thingworx®

One Platform. Unlimited Innovation.

ANALYZE

DELIVER INDUSTRIAL IOT ANALYTICS WITH THINGWORX

AUTOMATE COMPLEX ANALYTICAL PROCESSES FOR THE IOT - DELIVERING
REAL-TIME INSIGHTS, PREDICTIONS, AND RECOMMENDATIONS

ptc

The IoT is driving a massive increase in data as billions of new devices are connected every year. Each device generates potentially millions of new data points daily – unprecedented in both volume and pace. For the growing number of enterprises implementing smart, connected strategies and solutions, this data holds invaluable insights.

With these numbers of connected devices, managing and extracting value from IoT data poses real and significant challenges for the enterprise. Decisions are being made in real-time, increasing the need for enterprises to quickly, easily, and proactively automate complex analytical processes that enhance IoT solutions with reliable, actionable information, and insights.

Traditional reporting and visualization approaches are not well-suited for IoT data analysis. They are difficult and time-consuming to adapt and use for high volumes of complex IoT data in new and varying formats.

ThingWorx is designed to specifically tackle the challenges associated with the volume, velocity, and variety of IoT data. Using sophisticated artificial intelligence and machine learning technologies, ThingWorx delivers reliable, actionable insights in real-time to ThingWorx-powered solutions

⟫ PTC and Partners: Better Together

PTC partners with best-in-class enterprises to provide customized, innovative IoT solutions that extend the ThingWorx platform to accelerate digital transformation and deliver maximum value and business advantage.

RA Rockwell Automation

PTC and Rockwell Automation have developed a collaborative solution that connects devices with IT applications and systems, and consolidates data to deliver complete visibility of operations and systems status from a single source. By providing decision makers with improved data and insights, the solution enables industrial enterprises to reduce unplanned downtime, enhance productivity, and drive operational excellence in factories.

ANSYS®

PTC and ANSYS have developed a framework which allows customers to build predictive simulation-based digital twins, combining ANSYS Twin Builder and PTC's ThingWorx Analytics to predict how an industrial component operates and responds to its environment. The resulting solution enables businesses to improve product design, reduce maintenance costs, and streamline operations.

⟫ ThingWorx includes the following functionality:

Predictive Modeling – Incorporates supervised machine learning into industrial IoT solutions and extends data science practices with automated predictive and prescriptive modeling – without the need for algorithm expertise by users

Explanatory Analytics – Enables better understanding of industrial IoT data, providing a variety of advanced algorithms that allows users to discover useful patterns and correlations within data

Real-Time Monitoring – Monitors data streams using a variety of statistical and machine learning techniques to learn "normal" conditions and identify unexpected changes in behavior

Predictive Scoring – Anticipates future outcomes and offers the ability to make relevant outcome- based predictions based on data within ThingWorx

Prescriptive Scoring – Improves future performance and results by automatically executing simulations to generate recommendations that will optimize the product and process performance

Digital Simulation – Uses integrated models and other computational providers within the application to simulate behavior of physical products in the digital world

Descriptive Services – Pre-built calculations and other transformations, useful in both general IoT application development and as a preparation step in changing raw data into useful insights for predictive analytics training and scoring

⟫ With ThingWorx, enterprises easily:

○ Transform data into insight via intuitive, user-friendly interfaces that enable complex analytics capabilities for non- expert users

○ Operationalize insights, predictions, and recommendations across enterprise functions with automated IoT data to enhance decision-making

○ Detect changes in behavior and operating conditions in real-time, minimizing time to resolution

○ Optimize performance outcomes using prescriptive and simulative analytics that diagnose problems and generate recommendations

Optimizing Industrial Operations

ThingWorx delivers reliable and actionable advanced insights that can be operationalized across business functions to enhance decision-making in real time.

USE CASE	DEFINITION	PROBLEM STATEMENT
Operational Intelligence	Combine, analyze, and deliver insights from disparate and diverse silos of assets, operators, and enterprise systems into unified real-time visibility of KPIs for increased operational performance and improved decision making.	Modern industrial operations processes are a complex system of machines, operators and applications. Lack of visibility into the performance and efficiency of the overall process reduces the ability to understand process relationships between disparate systems and make real-time decisions to optimize operations. *Combining and correlating data into real-time KPIs monitoring the overall process improves real-time decision-making, leading to better performance, increased efficiency, and enhanced predictive operational recommendations.*
Predictive Maintenance	Monitor connected products and assets to determine condition of in-service equipment in order to predict when maintenance should be performed, enabling proactive maintenance activities and minimizing unplanned downtime.	Unexpected downtime costs are substantial. Scheduled or routine maintenance activities that do not consider asset conditions and operational experience can lead to unnecessary maintenance, which is an inefficient use of resources. *Proactively scheduling and performing maintenance based on real-world asset conditions and calculated predictions can minimize downtime, leading to increased productivity, higher quality, reduced costs and increased customer satisfaction.*
Asset/Process Monitoring	Enable real-time monitoring of assets to detect unexpected or abnormal conditions and proactively initiate maintenance teams or service networks to minimize downtime and identify maintenance and quality problems before they occur.	*Assets operating under abnormal conditions are more likely to experience failure and downtime or produce undesirable output. Manual monitoring of assets for indications of impending failure can be both expensive and ineffective due to the number of assets, complexity of the asset operation and volume of data generated.* *Identifying undesirable, unexpected or abnormal asset conditions enables experts to more effectively triage and resolve potential issues.*

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