

# Digital transformation for the manufacturing industry



**Manufacturing was made for digital transformation.** Big data and digital tools are giving industry companies the insights and levers they need to understand and predict customer and market demands, streamline operations, and fuel explosive growth. For companies who have used Agile processes, Lean manufacturing, and Six Sigma to optimize existing processes and strip fractional waste and defects out of operations, this is good news. Manufacturing is no longer constrained by the physical world, and new business opportunities await. With robotics, automation, predictive analytics, and machine learning, manufacturing is entering a brave new world of precision decision-making and production. No wonder industry pundits say that we are now experiencing the fourth industrial revolution.

Digital transformation enables manufacturers to reconceive their products and services, even their business models. According to Jorge Lopez, Gartner VP and distinguished analyst, companies in all industries are creating “new business designs” that blur the digital and physical worlds.<sup>1</sup>

Since many manufacturers operate in capital-intensive industries with thin margins, the opportunity to create new physical-digital-content product configurations, continually enhance the customer experience, and optimize the usage of costly equipment and aging inventory is a boon indeed. Meanwhile, mobile technologies connect global partners and customers, enhance worker productivity, and enable virtual service models. GE estimates that the “Industrial Internet of Things”—a term it coined—could add \$225 billion in business value by 2020.<sup>2</sup>

Much like other industries, manufacturers are seeking new ways to engage and serve digitally empowered customers, who complete two-thirds of their journey online. Targeted marketing and rich, interactive content are musts to move customers through the sales funnel, from initial consideration to product purchase and reengagement. Customers expect personalized products and services and access to the best new technologies. Manufacturers must constantly evolve offerings to keep pace with customer demands and market innovations.

To meet the demands of digital transformation, manufacturers are creating digital ecosystems: connecting suppliers, partners, and employees closely. Microsoft cloud services provide security-enhanced, anywhere access to Office productivity solutions and the SharePoint collaboration platforms, fueling the work of global teams. Windows 10 provides one common platform for connecting, building, and managing a connected business.

## Increasing business value with the Internet of Things

Manufacturers can build systems of intelligence—using facility, equipment, and worker data; Internet of Things (IoT) data from sensor-tagged raw materials, components, finished products, and smart devices; social listening signals; customer feedback; and partner data, to name a few sources—that create continuous digital feedback loops across the entire product and service life cycle. Real-time integrated intelligence strips the guesswork out of decision making, from strategic planning and product innovation to raw-material ordering and day-to-day operations. IoT enables rich, connected, and always-on customer experiences. Automated processes and robotics make asset-intensive and resource-intensive businesses nimbler, reduce production costs, and enable workers to focus on higher-level tasks. And digital data and smart machinery enable businesses to build and operate the plants and supply chains of the future—today.

Organizations that take the steps to embrace digital transformation to evolve how they use data, analytics, and the cloud generate an average of \$100 million more operating income each year than those who lag behind.<sup>3</sup>

**Engage your customers:** Manufacturers are reimagining the customer journey. By creating end-to-end business processes and developing a 360-degree view of their customers, they can engage with them on a 1:1 basis, delivering personalized marketing, sales, goods, and service. Manufacturers who use digital technologies to innovate all aspects of the customer experience can achieve dramatic revenue lift—up to 3 percent to 7 percent higher annual revenues than less digitally savvy peers. The industrial equipment, consumer goods and services, consumer technology, and automotive sectors are set to achieve the highest gains.<sup>4</sup>

**Customers no longer just buy off-the-shelf products.** They want goods that meet their unique needs and are willing to pay a premium for these goods. Digital-physical products and services can be enhanced with new features and expanded over time, based on usage patterns as well as predictive behavioral analytics.

**Customers also seek services that help them optimize use of their product investments.** Manufacturers can build on their existing infrastructure, connecting both their own and their customers’ things as they maximize their current investments. Sensor-tagged goods and smart devices developed on the Windows platform provide real-time data on their condition, enabling remote monitoring, pushing remote updates, and alerting manufacturers to changes in performance.

**Service, historically the bane of the customer experience, can become a positive opportunity for continued engagement.** Manufacturers can provide a comprehensive, integrated service approach to customer care. Rich self-service portals empower customers to order products and schedule service requests, while intelligent agents help customers rapidly resolve problems online. Predictive maintenance can preempt equipment failure and provide a first-time fix every time. Service centers can become profit centers: creating high-margin service revenues while increasing customer loyalty.

Rolls-Royce helps its aircraft customers keep planes available and operating at peak performance by delivering comprehensive maintenance services for the 13,000 commercial engines it has in service. It can monitor engine movement, state, and health, down to individual parts, to understand its remaining useful life and needed actions.

The latest research from International Data Corporation (IDC) shows that discrete manufacturers are doubling the percentage of their production that is connected in the next three years<sup>5</sup>—all paving the way to potential revenue streams that will extend the lifetime value of customers



**Use IoT-enabled automation to transform factory operations**

KUKA is a German manufacturer of industrial robots and solutions for factory automation. The company set out to build a new production factory for Jeep Wrangler bodies in Toledo, Ohio, that took advantage of the Internet of Things to create a highly automated plant that connects as many as 60,000 devices and 259 assembly-line robots to a central data-management system.

The intelligent manufacturing system, which is anchored by Windows Embedded, Microsoft SQL Server, and Windows Server, can adapt quickly to changing production requirements. Employees can perform control tasks, including creating and running programs and diagnostic processes, directly on the robots.

The highly adaptable system enables the factory to produce eight different configurations of the Wrangler, with orders changing daily. Meanwhile, the high degree of automation means that the plant has operated on a 24-hour production basis for eight years.

*"We ship our customer a complete car body every 77 seconds. We don't have time to adjust source code, and we can't introduce something that isn't trusted and proven. Our intelligent system built with Microsoft technology enables us to react very quickly."*

– **Jake Ladoucier**, Managing Director, KUKA Systems Group Toledo Facility

**Ensuring edge-to-edge security:** Manufacturers must secure their facilities, data, and services against physical and cyber attacks. An unintended consequence of digital transformation is the increase in cybercrime and new, more complex security challenges. Cybersecurity is a board-level conversation and top-of-mind for all business leaders. In every aspect of their operations, CXOs must embrace "secure by design" as a business priority. IoT solutions built on the Microsoft platform boast industry-leading, edge-to-edge security and cloud-based threat detection.

Device manufacturers can build smart devices on Windows 10, the most trusted platform ever, with tools to ensure device and data integrity and protection, authenticate users, and provide lockdown capabilities in the event of threats. Enterprises benefit by using devices that are secure by design, connected to trusted cloud services, and enhanced by robust identity and access management services, automatic updates, and other services such as remote monitoring and predictive analytics. Enterprise IT decision makers know that every platform they deploy should have its own unique security provisions and meet key legal and compliance requirements and international standards, as Microsoft does with all of its services. That's why Jeff Heyde, Director of Global Systems at Dana Holding Corporation, says, "It quickly became clear that our data would be safer in the Microsoft Cloud than in our own datacenters. After all, Microsoft is an expert in enterprise security."

Peerless Manufacturing has used cybersecurity consulting solutions from Microsoft Services to eliminate ongoing, persistent threats and implement ongoing, proactive monitoring. With these solutions, Peerless reduced their threat profile by 80 percent and reduced their threat response time from months to minutes.



**Automating scheduling for superior customer service**

As the largest privately held national electronic security system integrator in North America, NAVCO sought to enhance its customer service experience. The company needed to implement a customer service portal that would grow with the company. NAVCO implemented the FieldOne Sky Solution, which had an open architecture and enabled automated scheduling. The company has achieved efficiency gains of 76–98 percent and cost savings of \$12,000 a month. It has also improved its service levels, with a 95 percent first-time fix rate.

*"When customers use the portal, it not only allows them more flexibility, but it also increases our efficiencies as well since the customer is essentially dispatching work orders themselves."*

– **Paul Spruiell**, VP, Group Operations, NAVCO



中華電信  
Chunghwa Telecom

**Taking a holistic approach to cyber security**

Chunghwa Telecom in Taiwan decided to take a holistic approach to cybersecurity to protect the company against the advanced persistent threat (APT) attacks happening in the region.

*"We had an urgent need to build a holistic protect mechanism. Whenever vulnerabilities are announced, Microsoft provides an update as well as protection measures very quickly. We recognized the continued security investment Microsoft makes. Microsoft builds and integrates those security measures seamlessly into their products and technology."*

*"This is very unique and not replicable by other solution providers. Microsoft also has a unique technology called SERA that detects possible attacks. That's a win-win situation for both Microsoft and Chunghwa Telecom. It's really a differentiator and competitive advantage that cannot be matched by other technology providers."*

– **Fu-Kuei Chung**, President of Data Communications Business Group, Chunghwa Telecom



Qoros Automotive, a Chinese car manufacturer, wanted to create a connected

car to support the modern driver's desire to be always connected to his or her digital life. The Qoros IT infrastructure needed to support pervasive connectivity beyond the car. Qoros engaged Microsoft to design and build the telematics system, collecting traffic data, points of interest, restaurant reviews, and more, as well as connecting to dealer management, CRM, and other systems.

Qoros created the ultimate connected car by focusing on innovation, rather than IT infrastructure. The company expanded globally in months rather than years.

*"Car connectivity is the new battleground for product differentiation, and with Microsoft Azure, we can stay ahead of the competition. Ninety-one percent of our customers are recommending our cars to friends and family."*

– **Maurits Aalberse**, Director of Connected Services, Qoros Automotive

# Accelerating manufacturing transformation

with Microsoft and the Internet of Things

## EMPOWER EMPLOYEES

Enable mobile work styles and roles. Empower real-time integrated video collaboration among geographically dispersed teams. Dispatch field technicians using optimized routes and provide them with complete customer insight and repair guidance. Manage more work orders and resources with fewer dispatchers using cloud, big data, and mobility solutions.

Respond swiftly to changing market demand.

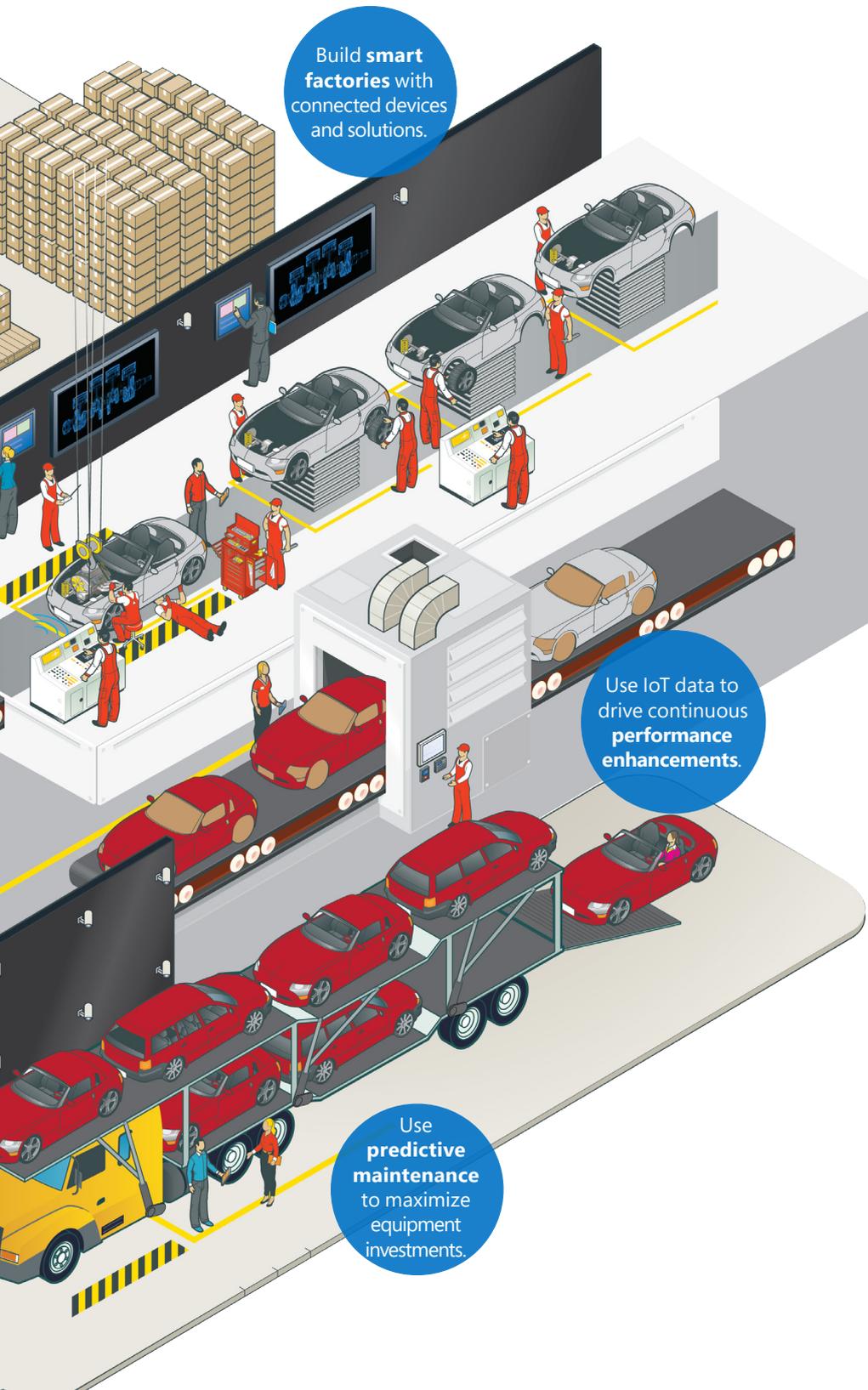
Enable mobile work styles for diverse contributors.

Make production adjustments to reduce cost.

## ENGAGE YOUR CUSTOMERS

Personalize products and services to drive customer-centric sales relationships. Gather product and customer data, push remote updates, and sell remote management services. Provide smart services that reduce costs and enable cross-sell and upsell opportunities.





Build **smart factories** with connected devices and solutions.

Use IoT data to drive continuous **performance enhancements**.

Use **predictive maintenance** to maximize equipment investments.

## **STREAMLINE YOUR PROCESSES**

Monitor production flow in near-real time to eliminate waste and unnecessary work-in-process inventory. Manage equipment remotely, using temperature limits and other settings to conserve energy and reduce costs. Implement condition-based maintenance alerts to eliminate machine downtime and increase throughput. Use individual assembly lines for multiple processes or product varieties. Use global visibility into performance to improve operational efficiency, streamline supply chain processes, and increase flexibility and scalability.

## **DEVELOP A ROBUST INNOVATION PIPELINE:**

Use integrated data and crowd sourcing to identify new product and service opportunities. Prototype, test, deliver, and scale offerings. Engage collaborators in continuously improving products and services.

## **ENHANCE YOUR PRODUCTS:**

Aggregate product data, customer sentiment, and other third-party syndicated data to identify and correct quality issues. Provide cross-channel visibility into inventories to optimize supply chain and reduce shared costs in the value chain. Transmit operational information to partners to automate and optimize processes.

**Empower employees:** Today's manufacturing workers require greater mobility and operational control, whether they are on the factory floor, in the showroom, or on the client site. Give it to them with mobile tools such as Surface tablets that enable rapid review of data and decision making. Enable seamless collaboration with colleagues and customers using interactive tools, such as Skype for Business. Hold more efficient meetings, crowdsource new ideas, and share files more securely.

Provide employees with security-enhanced, role-based access to vital manufacturing applications, such as manufacturing execution systems (MES), enterprise resource planning (ERP), human resource management (HRM), and maintenance, repair, and operations. Enable staff to quickly and easily identify sources of waste or process inefficiency; drive cycle times for manufacturing operations; and monitor and manage equipment, facilities, and factory networks, among other tasks.

Deliver intelligent, world-class field services including scheduling, onsite maintenance and repair, and resource optimization. The Microsoft Connected Field Service Solution helps manufacturers move from a costly break-fix model to a proactive and predictive service model. When manufacturers include IoT and machine learning capabilities, they can become digital service leaders.

Keep intellectual property confidential by enabling only authorized employees to access data and protecting information as it travels across regions, facilities, devices, and staff. Microsoft Office 365, Microsoft Enterprise Mobility Suite, and Microsoft Azure Rights Management combine next-generation, world-class collaboration and security. Use Microsoft solutions to facilitate security-enhanced, efficient document review and approval processes, enable regulatory compliance, and ensure compliance with data governance and protection policies.



Moderna Therapeutics researches and develops protein therapies based on novel messenger RNA technology. The company needed an agile, flexible platform and ecosystem to support its drug development efforts. Moderna Therapeutics used Office 365 ProPlus, click-to-run installation, and OneDrive to accelerate IT deployment and improve collaboration.

The company enabled heavy users to collaborate and communicate across devices in real time and improved workforce productivity to deliver a fast, scalable, and inexpensive treatment modality. Users can capitalize on new opportunities with just a few clicks.

*"By replicating our basic methodology, we can scale quickly to target new diseases. Traditional drug development for pharmaceutical companies takes 10 years or more."*

– Stéphane Bancel, Chief Executive Officer, Moderna Therapeutics

**Optimize operations:** Use your current technology investments, from sensors to enterprise-wide IT systems, and make them work harder. Link your assets, partners, and customers, gathering a wealth of real-time data. Make sense of it all with Microsoft Azure IoT suite, identifying the levers that will change your business.

When you're building, not buying, Windows 10 provides one common platform to do it all. Build, deploy, and manage devices and applications quickly and easily, connecting them with your current infrastructure. The familiar Windows platform is something your developers already know. Use preconfigured scenarios to bring your IoT vision to life. Windows 10 is the most trusted Windows ever, helping to protect you from a universe of threats as you unlock vital business intelligence. Use analytics to optimize all aspects of factory operations, from machine uptime and throughput, to product quality and customization, to just-in-time ordering and production, to product customization.

Integrate and streamline complex supply chain networks. With a single view of essential market, customer, product, and supply chain data, enable partners to collaborate more effectively, accelerating time to market and capitalizing on transient market demand.

## Whether process or discrete, manufacturing benefits from digital transformation

Manufacturers are embracing digital transformation as they seek to enter new markets, grow customer relationships, and evolve their products and services. Many have already invested heavily in front-end and back-end processes. With IoT, manufacturers can now elevate decision making to a precision science.

**Discrete manufacturers** create individual products that can be disassembled at the end of their life cycle, so that the basic components can be recycled.

### Verticals include:

-  • Automotive
-  • High tech and electronics (including software)
-  • Industrial equipment, machinery, and automation
-  • Aerospace

**Process manufacturers** create products using formulas and recipes that cannot be distilled back to basic components. Process manufacturing can be part of the value chain of other industries, such as consumer packaged goods and discrete manufacturing.

### Verticals include:

-  • Oil, gas, and mining
-  • Pharmaceutical and life sciences
-  • Chemicals



Create intelligent factories that do more with less. Use robotics, automation, and connected equipment to operate in a smaller footprint, use the same technology for diverse products and workflows, and reduce energy consumption—all while increasing production. Sensor-tagged goods update inventory in near-real time to avoid duplicative ordering and waste. Ensure exceptional product quality with optimized processes to prevent returns and discounting, which hurt margins.

Use remote monitoring and predictive maintenance of connected equipment to prevent costly downtime, reduce the need for staff troubleshooting, and protect costly assets. Jabil has used Microsoft predictive analytics solutions to predict machine processes that will slow down or fail at an 80 percent accuracy rate. Those insights have contributed a scrap and rework savings of 17 percent and an energy savings of 10 percent.



### **Rockwell Automation**

Rockwell Automation is the world's largest industrial automation and information firm with 22,500 employees and customers in more than 80 countries. Rockwell Automation wanted to strengthen its competitive advantage and open new business opportunities in the oil and gas industry by automating the collection and analysis of data from remote installations—often in rugged conditions. Rockwell Automation created a solution to monitor expensive capital assets and use that data to improve efficiency, drive better performance, and enable innovation. Based on Microsoft Azure IoT, the solution collects, integrates, and organizes sensor data from remote equipment across global supply chains to support real-time insight, predictive analytics, and preventive maintenance. The IoT-driven system has improved access to production and supply chain data worldwide, reducing costly downtime and maintenance. It also accelerates and supports business growth and innovation with a highly scalable cloud platform that enables easier development and faster time-to-market.

*"What we're talking about is delivering a degree of collaboration and visibility unheard of in the oil and gas industry. With sensors, software, and the cloud, these disparate elements can become part of a connected enterprise, powered at its core by a rich flow of data."*

– **Doug Weber**, Business Manager, Remote Application Monitoring, Rockwell Automation



## How IoT is transforming the manufacturing industry

IoT can help manufacturers bring greater precision to decision making and production.

### **Monitoring**

Sensors embedded into assets such as shop floor equipment can be used to monitor the condition of the equipment, detecting minute changes in performance or usage-level thresholds. Since a single piece of manufacturing equipment can cost millions of dollars, performing preventive maintenance can maximize investments by extending their life cycles and optimizing throughput.

### **Control**

Two-way communications also allow the user to control the equipment remotely, such as powering down the asset or adjusting settings. Planned downtime is almost always shorter and far less disruptive than unplanned downtime.

### **Automate**

Smart, connected devices can be used to automate processes that previously required hands-on attention. Factory workers can use interactive kiosks and tablets to review production progress and change settings as needed.

### **Optimize**

Data can also be used to automatically or manually optimize processes for improved performance or quality. In industries such as foods and pharmaceuticals, tight calibration of equipment and formulas can mean the difference between a quality product and a scrapped production run. Real-time monitoring of equipment calibration and product attributes can improve overall product quality and reduce waste.



**Transform products:** Manufacturers have moved product innovation into real time. Gone are the days of waterfall IT development and multimillion-dollar product launches based on strategic hunches. Companies can use a wealth of data, including IoT-driven insights, to conceive new products, rapidly prototype them with 3D modeling tools and 3D printing, and scale their distribution with cloud platforms. Analytics, Agile processes, and automation have also made it possible and profitable to serve micromarkets.

Manage a pipeline of new ideas, prioritize investments, and take products to market swiftly. With digital technologies, everyone competes on the same playing field: startups, small businesses, and global enterprises. Those that can identify and scale new solutions can rapidly capture share from competitors. Liebherr teamed up with Microsoft to create a smart refrigerator, using a dashboard that analyzed data from many sources to inform design choices. Use tools such as Cortana Intelligence Suite and Azure Machine Learning to convert data from product performance and customer usage and make better product roadmap decisions and improve product design and usability. Protect products and equipment with embedded sensors to prevent diversion and theft. Use RFID tags and readers to acquire updates on product condition as they travel from the factory floor to distribution hubs and customer retail stores.

Use virtual reality (VR) to help developers, sales teams, and customers simulate product usage in context. With Microsoft HoloLens, Volvo sales associates can give customers a detailed, immersive view of the cars they're interested in—from simply viewing and choosing features, colors, and options, to stripping away the outer layers of the vehicle to learn more about the engine, transmission, or other technical details. They can also demonstrate the safety features of Volvo cars in action, building trust in its system.

**Globalization and emerging economies:** Globalization has changed the innovation process, the supply chain, the distribution model, and the ways that manufacturing organizations sell and service customers. Today, global leaders compete head-to-head against regional powerhouses and startups and may not always win, especially in emerging markets.

**Business insights:** Sensor-tagged items, from raw materials and product components to finished goods, equipment, and connected devices, are creating a massive amount of IoT data. Manufacturers must make sense of it all with analytics and use machine learning to get smarter and faster.

**Pricing volatility and competitive pressure:** Manufacturers operate in a complex industry, where volatile raw material supply, high energy and labor costs, and increased competition can harm their profitability.

**Changing demographics:** An aging workforce and new modes of work are changing the manufacturing industry, and many organizations are investing in technology to attract, motivate, and empower the leaders of today and tomorrow—and empower mobile workers, who will reach 1.75 billion in 2020, or 42 percent of the world's workforce.

**Complex regulations:** Overlapping global requirements and a lack of standardization have added cost and challenges to competing in the marketplace. Anticipating and reacting to challenges in the regulatory climate in real time is becoming the new norm.

**Sustainability:** Sustainability is becoming more important than ever due to dwindling natural resources. Creating sustainable processes, using the three R's—to reduce, reuse, and recycle—enables companies to be good stewards of the earth, manage constrained budgets, and build brand with conscious consumers. For example, IoT-enabled tools can help manage energy usage of the key inputs into manufacturing processes.

**Outsourced R&D:** Research and development teams are increasingly focused on outsourced science. While manufacturers benefit by using new talent pools, this type of collaboration may exacerbate data silos. Developing a single view of data and projects is key to driving innovation.

## Why Microsoft

Microsoft has a strong track record of helping manufacturing organizations realize the business value of digital transformation. That's because our holistic platform and advanced technologies, open and flexible approach, enterprise-grade solutions, and partner ecosystem build on companies' existing technology investments and deliver results quickly and cost-effectively. Working with Microsoft brings a distinct set of business advantages that no other provider offers. Across the different manufacturing sectors, Microsoft solutions help companies achieve the insight, innovation, and efficiencies that promote competitive advantage and keep the world powered.

### A trusted, flexible, and open-cloud platform

Today, the Microsoft cloud infrastructure supports more than 1 billion customers in more than 140 countries. With this unique experience and scale, Microsoft cloud services can achieve higher levels of security, privacy, and compliance than most customers can on their own. Azure has received more compliance certifications than any other cloud provider, including major global, national, regional, and industry standards and regulations.

### Windows 10 accelerates time to value

Windows 10 provides one universal app platform, one security model, one management approach, one unified experience that scales across all devices—from the smallest sensor, to the largest, most powerful devices. This one core operating system provides a common developer platform, enhanced security, management, store, and more, across the broadest range of devices. Windows 10 devices offer advanced integration with your customers' current infrastructure. Use Azure IoT Suite to connect your devices and things, get started quickly with preconfigured solutions, and use untapped data to transform your business.

## Global

The extensive, global Microsoft datacenter footprint covers more regions than any other provider, to better meet data sovereignty requirements. We're investing in one of the world's largest technology partner ecosystems with 640,000+ partners in 170 countries.

## Edge-to-edge security

Whether you are a device manufacturer building smart devices, a retailer selling devices, or an enterprise using Azure, you must protect each and every endpoint, from the smallest sensor to the cloud. Device manufacturers are using Windows 10 IoT, the most trusted Windows ever, to build smart devices. Windows 10 IoT takes intelligence to the edge, with Secure Boot and Trusted Boot, to help ensure device integrity; integrated Windows Defender, to help keep devices safe from malware and other threats; BitLocker and TPM support, to help keep user and device data safe; Credential Guard and Windows Hello, to ensure user authentication across all devices using the latest technology; and Device Lockdown, to enhance device security in event of theft or diversion.

Enterprises benefit by deploying Windows devices that are secure by design, provisioned to connect to the trusted cloud, and that provide automatic updates. Azure Active Directory (Azure AD), a world-class identity management solution, provides enterprises with self-service tools that empower employees to access cloud services, but maintain robust controls and provide ongoing security monitoring and alerts. More information about the Microsoft commitment to transparency, privacy, compliance, and security can be obtained at the [Microsoft Trust Center](#).

## On customer terms

Azure is the only platform that supports a fully hybrid architecture, giving you complete flexibility and control of data and applications delivered between public and private clouds. The Microsoft cloud works with any operating system, database, middleware, and application framework, enabling you to build on your current technology. Windows 10 empowers the digital transformation of IoT devices and smart things, enabling edge intelligence for a multitude of ever-evolving needs, whether gathering data, monitoring security, or enabling productivity on-the-go.

## Comprehensive, enterprise-ready solutions

Microsoft solutions span the full spectrum of business needs—data access, high-performance computing, advanced analytics, visualization, and business process automation. Windows 10 offers unprecedented universal application capability across devices, including innovative devices like Surface, Surface Hub, and HoloLens. Individual and enterprise productivity is increased by ensuring that the right information is provided to the right people at the right time for actionable insights and decisions. This is accomplished through a holistic suite of collaboration, knowledge management, work process, mobility, business insights, and advanced analytics capabilities.

## Advanced technologies designed for ease of use

By offering technologies such as Power BI, Cortana Analytics, and Azure IoT Suite, Microsoft helps enterprises apply advanced technologies to business challenges once deemed too costly or complex to solve. For example, Microsoft industrial IoT capabilities enable organizations to ingest data from any source or format, apply machine learning models and data visualization, and integrate those results into collaboration and work-process solutions. This drives informed actions, as individuals take advantage of tailored, actionable insights to make better business decisions and deliver better business outcomes.

## Largest ecosystem of industry-leading partners

Microsoft has a broad ecosystem of prominent systems integrators and independent software vendors. This ecosystem uses existing technology investments and offers the flexibility to select the best solutions for each business. Our partners design and deploy innovative, industry-focused solutions built on a Microsoft foundation, coupling best-in-class technology with deep industry expertise. No other technology provider offers a comparable end-to-end portfolio as well as an open and flexible approach. Together, it's this unique perspective that helps Microsoft drive digital transformation across all aspects of an organization and change the way a company optimizes operations, empowers employees, transforms products and services, and engages with customers.





Windows 10 IoT provides customers with a flexible platform of integrated products and services, while our comprehensive partner ecosystem helps lead companies through a journey of digital transformation to create innovative products and services, improve customer engagement, and execute with excellence.

#### Why Windows 10?

**One Windows**—offering a universal Windows platform for developing, deploying, and managing all company devices and apps.

**Security-enhanced**—providing enterprise-grade security with granular UX control and advanced lockdown to secure identities, data, and devices.

**Connected**—ensuring interoperability across devices, easy incorporation of sensors and peripherals, and seamless connectivity to Microsoft Azure.

As one of only a handful of firms with hyper-scale cloud infrastructure, Microsoft is in a unique position to help customers tap into digital transformation and invest in technologies that will create more operational efficiencies and better engagements with customers, suppliers, and partners.

For more information on how Microsoft is empowering businesses to harness IoT across their enterprise, visit:

[www.InnovateOnWindows10IoT.com](http://www.InnovateOnWindows10IoT.com)

## Get ready to transform your business with Microsoft technology

Get started today. Work with Microsoft or one of our global partners to see how you can transform your business by harnessing IoT, big data, collaboration, and mobile solutions.

- Learn more about how Microsoft is enabling digital transformation on a global stage:  
[www.innovateonwindows10IoT.com](http://www.innovateonwindows10IoT.com)
- Get more information on Microsoft and the manufacturing sector:  
<https://www.microsoft.com/en-us/microsoftservices/industry/manufacturing.aspx>
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Discrete manufacturing—[https://enterprise.microsoft.com/en-us/industries/discrete-manufacturing/?post\\_type=customer-stories](https://enterprise.microsoft.com/en-us/industries/discrete-manufacturing/?post_type=customer-stories)  
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<sup>1</sup>Jorge Lopez, Gartner, "Digital Business is Everyone's Business," *Forbes*, May 7, 2014, <http://www.forbes.com/sites/gartnergroup/2014/05/07/digital-business-is-everyones-business/#5feb030e2d66>.

<sup>2</sup>What is the Industrial Internet of Things? GE webpage, undated, <https://www.ge.com/digital/blog/everything-you-need-know-about-industrial-internet-things>.

<sup>3</sup>Keystone Strategy interviews, October 2015 – March 2016. Based on interviews with 340+ leading enterprises comparing data platform maturity with business performance, controlling for company size and industry. Incremental operating income of \$100 million is based on median company revenue of \$3.4 billion.

<sup>4</sup>IW Staff, "Higher Revenue from Better Customer Experience Rather than New Products," *IndustryWeek*, December 2, 2016, <http://www.industryweek.com/innovation/higher-revenue-better-customer-experience-rather-new-products>.

<sup>5</sup>IDC Manufacturing Insights Provides Framework for Service Innovation in the Move Toward Profitable Customer Centricity," IDC Press Release, October 5, 2016, <https://www.idc.com/getdoc.jsp?containerId=prUS41831816>.

<sup>6</sup>Gina Luk, Global Mobile Workforce Forecast, 2015-2020, Research Report, Strategy Analytics, November 3, 2015, <https://www.strategyanalytics.com/access-services/enterprise/mobile-workforce/market-data/report-detail/global-mobile-workforce-forecast-2015-2020>.