



# DIGITAL MANUFACTURING AWAITS

Empower your people with information that  
expands their possibilities





## ACCELERATE AND SIMPLIFY DIGITAL TRANSFORMATION

Data from connected equipment, lines, processes and facilities is pouring into factories. The information locked in these data streams can transform how you manage your operations, solve issues and adapt to change. But managing that data and making it useful for the right purpose, at the right place and time, is no easy task.

Can your decision-makers get the answers they need to make timely decisions?

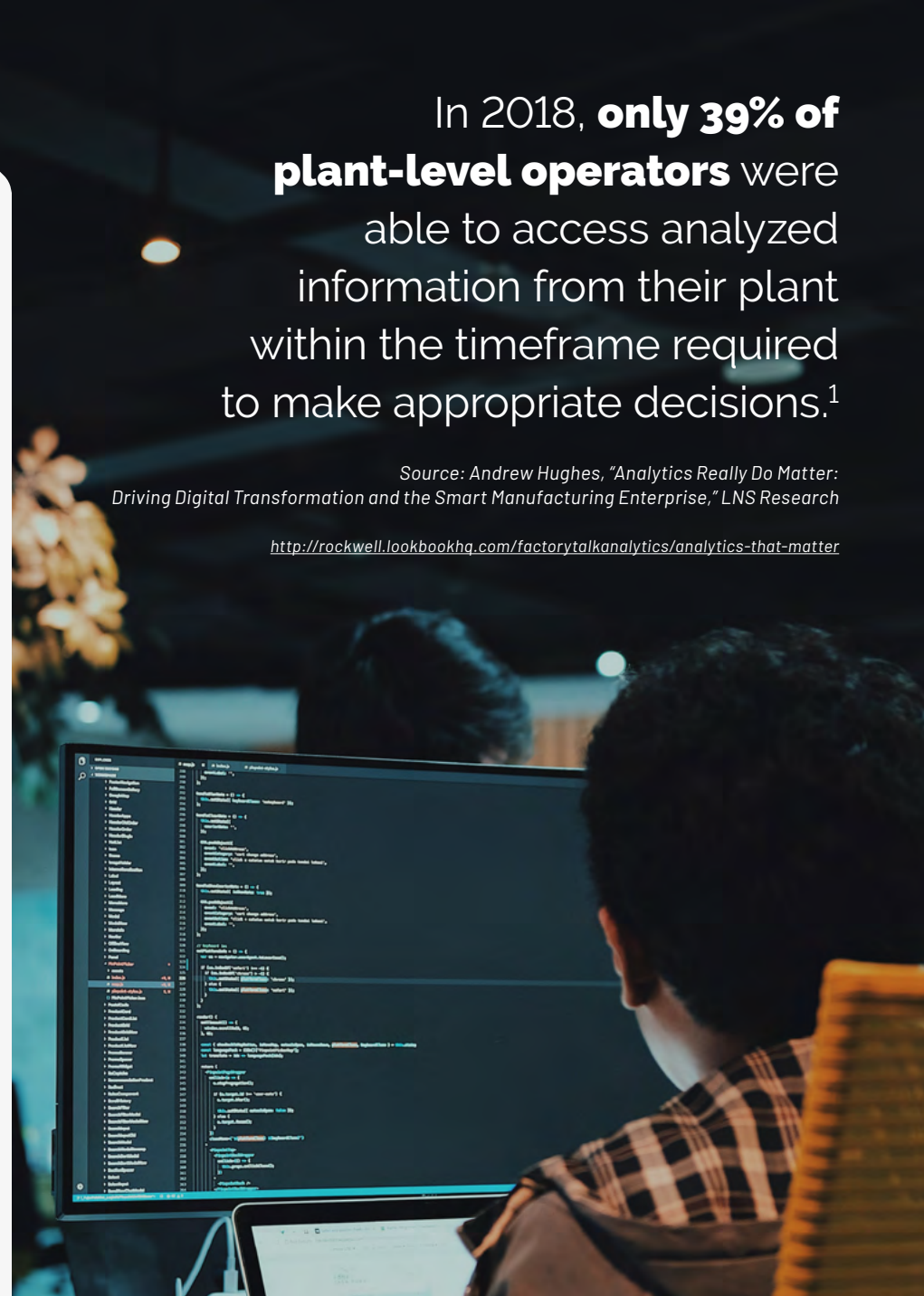
FactoryTalk® InnovationSuite, powered by PTC, is a comprehensive suite that brings edge-to-enterprise analytics, machine learning, industrial internet of things (IIoT) and augmented reality (AR) into industrial operations. This powerful solution simplifies how your company manages data and makes it easier for everyone to access, understand and leverage the information they need to make decisions.

InnovationSuite collects and consolidates information technology (IT) with operational technology (OT) from your existing equipment and systems so you can make data-driven decisions that align with your exact needs. You and your workers can easily find the data you need. And with instant access to actionable, real-time, data-driven insights, they can be more effective and more innovative.

In 2018, **only 39% of plant-level operators** were able to access analyzed information from their plant within the timeframe required to make appropriate decisions.<sup>1</sup>

Source: Andrew Hughes, "Analytics Really Do Matter: Driving Digital Transformation and the Smart Manufacturing Enterprise," LNS Research

<http://rockwell.lookbookhq.com/factorytalkanalytics/analytics-that-matter>



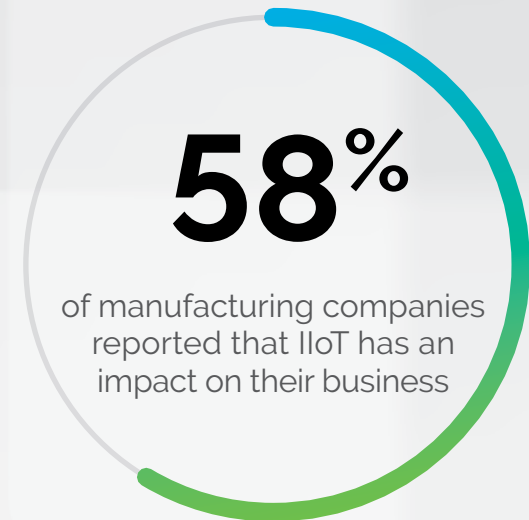
# The new imperative

A world of interconnected data has changed the way we live and work. Our expectations have changed, too. Customers, partners, employees—everyone expects customized products, seamless and personalized experiences, and immediate access.

Gaining value from your production and IIoT data to meet these growing expectations requires specialized, industry expertise and an end-to-end solution. Reduce your costs, improve your users' experience, and get more from your maintenance and training efforts with a single suite of IIoT solutions: FactoryTalk® InnovationSuite, powered by PTC.

InnovationSuite brings together Rockwell Automation FactoryTalk® Analytics™ and manufacturing execution system (MES) platforms with PTC's ThingWorx Industrial IoT Platform and Vuforia Augmented Reality. Enabled by the powerful Microsoft Azure IoT cloud infrastructure, this comprehensive suite makes it easy for you to connect so you can improve operational insight across your business.

## IIoT IMPACT



**27%** still are investigating whether there is an impact

**14%** don't understand or know about IIoT<sup>2</sup>

Source: Ibid



# Why InnovationSuite?

## Accelerate value across the value chain with market-leading solutions

Our robust suite of industrial solutions allows you to capture exponentially more value, faster and with the flexibility you need to transform your operations. With **InnovationSuite**, you benefit from the following solutions:

- 1 Digital Workforce Productivity.** [VIEW STORY](#)  
Empower your workers to perform better and avoid safety and compliance risks by providing easy access to the information they need.
- 2 Enterprise Operational Intelligence.** [VIEW STORY](#)  
Increase your flexibility and efficiency with real-time visibility into your factory's performance across operations, allowing you to reduce costs.
- 3 Intelligent Asset Optimization.** [VIEW STORY](#)  
Improve equipment performance and uptime with real-time monitoring of equipment and predictive and prescriptive maintenance.
- 4 Scalable Production Management.** [VIEW STORY](#)  
Reduce costs and accelerate your time to market with flexible process enforcement and dynamic scheduling on the shop floor.

The benefits of digitally transforming your operations preserve the value of your current investments while helping you add innovation to your process through technology. With these solutions, you can transform your factory floor into an AI-enabled, responsive and connected enterprise.

“The ThingWorx platform has brought all our various systems together and makes the data from those actionable for our workers. Not only have we been able to improve the quality of our products, but we’ve drastically increased efficiency and productivity across all of our facilities as well.”

– **Jay Drager**,  
Director of Global Business  
Systems, Woodward

## Boost the productivity of your workforce

**Challenge:** A shortage of skilled workers combined with increased demand for custom products is causing a crisis. Experienced workers are exiting the workforce, and the lack of skilled talent to replace them is leaving you without the expertise you need. Worsening matters, new hires are taking longer to get up to speed due to increased complexity in the manufacturing process. In essence, you have to do more with less.

**Solution:** Digital Workforce Productivity empowers your workforce with actionable, augmented intelligence that improves productivity and quality while avoiding safety and compliance risks. The solution's performance enhancement and monitoring tools help workers at any level of expertise. Expand these capabilities with AR-based training and instructions, then optimize your factory floor with sophisticated AI-driven insights and interfaces.

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**What this means to you:** Your workers will be more productive and generate higher-quality products more safely. You'll be able to train workers faster and more effectively so they can make proactive decisions and perform better. With trained and productive workers, you'll see lower costs and improved time to market.



A large global food and beverage company is using ThingWorx in dozens of manufacturing sites across their global enterprise. ThingWorx is providing this enterprise with role-based access to real-time standardized metrics and information across numerous systems, **driving a 5-8% increase in productivity.**

## Improve the performance of your enterprise

**Challenge:** Global competition and cost pressures are escalating the need for manufacturers to have full visibility into operations and to identify areas for improvement. Without real-time performance visibility and responsiveness, you face inconsistent performance across lines, cells and plants. As mass customization drives up inventory, work in progress (WIP) and tooling costs, delays in production schedules are affecting time to market and reducing market share.

**Solution:** Enterprise Operational Intelligence gives you visibility from your top floor to your shop floor, enabling real-time performance management so you can reduce your costs while increasing the flexibility and agility of your manufacturing networks. Your starting place is implementing real-time, factory floor-wide monitoring and management. Enhance these capabilities with sophisticated tracking and performance analytics. And then optimize your enterprise by applying AR to identify additional automation and service delivery opportunities.

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**What this means to you:** When you have comprehensive, real-time insights into every aspect of performance across your factory floor, you can use that knowledge to make informed decisions and maximize business results.

A large tier-1 automotive supplier deployed an alarm monitoring application using InnovationSuite to visually display data from all oven sensors, while running a model to predict O<sub>2</sub> intake alarms. **They can now predict alarms 24 hours in advance, with 91% accuracy.**

## Optimize your assets

**Challenge:** Manufacturers are under constant pressure to keep up with increasing product complexity while reducing costs. Unplanned downtime and unexpected capital expenses add to this pressure and are very disruptive and costly. Without the ability to anticipate equipment failures and identify root cause, you lose significant amounts of time and money.

**Solution:** Intelligent Asset Optimization offers real-time monitoring, diagnostics, and predictive and prescriptive analytics that give you critical insights into your assets. With visibility into your assets' capacity, performance and health status, you can avoid unplanned downtime and maximize your asset utilization. Start transforming your factory floor with asset monitoring and predictive maintenance. Use digital work instructions for the task at hand. Build on these capabilities with more sophisticated AR performance and maintenance tools. Complete your transformation with remote maintenance access and prescriptive asset optimization.

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**What this means to you:** Real-time asset monitoring and assessment can reduce both planned and unplanned downtime, improve first-time fix rates, increase return on assets, improve asset utilization, and reduce maintenance and equipment costs.

A large furniture manufacturer augments its existing MES system with ThingWorx to provide **real-time visibility** into machine, workforce and production efficiencies. This allows them to **rapidly rebalance their schedule** during the workday, dispatching critical jobs and adjusting routes for **maximum productivity**.

## Execute production with predictability

**Challenge:** Global competition and mass product personalization require manufacturers to respond with speed, flexibility and agility to meet production deadlines and deliver a quality product. Yet rigid manufacturing infrastructures are holding you back, delaying production schedules and increasing WIP. The demand to meet quality and compliance standards under these high-pressure circumstances often leads to scrap and rework and can put the enterprise at risk.

**Solution:** Scalable Production Management brings agile process enforcement and dynamic scheduling onto the shop floor to reduce the cost of inventory, improve quality and accelerate time to market. Begin your transformation with real-time, across-the-floor production performance monitoring to improve efficiency. Expand these capabilities with tools that provide detailed insights into WIP and help your workers do their jobs better. Finally, optimize your factory floor with AI-enabled predictive tools that help you fine-tune process planning and quality.

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**What this means to you:** Your factory floor gains the speed, agility and flexibility you need to stay competitive and achieve on-time delivery of the high-quality products customers want. Machine learning-based problem solving helps ensure that you produce a quality product without incurring unnecessary waste and costs.





## The FactoryTalk InnovationSuite, powered by PTC and Microsoft Azure

Imagine the possibilities. Digital transformation can bring greater innovation and productivity to address any business need when your data is managed well.

InnovationSuite includes auto-discovery tools that collect, integrate and manage data so that your decision-makers can access the real-time and near-time information they need to make timely and well-informed decisions. With InnovationSuite, you gain powerful, purpose-built, IIoT solutions that:

- Rapidly connect users to equipment, systems data and information from one or many facilities, so they can monitor products and performance in real time
- Provide insights into the performance of physical assets and digital systems, all from one interface, for proactive responses and updates
- Support rapid build and deployment of fit-for-purpose applications to all decision-makers—from the plant floor to the C-suite—to enhance productivity and innovation
- Automate complex, advanced analytical tasks, giving your people real-time information to inform their decision-making
- Use AR experiences to improve effectiveness in common industrial use cases, such as workforce instruction, training and service
- Help eliminate information silos to improve information sharing and enhance collaboration

## Easily gain real-time insights from complex data

InnovationSuite uses artificial intelligence (AI) and machine learning to simplify and automate the gathering and analysis of complex IT and OT data, learning from and building on its knowledge base for future analyses. The integrated suite collects and organizes data in real time and adds context to give you actionable insights. It also recommends insights of its own, so that you can easily understand and respond to issues and opportunities – right now.

With InnovationSuite, your applications become more predictive, and you gain greater control over your operations while better protecting your assets.

## Make your data actionable across the enterprise

Turn insights into actions with InnovationSuite. The suite blends advanced analytics with information from your MES to add context to your analytics, supporting quality initiatives, compliance and continuous improvement. And the AR features work with your MES to give you deeper visibility and improve your operational effectiveness.

### All through a single pane of glass

InnovationSuite provides a single pane of glass through a centralized dashboard to give you immediate visibility into the data you need, whether it is from a lone facility or an entire global network of facilities. This 360-degree view allows you to optimize global operations by combining, comparing and analyzing information in real time from machine to machine, line to line, process to process, and facility to facility.

### Easy-to-understand visualizations

An intuitive, user-friendly interface gives employees a view of the enterprise tailored to their role, connecting and contextualizing data from other systems through one common window.

### Enterprise-wide visibility and control

The solution creates a digital representation of each physical asset and process, then connects that representation to all relevant data so it can monitor the asset. With complete visibility into the data, users have access to the information they need for their job roles, including MES, enterprise resource planning (ERP), customer resource management (CRM) and finance.

Are you missing opportunities because you can't access the data you need quickly enough? The opportunities are limited only by your business need and your imagination.

# THE TOP 5

uses of analytics in manufacturing are:

- 01** Improving manufacturing quality
- 02** Gaining better forecasts for a production plant
- 03** Pursuing Operational Excellence programs
- 04** Continuing manufacturing process improvement
- 05** Improving customer service and support<sup>3</sup>

<sup>3</sup> IBID.

# Industry-leading smart factory technologies

## InnovationSuite incorporates features from these technology portfolios:

### FactoryTalk Analytics

The **FactoryTalk Analytics** platform is bundled with FactoryTalk Analytics DataView, FactoryTalk Analytics DataFlowML and FactoryTalk Analytics Edge. With FactoryTalk Analytics, you gain scalable analytics from the edge to the enterprise, ingesting data from many different sources. The platform provides your decision-makers with self-service machine learning and data mashups for collaborative data analysis. It lets you execute as close to the source and consumer of data as possible, so you don't have to rely on IT or your data scientists.

### FactoryTalk MES

FactoryTalk MES applications connect, manage, validate and optimize all aspects of production. FactoryTalk® Performance helps you improve efficiency on your factory floor by automatically measuring and analyzing data to determine key corrective actions. FactoryTalk® Production automates order management to help you achieve balance and enable continuous improvement. FactoryTalk® Quality easily and efficiently enables modeling and enforcement of quality regimens. FactoryTalk® Warehouse controls and manages warehouse logistics, providing full

inventory transparency and increasing efficiency. Available as a complete package or through individual components, these MES applications allow manufacturers to take a flexible, scalable approach to smart manufacturing to meet specific production optimization goals.

### ThingWorx Industrial IoT Platform

Simplify the process of connecting devices and sensors, systems and assets with the **ThingWorx** ready-built, end-to-end technology platform. The easily scalable platform contains a broad set of features, including several connectivity options, application development tools, and analytics. With ThingWorx, you can seamlessly build powerful, easy-to-use IoT solutions that drive innovation through smart, connected products, systems and operations.

### Vuforia Industrial Augmented Reality

Vuforia tools allow you to quickly create and deliver AR content to transform your operations, facilitate knowledge transfer and improve your profitability. The tools create and deliver easily consumable instructions with new or existing media content/capture, 2D and 3D content, sequences, IoT data and real-time annotations. You can deploy AR experiences authored in Vuforia to the cloud or on premises, and users can access them from smartphones, tablets and wearable devices via a single universal viewer application.

### End-to-end services and support for your journey

Together, PTC, Rockwell Automation and Microsoft offer support and services to help you assess, consult, train and supplement your in-house teams to ensure that you reap the full benefits of your implementation. This support includes alignment with the networks and security services teams to give you a fully networked, secure information infrastructure.



# Connected Enterprise checklist

## Get ready to connect and innovate

Take advantage of The Connected Enterprise – and get the data you need to innovate. Get ready to:

- Benefit from seamless integration of your enterprise and operations systems
- Access a centralized dashboard and a single source of truth
- Easily connect users to data and insights from across the enterprise
- Access real-time data through an easy-to-use interface
- Use augmented reality to enhance effectiveness and productivity

## Ready to get started?

PTC and Rockwell Automation have created a unique combination of information software, services, delivery, scalable computing options and world-class partnerships to give you the end-to-end solution that best fits your needs, whether it's on premises, hybrid or delivered through the Microsoft Azure platform.

We won't leave your side during your journey.



# Expand the possible with InnovationSuite

The most successful business of the future will be the one that brings operational intelligence to its human developers. You'll gain insights that enable you to innovate how you manage your enterprise, how your workers work and how you deliver solutions to your customers.

FactoryTalk InnovationSuite, powered by PTC and enabled by the Microsoft Azure IoT platform, provides the best of today's IIoT, data analytics, AR and machine learning in one comprehensive solution. From the shop floor to the top floor, real-time operational visibility unleashes the power of possibilities for greater innovation, efficiency and profitability.

## GET READY TO INNOVATE.

[Click here](#) to learn more about the benefits of FactoryTalk InnovationSuite, powered by PTC, for your operations.