ptc

The Key Benefits of Hybrid Cloud for Manufacturers

WHITE PAPER

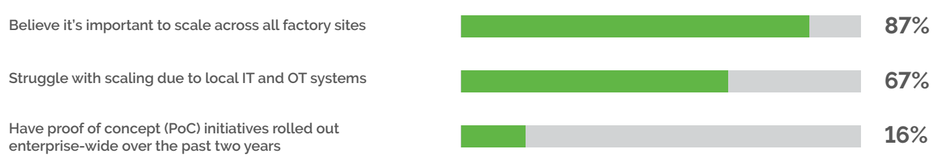
Executive Summary

Manufacturers have a history of producing revolutionary innovations. From Henry Ford's assembly line cars to Andrew Carnegie's steel factories, manufacturing has shaped economic structure around the world. However, many traditional manufacturers still operate with rigid systems that can't evolve to meet today's business needs. Digital industrial transformation involving disruptive technologies, such as edge computing, Internet of Things (IoT) and machine learning on cloud can help transform what's possible in manufacturing. These cloud-enabled innovations impact logistics, warehousing, production, and maintenance. They can be the key differentiators for staying competitive and breathing new life into a long-standing manufacturing legacy.

Companies have continued to struggle with scale purgatory

Forrester report in Dec 2020 reveals that 87% of decision-makers in manufacturing sector believe it's important to scale applications across all factory sites, however, 67% reports struggling with scaling due to local IT and OT systems. Furthermore, only 16% of all proof of concept (PoC) initiatives have been rolled out enterprise-wide over the past two years.

DECISION-MAKERS IN THE MANUFACTURING SECTOR



Many organizations are stuck in pilot purgatory, never breaking through this initial PoC stage to provide production level impact. For those initiatives that do reach production are often stuck with scale purgatory. Manufacturers struggle to replicate the success model at one site to additional sites due to lack of standardization and custom-made infrastructure environments at a particular site.

Most organizations have high ambitions for their digital industrial transformations journey but only 12% of manufacturing decision-makers say they have achieved enterprise-wide scale with more than a couple of projects. 57% of manufacturers are in a limited implementation phase while the rest are in a piloting or planning stage. Manufacturing firms will need to clear pilot and scale purgatory to deliver transformational impact that can be repeated across sites.

> *"Nearly half of decision-makers say their organizations have run 10 or more PoCs in the past two years, however, on average, only 41% of PoCs have gone into some form of production."*
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> **Forrester Report Dec 2020**

Key factors contributing to scale purgatory

Lack of repeatability and standardization across manufacturing sites are key contributing factors resulting in scale purgatory. The slow development time associated with DIY approach significantly increases time to value, which therefore makes executive support difficult to ascertain. In addition, DIY approaches are mostly tailor-made for testing specific functions and miss certain aspects like scalability, standardization, integration with existing software and data architectures. Variable data and application environments across manufacturing sites means each implementation must start from scratch with limited repeatability making scaling across sites lengthy, complicated, and expensive. The net result is that companies are unable to deliver transformative impact in an agile manner, fail to show value from the overall transformation initiative, and lose momentum on digital industrial transformation.

Manufacturing organizations struggle due to poorly integrated, patchwork technology ecosystems with the inability to scale and innovate quickly. Most organizations have overly complex legacy systems that suffer from the slow evolution of the technology solutions available This is because most firms still operate with patchwork technology rather than purposefully selecting best-of-breed solutions or opting for a single integrated platform. 57% of decision-makers say they have adopted various individual point solutions over time to solve the immediate problems and have gathered multiple IT, OT and custom developed solutions. These manufacturers have had substantially greater challenges when it comes to speed and scale.

> *"You can have the most perfect technology but not the right partner to implement it. If the people helping you don't have the experience, knowledge and background in your application, there will be struggles. Those with expertise have learned from previous clients all the things not to do – and that's very valuable as you execute on your digital transformation strategy"*
>
> **Barry Lynch, Senior Vice President of Field Services at PTC**

Organizations need to invest in standardization including naming conventions, software, infrastructure, data architectures and reporting to realize benefits like quicker deployment, better governance, and poor-quality avoidance. Also, deployment process becomes repeatable, and a standardized system is much easier to maintain. When your system is standardized, you make a modification once and it applies to other processes. It provides enterprise-wide visibility that gives you complete picture across sites to identify top performing sites and best practices.

Hybrid cloud architectures can help break through scale purgatory

Cloud computing plays a crucial role in digital industrial transformation efforts in all industries including manufacturing. According to a Forrester report, 67% of decision-makers report that their organizations are migrating workloads and applications to the cloud and 64% are building net new applications on the cloud. Decision-makers estimate that two years ago, only 28% of manufacturing workloads were in the cloud, while today, that number has grown to nearly 40%, and business leaders estimate growth to 48% within two years.

DECISION-MAKERS IN THE MANUFACTURING SECTOR

Standardized systems deployed on the cloud provides greater flexibility and agility with low maintenance cost, however, move to cloud does not indicate entire desertion of existing data centers. Since the factory floor will continue to play a key role for integration with edge devices a hybrid architecture that incorporates cloud and edge will be key to digital industrial transformation in manufacturing. A significant portion of manufacturing workloads and applications particularly those associated with production execution are deployed at the edge today. 84% of decision-makers are already undertaking an initiative at the edge or in data center and firms have found success with this approach: 89% of manufacturing decision-makers whose firms have built new workloads on the factory floor have found it valuable to their initiatives.

> *"We believe in the power of collaboration to help manufacturing companies accelerate the delivery of value to their customers and unlock new business opportunities. By teaming up with PTC and Rockwell Automation to converge IT and OT excellence, we empower businesses to rapidly deploy their relevant use cases at scale – from asset, workforce, and production-floor performance to accelerate impact across the global production network."*
>
> **Jason Zander, Executive Vice President, Microsoft Azure at Microsoft.**

Using hybrid cloud architecture, organizations can protect their assets with built-in advanced security that proactively detects and stops threats before they can infiltrate the cloud infrastructure. Cloud services like Azure Sphere, Azure Defender, and the OPC Vault microservice within Azure IoT can simplify the implementation and maintenance of industrial assets, making complex connectivity easier and improve edge resilience for outages and intermittent performance with in-pipe data retention.

> *The combined IIoT and hybrid cloud capabilities and solutions from Microsoft and PTC deliver unmatched time to value and long-term impact to companies that are striving to empower their workforce and reimagine manufacturing"*
>
> **Feliz Montpellier, Director, Global ISV Alliances, Microsoft**

"The combined IIoT and hybrid cloud capabilities and solutions from Microsoft and PTC deliver unmatched time to value and long-term impact to companies that are striving to empower their workforce and reimagine manufacturing" said Feliz Montpellier, Director, Global ISV Alliances, Microsoft

Analytics is another key component of digital industrial transformation. Manufacturing analytics traditionally has been done on-premise with historical data on spreadsheets for ad hoc diagnostics, maintenance schedules, or operational dashboards, however more recently the benefits of cloud-based analytics are being realized. IoT implementation on cloud accelerates business agility and boosts intelligence from edge to cloud and provide real-time insights. It can provide integration with cloud services ecosystem to perform ad hoc analysis, advanced analytics, and machine learning processes. It also provides operational efficiency and location intelligence to your IoT data.

Whether your IoT devices are at one factory location, in remote areas, or spread across hundreds of sites, cloud geospatial platforms can help you visualize their location in real time. In addition, it provides capabilities like predictive maintenance (automatically predict when equipment needs maintenance and optimize its performance in real time while predicting downtime, detecting anomalies, and tracking device status, state, and location). It can also provide real-time asset tracking and perform complex analytics and machine learning on the data you collect to deliver actionable business insights.

Factory Insights offering to scale digital industrial transformation

As manufacturing organizations are experiencing scale purgatory and lack of swift innovation, a concerted effort is required to fundamentally alter their operations structure. Digital industrial transformation models can vary based on a company's situation. Companies that are under intense competitive threat would require enterprise-wide agile transformation to reinvent their business. A new digital core requires a truly open architecture to eliminate silos across industrial applications and proprietary vendor stacks throughout the entire value chain. This approach enables large organizations to incubate a new digital culture and operating model while allowing the business to experience the change of a new way of working.

Solutions like Factory Insights as a Service helps companies break through pilot and scale purgatory so that they can deliver digital industrial transformation with accelerated time. Factory Insights, a SaaS based solution enables manufacturers to rapidly build a foundation for digital industrial transformation in as little as 30 days that provides insights to performance, assets, and the workforce. It utilizes high impact use cases that replace custom, bespoke approaches with repeatable, configured, not coded, applications that leverage the domain expertise from hundreds of successful implementations. These vastly reduce the effort associated with designing, coding and testing new applications. When executed well, this approach provides a blueprint for the future of manufacturing work that energizes the business and excites employees. It catalyzes the innovation and creativity to provide rapid deployment to improve time to value and scale digital industrial transformation across the enterprise in a fraction of the time.

Factory Insights offering to scale digital industrial transformation

Factory Insights as a Service includes many of the key product components of FactoryTalk® Innovation Suite (from PTC and Rockwell Automation) and leverages domain expertise gathered from hundreds of implementations for common use cases. It leverages Microsoft technology including Microsoft Azure IoT Hub & Azure IoT Edge, enabling manufacturers to rapidly connect individual sites, enhance multisite rollout, improve edge compute capabilities, and advance edge security. Key solutions as part of Factory Insights as a Service include Digital Performance Management, Asset Monitoring and Utilization (AMU), Digital Work Instruction and Connected Work Cell.

Source 1: “Factory Insights as a Service” https://www.ptc.com/en/products/factory-insights-as-a-service

Source 2: “Drive Transformational Outcomes at scale” https://www.ptc.com/en/resources/manufacturing/white-paper/forrester-drive-transformational-at-scale

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