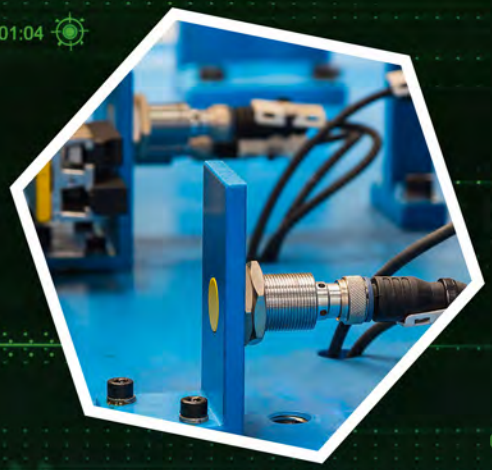
ptc



DECISIONS AT THE SPEED OF DATA

Overcoming Data Silos and Information Saturation

The industrial Internet of Things (IIoT) has created a new breed of data that impacts every level of the manufacturing ecosystem. Machines, software, devices, sensors, people, locations and even dynamic elements such as processes and events—both real and predicted—are connecting, consuming, and churning out new data like never before.

Manufacturers big and small can connect their entire supply chain—regardless of protocols, processes, equipment age or location. This massive datafication has created high volume and high velocity information that is changing how decision-makers view their value chain. But without an infrastructure that helps focus the information excess, all this newly tapped data can be overwhelming—slowing down important decisions, instead of streamlining them.

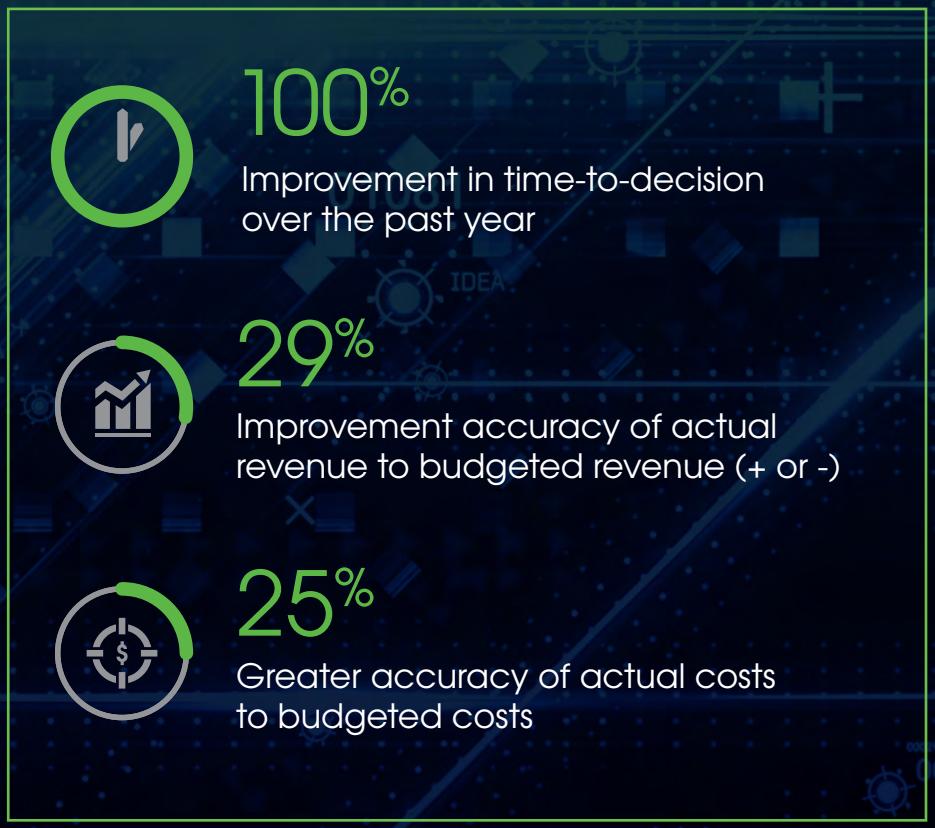
> Real-time visibility into logistics routes and material flow across the supply chain increases the efficiency of your production and inventory management . . . Easy access to a high volume of near real-time data enables the improvement of current analytics and the development of innovative applications.
>
> - *Smart Factory Applications in Discrete Manufacturing: An Industrial Internet Consortium White Paper*

Real-Time Data for Real-World Decisions

Manufacturing relies on continuous production. Fast, accurate, real-time analytical insights are intuitively recognized as valuable. Many decisions must be made in real-time, so having real-time data will naturally improve those decisions. Actionable, up-to-date metrics create many new benefits, including:

- **Improved OEE and Predictive Maintenance:** With real-time equipment analysis based on the most up-to-date data, maintenance teams can immediately determine the root cause of downtime and other inefficiencies—and even prevent downtime through predictive data analysis.
- **More In-Depth Performance and Quality Metrics:** With an industrial IoT platform, real-time views into metrics of all kinds can be embedded into the production process. These detailed looks into performance across the enterprise enable new levels of quality checks and corrections—without slowing down production.
- **Refined Compliance Awareness:** Manufacturers have different compliance demands, depending on their industry. Real-time data can consistently monitor regulatory alignment and immediately flag any conflicts. More accurate compliance and regulatory data can also help during audits.

Reported Results from Businesses Incorporating Real-Time Dynamic Data



Source: Aberdeen Group research report, *Dynamic Planning: Live in the Moment to Succeed in the Future*

- **Workforce Efficiency and Accuracy:** Integrated data from multiple sources helps eliminate the manual processes of data collection, along with helping simplify and automate tasks that are prone to human error. Data is not only more timely, it's more accurate.
- **Faster Decision-Making and Problem-Solving:** The ease of data availability makes for faster and more informed problem-solving. Data can be accessed at any time on any device with internet access, so decision-makers always have data at their fingertips—on-site and off-site.
- **Competitive Advantage and Improved Management Awareness:** At the corporate level, real-time data helps upper management forecast and prepare for both the expected and unexpected—from current process gaps to future strategic planning. Management is better able to make and adjust decisions based on real-time, accurate data.
- **Advanced Technology with Simple Administration:** IoT helps streamline communication between the IT and operations departments across the enterprise, without burdening your IT team. With out-of-the-box connectivity and user-friendly capabilities, real-time data availability increases while reliance on IT support decreases.

> By incorporating the IoT throughout our shop floor, we've been able to take something that previously required memorization and 30 to 40 clicks and bring it down to a single click of a button.
>
> –Owen Gwynne
> Senior Programmer, Teel Plastics

Role-Based Apps and Integration

Accessing real-time data for the benefits listed above is a start. But integrating and measuring specific role-based data helps provide a fuller picture—especially when looking to that data for OEE metrics and KPIs. Role-based, real-time data is the best way to overcome data overload and ensure your information remains integrated and actionable at all levels.

With IoT, manufacturers can unlock data from every single asset, across every remote location, and deliver it to every employee. But Controls Engineers, Operations Engineers, Maintenance Managers, Continuous Improvement Engineers and all the other wide variety of roles across the enterprise have very different responsibilities—and they rely on different types of data. By incorporating custom apps that create a single point of access for different roles, each user can better understand their data and the reality it depicts.

Role-based, real-time data is the best way to overcome data overload and ensure your information remains integrated and actionable at all levels.

Focused Data Dashboard for Real-Time Analysis

For example, Controls Engineers often struggle with the challenges of connectivity errors and critical data loss. An IoT-enabled smart factory adds reliable data connectivity—but a role-based app, custom-built on your high-performing IoT platform focuses that data for deeper insights.

Controls Engineers gain the ability to remotely visualize, monitor and troubleshoot industrial data and machine connectivity in real-time—without needing to sift through data dumps or manually input the data they really need. They receive instant notification of data communication errors—such as when a PLC or device stops communicating—real-time alerts, rapid tag trending and more. Controls Engineers can build up their custom IoT apps to make use of the data in numerous ways, including opportunities for:

- Efficient root-cause analysis, leading to faster issue traceability, troubleshooting and resolution
- Enhanced insights into connectivity errors
- Predictive data analysis for reduced unplanned downtime
- Increased flexibility through enhanced remote monitoring

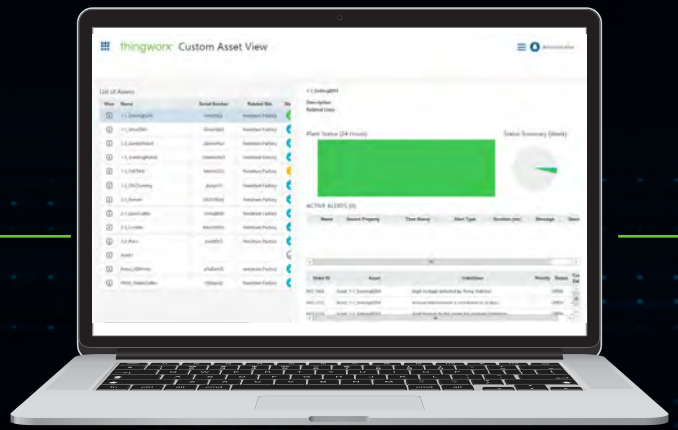
With the real-time data presented on dashboards created just for them, Controls Engineers have more capabilities to perform condition-based monitoring and draw attention to problems before they impact production or cause data loss. They can troubleshoot in real-time, watching the results even as they experiment with a solution.

And That's Just One Role, and Just One Example.

While IoT has created real-time data, the ability to funnel that data to the right person is the next step in creating real-world results—such as a more informed, performant and productive plant floor. Real-time visibility into production status, data connectivity, maintenance issues, operational efficiency, product quality and other KPIs is useless if the right people can't access the right data.

Thinking Beyond the Platform

An industrial IoT platform used to be the next generation of technology—now it's just the start. Building on the platform, custom-built apps provide role-based information that funnels the correct data to the person who needs it most, in real-time. Purpose-built, IoT analytics software is crucial for integrating raw data from the unprecedented number of connected data flows and turning it into reliable information. An IoT platform provides a strong base for user-friendly, out-of-the-box apps that enable different roles to customize their data—and their innovations.



For more information on how custom-built apps are extending IoT and driving performance for manufacturers, visit developer.thingworx.com/apps or contact a PTC specialist today.