



One platform.  
Unlimited innovation.



## Built for Industrial Innovation

In what has been dubbed the fourth Industrial Revolution – or Industrie 4.0 – the Internet of Things (IoT) continues to blur the lines between the physical and digital worlds for industrial enterprises.

Many forward-thinking enterprises have become keenly aware of the potential of their “things” – enterprise assets and systems like manufacturing equipment, tools, or products are a rich source of untapped data. The industrial IoT empowers organizations to access, analyze, act upon, and monetize that data by connecting machines, devices, workers, facilities, and other systems.

A flexible IoT technology platform provides the tools and technologies needed to seamlessly build robust, easy-to-use IoT solutions and augmented reality (AR) experiences that leverage data from smart, connected products and operations to drive innovation.

From optimizing product development and manufacturing operations, to transforming service and sales, an industrial IoT investment offers endless opportunities to drive innovation and value.



**ThingWorx delivers everything needed to drive industrial innovation.**

### Drive New Revenue Streams

Implement new business models and create value-add opportunities

### Optimize Business Processes

Combine real-time data with existing systems to increase efficiency

### Enhance Customer Experiences

Leverage insights from IoT data to improve service, support, and usability

### Differentiate Offerings

Use powerful new technologies to increase the pace of product and service innovation



## Meet ThingWorx: The Complete Platform for Industrial IoT

Purpose-built for industrial environments, PTC's award-winning ThingWorx IoT platform turns the promise of industrial IoT into a powerful reality, empowering enterprises to transform how they operate and compete for the smart, connected world.

The ThingWorx platform provides complete, end-to-end industrial IoT capabilities, from connecting assets and building role-based experiences, to extracting valuable data insights and orchestrating assets.

With extensive domain expertise built on nearly two decades of IoT innovation, ThingWorx delivers the functionality and flexibility needed to drive a rapid ROI—while offering the security and scalability required to expand IIoT solutions throughout the enterprise.



### >>> ThingWorx empowers industrial businesses to:

- > **Connect** disparate assets and systems to enable access to multiple sources of OT and IT data
- > **Build** robust, feature-rich industrial IoT applications quickly and easily
- > **Analyze** large volumes of complex IoT data for actionable insights, predictions, & recommendations
- > **Manage** connected devices, systems, and control processes centrally to ensure optimal performance
- > **Experience** contextualized, actionable information via role-based views, applications, and AR tools
- > **Accelerate** time-to-value and return on investment (ROI) of industrial IoT initiatives

## Leading the Industrial Revolution

ThingWorx delivers tools and technologies that eliminate complex connectivity, programming and deployment tasks.

### > Purpose-Built Platform

Functionally designed for industrial IoT, including the connectivity, scalability, and security required for industrial enterprise settings.

### > Rapid Development, Deployment, and Extensibility

Integrated platform capabilities enable seamless development for quick and easy delivery of industrial IoT applications.

### >>> Industry Awards and Recognition

FORRESTER®

Gartner®

IDC  
*Analyze the Future*

Research

CONNECTED  
WORLD

COMPASS  
INTELLIGENCE

EXPERTON  
GROUP  
ISG



luxresearch

SIIA

### > Ultimate Flexibility

Deployment options in the cloud, on-premise, or hybrid environments – including optimizations for Microsoft Azure. Integration with external data sources simplifies processes and yields more meaningful results

### > Engage and Experience

Drag-and-drop tools are used to build and deploy user interfaces for web and mobile applications or AR experiences.

### Vibrant Ecosystem

> Compatibility with a wide range of products and services to simplify, accelerate, and enhance organizational processes and strategies.

## Connect

Data access and visibility in an industrial setting presents challenges. Operations are teeming with disparate or legacy devices and ad hoc systems – connectivity, communications, and security are found to be unreliable or nonexistent.

**ThingWorx quickly connects industrial assets to source data directly from devices, applications, and enterprise systems – providing a single source for collecting, aggregating, and enabling secure access to industrial operations data.**

**Powered by Kepware®, and with a library of more than 150 device drivers, client drivers, and advanced plug-ins, ThingWorx enables connectivity to thousands of devices and enterprise data sources.**



### Data Aggregation

A single point of entry connects all sources of data – including edge devices, on-premise web servers, or off-premise cloud applications - eliminating the need for multiple, disparate applications for connectivity

### Real-Time Data Insight

Edge devices transform data into actionable insights at the source, avoiding issues with latency, cost, and security

### Secure Communications

Enhanced messaging security via SSL and TLS enables secure, authenticated and encrypted communications across various network topologies that meet site security requirements



## Build

For many industrial businesses, driving digital transformation is uncharted territory, where conventional methods and technologies no longer apply. A new technology infrastructure for IoT application development must be established.

**ThingWorx delivers the solution in a single platform. With deep functional capabilities and the industry's largest ecosystem of partners, ThingWorx enables rapid development of comprehensive, feature-rich industrial IoT applications and AR experiences.**



### Fast Time-to-Value

Model-driven design and user-friendly tools enable developers to create, test, and deploy a broad range of solutions quickly and easily – without manual coding

### Seamless Developer Experience

Integration with platform components and third-party applications minimizes work to connect things with existing business systems

### Scalability

Enterprise-level scalability meets varied and evolving business needs, providing support for the smallest to the largest deployments



## ■ Analyze

Devices are being connected at a rate of billions per year, generating unprecedented volumes of data - potentially in new and varying formats. In a world where real-time information is quickly becoming the standard, managing and extracting insight from industrial IoT data poses real and significant challenges.

**ThingWorx uses sophisticated machine learning technology to mitigate these challenges - simplifying industrial IoT analytics for everyday developers and users. ThingWorx uses automated analytics and machine learning to transform industrial IoT data into reliable, actionable insights in real time.**



### **Simple User Experience**

Intuitive, user-friendly interfaces, tools, information and visualizations enable complex analytical capabilities for the non-expert user

### **Powerful Insights**

Machine learning allows users to discover data patterns and correlations, anticipate future outcomes, and make predictions that can be operationalized across functions to enhance processes and decision-making

### **Optimized Outcomes**

Prescriptive and simulative analytics diagnose problems and provide recommendations for how to achieve or change a predicted outcome



## Manage

Effective management of connected devices and equipment is critical to IoT success. ThingWorx empowers users to easily define, monitor, manage and optimize the performance of connected devices and processes.

**ThingWorx offers components and capabilities for system administrators and users to simplify cumbersome tasks, including deployment, software content management, system integration, and workflow capabilities. Out-of-the-box functions and applications ensure optimal performance of assets and operations – increased uptime, reduced costs, role-based visibility and control, and improved compliance.**



### Simple Administration

Using ThingWorx Solution Central, system administrators manage, monitor, and control deployments of any size and scale from a central location using automated deployment and dependency management

### Seamless Integration

User-friendly, out-of-the-box system connectors reduce the time and skills required to integrate ThingWorx into existing environments and processes

### End-to-End Use Cases

Visual, codeless environment enables users to easily create, manage, and modify the flow of information through integrated systems – such as a flow that starts with a device alert and ends with a completed service ticket

Connection 02  
ACTIVE

27.03



PUMP

FAILURE IMMINENT 14.23%

FAILURE IMMINENT

## ▫ Experience

The extent to which any industrial enterprise realizes positive impacts of digital transformation is largely determined by how effectively IoT data is captured and translated into meaningful, actionable insight. Companies must consider the contexts in which to present information to ensure the right people get the right information at the right time.

**ThingWorx collects and aggregates data from connected devices and systems to create a holistic view of IoT-related information. Data insights are contextualized for the intended audience and shared via customizable, dynamic, visual presentations and AR experiences that enable users to be more responsive, productive, and adaptable.**



### **Compelling Visualizations**

Intuitive design allows users to easily build and share dashboards and visualizations from raw data, with customized views of connected devices, system status, and alerts

### **Unified Data View**

Data is combined into a single, unified view and accessed via user interfaces for desktop, web, and mobile applications to ensure accuracy and consistency of information

### **Seamless Integration with Vuforia**

Integration with Vuforia solutions allows users to create powerful, immersive AR experiences from IoT data in a visual authoring environment and access via mobile and wearable devices



## Accelerate

A pioneer in bringing IoT to the industrial ecosystem, ThingWorx has a deep, rooted understanding of the day-to-day needs of developers and users of IoT solutions. Based on extensive experience working with customers and partners in real-world scenarios, ThingWorx has developed a collection of easy-to-use, pre-configured, role-based applications that enhance visibility, productivity, and performance across the business.

**ThingWorx Apps enable businesses to build, deploy and maintain ThingWorx-enabled solutions on their own terms. ThingWorx Apps are easily installed and configured without impacting production. They are 100% web-enabled and accessible via any browser – enabling users to view, understand and act on industrial data in real time, accelerating time-to-value. Using ThingWorx Apps, businesses are better-equipped to optimize asset performance and meet the demands of ever-shortening product cycles to outpace growing competition.**

### PTC Marketplace

The PTC Marketplace provides a one-stop shop for hundreds of resources to build, customize, and run ThingWorx-based IoT solutions. It features a wide selection of tools, extensions, apps, and solutions from ThingWorx and its partners that have all been tested and guaranteed to work seamlessly with the ThingWorx industrial innovation platform.

### ThingWorx Developer Portal

The ThingWorx Developer Portal is an online destination for access to ThingWorx- and partner-provided resources that enable developers to easily learn about, explore, and use ThingWorx technologies.



## >>> The ThingWorx Partner Ecosystem

ThingWorx maintains one of the world's largest networks of industrial IoT-focused developers and partners, offering a wide range of products and services from partners that simplify, accelerate, or enhance processes and strategies.

Technology providers, solution providers and global systems integrators join with ThingWorx to explore new business opportunities in the industrial IoT. ThingWorx provides the leading technologies, tools, and resources needed for partner success and invests in enabling and growing the partner network for the benefit of a joint, global customer base.

ThingWorx showcases innovative technologies and solutions of its partners to engage customers through marketing, sales, and other channels.

### > Complement

Partners expand market visibility by aligning hardware and software products with ThingWorx, validating that they integrate easily with ThingWorx solutions.

### > Sell

By selling or distributing ThingWorx solutions, partners can grow and scale their own businesses by offering integrated solutions customers need.

### > Service

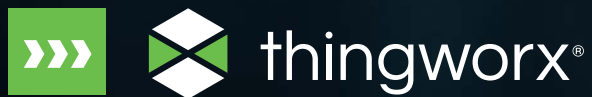
The ThingWorx partner network provides access to resources that enable partners to provide first-class services and training to their customers.

### > OEM

Partners rapidly build and commercialize your solutions by embedding or bundling ThingWorx technologies and gain access to partner resources to support development and launch. I and physical product data, dashboards, and alerts.

### > PTC Marketplace

Offers partners a unique opportunity to promote applications, products, and solutions directly to the market alongside ThingWorx and other compatible solutions and technologies .



**>>> ThingWorx:** One Platform. Unlimited Innovation.

PTC helps companies around the world reinvent the way they design, manufacture, operate, and service things in and for a smart, connected world. In 1986, we revolutionized digital 3D design, and in 1998 were first to market with Internet-based product lifecycle management. Today, our leading industrial innovation platform and field-proven solutions enable you to unlock value at the convergence of the physical and digital worlds. With PTC, manufacturers and an ecosystem of partners and developers can capitalize on the promise of the Internet of Things and augmented reality technology today and drive the future of innovation.

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