

ThingWorx Analytics

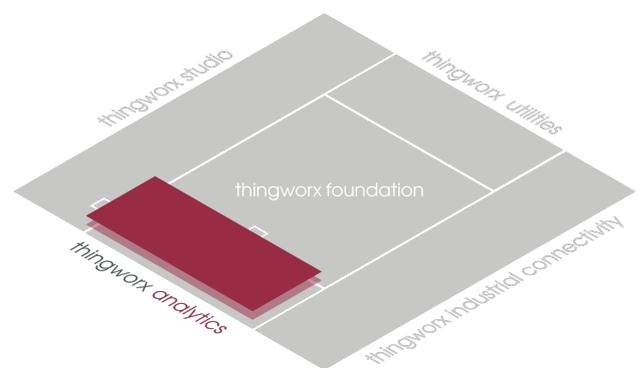
DELIVERING POWERFUL, OPERATIONALIZED ANALYTICS TO SOLUTIONS BUILT ON THE THINGWORX PLATFORM

The Internet of Things is driving a massive increase in the data available for analysis. Smart, connected things, by definition, generate data – and within that data lays a wealth of previously unattainable, invaluable insights. As the number of connected devices grows into the billions, the demand for more insight from IoT data is outpaced only by the growth of the data itself.

In the Internet of Things (IoT), data is growing at an unprecedented rate. Each device or sensor – each “thing” – can generate up to millions of data points each day. With the number of connected devices expected to reach 30 billion by 2020¹, managing and extracting value from this data is growing increasingly difficult.

To deliver reliable, actionable intelligence in real time, the approach to analyzing data must easily and effectively mitigate the challenges posed by the volume, velocity, and variety of IoT data.

- **Volume:** By 2020, IoT data will comprise up to 10% of the world’s data.²
- **Velocity:** With 3 billion new devices connected every year on average, data is growing at a uniquely fast pace.³
- **Variety:** IoT data is found in varying formats for various objects, in both structured and unstructured formats.



Traditional reporting and visualization approaches are not well-suited for IoT data analysis. They can be complex, typically require some manual intervention, and yield limited visibility and insights. These tools will become too difficult and time-consuming to use when working with potentially billions upon billions of data points in varying formats. And for IoT users, time is critical – analytics must be contained within their solutions in a way that is both real-time and proactive to keep IoT operations running optimally. Moving between applications wastes too much valuable time for IoT decision makers who need analytics to better understand their ecosystems and make critical, informed decisions.

^{1,3} “The Internet of Things: Sizing Up the Opportunity,” *McKinsey and Company*

² “10 of the Biggest IoT Data Generators,” *Computer Business Review*

Meet ThingWorx Analytics

ThingWorx Analytics is designed to specifically tackle the volume, velocity, and variety challenges of IoT data analysis within ThingWorx-powered solutions. Solutions are enhanced with sophisticated analytics made available to users via simple, intuitive user interfaces, easy-to-understand information and visualizations.

With ThingWorx Analytics, enterprises easily:

- Monitor edge devices and provide real-time pattern and anomaly detection on real-time data streams
- Provide automated predictive modeling and operationalization of results directly into IoT solutions built with ThingWorx
- Deliver prescriptive and simulative analytics that identify contributing factors to an outcome and explain how to change a predicted outcome
- Automatically maintain predictive and simulative intelligence that is delivered to end-users

Key Benefits

- Automation of complex analytical processes simplifies the development of smart, connected products, operations, and solutions
- User-friendly interfaces, tools, and applications enable complex analytical capabilities for those who are not data experts
- Deep, real-time insights, predictions, and recommendations derived from “thing” data enhance operational planning and decision-making
- Replay functionality enables analysis of historical data and supports forensic investigation of data after an incident
- Production-ready deployment enables enterprises to get up and running quickly - at the edge, on premise, or in the cloud

How It Works

ThingWorx Analytics delivers powerful, automated analytics capabilities to ThingWorx-powered solutions – including real-time pattern and anomaly detection, automated predictive analytics and contextualized recommendations.

Utilizing simple user-friendly interfaces, visualizations, and easy-to-use tools, ThingWorx Analytics eliminates the need for developer or user expertise in data modeling, complex mathematics, statistical analysis, artificial intelligence, or machine learning.

ThingWorx Analytics offers robust functionality through each of its core components:

- **ThingWorx Analytics Server:** Automates complex calculations and generates predictions, simulations, and prescriptions. Uses historic data to automatically build, validate, and maintain models that can be used by ThingPredictor and recommend instructions that can be used by ThingOptimizer.
- **ThingWatcher:** Finds anomalies from edge devices in real-time. Automatically observes and learns the normal state pattern for every device or sensor, without the need for setting rules or applying pre-calculations, then monitors each for anomalies and delivers real-time alerts to end users.
- **ThingPredictor:** Automatically predicts future outcomes. Subscribes “things” to relevant outcome-based predictions (time to failure, errors per hour, etc.) and displays results in context through any ThingWorx-powered solution or experience.*
- **ThingOptimizer:** Improves future performance and results with automated prescriptions and simulations. Automatically identifies the key factors causing a given outcome.*

ThingWorx Platform Integration

The ThingWorx Technology Platform enables innovators to rapidly develop and deploy smart, connected solutions for industrial IoT. The platform contains the industry's most complete set of integrated IoT-specific development tools and capabilities - simplifying solution development, accelerating time-to-market, and making end-user solutions more compelling.

ThingWorx Analytics is tightly integrated into the ThingWorx Platform, enabling organizations to build smart, connected solutions faster, at a lower cost, and using fewer resources. ThingWorx Analytics monitors data streams from connected devices directly via connectivity to the underlying ThingModel. Each piece of ThingWorx Analytics then works in conjunction with other modules of the ThingWorx Platform to automate the creation and delivery of proactive intelligence to ThingWorx-powered solutions.



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