Bridging the OT
Data Gap in IoT

Using industrial connectivity as a pathway to digital transformation

Industrial organizations have embraced the Internet of Things (IoT) to unify, monitor, analyze, and act on industrial data in new ways to improve efficiency, maximize revenue growth, and reduce costs. These solutions provide real-time visibility into plant operations and can even predict critical issues before they occur. This digital ecosystem gives manufacturing teams the power to monitor performance, benchmark across sites, and optimize factory operations—encouraging a culture of continuous improvement and enterprise scale digital transformation.

Despite the game-changing potential of harnessing this rich industrial data, success is not guaranteed—IoT implementations often stall at the get-go. Plant and factory floors are a jungle of siloed machines and equipment, and teams quickly discover that accessing their machine data—especially for brownfield factories using legacy devices and machinery—is no simple task. Legacy assets were never designed to be connected and the variability of device types and manufacturers hinders data access at scale. This lack of data can severely curtail comprehensive insights and analysis. The mix of functions, protocols, and data formats can make the implementation of IoT solutions seem impractical, if not impossible. Fortunately, connectivity can be easily achieved with smart investments and planning, enabling any factory—even a brownfield one—to unlock the benefits of IoT connectivity and digital transformation.

IoT implementation faces several potential hurdles. **Enter Kepware+.**

Having a robust connectivity foundation paves the way to securing all the benefits of IoT and ensures enterprise-wide resilience in the face of ever-evolving manufacturing assets, processes, and systems. In the context of brownfield factories and legacy systems, this groundwork involves not only connecting disparate devices and machines but also addressing the gaps in OT data across systems to build a comprehensive view of operations.

Kepware+, the market-leading enterprise industrial connectivity solution, collects data from both modern and legacy OT devices and normalizes it into a standard format, enabling interoperability across OT and IT systems. The establishment of an industrial connectivity layer futureproofs manufacturing architecture by consolidating OT data into one centralized source. It then leverages pre-built IT and OT integrations to send data where it's needed—cloud and enterprise systems—including direct compatibility with PTC's ThingWorx IoT platform.

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Laying the foundation of your OT data strategy with industrial connectivity offers far-reaching benefits, including:

Accelerated digital transformation initiatives: When teams can seamlessly access and move data without costly hardware or machine upgrades, they can avoid pilot purgatory and quickly scale IoT and other digital technologies rapidly across their manufacturing networks. The ability to capture data from virtually any device and share it with virtually any system provides the flexibility to accommodate individual site needs while still establishing a technology standard at scale.

Reduced cybersecurity risks: The potential for cyber threats looms large, but manufacturers can use Kepware+ to modernize, standardize, and secure the movement of data from operations to the broader enterprise. This proactive approach not only safeguards sensitive data but also ensures compliance with evolving industry regulations and standards.

Improved operations at scale: Enterprise-wide, data-driven decisions help maximize throughput, lower costs, and improve asset efficiency. A robust OT data strategy with automated and real-time data collection frees teams from manually harvesting data—so they can spend more time leveraging insights to make informed decisions. This can lead to improved operational efficiency, reduced downtime, and better agility for shifting market conditions. Further, the ability to leverage data to drive decisions enables companies to unlock new opportunities for innovation and competitive advantage.

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Spotlight on NEI

NEI, India's leading bearings manufacturer, struggled with limited operational visibility and outdated factories with a diverse set of equipment. This made it difficult to extract and interpret meaningful data from its machines. The manufacturer used Kepware to pave the way for PTC's IoT solutions, ultimately achieving:

- Faster response times for unplanned breakdowns

- Significant improvements in quality

- Fewer losses, leading to impactful improvements in OEE via real-time dashboards

- Higher internal engagement due to heightened data access and visibility

Setting the Stage for ThingWorx

While Kepware+ liberates the siloed data, ThingWorx enables manufacturers to put that newly available data to work. The ThingWorx platform is purpose-built to simplify a robust analytics strategy—and by removing the barriers to data analysis, manufacturers can focus on extracting enterprise-wide value from their machines.

To begin, Kepware+ breaks down the OT silos and allows that data, regardless of source format, to flow to ThingWorx. It is then unified with IT data, standardized, and made available to be leveraged for further insights. By unifying data from OT and IT systems, manufacturers can harness the power of analytics and real-time decision-making to realize a multitude of transformative benefits. The ThingWorx platform offers a rich set of capabilities that empower industrial enterprises to digitally transform every aspect of their business with innovative solutions that are simple to create, easy to implement, scalable to meet future needs, and accelerate time to value, helping achieve:

Maximized revenue

Reduced time-to-market

Lower costs

Increased flexibility

Improved quality

Together, ThingWorx and Kepware+ offer a holistic approach to managing OT data in manufacturing. They gather, integrate, and analyze data, ensuring scalability and security all while enabling closed-loop feedback. While the two have many unique manufacturing applications, performance management, which empowers teams with timely insights about bottlenecks and root causes, is a top use case. IT/OT convergence is integral for performance management, as IT systems contain information about products and schedules, while OT systems hold data regarding machines, quality, and defect rates, as well as good and bad counts.

Manual Performance Management	Without a unified approach to data gathering, integration, and analysis, organizations are left grappling with fragmented insights and missed opportunities for optimization and innovation. Siloed data sources and analog processes make identifying inefficiencies and root causes challenging, hindering performance management efforts.
Performance Management in an IT/OT-enabled Digital Environment	With unified IT and OT data, manufacturing organizations can identify what specific areas of the factory floor are hindering efficiency, find out where they are losing time, and dig deeper into root causes to identify the various activities that can drive improvements. And when those efforts are effective, they can be recalled and replicated for routine continuous improvement.

Racing Towards Digital Transformation **with Brembo**

Brembo, a global leader in the design, development, and production of braking systems for cars, motorbikes, and industrial vehicles, partnered with PTC to connect data sources and begin its digital transformation journey. With over 40 facilities across 14 countries, all with unique processes and equipment, Brembo had plenty of data but little insight. Brembo used Kepware to integrate disparate sources of data and display it as a complete story of what was happening on the production line, allowing the manufacturer to link a variety of legacy machines and PLCs to facilitate true industrial connectivity. And by leveraging ThingWorx, Brembo was able to gain real-time visibility into production and asset health with data analytics and a rich array of insights, all while enabling the flexibility and speed of deployment the manufacturer needed.

After a successful pilot program, Brembo quickly realized it could accomplish more with Kepware and ThingWorx to accelerate its digital transformation journey. Brembo started expanding its use cases by integrating the two technologies into all processes, starting with asset monitoring to improve OEE and expanding to streamlining production processes and monitoring pollution requirements to ensure compliance.

"There are a lot of things that we are now starting to finalize that were part of our original vision—things that before our digital transformation the plant could only have dreamt of, but today they are becoming a reality." - Stephen Ceccarini, IT Manager at Brembo North America

With Kepware and ThingWorx already incorporated into almost every part of Brembo's production operations, the manufacturer's digital transformation is well underway—but they're not stopping there. Brembo's upcoming goals include improving the changeover process and minimizing downtime, as well as utilizing AI and machine learning for predictive maintenance. Ultimately, the adoption of Kepware and ThingWorx has allowed Brembo to maintain an edge in the highly competitive automotive industry.

The path to success using Kepware+ and ThingWorx requires a clear vision, precise metrics, and a culture that embraces change and CI. When implementing industrial connectivity and IoT solutions, it's important to formulate a unified strategy that considers the challenges that can arise before deploying new processes and capabilities. Each organization has different needs, strengths, and opportunities, which means there's no one-size-fits-all roadmap for success. Understanding how Kepware+ and ThingWorx work together to provide impactful benefits can help create a strong implementation strategy to set your organization on the right track.

The journey to a digitally transformed, IoT-enabled factory is not always smooth—

and scaling across an entire enterprise can introduce even more challenges. To realize the full potential of IoT solutions such as ThingWorx, it's important to set yourself up for success from the get-go. Ensuring a robust connectivity strategy is in place can help protect your data and make it easier to accelerate digital transformation and scale it across the enterprise. This guide provides a strategic framework to help make informed digital transformation decisions and navigate the complexities of IoT integration to drive innovation and efficiency at scale.

Steps to Unlocking Lasting Success with Digital Manufacturing Solutions

Learn how to make informed digital transformation decisions using this strategic framework.

Discover the key factors to deliver outcomes at enterprise scale

Although manufacturers are increasingly prioritizing digital manufacturing investments, many struggle to scale. While solving a single problem at a single site through a pilot program is straightforward, delivering value at scale requires a different approach.

To navigate a clear path to digital manufacturing success, teams need to:

- Identify a unified end goal
- Align it with the most impactful use cases
- Formulate a lasting strategy that resonates their long-term vision