Microsoft

Reimagine Manufacturing: Empower Your Workforce with Digital Solutions

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Drive transformation for employees and customers

The transformative potential of technology is changing the landscape of manufacturing and production across the supply chain. From enabling workforce transformation to engaging customers in new ways, digital transformation is paving the way for manufacturing leaders to think outside of the box and develop unique solutions.

The technology revolution of artificial intelligence (AI), IoT devices, and robotics has helped create a safer, resilient, and more sustainable environment in the factory. It's now easier to procure tools and services to meet manufacturing needs. A greater challenge is that manufacturing faces a global labor shortage of 7.9 million workers[1].

Manufacturers are searching for the best pathways to hire the right staff and retain skilled labor in an environment where the essential technologies and tools for businesses are evolving rapidly. Digital transformation offers the opportunity to bridge that skills gap and innovate within a factory organization. With accelerated cloud adoption across the manufacturing industry, now is the right time to make these investments and empower employees.

The manufacturing industry has risen to the challenges of the past few years, finding innovative paths to the best possible service for its customers. The lessons from this innovation have driven performance improvements and increased competitive advantage, opening up the opportunity to build successful customer relationships in the future.

The size of the overall equipment-as-a-service market is expected to reach $131 billion by 2025, a 35% increase from 2019[2], and exciting new digital revenue streams have opened up. In 2023, manufacturers are expected to double digital revenue compared to 2020[3]. Now is the time to invest in seamless customer collaboration to enable digital growth.

Over the course of this e-book, we'll examine how empowering employees and investing in seamless customer collaboration can deliver benefits for the manufacturing sector, starting with how to prepare the workforce for a smoother digital transformation.

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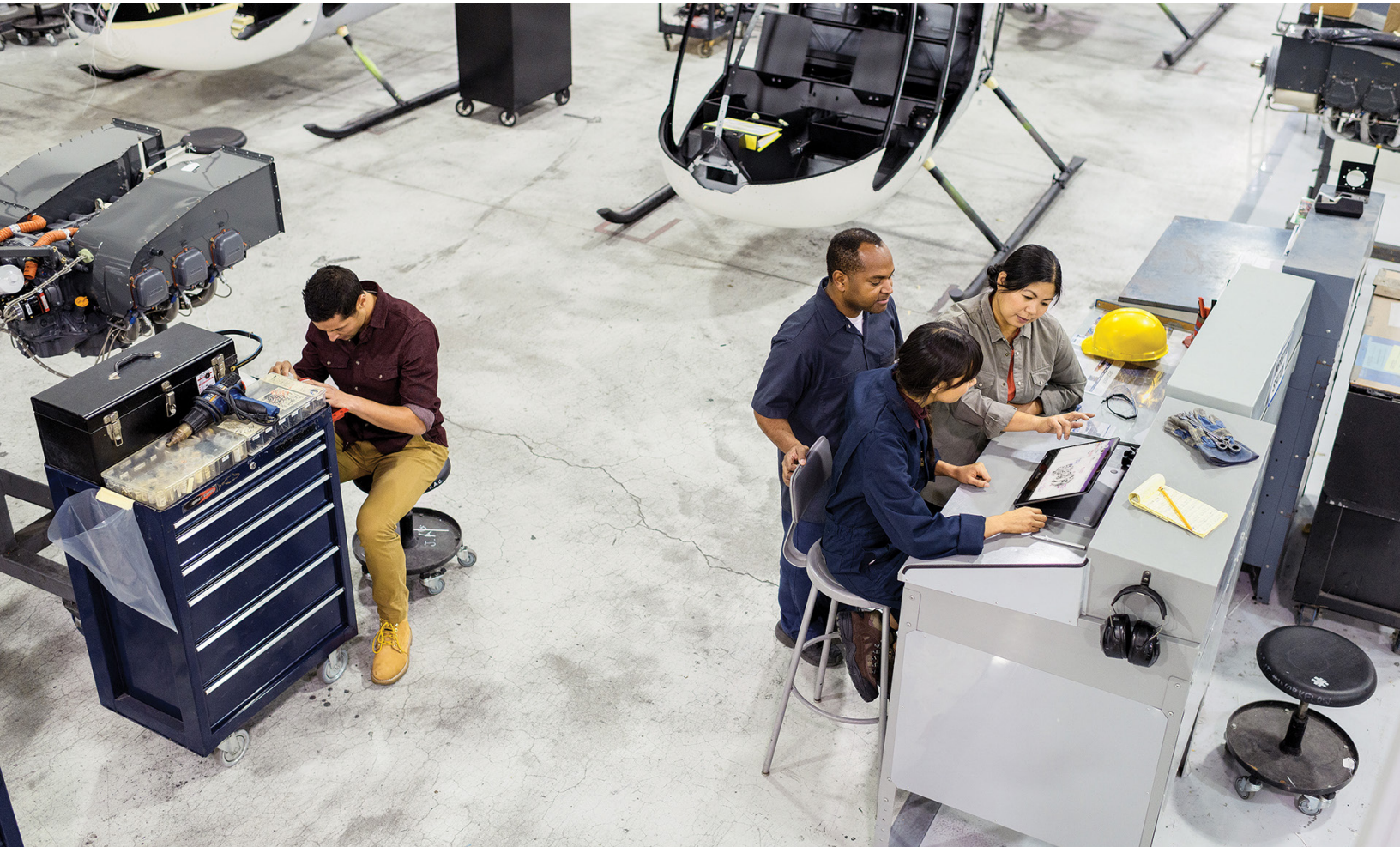


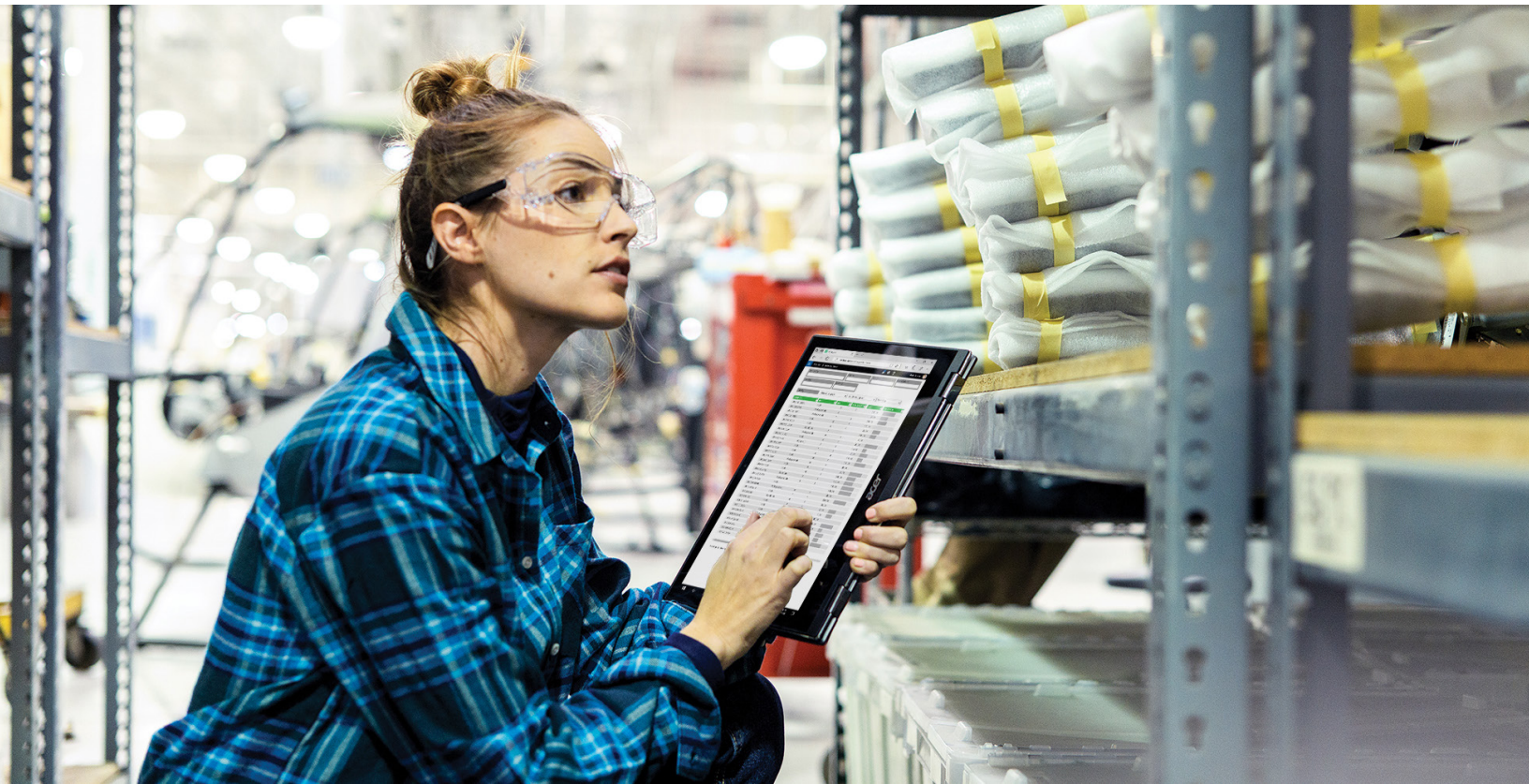
Empower your employees and customers

The next phase of digital transformation presents an opportunity for manufacturers to drive meaningful business transformation with their workforce and ultimately for their customers. Manufacturers can achieve growth and greater social responsibility through digital technology—helping to create safer and more agile factories and resilient supply chains, unlocking the innovation of sustainable products and services, and engaging customers and the workforce in new ways.

Specifically, manufacturers can capitalize on the opportunity presented by focusing on three key areas:

- Empowering employees
- Seamless customer collaboration
- Delivering value for customers

We'll take a deep dive into each focus area and find out what opportunities manufacturers face. We'll also show how Microsoft solutions can help address challenges and make workforce transformation easy.



Build an informed workforce

Empowering employees is all about learning and knowledge management, workforce engagement and collaboration, and diversity and inclusion. Each of these areas faces its own challenges and opens up unique opportunities for employee growth to keep up with the speed of digital manufacturing.

Redefine learning and knowledge management

Manufacturing faces a widening skills gap in the wake of the pandemic. For example, the impact of COVID-19 on workforce health and necessary safety measures disrupted manufacturing and supply chain operations. Almost 45% of manufacturing executives surveyed[4] have turned down business opportunities due to a lack of workforce.

Hiring additional workers relieves pressure on existing workers, increasing their focus time to maintain or even expand their existing skillset. Reducing the individual skills gap can help workers gain confidence in their abilities and drive their careers forward.

The skills gap is affected by the following factors:

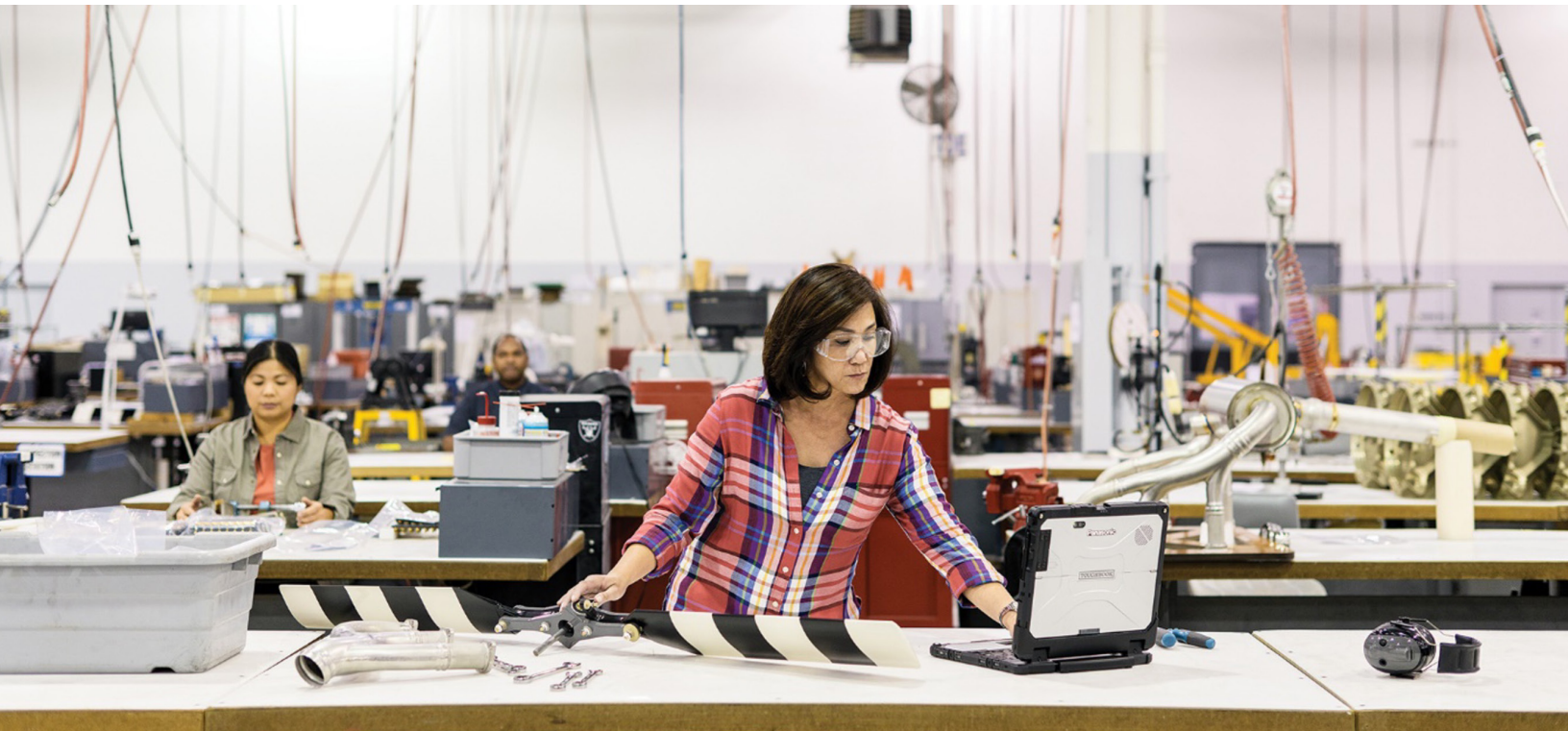
- **Workforce retirement**: A considerable percentage of the manufacturing workforce is reaching retirement age. In addition, the pace at which the baby boomer generation is retiring is increasing. As they exit the workforce, new workers must retain the expert knowledge of how plants operate and how to troubleshoot and keep critical equipment running as efficiently as possible.
- **Industry 4.0**: The fourth industrial revolution brings new skills that are required in AI, IoT, and robotics, making it harder to fill roles. Due to this rapid change and the adoption of technology and industrial practices, there's also a change in the work culture, which needs a consistent skills development program to keep the workforce up to date.

Through learning and knowledge management, manufacturers can bridge the skills gap with:

- Easily accessible learning content from various platforms, such as Microsoft Viva, Microsoft Teams, and Dynamics 365 Guides, offering a more holistic curriculum.
- Microsoft Teams facilitates employee live mentoring and support using video conferencing throughout the training journey along with searching, sharing, and chatting about learning content.
- Tools like Microsoft Viva that enable employees to pick up from where they left off with access to bookmarked learning items, recently viewed courses, content assigned from a learning management system, and recommendations.

> Our training efficiency has increased, trainers and trainees are receptive to the technology, and they rank Microsoft Dynamics 365 Guides on Microsoft HoloLens 2 as their preferred way to learn.

Zach Reeder, Technology Development Engineer at Toyota Motor North America. Read more about Toyota's story here.



Boost workforce engagement and collaboration

Manufacturers are turning to digital solutions to boost workforce engagement and collaboration. One such solution is upgrading the existing tools that the workforce uses. Tools such as Microsoft Teams and Microsoft OneDrive offer a seamless employee and customer experience for communication and sharing information.

By working with Microsoft, businesses can focus on workforce engagement and collaboration, enabling:

- Difficult or complex tasks, such as quality checks, to be simplified through digitalization.
- Collaboration that empowers employees to share with others the broader context that has informed their decisions and to spark new discussions.
- Reduced downtime during maintenance operations due to receiving guidance on work processes using augmented reality, with products like Microsoft HoloLens 2.

Based on the **Microsoft-commissioned Forrester Total Economic Impact (TEI) report**[5] (HoloLens 2 TEI study), HoloLens 2 is delivering a 177% return on investment (ROI) and a net present value (NPV) of $7.6 million over 3 years with a payback of 13 months. According to the study, manufacturing organizations that have deployed mixed reality solutions on HoloLens 2 have:

- Reduced training times by 75%, at an average saving of $30 per labor hour.
- Saved an average of $3,500 per avoided expert trip.
- Avoided 240 to 320 hours of average lost throughput per year.

Making better business decisions with diversity and inclusion

Diversity and inclusion (D&I) is about having a group of unique people who work well together while bringing entirely different viewpoints and backgrounds. Research shows that inclusive teams make better business decisions[6] up to 87% of the time, and that they drive decision making twice as fast within half the meetings.

To address D&I, manufacturers are expected to clarify and capture the skills required for the responsibilities of a particular role and overcome implicit bias in the hiring process.

The hiring process often relies on traditional HR methods that in the past have not always effectively captured the exact skill set needed to fill a role. Not to mention, previous methods can lead to the underrepresentation of certain groups. For example, according to a 2018 study, women are massively underrepresented in the manufacturing space, with 79% of EU scientists and engineers in manufacturing being male[7].

Digitalization and the transformation towards sustainability are opening new opportunities for women in manufacturing. Companies are recognizing now, more than ever, that digital transformation requires a diverse skillset.

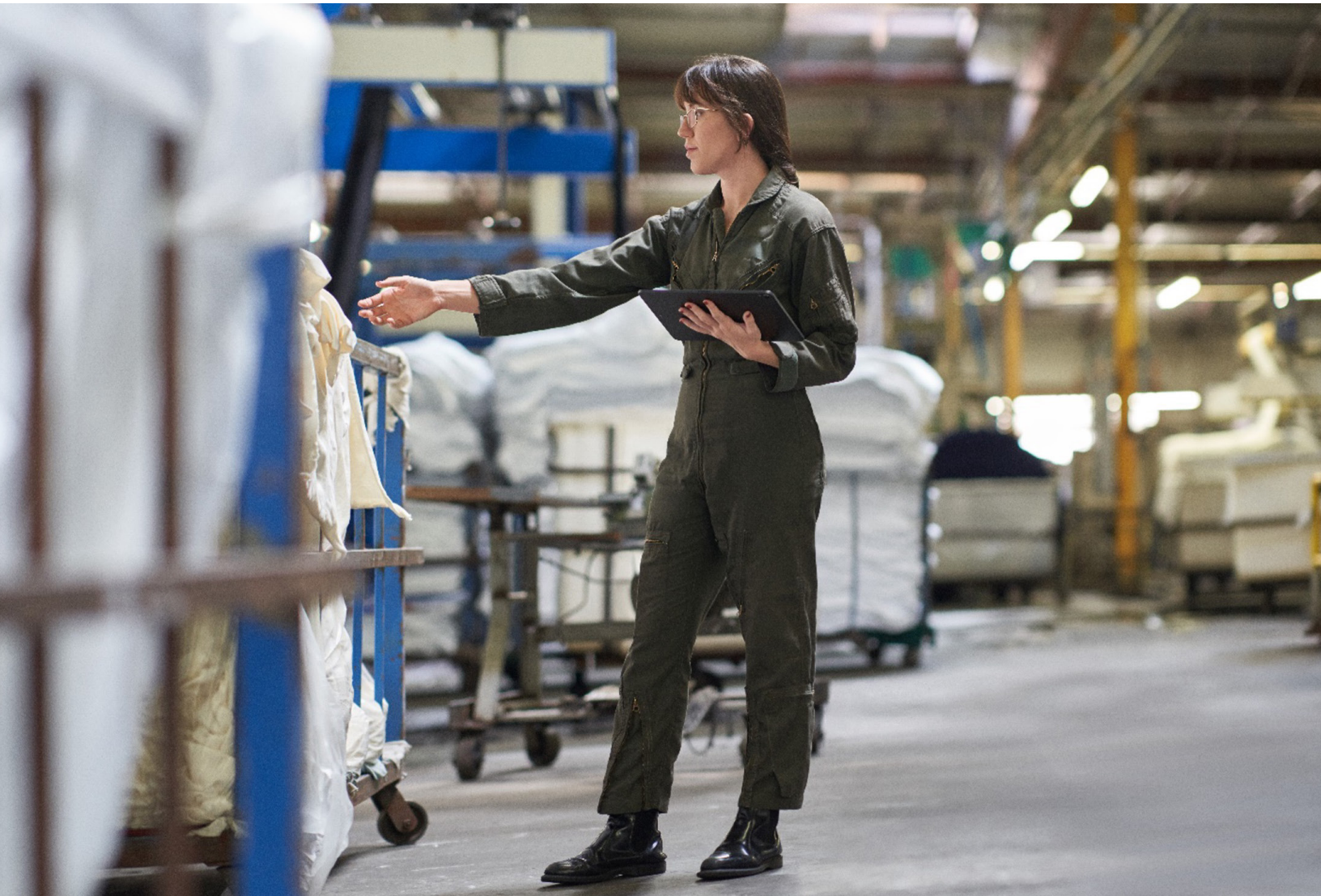
Speaking about the role women play in the future of manufacturing[8], Katarina Heining, DMG Mori's Digital Sales and Marketing Lead, said: "We're embarking on new roads, testing new markets, bringing in new products with digitalization – and we need new talent for that".

Organizations can improve D&I opportunities by using Microsoft products, solutions, and services. For example:

- Simplify the overall HR process with recruitment tools and talent management solutions such as Dynamics 365 Human Resources
- Put the employee at the center of the innovation experience throughout their time at the company.
- Create a more collaborative work environment by capturing employee sentiment using survey insights from Dynamics 365 Customer Voice.
- Analyze and visualize data with Microsoft Power BI to make informed decisions about the HR requirements and needs of the workforce.

> With Dynamics 365 Human Resources, we're tracking employee achievements better, helping ensure regulatory compliance, and streamlining processes that have been manual.

David Panter, Chief Executive Officer, ECH Inc. Learn more.



Optimize seamless customer collaboration

Collaboration with customers empowers organizations to provide effective and efficient end-to-end sales and service experiences across every stage of the customer's journey.

An always-on-service approach enables employees to proactively connect with customers and facilitates seamless customer collaboration by integrating a right-first-time approach with remote assistance and connected products.

Always-on service for enhanced customer engagement

An always-on service provides reliable and consistent monitoring of technology infrastructures, empowering teams by providing the right tools to proactively reach solutions and engage with customers.

AI-driven insights further remove barriers to help customer service supervisors, field technicians, and supply chain managers make better decisions. These insights allow for the wellbeing and efficiency of an organization to be considered in every decision and equip virtual agents with the information they need to resolve more customer inquiries within a single interaction. This frees up agents and technicians to tackle more complex issues with customers.

Engage customers in new ways

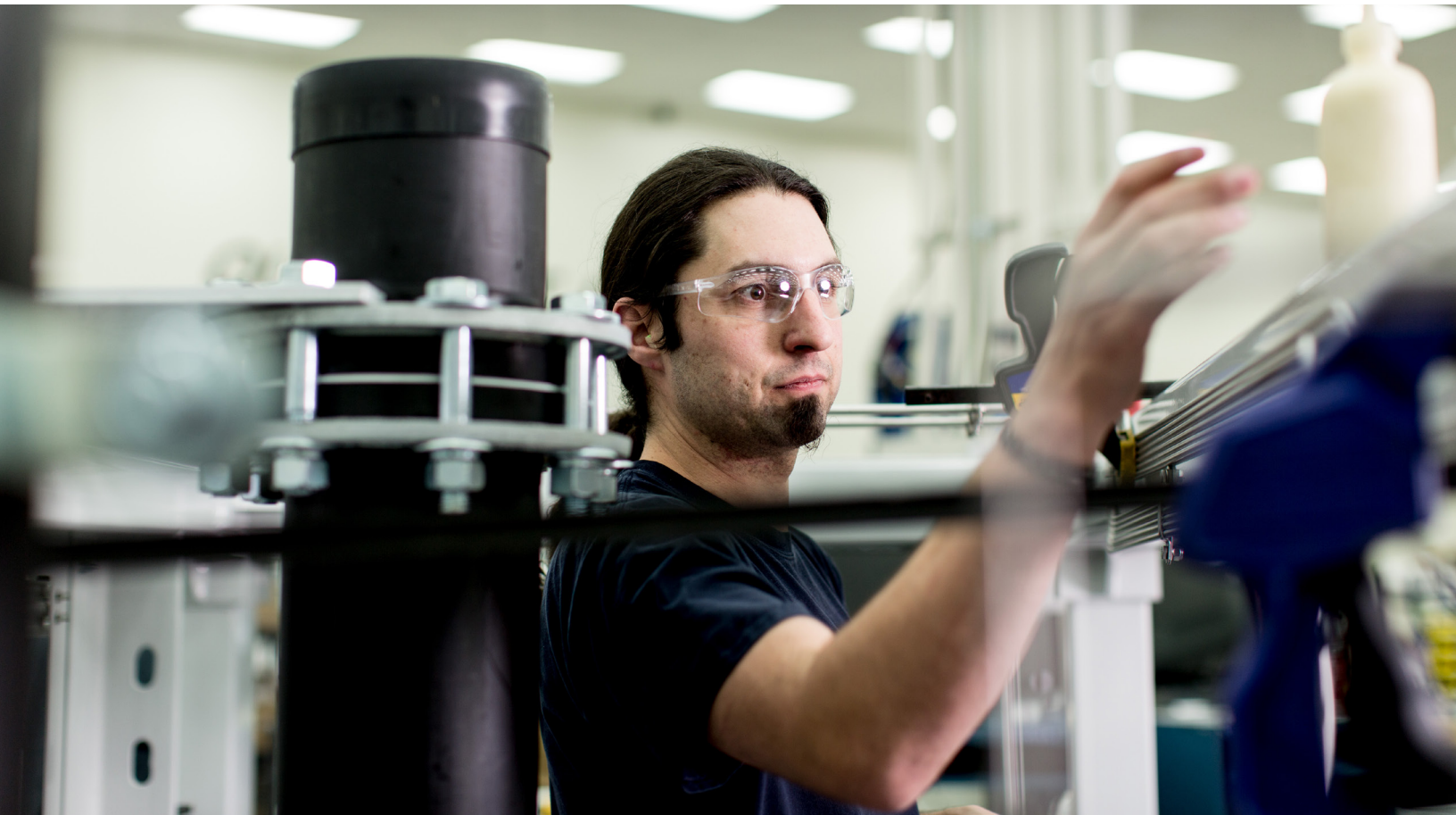
Customer satisfaction, trust, and loyalty increases by delivering new digital experiences across marketing, sales, and service channels. The key is delivering empathetic, connected service experiences that adapt to customers' evolving needs.

Customer service organizations are now delivering proactive service using AI. HP is a strong example: they have achieved great success in improving customer service by using AI virtual assistants to handle 70-80 percent of their helpdesk calls.

Manufacturers need to have a fully connected system that provides one single view of their customers and devices. This provides the intelligence to enable proactive service and accelerate agent and technician productivity.

Microsoft Dynamics 365 suite of programs enables seamless connections with customers through:

- Meeting customer expectations with on-time scheduling and technician location information using the Dynamics 365 Field Service.
- Gaining customer insights with automated, personalized customer surveys after completing field service calls using Dynamics 365 Customer Voice.
- Providing convenient self-scheduling options for customers using Dynamics 365 Customer Service.
- Seamlessly collaborating, sharing knowledge, and easily bringing critical data into the workflow with Dynamics 365 Guides.
- Connecting frontline workers, office workers, and customers with secure collaboration and information management tools, such as Microsoft Teams.



> Dynamics 365 Sales and Field Service is enabling us to shift our sales and service thought process from reactive to proactive. The information we gather from and provide to our frontline people enables them to partner with business customers vs. being just a sounding board to fix problems.

Todd Seufer: Product Owner G&J Pepsi Bottlers, Inc.

Litware Inc, a compressor manufacturer, has just installed a compressor at one of Contoso Chemicals factories. After successful installation, they activate the connected digital service. Litware uses Microsoft's IoT services to gain continuous access to data from Contoso's systems. It then reviews this data using operational analytics dashboards and anomaly detection systems. This helps Litware plan a recalibration cycle that fits Contoso's operation cycles. Using Microsoft's AI-enabled recommendations, Litware technicians can detect anomalous behaviors and consult their team members for faster resolution. They can also save this data for future calibration and maintenance activities. By detecting and resolving issues before they turn big, Litware has established a strong relationship with Contoso through improved equipment performance and customer support.*

* The company names used here are fictitious and created for the implementation demos. This example showcases the capabilities of Microsoft services for the manufacturing industry.

Bring efficiency in day-to-day tasks with right first time

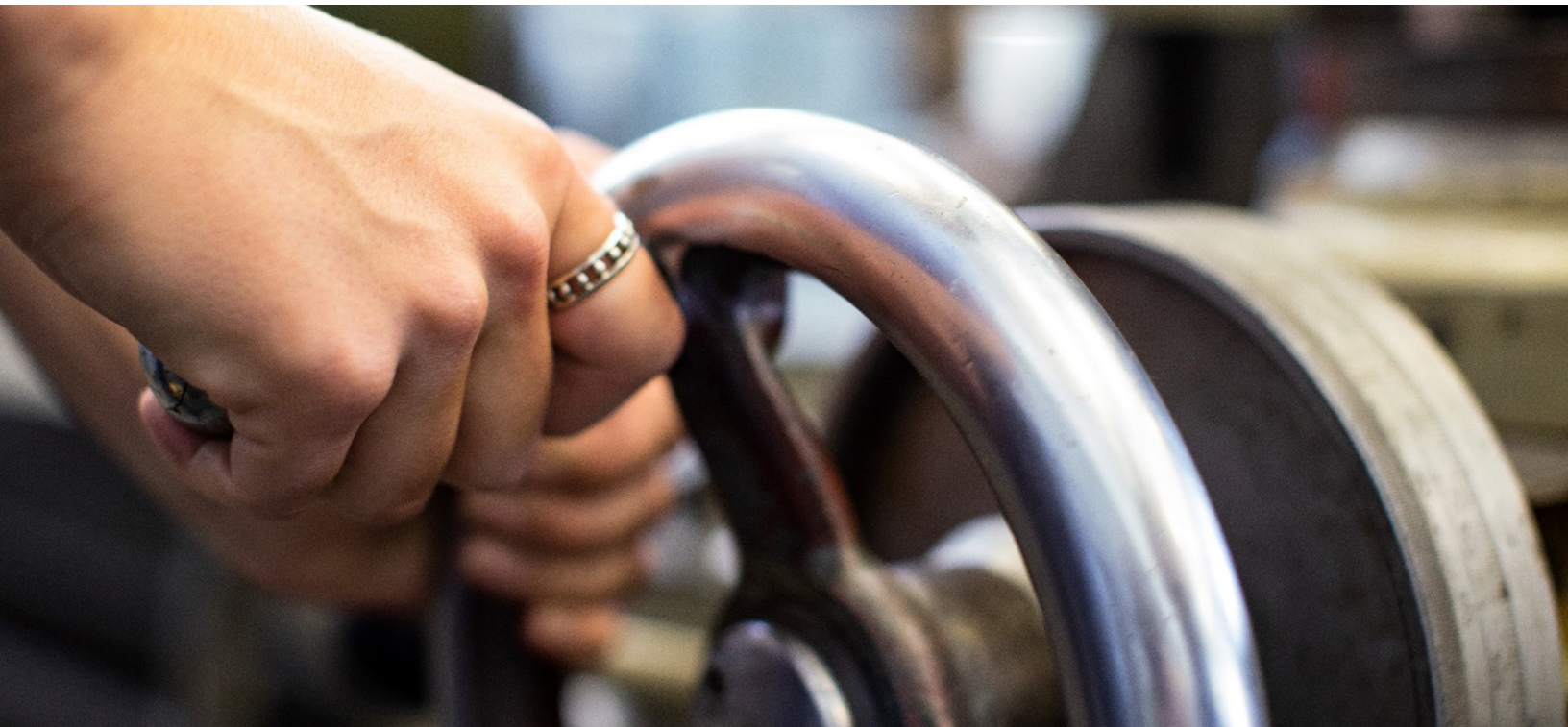
Right first time (RFT) is all about ensuring that any procedure is performed in the right manner the first time and every time. This can be a challenge when workers don't have easy access to the correct information at the right time.

Process and workflow automation can improve customer and employee experience by:

- Supporting external collaboration between customers, suppliers, and partners, which streamlines processes and communication and boosts agility.
- Enabling power users to build their own line-of-business apps that rationalize enterprise workflows using a no-code/low-code platform with Microsoft Power Apps.

> With Microsoft, Azure, IoT technologies, and Dynamics 365, XTO Energy is an innovation leader in the oil and gas industry.

Anish Patel, Permian Digitalization Manager, XTO Energy. Learn more.



Collaborating in new ways with Remote Assist

Always-on customer collaboration requires employee access to expert assistance to enable proactive solutions. When issues arise with equipment on the shop floor, operators want on-time access to the best experts available. They also want to communicate with these experts in modern ways that allow a collaborative approach to problem-solving.

By using HoloLens 2 – a head mounted computer with a see-through display – Andrew Wood, a mechanical fitter at BHP's iron ore team at Pilbara can coach his peers at site, anytime, from anywhere using Dynamics 365 Remote Assist. Andrew is instantly able to see what mechanical fitters on site can see, send them helpful documentation, videos, and schematics on the fly, and even use digital ink and arrows to annotate real things in the physical world in order to help them complete tasks and inspections on remote sites.

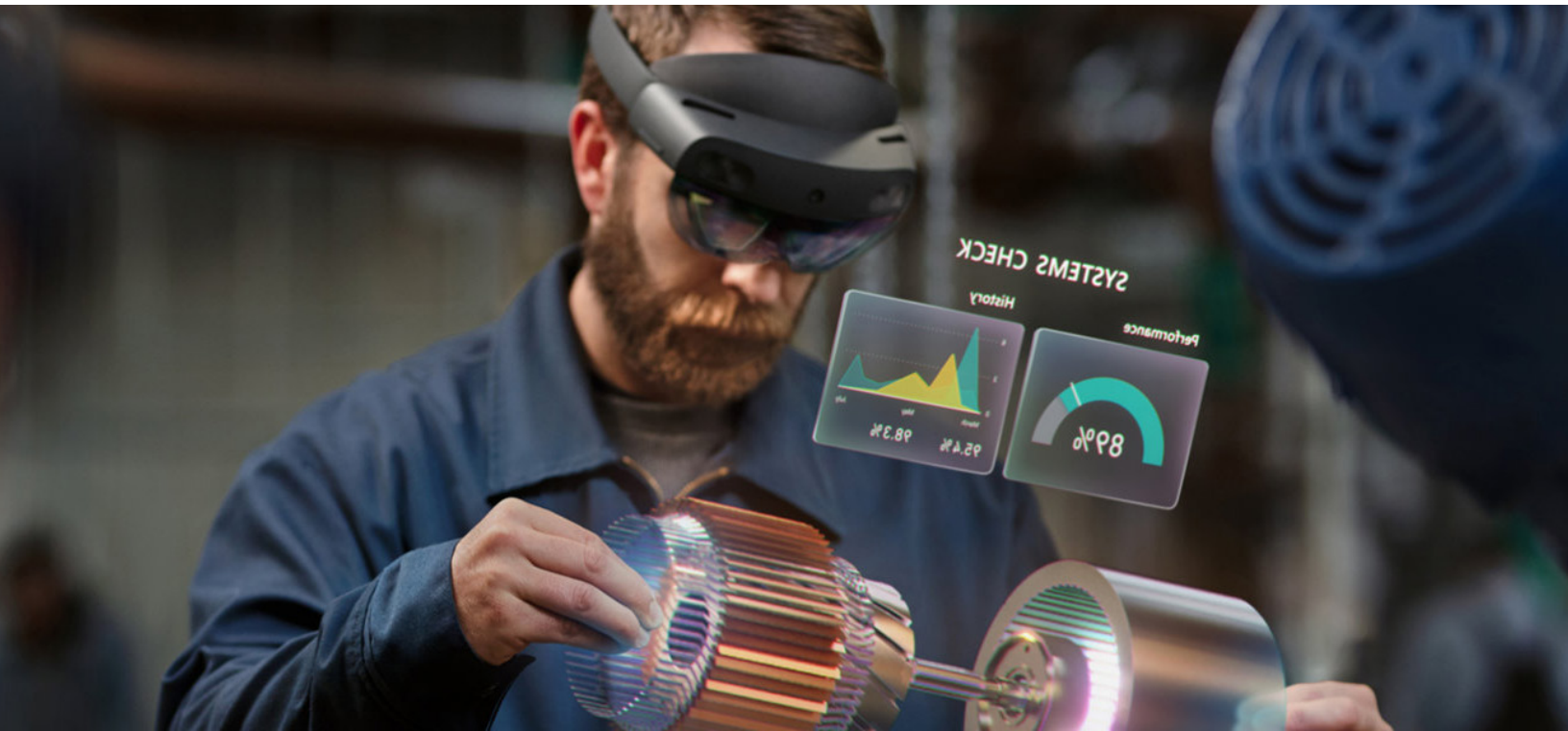
Read more about this story here.

Using augmented reality (AR) and Virtual Assistants with Remote Assist on HoloLens 2:

- Users can now blend the physical world and digital world. Digital information is shown as holograms that appear in the real world around the user.
- Through AI, these holograms have real-world context, and it's possible to interact with them in real time.
- Common assistant skills are provided, for example, finding a point of interest, checking off an item on a to-do list, or replying to an email. Skills are fully customizable.

> Using Remote Assist on HoloLens, we're bringing the outside viewer perspective into the plant. Let's say they are checking a quality dimension. If someone on the call has been on another Gemba walk in another site, they can say, 'You should contact plant XYZ because they do a similar measurement, but they're using an automated process.'

Alexandre Georgetti, Director of Eaton's Vehicle Group Manufacturing Strategy.
Read more about Eaton's story here.



Closing the loop with connected products

Before the rise in digital transformation, it was difficult for manufacturers to gain live feedback or track how their product performed and operated once delivered to the customer. For example, understanding how products were performing against design parameters was a missed opportunity for manufacturers.

Using predictive maintenance tools within Azure IoT enables greater opportunities for improved customer collaboration. Manufacturers can now:

- Combine real-time data from sensors with advanced analytics to monitor equipment in real time.
- Predict the remaining useful life of critical components.
- Offer an end-to-end solution that includes data ingestion, data storage, data processing, and advanced analytics.

Improving safety with digital tools

In the past, technicians would need to be physically present to work on a piece of equipment. That was due to a lack of connectivity, meaning operators and field technicians were put in harm's way when collecting information or running diagnostics.

Microsoft solutions focus on health, safety, and wellness, allowing remote access to safer environments:

- Using tools like Azure IoT to remotely access equipment parameters allowing workers to keep a safe distance from high-risk environments.
- Worksite safety and security are prioritized to monitor job sites, flag issues, and protect data.
- A connected work environment is developed that promotes employees to collaborate internally and externally using tools like Microsoft Teams.

Deliver value for customers

At Microsoft, we focus on building the best outcome-driven solutions and capabilities that help in accelerating time to value for our customers in an end-to-end, holistic, and scalable way.

Empowering employees and seamless customer collaboration can have a substantial impact inside the four walls of a factory with respect to increasing productivity, safety, quality, and revenue.

Productivity

In its simplest form, productivity is a ratio of the inputs to outputs for manufacturing. Inputs are the resources required to produce a particular part, including labor. Output is a measure of parts or goods produced.

Therefore, the more goods produced with available resources, the better the productivity. When it comes to workforce transformation, it is all about maximizing the goods produced with the available workforce.

Safety

Safety in manufacturing involves everything it takes to provide a safe work environment for frontline workers. Keeping up with the required health and safety obligations, from handling chemical spills to managing trip hazards, is a full-time job.

Digital tools allow employers monitor their workers overall health and working conditions while limiting employees risk and exposure to prevent incidents from happening.

Using mixed reality and IoT in day-to-day operations, is one of a series of innovations that BHP, a leading mining company is undertaking to keep its people safe and its productivity up.

Dash Maintainer Tools, developed by BHP's maintenance and innovation teams, allows frontline personnel to securely collect data from machinery remotely, avoiding the potential risks associated with manually checking dials or taking readings from heavy mobile equipment such as trucks, excavators, drills and 'dozers. Learn more.

Quality

Goods or parts manufactured below the benchmark quality can severely impact the business. If not manufactured correctly in the first instance, some goods or parts will have to be reproduced, while others may need to be scrapped altogether. It is critical that goods or parts are manufactured right the first time itself.

By focusing on quality as part of their digital transformation, manufacturers can reduce the cost of goods sold (COGS) while improving customer satisfaction.

Revenue

Successful digital transformation efforts involve examining new channels or sources of revenue to complement any work being done to lower or remove costs. By exploring new business models using digital technology, companies are seeing an increase in their top-line revenue.

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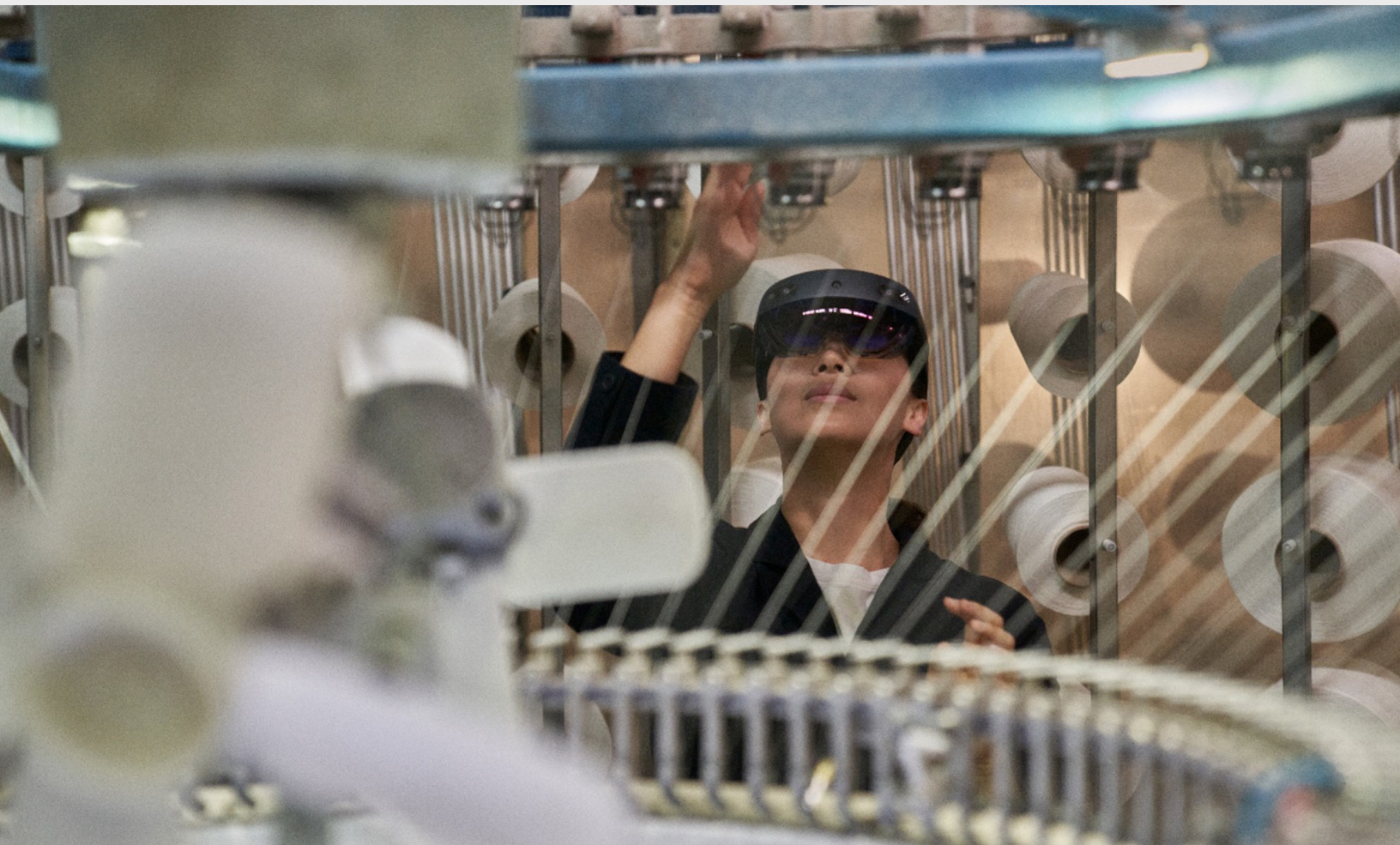

Unlock new opportunities with Microsoft

Microsoft Cloud for Manufacturing is designed to deliver capabilities that support the core processes and requirements of the manufacturing industry and the factory environment. These end-to-end solutions include new and released capabilities that seamlessly connect the people, assets, and workflow of the factory with each other and with business processes, empowering organizations to be more resilient.

The opportunity associated with empowering the manufacturing workforce and how Microsoft can help unlock that opportunity with its unique portfolio of tools. The near-endless possibilities that come from seamlessly collaborating with customers and how Microsoft's world-class solutions are helping manufacturers to realize the most from their digital investment

Take your next steps

- Get started with Microsoft Cloud for Manufacturing.
- Sign up for our webinar series to learn more on how to exceed customer expectations with always-on service.
- Learn how to deliver exceptional service experiences with Dynamics 365 Field Service and Microsoft Teams.