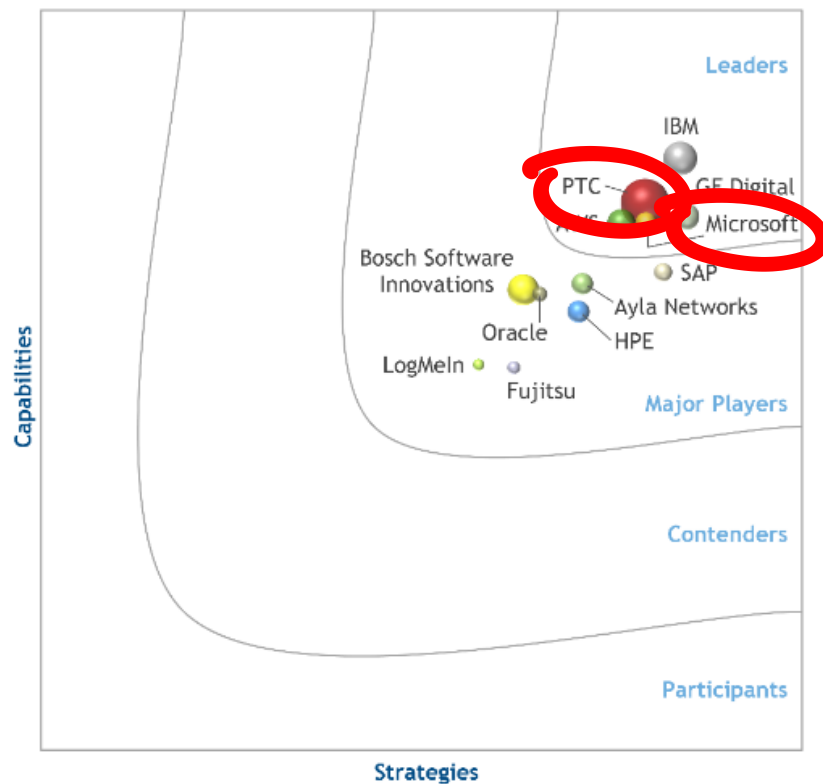
“...**reinvent** the way industrial companies design, manufacture, operate, sell and service things with the **convergence of the physical and digital worlds**”

“...**reimagining** how you bring together people, data and processes to create value for your customers and maintain a **competitive advantage in a digital-first world**”



# RECOGNIZED LEADER BY TOP ANALYST FIRMS

Both PTC and Microsoft were named “Leaders” in IoT Platforms



IDC, July 2017  
MarketScape: Worldwide IoT Platforms



FORRESTER®

Forrester, Q3 2018  
Forrester Wave: Industrial IoT Software Platforms

# DIGITAL TRANSFORMATION



Connected  
manufacturing and  
service



Connected product  
performance feedback  
and traceability



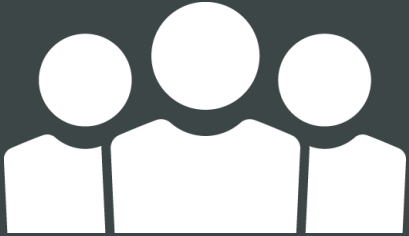



Automated simulation,  
artifact creation and  
collaboration

**“Far more intense coordination  
among functions is now required...  
Customer relationships are  
continuous and open-ended.”**

**“Smart, connected products are  
transforming how companies design,  
manufacture, operate and service  
products ... to create and  
capture value.”**

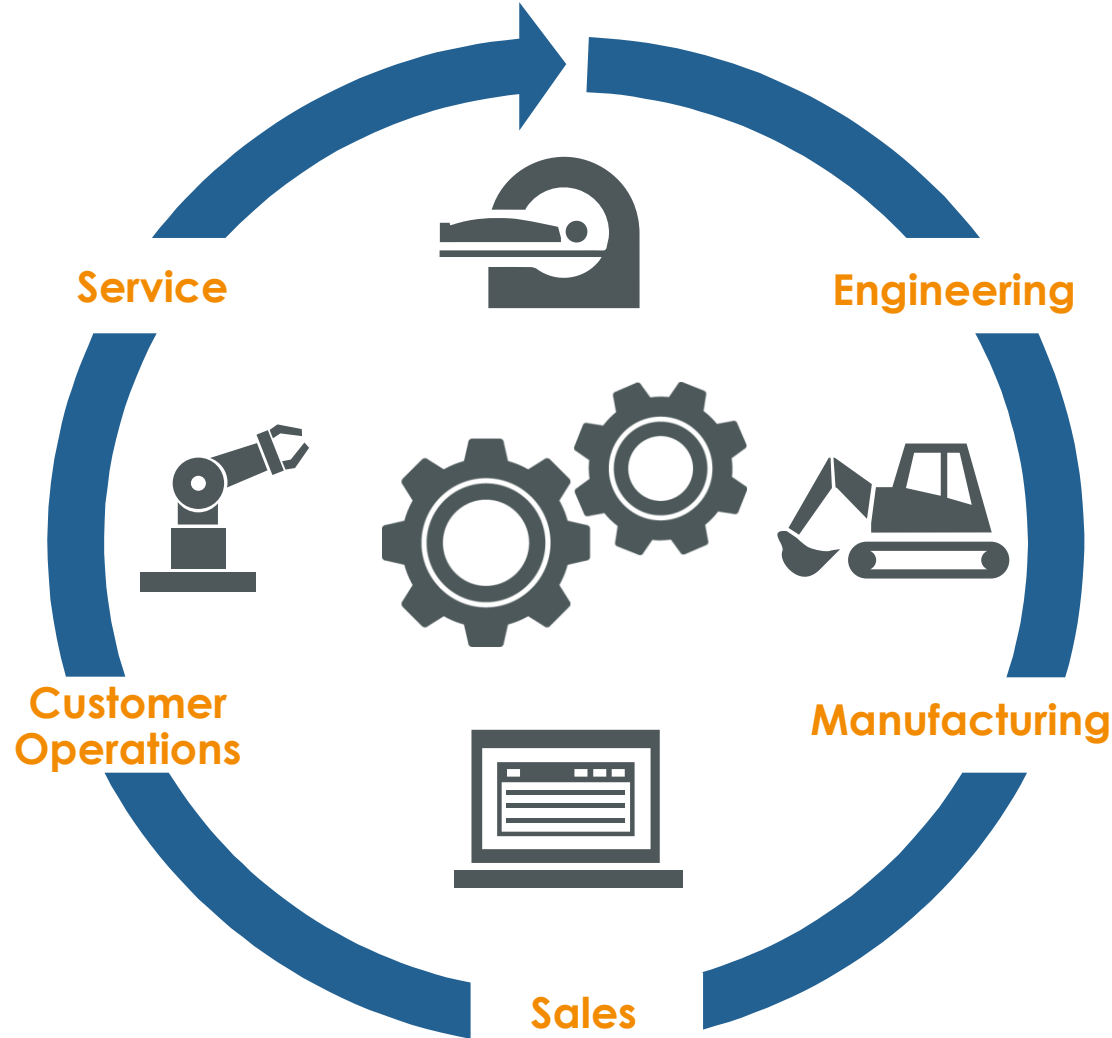
- Michael Porter, Jim Heppelmann, Harvard Business Review

# IOT CREATES ENORMOUS BUSINESS OPPORTUNITY

			
<b>Improve Customer Experience</b>	<b>Optimize Internal Processes</b>	<b>Differentiate Through Innovation</b>	<b>Drive New Revenue Streams</b>
Leverage data from connected products and systems to <b>increase service revenue and profit</b> with improved first time fix rates and customer satisfaction	Increase operational efficiencies to <b>reduce Operations Downtime, improve Throughput</b>	<b>Accelerate innovation</b> impacting product, service and factory operations that is <b>secure and scalable</b>	Unlock new business models and realize new value-add opportunities such as <b>products as a service</b> , scaling to <b>new markets</b>

# SCP DRIVEN DIGITAL TRANSFORMATION IMPACTS...

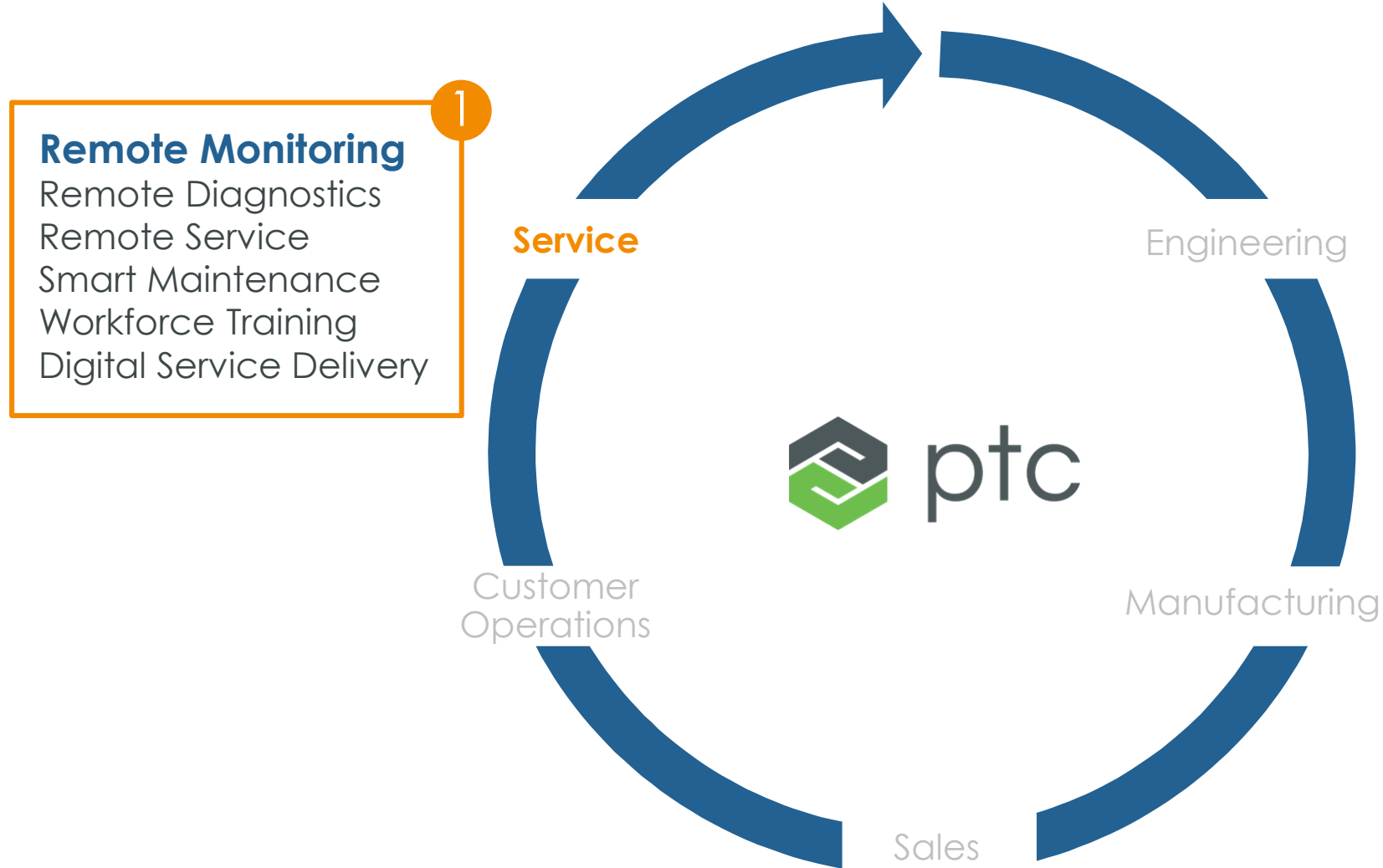
**Entire  
Enterprise**



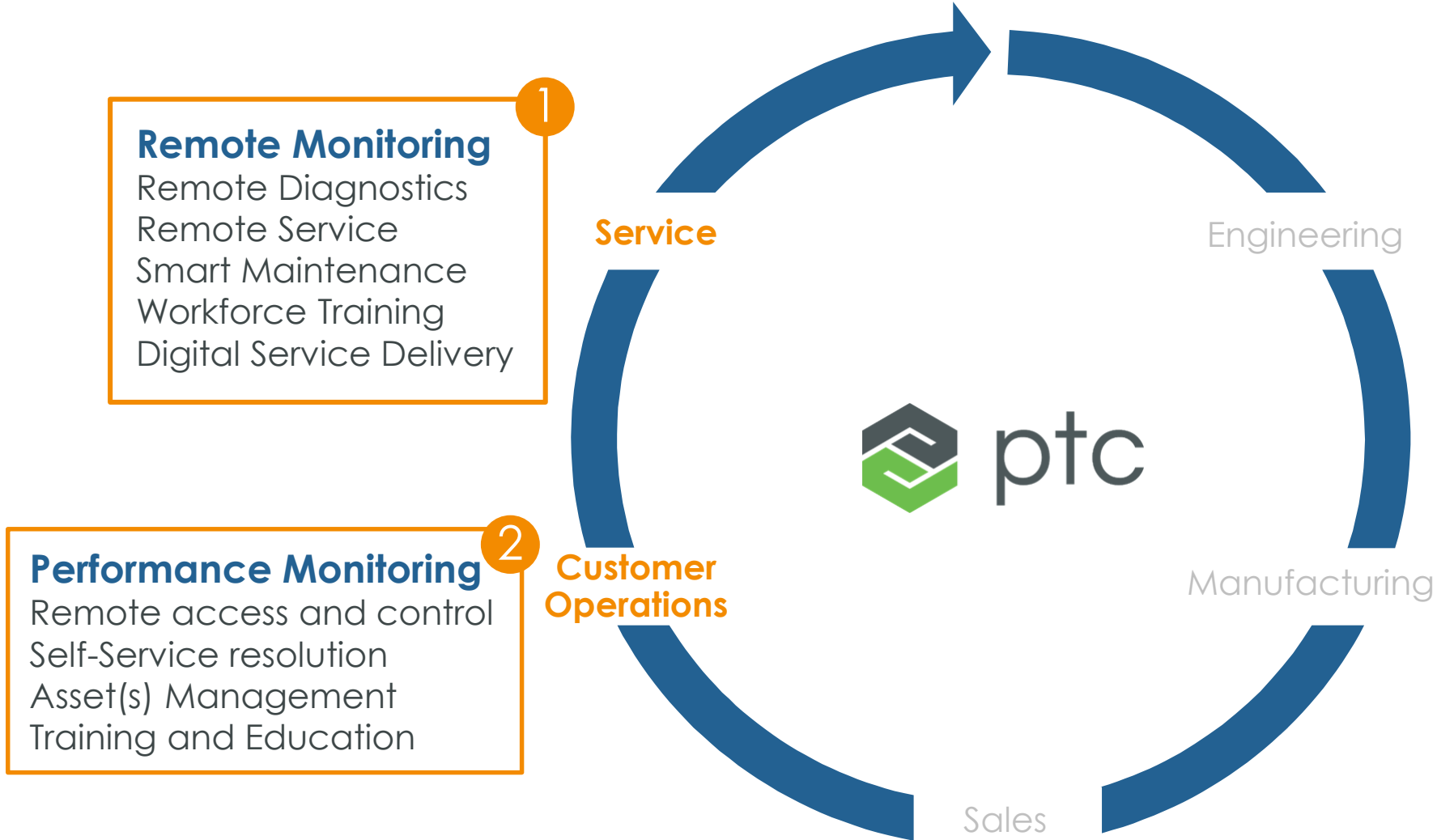
**Across  
Multiple  
Industries**

**Across All Functions**

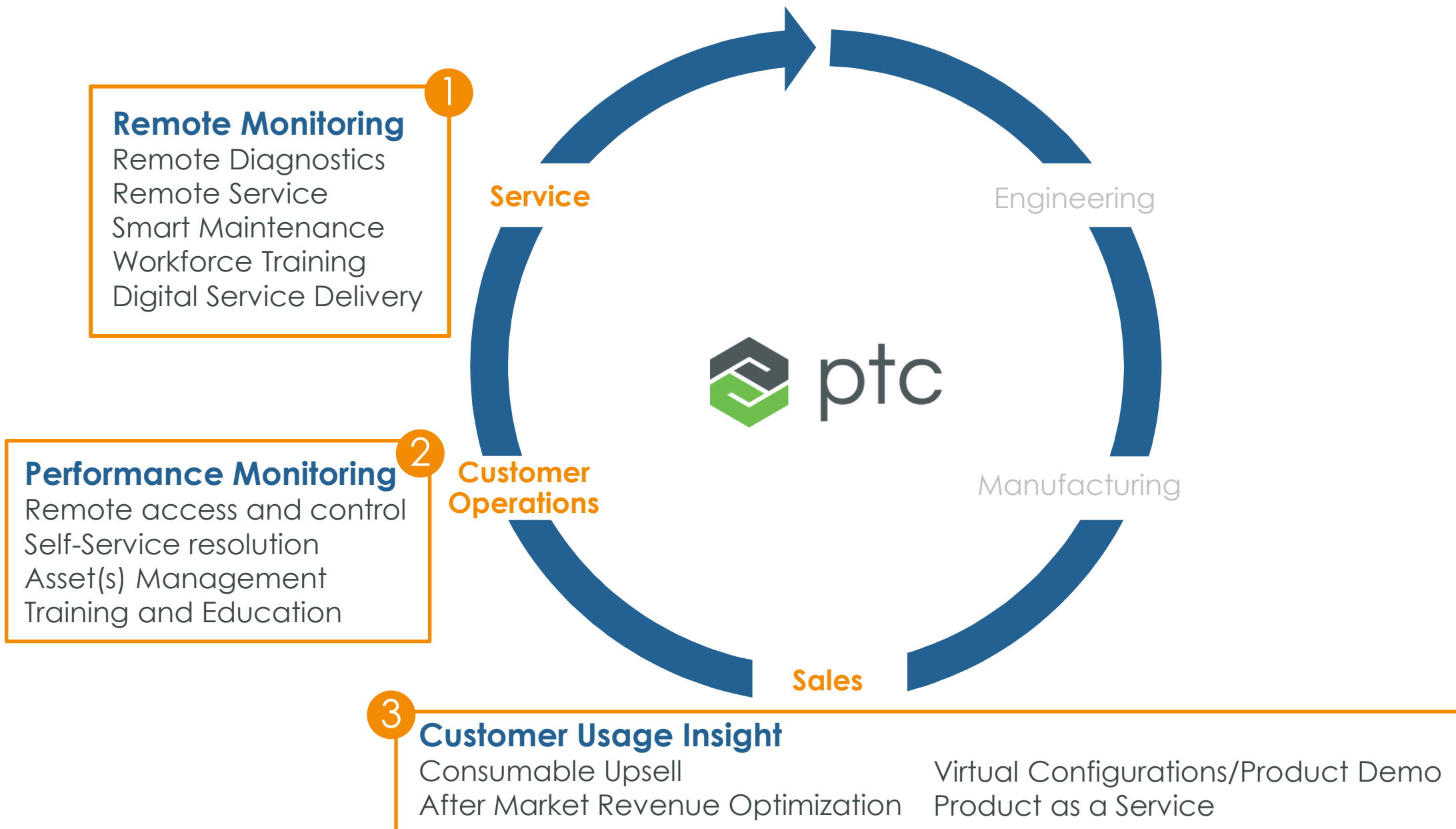
# SMART CONNECTED PRODUCT USE CASES



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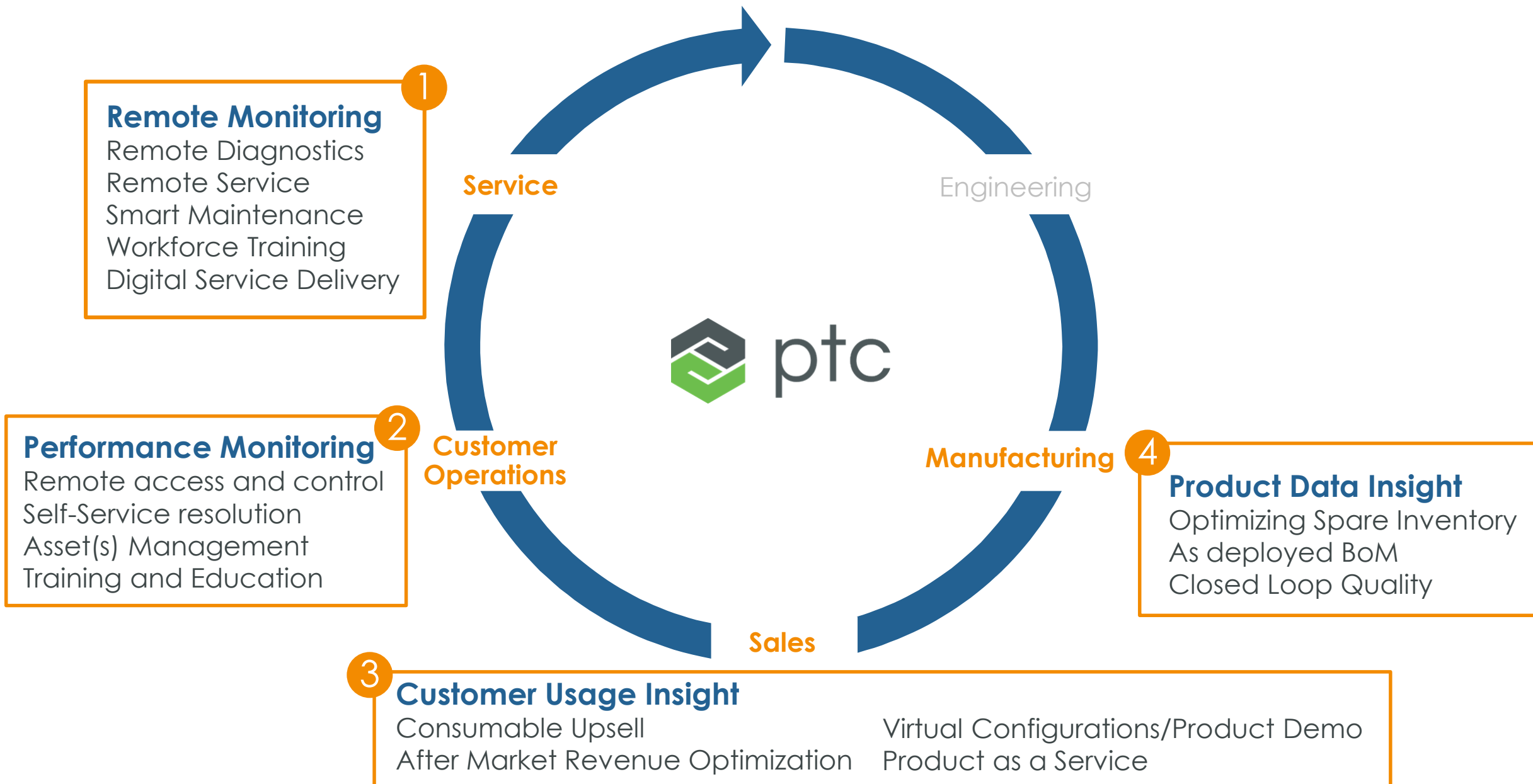


# SMART CONNECTED PRODUCT USE CASES

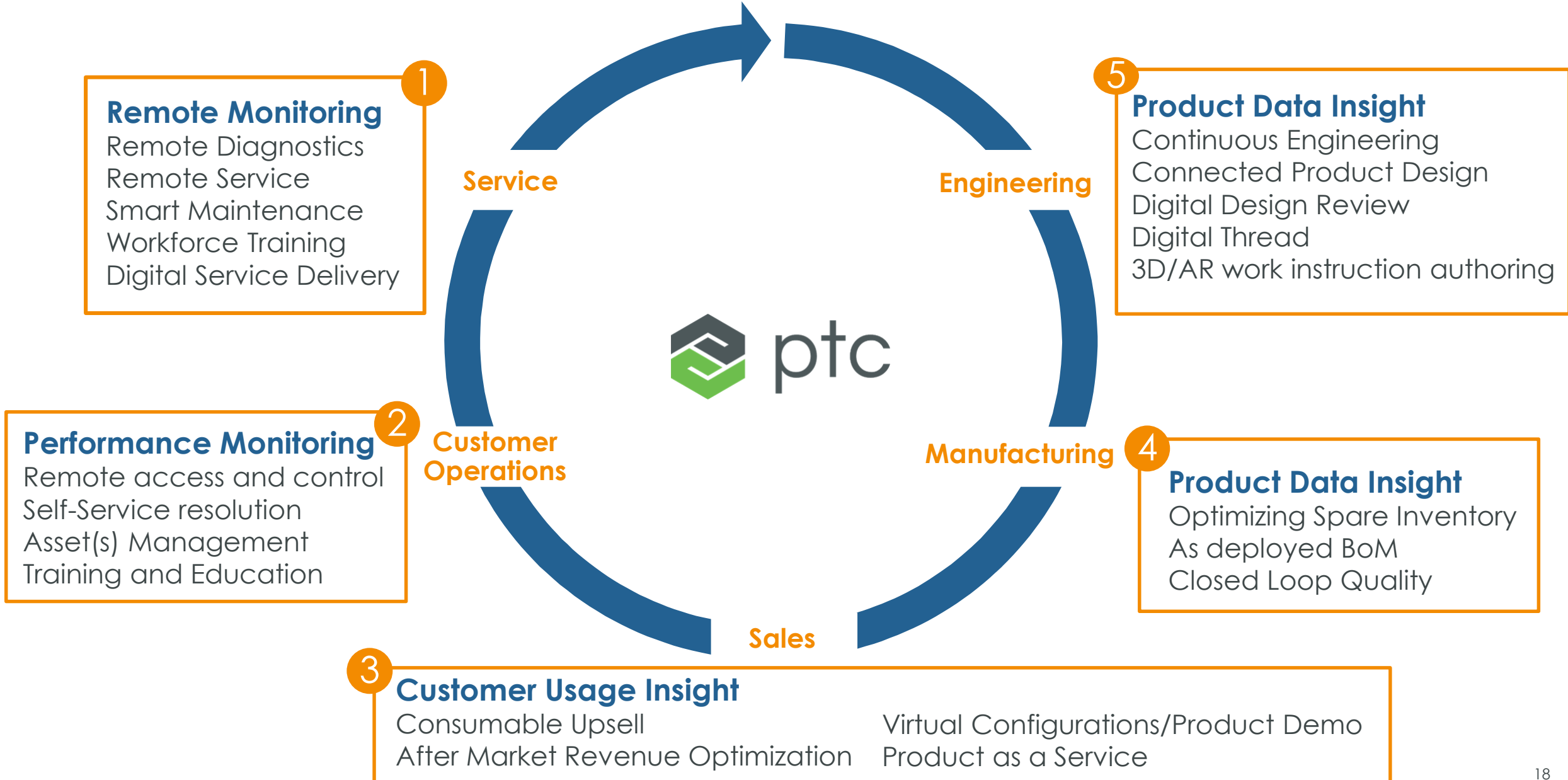




# SMART CONNECTED PRODUCT USE CASES



# SMART CONNECTED PRODUCT USE CASES



# WHY START WITH SERVICE? CLEAR REPEATABLE ROI

Market research has shown that **revenue** from basic and **value-added services** can **represent** as much as **10 to 30 times the original purchase price** of equipment per year.

- Bloomberg

Aftermarket services offer excellent margins — while **aftermarket services** represent approximately 24% of total revenue, it often contributes **40% to 80% of profit**.

- Gartner

## THINGWORX CUSTOMER SUCCESS

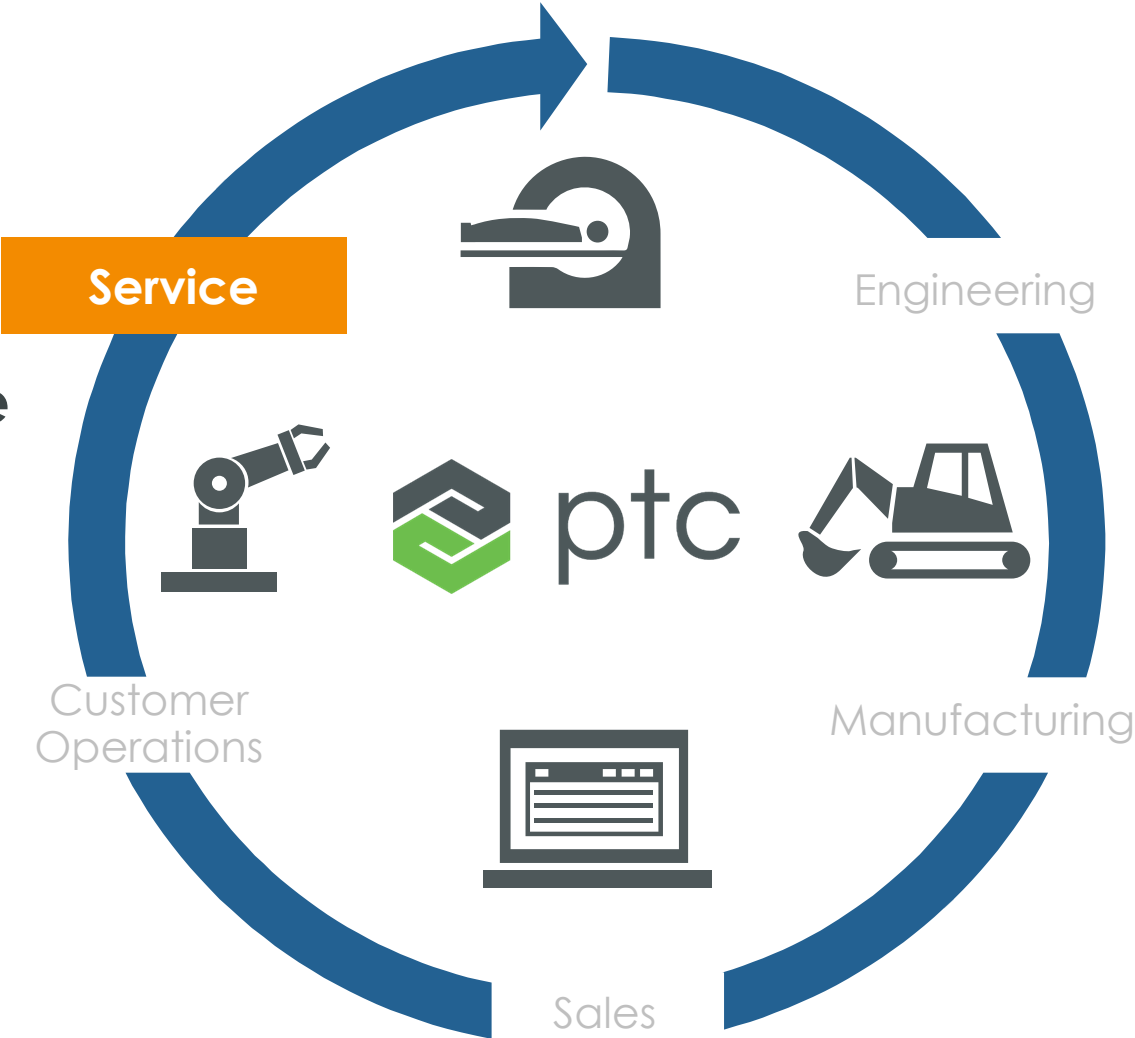
- **50%** reduction in mean time to repair
- **42%** reduction in on-site visits
- **15% -40%** reduction in unplanned downtime
- Improve first-time first rate from **88% to mid 90%** (industry average 60%)

# BENEFITS TO ALL ENTERPRISE FUNCTIONS



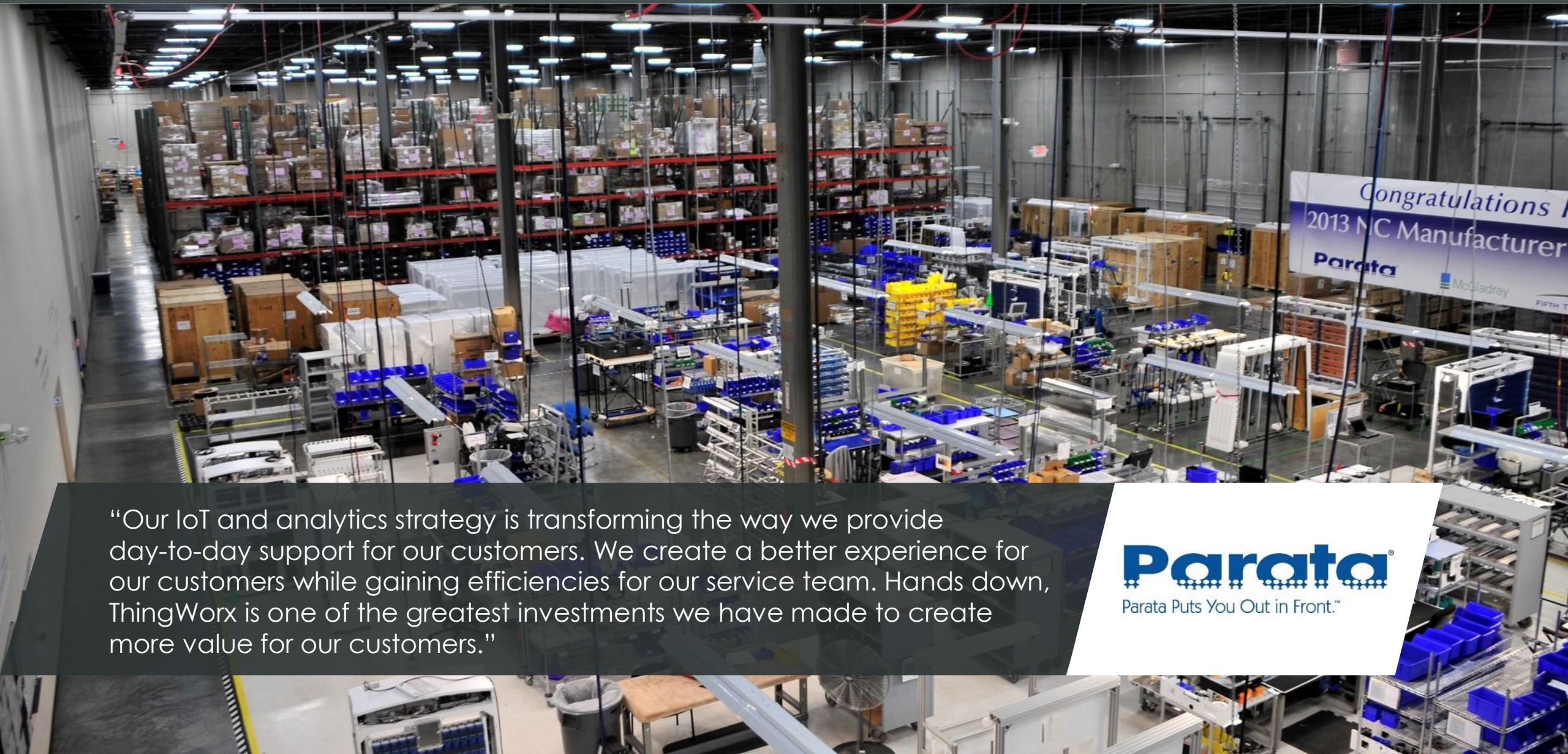
**Parata**

Moved from reactive  
to proactive service





# CUSTOMER SATISFACTION WITH PROACTIVE SERVICE



"Our IoT and analytics strategy is transforming the way we provide day-to-day support for our customers. We create a better experience for our customers while gaining efficiencies for our service team. Hands down, ThingWorx is one of the greatest investments we have made to create more value for our customers."

**Parata**<sup>®</sup>  
Parata Puts You Out in Front.™

# BENEFITS TO ALL ENTERPRISE FUNCTIONS



Creation of real time dashboards





# CONNECTED SERVICES FOR 3D PRINTING



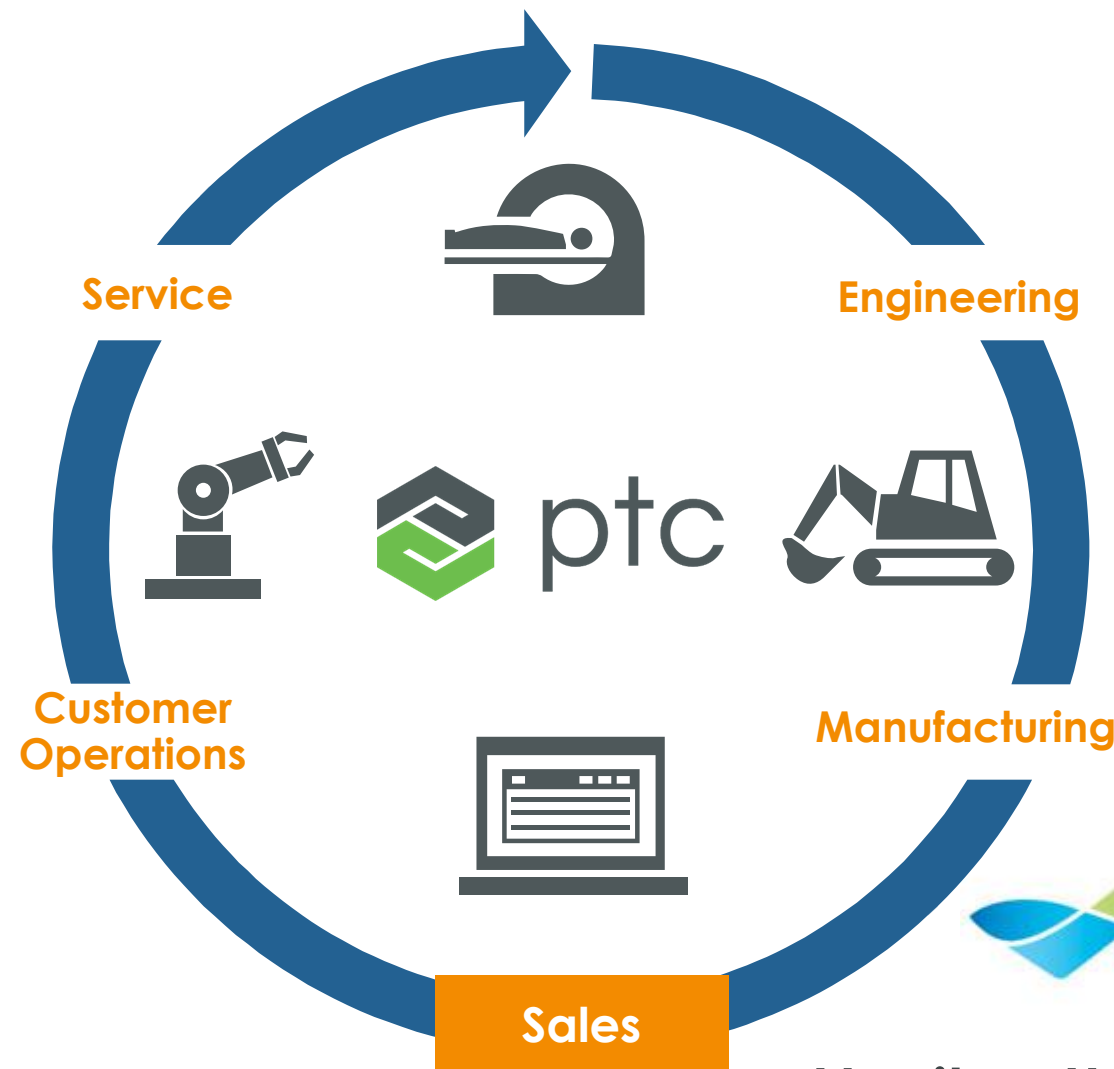
Figure 4 Production

“With ThingWorx, we are not just collecting data from products in the field. We are analyzing that data to get insights that are truly actionable – enabling us to more efficiently and effectively identify, assess, resolve, and prevent service issues, minimizing interruptions to productivity and boosting the overall customer experience.”



**3D SYSTEMS®**

# BENEFITS TO ALL ENTERPRISE FUNCTIONS



**Monitors Usage to Create Up-Sell  
and Cross-Sell Opportunities**



# ACHIEVING CONNECTED PRODUCT MATURITY



"ThingWorx is at the core of our connected products strategy and remote service offering. We have discovered how to expand the value from instrument data throughout the business, transforming the way we work. ThingWorx data is integrated into every aspect of our business, from implementing process efficiencies to building value-add solutions for customers."



# ALIGNED APPROACHES TO MEETING MARKET NEEDS



ENHANCE DIGITAL  
FACTORIES



MONETIZE CONNECTED  
PRODUCTS



CREATE INTELLIGENT  
VALUE CHAINS

# ALIGNED APPROACHES TO MEETING MARKET NEEDS



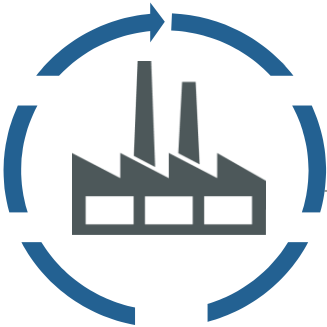
ENHANCE DIGITAL  
FACTORIES



MONETIZE CONNECTED  
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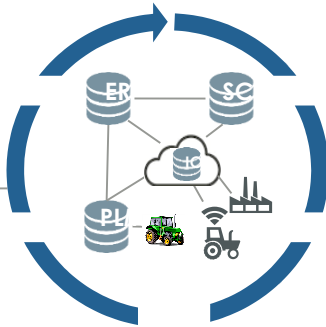
CREATE INTELLIGENT  
VALUE CHAINS



Smart  
Connected  
Operations

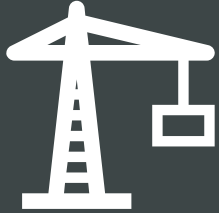

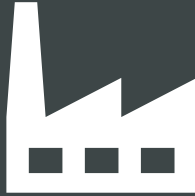



Smart  
Connected  
Products



Smart  
Connected  
Systems

# COMPLETENESS OF THE JOINT SOLUTIONS

			
Deep Industrial Domain Expertise	Jointly Developed Architecture & Solutions	Widest Use Case Coverage	IoT Solutions to expedite time to value

**Joint Architecture** designed to provide Enterprise customers **ready solutions** meeting the challenges facing manufacturers.

# DIGITAL TRANSFORMATION





Leveraging the product as the “Voice of the Customer”

**COLFAX**





Leveraging the product as the “Voice of the Customer”

**COLFAX**

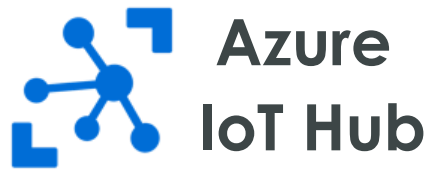




Leveraging the product as the “Voice of the Customer”

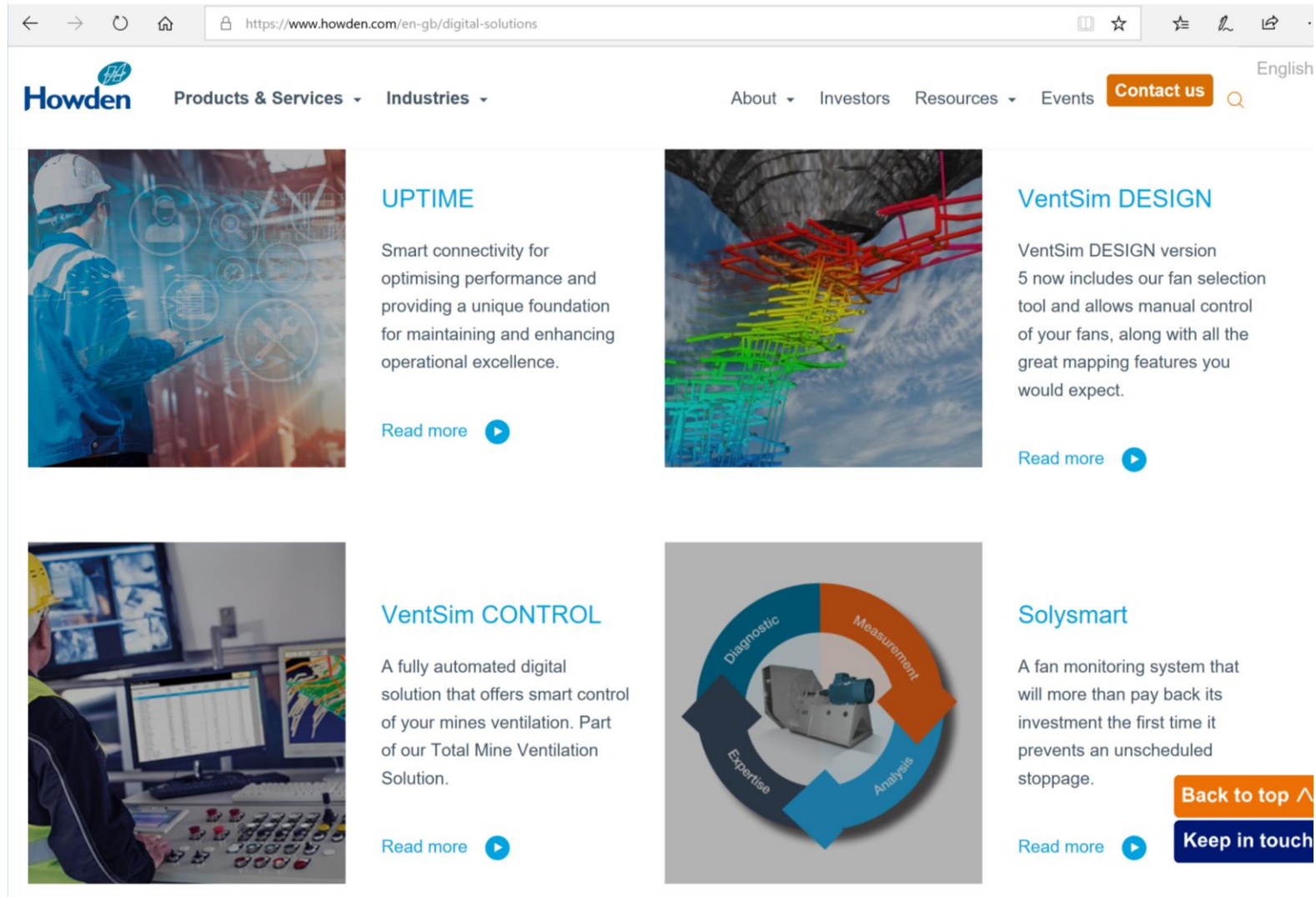
**COLFAX**





Leveraging the product as the “Voice of the Customer”

**COLFAX**



The screenshot displays the 'digital-solutions' page of the Howden website. The page features a navigation bar with the Howden logo, 'Products & Services', 'Industries', and links to 'About', 'Investors', 'Resources', 'Events', and a 'Contact us' button. A language selector for 'English' is also present. The main content area is divided into four sections, each with an image, a title, a description, and a 'Read more' link with a play button icon.

**UPTIME**  
Smart connectivity for optimising performance and providing a unique foundation for maintaining and enhancing operational excellence.  
[Read more](#)

**VentSim DESIGN**  
VentSim DESIGN version 5 now includes our fan selection tool and allows manual control of your fans, along with all the great mapping features you would expect.  
[Read more](#)

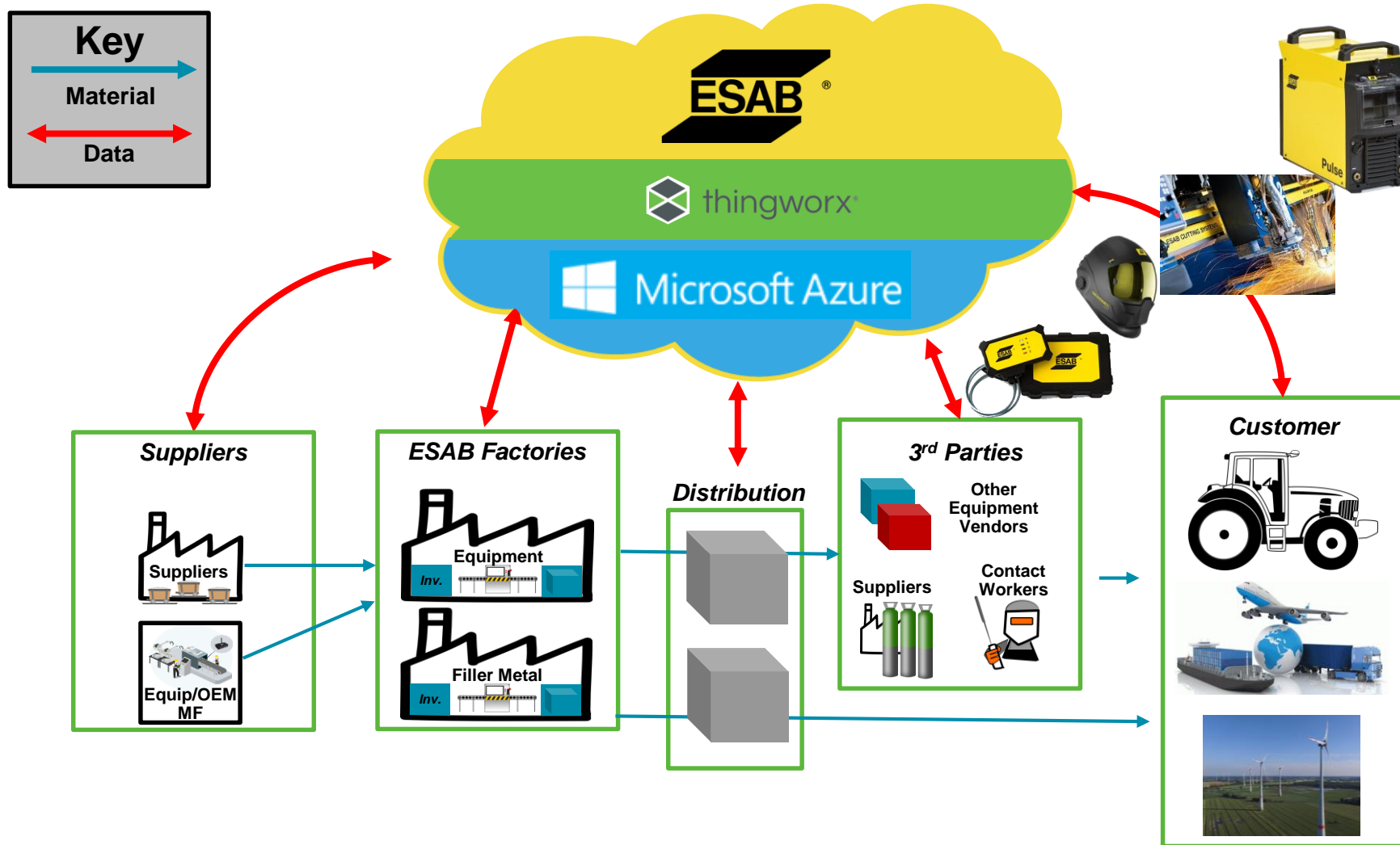
**VentSim CONTROL**  
A fully automated digital solution that offers smart control of your mines ventilation. Part of our Total Mine Ventilation Solution.  
[Read more](#)

**Solysmart**  
A fan monitoring system that will more than pay back its investment the first time it prevents an unscheduled stoppage.  
[Read more](#)

Additional buttons at the bottom right include 'Back to top' and 'Keep in touch'.

# What's Next?

## The Smart Connected Value Chain







Purpose-Built for  
Industrial  
Innovation



Wrap & Extend  
Existing Technology



Agile &  
Flexible



Engage &  
experience

# PURPOSE-BUILT FOR INDUSTRIAL INNOVATION



## BROAD CONNECTIVITY

Easily connects to millions of assets (including brownfield and greenfield)

## DOMAIN EXPERTISE

History with CAD and PLM gives PTC unmatched insight into the design, manufacture, operation and service of things

## CUSTOMER FOCUS

With implementations in over 75,000 sites, we have developed solutions based on customers' needs for simplicity, power and flexibility

# WRAP AND EXTEND WITH EXISTING TECHNOLOGY



## MAXIMIZE EXISTING STANDARDS

Seamlessly ingest rich data from other applications, enterprise systems and cloud technologies

## FUTURE PROOF SOLUTIONS

Enable solutions for rich experiences via Augmented Reality/Mixed Reality

## EXPANSIVE ECOSYSTEM AND MARKETPLACE

Pre-configured tools and technologies to expedite your time to value



## RAPID APPLICATION DEVELOPMENT

With drag-and drop functionality and intuitive tools, customers can expedite time to value

## ENGAGE ON MULTIPLE DEVICES

Deliver applications in the best format for end users (on desktop, mobile, or AR hardware like HoloLens)

## MULTIPLE DEPLOYMENT OPTIONS

ThingWorx can be deployed in the Cloud, on-premise or hybrid providing ultimate flexibility for customers

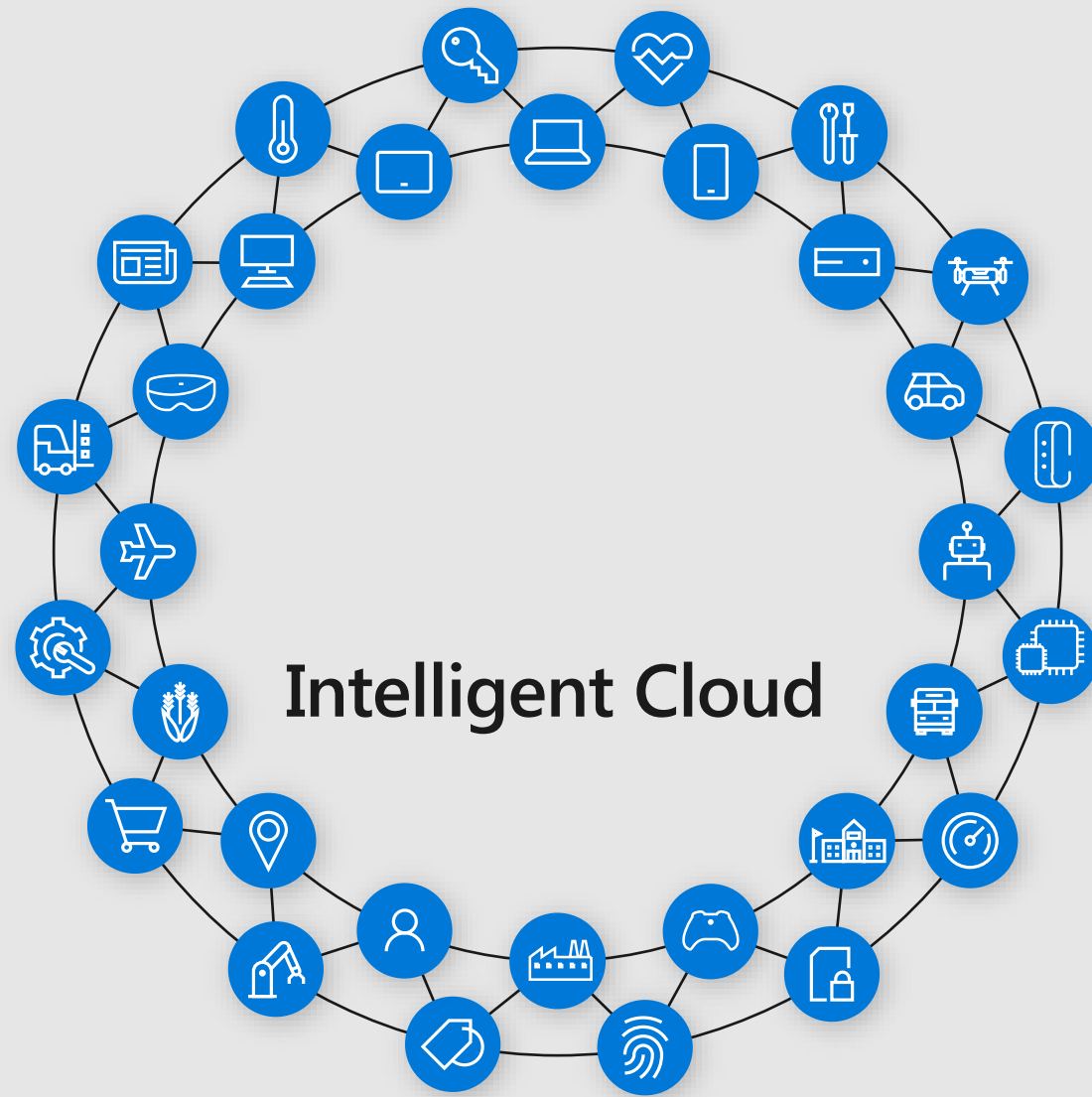


ENGAGE USERS VIA MULTIPLE DEVICES	ADOPT EMERGING TECHNOLOGIES	MEET BUSINESS GOALS
Deliver applications for desktop, mobile, or AR hardware like HoloLens)	Integrated AR/MR authoring allows creation and consumption of experiences without writing any code	Create new revenue streams or increase operational efficiencies with dynamic interactions with products or equipment



# Transform your business with Microsoft

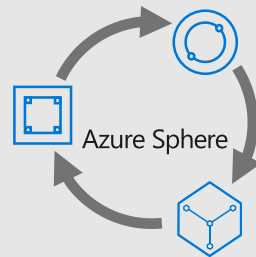
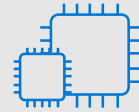
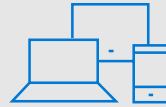




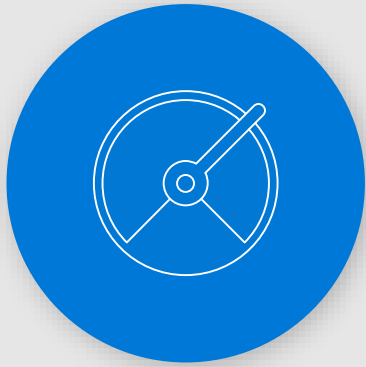
Intelligent Cloud

Intelligent Edge

# Azure IoT solutions and services



## Azure IoT Edge



**Productive**



**Hybrid**



**Intelligent**



**Trusted**

# Microsoft and PTC: IoT for every business



**Accelerate**  
your IoT  
journey



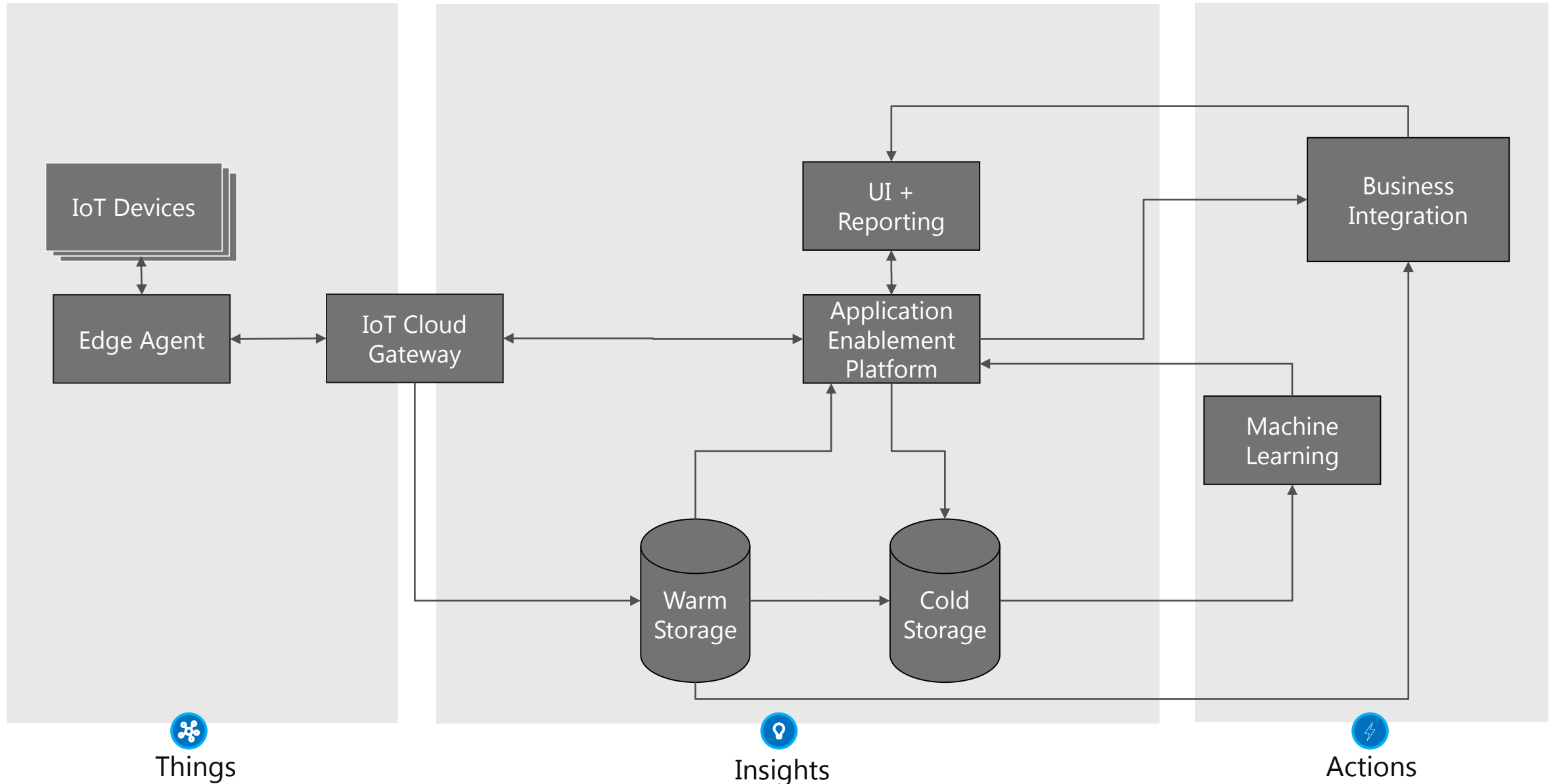
Build on the most  
**comprehensive**  
IoT portfolio &  
ecosystem



Work with a  
**trusted** IoT  
leader

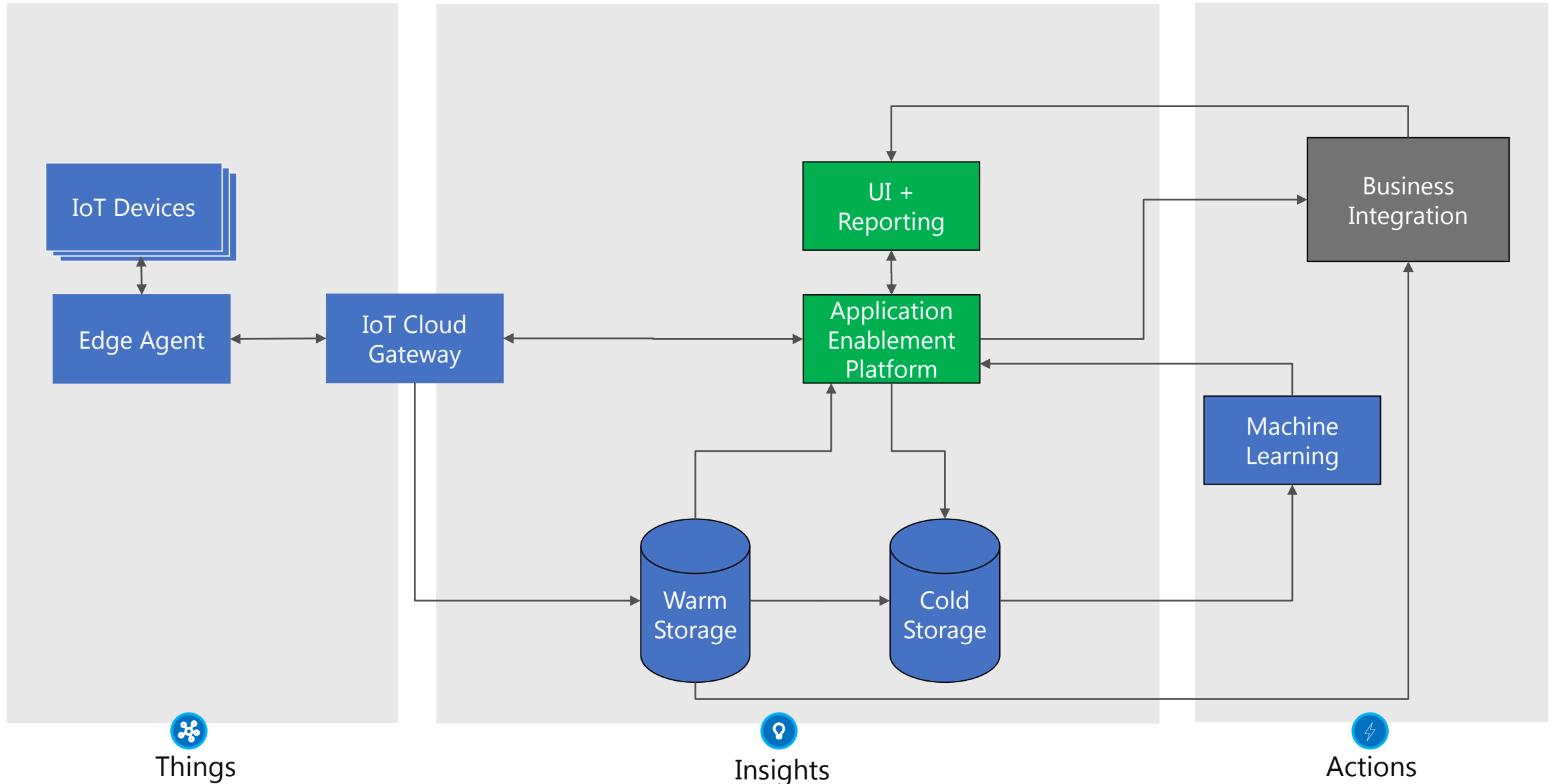


# SCP Reference Architecture





# SCP Reference Architecture

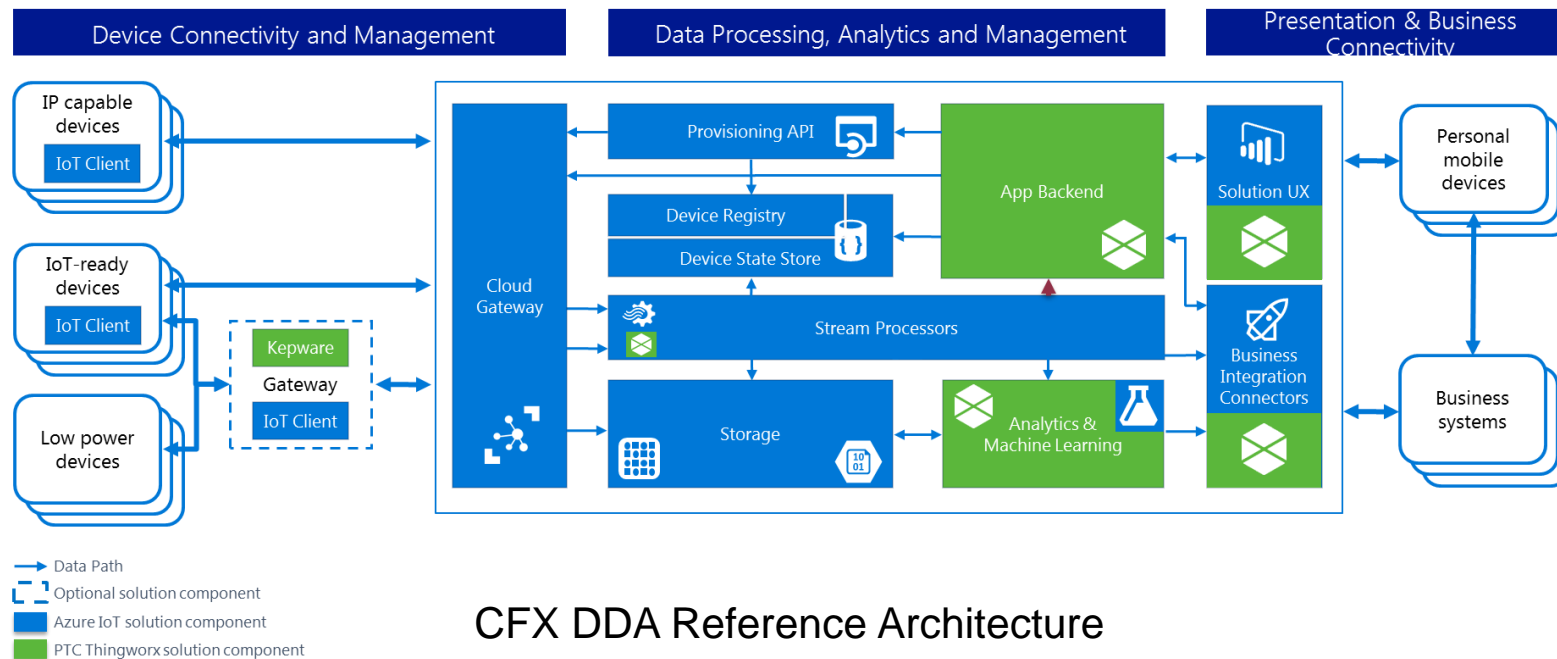


# SCP Reference Architecture Components

Component	Role	Critical Capabilities
IoT Devices	OEM Customer's Product	Communicate operational status via on-board capability or via tethered hardware device
IoT Edge Gateway	Broker secure communication to the cloud gateway	Secure operating system, authorization and authentication, resilient messaging
IoT Cloud Gateway	Broker secure communication to the edge gateway	Global scalability and availability, Secure operating system, authorization and authentication, resilient messaging
Stream Processing	Apply data transformation, normalization, aggregation, and rules processing	Declarative expression of data processing rules, execution of business logic and triggering of advanced analytics e.g. ML
ML Scoring	Apply pre-built ML models to real time data streams for predictive scoring	Efficient and lightweight execution of pre-built ML models
ML Training	Train and refine ML models which are then deployed for operational scoring	Training, validation, and refinement of predictive ML models
Warm Path Store	Store recent machine and relevant contextual data (often time series) for ready querying from applications	Optimized for time series, graph, and document storage and speedy retrieval for interactive applications
Cold Path Store	Archive machine data for compliance and longitudinal analysis	Long term, economical, scalable data storage with geo-replication and hooks for analytics tools and ETL
Application Enablement Platform	Digital Twin modeling environment with Citizen-developer oriented tools for customization of business logic, workflows, app construction	Visual environment for assertion of a Thing Model with connections to machine data, contextual data, and encapsulation of business logic and analytics (Digital Twin)
Solutions, UI, & Reporting	Pre-built applications for common use cases, reporting tools for customer-specific data visualizations and analysis	Purpose built for intended IIoT use cases in SCP, flexible self-service reporting and visual analysis tools
Integration and Orchestration	Connect to and orchestrate business workflows with related enterprise systems	Comprehensive coverage of common business systems, visual workflow builder for non-developers
Enterprise Business Systems	OEM customer and OEM user's business systems	

# THE PLUMBING: DDA ENABLEMENT ARCHITECTURE

- Common reference architecture allows focus on accelerating application value, not getting mired in the technology
- Same architecture for connected products, operations, and services



# PTC AND MICROSOFT ACCELERATE DIGITAL TRANSFORMATION

**Our joint solutions** provide enterprise customers ready solutions to quickly meet the daunting Manufacturing Challenges of today.



ENHANCE DIGITAL  
FACTORIES



MONETIZE CONNECTED  
PRODUCTS



CREATE INTELLIGENT  
VALUE CHAINS

MICROSOFT

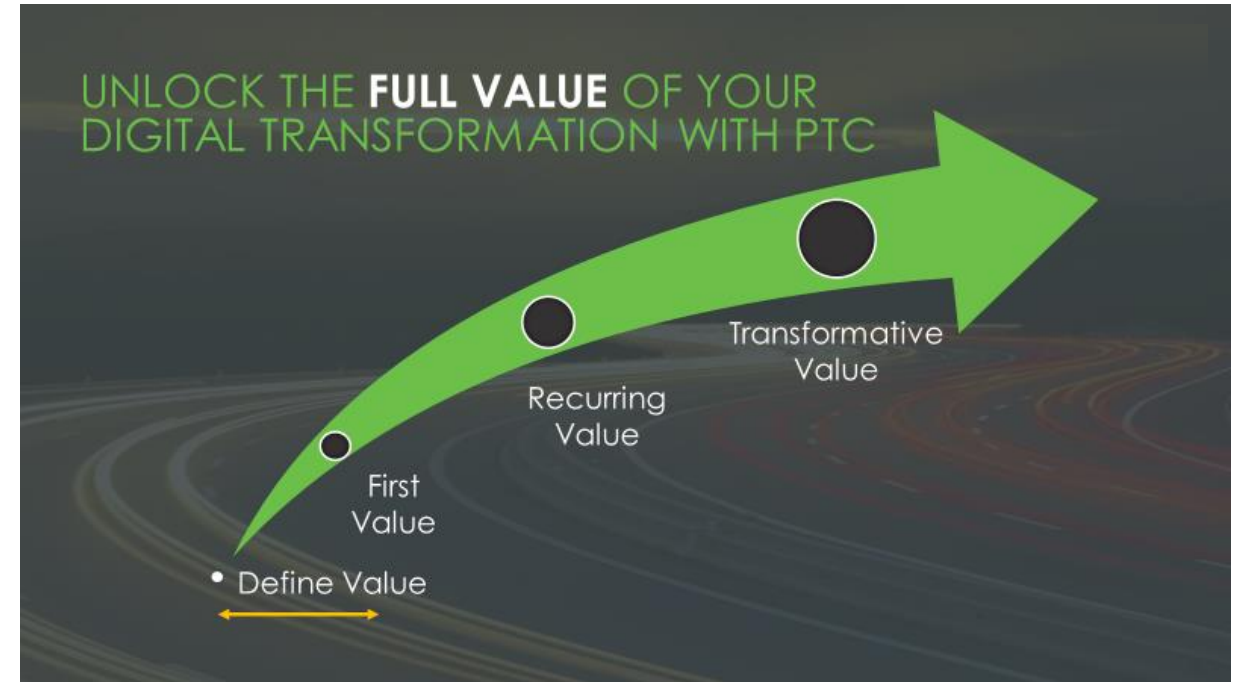


PTC



# NEXT STEPS

- “Digital Transformation” isn’t Someday; It’s Today
- Data from Products in the Field is Highly Valuable to All Functions of the Enterprise
- Get Started with PTC & Microsoft
  - Proven Domain Expertise
  - Technical Portfolio
  - Partner Ecosystem
  - Resources Dedicated to Customer Success







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Technologists

**240+**  
Breakout Sessions

**300+**  
Industry Experts

**100+**  
Product Demos



