Microsoft

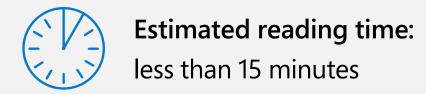# A Five-Part Guide to Digital Transformation:

Learn How Manufacturers Can Build a
More Resilient and Sustainable Future

Contents

Estimated reading time:
less than 15 minutes

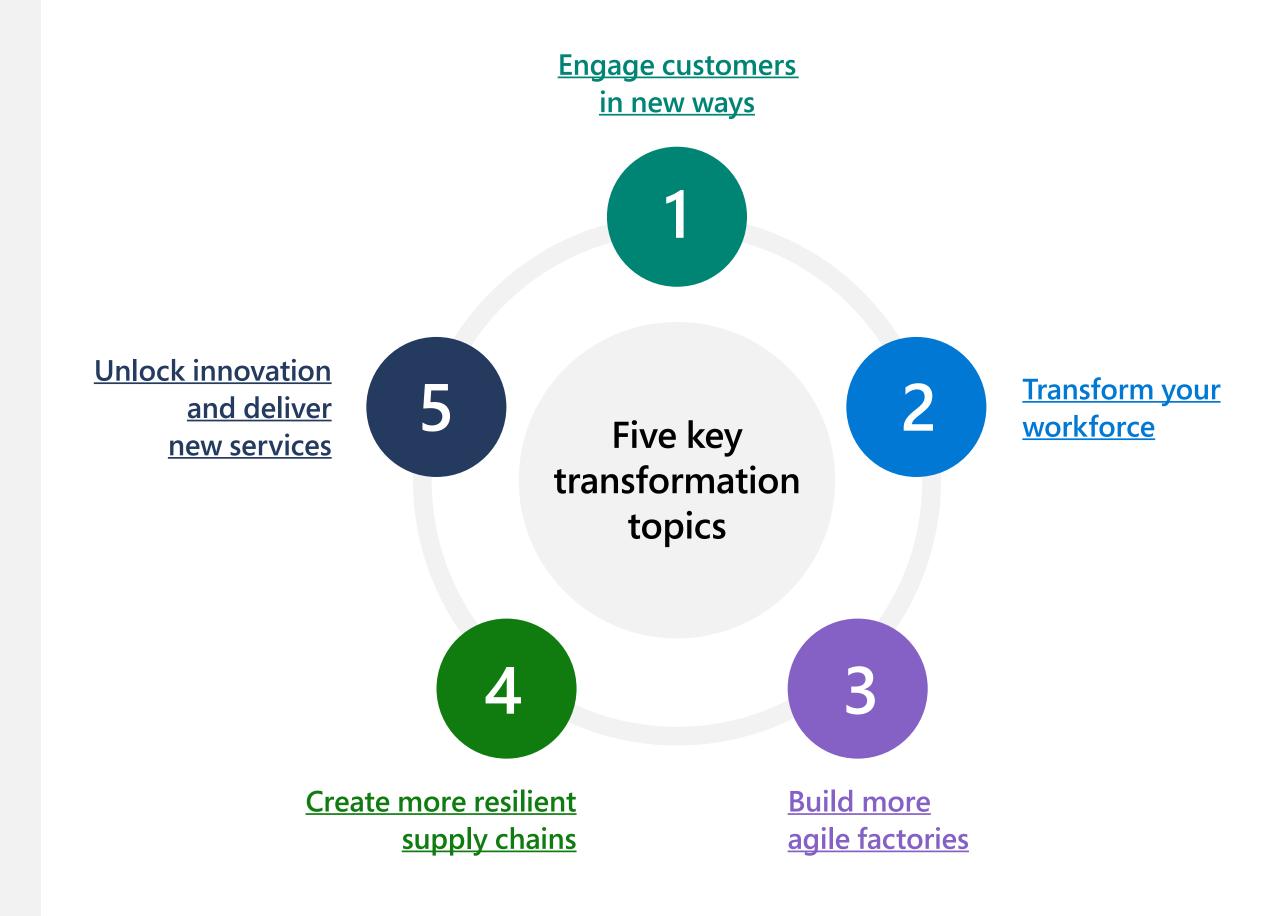# How can we manufacture a sustainable and resilient future?

Manufacturers have witnessed unimaginable change. They've seen significant disruptions in terms of business continuity, operational visibility, remote work, employee safety, and the list goes on.

But we've also seen new hope and opportunity amidst these challenges. Businesses are learning to embrace change and respond with new ideas. They're adapting to new processes, models, and ways of working as they accelerate their use of digital technology, at first out of necessity, but with increasing confidence in its potential and benefits.

At the same time, sustainability seems more achievable than ever—in manufacturing and beyond—to help protect our planet and minimize environmental impacts. Sustainable practices are proving to be good for business, too. They can reduce operating costs by controlling consumption and waste, and they can add revenue streams with new sustainability solutions that customers want.

All of these changes have renewed the promise and potential of what's possible in manufacturing. It's time to work together to harness the power of technology to help everyone, everywhere, build a more sustainable and resilient future. This e-book will help you better understand and navigate the current and future trends in digital transformation along the way.

Explore these five key transformation topics to help you secure a resilient and sustainable future by accelerating digital manufacturing and empowering your workforce.

Engage customers in new ways

Transform your workforce

Unlock innovation and deliver new services

1

5

Five key transformation topics

2

4

3

Create more resilient supply chains

Build more agile factories

1. Engage customers in new ways

Imagine if you could improve customer satisfaction, attract new customers, and empower sales to close more deals and create recurring revenue.

Realize new customer engagement opportunities across channels

Most manufacturers face increasing challenges with staying connected to customers, while at the same time dealing with eroding margins and selling complex products and services remotely. Improving customer experience has become increasingly important: 86 percent of manufacturers say that it's a key competitive differentiator,[1] due to the blurring boundaries between products and services and the changing face of the B2B buyer.

Manufacturers know they need to respond, and 91 percent of them increased their investment in digital transformation in the last year.[2] Many have found ways to innovate with new services, too. For example, some manufacturers are discovering how to optimize inventory for customers with material planning systems, or they're giving customers new ways to quickly and accurately customize complex quotes and orders. Others are differentiating themselves and increasing brand loyalty through their approach to field service, with a total mobile experience and a centralized, real-time view of customer and equipment activity. By 2024, 75 percent of the top 20 global consumer goods companies are predicted to partner with other companies to provide a digital experience to augment physical products and services.[3]

It's more clear than ever that manufacturers need to engage customers in new and more effective ways to succeed across marketing, sales, and service channels. Manufacturers should look for capabilities such as contextual collaboration, improved insights from smart-connected products, and virtual assistants to help provide efficient, end-to-end sales and service experiences, through every stage of the customer journey.

[1] "Revolutionizing Customer Service in Manufacturing," Salesforce Research.
[2] "2021 State of Manufacturing Report," Fictiv.
[3] Gartner 2021 Top Trends in Manufacturing Industries.

HP achieves powerful growth in its sales pipeline and captures the bigger picture of progress in a digital world

HP decided to embrace new capabilities that would help it create the sales workforce of the future. The organization invested in a completely new relationship with Microsoft—one that would enable it to train 1,200 global employees in relationship sales methods. HP has since grown the contribution to its sales pipeline that's attributable to Microsoft Relationship Sales by 6,500 percent in four months.

[Read HP's transformation story ›](#)

> "We decided to look for skill sets and platforms where we wanted to increase our investment. We realized that the more transactional the vendor tends to be—the more they sell products by the pallet—the less they're enabling sales reps to tap into the power of relationship selling and networking."

Vincent Brissot
Vice President of Digital Automation and Channel Operations, HP

💡 What's next?

Two strategies to engage customers in new ways

See how you can increase customer satisfaction with new digital experiences across marketing, sales, and service.
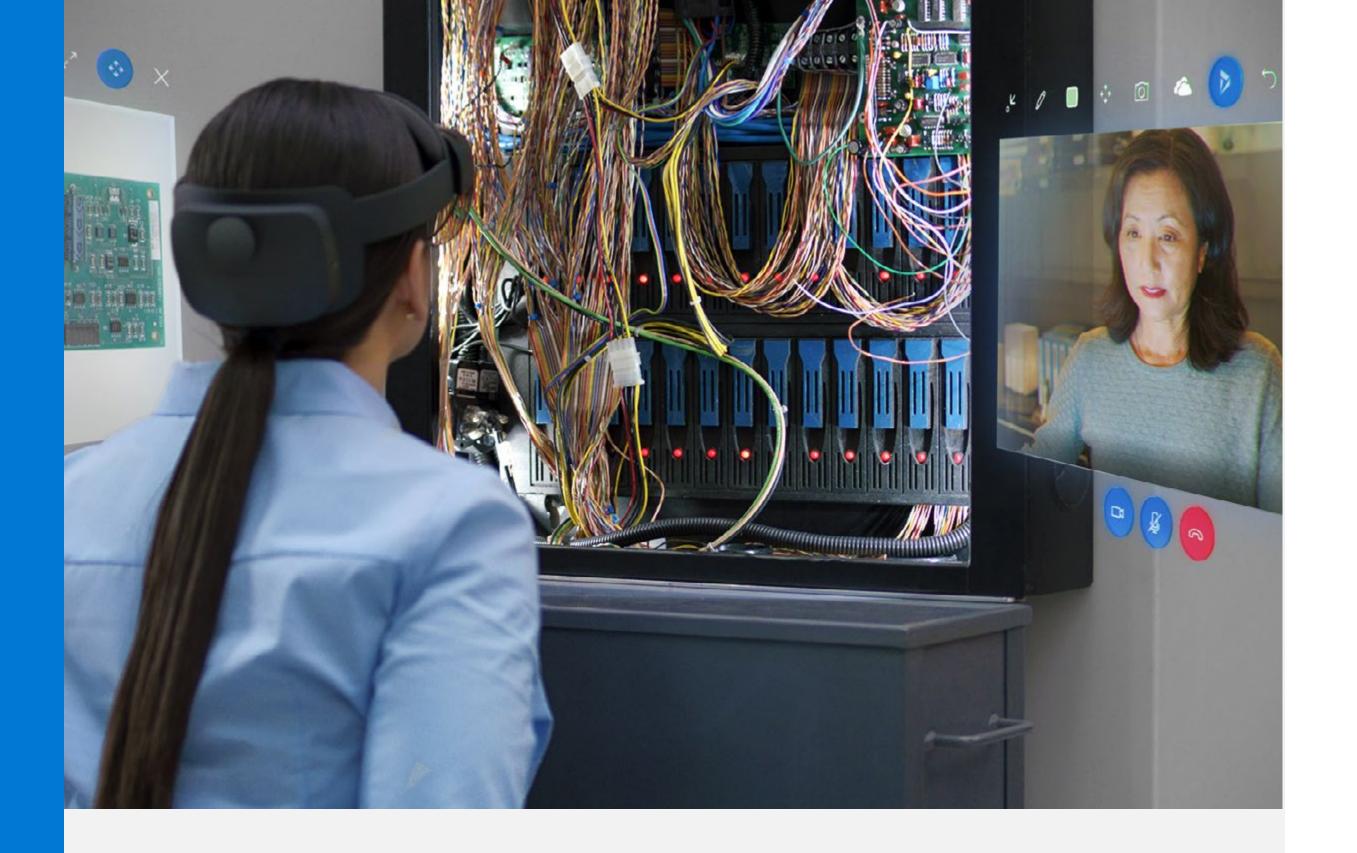
✓ **Activate digital selling**

Increase margins with digital solutions for quote to cash, configure, price, quote, and contract lifecycle management.

Explore Dynamics 365 Sales.

✓ **Always-on service**

Help agents, dispatched technicians, and virtual assistants monitor connected products and engage remotely with customers and experts.

Watch a video about always-on service.

2. Transform your workforce

Imagine if you could attract and retain a workforce that's empowered to keep up with the pace of change in digital manufacturing.

Address the skill gap and adapt to new ways of working

The manufacturing industry continues to change rapidly, especially as companies look for ways to help their people be more productive from anywhere. Frontline manufacturing workers have long been combining technology with onsite work as they navigate complex industrial processes. But the pandemic only accelerated that, as those workers had to learn new ways—and new tools—to get those jobs done.

Manufacturers are feeling acute challenges around keeping and training workers, too: Only 60 percent of manufacturing CFOs are confident in their company's ability to retain critical talent, and less than half have confidence that they're building skills for the future.[4] On top of that, an estimated 2.6 million Baby Boomers will retire from manufacturing jobs over the next decade. In response, many manufacturers are offering part-time schedules to older workers to help with mentoring and knowledge transfer.[5]

That's just one of many ways that manufacturers are adapting to this talent crunch: By 2023, many manufacturers will likely be using augmented reality, virtual reality, and machine vision to help deliver engineering and maintenance support, reducing on-site workers by as much as 30 percent.[6] To boost workforce productivity and customer reach, it's estimated that 40 percent of organizations will begin to blend virtual and physical experiences.[7]

One of the best ways that manufacturers can respond to these trends is by empowering workers with better skills and tools, so they can safely keep up with the new complexities and speed of digital manufacturing.

[4] "PwC US CFO Pulse Survey," PwC.
[5] "Top HR Challenges in Manufacturing," Society for Human Resource Management.
[6] "IDC FutureScape: Worldwide Manufacturing 2021 Predictions," IDC.
[7] "Gartner 2021 Top Trends in Manufacturing Industries," Gartner.

Manufacturers should seek out tools and capabilities that enable enhanced engagement, improved learning and knowledge management, more effective collaboration from anywhere, better safety and wellness, and the ability to reskill employees and empower frontline workers.

Maintaining a safety-conscious culture

Alcoa continues to focus on remaining productive in the midst of change, and Microsoft Teams has emerged as the collaboration tool of choice to help the entire organization keep working and stay connected. With new schedules and new ways of working in place, Alcoa employees continue to stay productive around the clock.

[Read Alcoa's transformation story ›](#)

" **With Microsoft Teams, we're able to share information with the entire factory at once. Without Teams, all the crucial information would have been spread across various platforms and difficult for people to find."**

Friopjófur Tómasson
Pot Room Supervisor, Alcoa Iceland

💡 What's next?

Three strategies to transform your workforce

See how you can address the skills gap and keep up with the new complexities and speed of digital manufacturing.

✓ **Connected and frontline worker**

Empower your workforce with digital tools and modern devices that offer the best experiences for collaboration and productivity.

Explore Microsoft Teams for Frontline Workers.

✓ **Learning and knowledge management**

Identify skills gaps, improve how training is delivered, and accelerate access to knowledge across the organization.

Watch this video about learning and knowledge management.

✓ **Wellness and health and safety**

Operate assets responsibly, monitor intelligently, and protect continuously to promote a safer work environment.

Learn how digitization addresses manufacturing skills gap and worker safety.

3. Build more agile factories

Imagine if you could build the productive, smart factory of the future with industrial IoT, cloud, AI, and mixed reality.

Drive new levels of agility, safety, productivity, and innovation

The ability to adapt to rapid change is a defining factor between manufacturers that merely survive and those that thrive. As rising costs, supply chain issues, skills gaps, and other challenges escalate, manufacturers must look to intelligent cloud and intelligent edge solutions to build smart, agile factories.

IoT, combined with edge computing, AI, and machine learning, is helping manufacturers improve performance and anticipate shifts through actionable intelligence and real-time visibility. In fact, 91 percent of manufacturers have already adopted IoT, citing increased operational efficiency as the top benefit.[8] But as they connect all these devices, manufacturers are also prioritizing security, with 62 percent concerned about protecting their solutions edge-to-cloud[9].

More agile factories help manufacturers ensure business continuity and resiliency, drive safe and secure production with reliable quality and yield, and optimize resource utilization with Industrial IoT and AI.

Manufacturers need to look for new ways to make data-driven decisions, whether they're leveraging IoT to connect legacy factories and machines or they have a modern smart factory generating a petabyte of data every day. New insights will help them improve quality, productivity, and efficiency within production facilities, so they can drive sustainable, digital, and agile production.

[8] "2021 IoT Signals Report," Microsoft.
[9] "Cloud Drives Digital Transformation in Manufacturing: Excerpts from the 2020 Frost & Sullivan Global Cloud User Survey," Frost & Sullivan.

A sustainable stainless steel giant with a data-driven mindset

Finnish manufacturer Outokumpu is a global leader in stainless steel. The company chose to build the new core of its business on Azure, creating a platform to transform from experience-based, intuitive decision-making to data-based decision-making. Outokumpu is transforming operationally, financially, and culturally to fulfill its vision of being the best value creator in stainless steel through customer orientation and efficiency.

[Read Outokumpu's transformation story ›](#)

> " Imagine if the technology existed so you could know exactly where each coil of steel you buy comes from, what's in it, and how large its CO2 footprint is. Then you start to create an additional business opportunity, a new feature that nobody else has at the moment: the ability to guarantee a certain environmental footprint."

Stefan Erdmann
Senior Vice President and Chief Technical Officer, Outokumpu

💡 What's next?

Three strategies to build more agile factories

See how you can leverage IoT, AI, and mixed reality to optimize safe and agile factories.

✔ **Asset productivity**

Improve equipment effectiveness with predictive technologies, IoT, and mixed reality to improve throughput, quality, and delivery while reducing costs.

Read the Asset Productivity Data Sheet.

✔ **Operational visibility**

Provide a 360-degree view of overall plant systems and workflow that allows operators to analyze problems and enhance workflow efficiency.

Learn how Siemens Healthineers identifies issues in X-ray tube production.

✔ **Production operations**

Increase production efficiency and quality by advising, assisting, and augmenting factory workers with AI and autonomous systems.

Explore autonomous systems with Microsoft AI.

◼◆ Reduce supply chain risk and disruption while creating value

Unprecedented supply chain shocks have increased the need to respond to immediate disruptions, while building resilience into every layer of the supply chain. Fortunately, cloud solutions have dramatically shortened the time and effort to adapt and reconfigure supply chains, reducing once-massive, months-long efforts to just weeks.

Manufacturers have taken up the challenge, with 60 percent of manufacturers estimated to participate in distributed supply chain networks by 2024, to reduce unplanned disruptions in their value chain.[10] In addition, more than half of supply chain organizations are planning to invest in applications supporting artificial intelligence and advanced analytics capabilities through 2024.[11] Many manufacturers have also looked to increase resilience and flexibility through selective redundancy, for example with dual sourcing or nearshoring to reduce dependence on complex global logistics.[12]

It's becoming clear that manufacturers have many parallel paths to creating more resilient end-to-end supply chains. Real-time visibility, intelligent planning, and execution can all help ensure business continuity, increase agility, and reduce risk by improving security and flexibility.

4. Create more resilient supply chains

Imagine if you could increase resilience in your supply chain by enabling faster response and better anticipating market dynamics.

[10] "IDC FutureScape: Worldwide Manufacturing 2021 Predictions," IDC.
[11] "Gartner Predicts the Future of Supply Chain Technology," Gartner.
[12] "Real-World Supply Chain Resilience," BCG.

Daimler looks to optimize supply chain processes and reduce downtime

Daimler Trucks North America is the leading commercial vehicle manufacturer in the US, with a portfolio of distinctive brands like Freightliner and Western Star Trucks. With data coming from trucks, in-house ERP and supply chain systems, and suppliers, the company wanted to bring these solutions together to gain actionable insights and optimize operations on the production floor as well as across the supply chain.

[Read Daimler Trucks' transformation story](#) ›

" The more we do, the more we learn, and the better we are actually to derive services out of it for suppliers, partners, customers, dealers. And this is the good thing. You can suddenly show the value to everyone, and there is not just value for us. There is value for everybody in the whole process chain."

Lutz Beck
CIO, Daimler Trucks North America

⚲ What's next?

Two strategies to create more resilient supply chains

See how you can activate more dynamic collaboration and increase visibility to enable fast and effective decision-making.
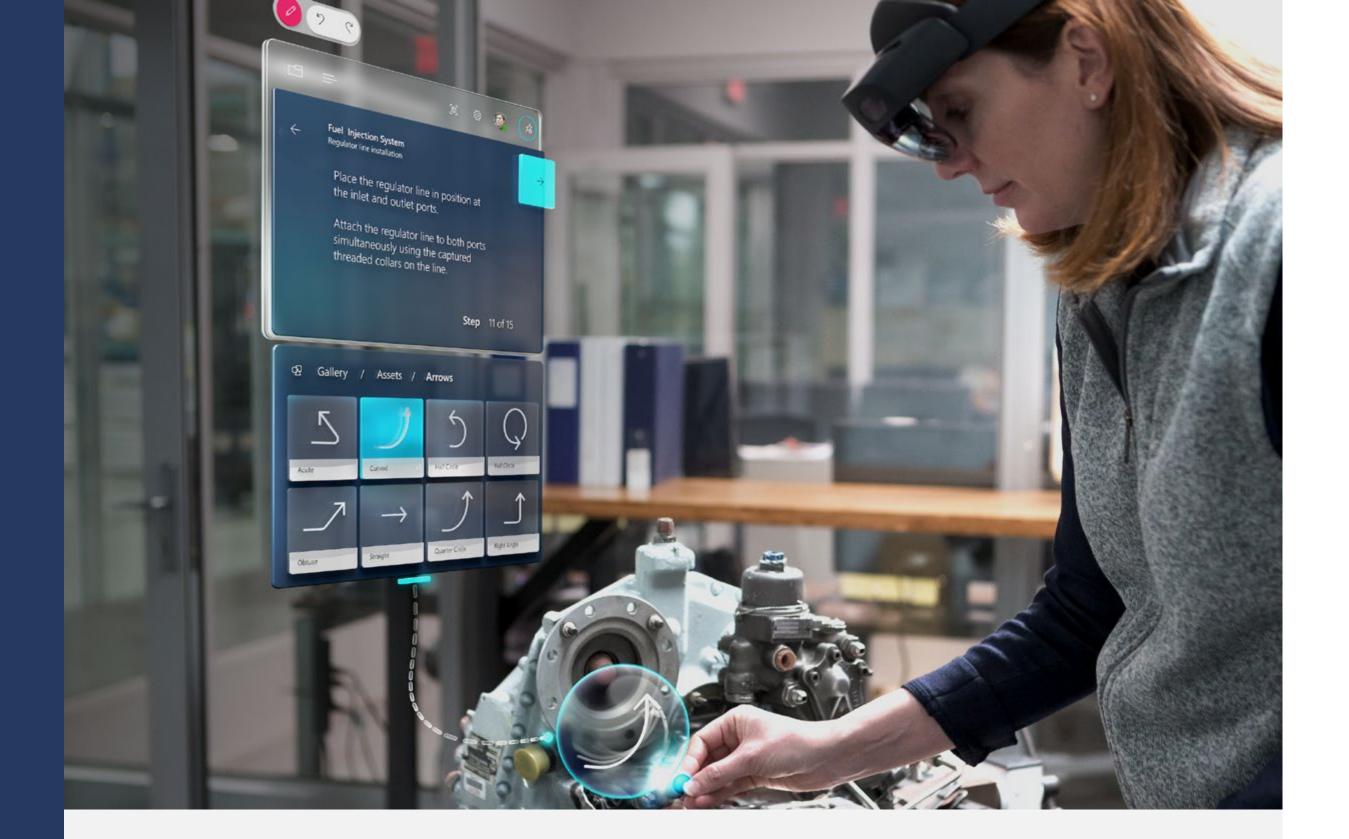
✓ **Planning and optimization**

Increase service levels and reduce cost, with the flexibility to run planning and execution in the cloud and at the edge.

Learn how priority-based planning optimizes your supply chain.

✓ **Supply chain visibility**

Leverage demand and supply chain signals to minimize risk and capitalize on future opportunities.

Watch a video about supply chain visibility.

5. Unlock innovation and deliver new services

Imagine staying one step ahead of customer needs and discovering new and sustainable products, operations, and digital services.

Stay competitive and exceed customer expectations

Many manufacturers have responded to recent disruptions by demonstrating the innovation for which their industry is known. They've shown how quickly products and processes can be designed when leveraging digital feedback loops, open innovation practices, and cloud-based tools for design, simulation, validation, and training.

To increase agility and innovation, many manufacturers are also turning to digital twins—that is, creating a virtual replica of a physical object, machine part, system, process, or entire lifecycle. This technology allows real-time monitoring and control, the ability to learn with AI and machine learning, and a method for improving systems and designs over time. Almost a third of manufacturers will enhance their shop-floor digital twin with real-time signal transponder data by 2023, reducing logistic bottlenecks on shop-floor and storage areas by 80 percent.[13]

Some manufacturers have also been exploring AI-driven generative design and additive manufacturing. For example, GM used generative design to produce a new bracket that replaced eight components with one 3D-printed part that was 40 percent lighter and 20 percent stronger.[14]

Manufacturers who embrace new design and manufacturing paradigms like these will be more successful in discovering and engineering new business value with sustainable products, operations, and digital services.

[13] "IDC FutureScape: Worldwide Manufacturing 2021 Predictions," IDC.
[14] "Lightweighting with Additive Manufacturing," All3DP Magazine.

Kennametal embraces Microsoft cloud strategy to drive business innovation

From airplanes to mine drills, machines around the world depend on parts built with Kennametal technology. Kennametal chose Microsoft as its cloud provider and, as part of its Simplification/Modernization initiative, began a three-year journey to become a cloud-first company. With its firm cloud foundation, Kennametal is streamlining its business, using IoT to boost factory output in certain operations and bringing better solutions to its customers.

[Read Kennametal's transformation story ›](#)

" We see the Microsoft cloud as the right choice to support our ongoing mission to be an innovative company and bring our customers new tools and designs that perform better in a manufacturing environment."

Tom McKee
Chief Information Officer, Kennametal

▢ What's next?

One strategy to unlock innovation and deliver new services

See how you can accelerate engineering and design innovation and find new business models and revenue opportunities with digital products and services.

✔ **Digital twins**

Accelerate evolution of connected products with remote monitoring through digital threads, feedback loops, and simulation of outcomes.

Learn how digital twins can provide a competitive advantage.

Let Microsoft Cloud for Manufacturing be your guide

If the pandemic has taught us anything, it's that the fourth industrial revolution is no longer hype.

Every business is on a digital journey and the old ways of doing business no longer suffice. To truly understand your data and drive the right outcomes from it, you need capabilities that empower intelligence at the edge and in the cloud.

Microsoft Cloud for Manufacturing can be your guide on this journey, helping to:

• Bring the best outcome-driven solutions and capabilities from Microsoft and our partners together in a unified solution.

• Accelerate time-to-value in an end-to-end, holistic, and scalable way.

• Unite productivity, intelligent cloud, intelligent edge, as well as AI and big data platforms and tools to solve business problems.

• Provide the world-class partner, global ecosystem, and modern productivity platform you need.

With Microsoft Cloud for Manufacturing, you can take advantage of innovation momentum that connects intelligent, integrated cloud and edge capabilities of the Microsoft stack to the highest value manufacturing scenarios.

And there's no need to "rip and replace." Microsoft Cloud for Manufacturing starts with a modular framework that enables you to innovate as you go. You have the flexibility to adopt the capabilities you need to address your most pressing business needs—whether that's engaging customers in new ways, empowering the hybrid workforce, building more agile factories, creating more resilient supply chains, or unlocking innovation and delivering new services. And you can do it all with the utmost trust, security, compliance, privacy, and transparency.

Perspectives on manufacturing:

How transformation can overcome challenges that leaders face

Manufacturing companies across different industries and regions struggle with some of the same challenges. Here are a few of the most common issues that we hear voiced by manufacturing leaders, and how Microsoft Cloud for Manufacturing can help address them by seamlessly connecting people, assets, workflows, and business processes.

CEO

"It's not just about growth anymore. We need to accelerate digital transformation to survive—and to reimagine how we do business. Employees need the tools and flexibility to work together in new ways and participate in our innovation."

COO, VP of Manufacturing, VP of Supply Chain

"Even before the pandemic, there was a growing skills gap. Now we need to address that gap while increasing factory agility and supply chain resilience, so we can adapt to disruptions, demand uncertainty, and increased complexity."

VP of Customer Sales and Service

"Customer support has the most day-to-day contact with customers, but our tools are often dated or cobbled together. We want to deliver holistic customer service engagements, even remotely, and that means better real-time tools for collaborating, selling, and resolving issues."

Microsoft Cloud for Manufacturing can help by...

- ✓ Enabling and driving transformation across your organization.
- ✓ Empowering workers with digital tools and modern devices that offer the best experiences for collaboration and productivity.

- ✓ Improving supply chain visibility so you can leverage demand and supply signals to minimize risk and capitalize on future opportunities.
- ✓ Augmenting workers with collaboration tools, mixed-reality devices, IoT-enabled machines, and AI-enhanced applications to keep pace with increased operational, maintenance, and process complexity.

- ✓ Delivering new insights into customer needs with a 360-degree view of customer interactions.
- ✓ Helping agents and dispatched technicians monitor connected products and engage remotely with customers and experts.

> **"**
>
> Even before the pandemic, there was a growing skills gap. Now we need to address that gap while increasing factory agility and supply chain resilience, so we can adapt to disruptions, demand uncertainty, and increased complexity."

**COO, VP of Manufacturing,
VP of Supply Chain**

Microsoft Cloud for Manufacturing can help by...

CIO, Chief Security Officer

"We all want higher levels of asset and workforce productivity—but that can't come at the expense of security. We also need to be able to securely connect devices in factories, and to products at customer locations."

- ✔ Providing agentless IoT/OT security monitoring, to strengthen IoT and OT security and prevent plant downtime.
- ✔ Securing devices, data, documents, and processes, from chip to cloud, while streamlining and improving security across the manufacturing value chain.
- ✔ Protecting greenfield as well as brownfield and proprietary IoT/OT devices, with a solution that can be deployed either on-premises or in cloud-connected environments.

VP of HR

"Manufacturers can be seen as monolithic and slow-moving. We need modern facilities, benefit plans, and IT to attract and retain young talent and create a diverse workforce. We need to be more agile and innovative."

- ✔ Enriching communication and employee experiences by connecting employees with the right tools, people, and devices.
- ✔ Quickly onboarding employees and helping them continuously build skills with custom, role-based learning paths.

Chief Sustainability Officer

"We know it's not too late to build a future that allows everyone to not just survive, but thrive. But for that, we need technology that can help us manage change, think sustainably, and embrace change as an opportunity for growth."

Learn more about Sustainability in Manufacturing.

- ✔ Reducing operating costs by controlling consumption and waste, and adding revenue streams with new sustainability solutions that customers are increasingly demanding.
- ✔ Helping build integrity and brand trust, leading to greater employee and customer satisfaction.

Take the next step to build a sustainable and resilient future now

We invite you to explore Microsoft Cloud for Manufacturing. We look forward to helping you find new ways to empower your business to drive transformation, so you can achieve growth and greater social responsibility through digital technology.

Explore Microsoft Cloud for Manufacturing ›

ARCHERPOINT

Learn more about how ArcherPoint can help with your digital transformation.

Microsoft