Manufacturing, Reimagined
How the Internet of Things is Transforming the Business of Manufacturing
Introduction

In the past, manufacturing and operations were linear processes. The focus was on the customer at the end of the sales cycle. Lacking was the ability to center the entire manufacturing process around the customer and support an ongoing relationship.

Today, for the first time in many decades, technology has outpaced the evolution of business processes. Though smart products have existed for some time, it was difficult to realize their business potential. Now, due to the proliferation of the cloud and big data, continually connected smart products can deliver real value.

Digital technologies facilitate opportunities for improved customer connections and business differentiation. With smart products, you can listen to social sentiment, analyze customer product usage, determine long-term quality improvements, and deliver innovative services to your customers.
Transformation requires a new mindset

The Internet of Things (IoT) is a quantum technology leap for the manufacturing industry, enabling business opportunities and competitive inroads that were not possible before.

The market opportunity for manufacturing is predicted to be $913 billion by 2018 with 14 billion connected devices by 2022. If this estimate is realized, the impact of IoT on the gross domestic product could reach $10.6 trillion by 2030.

Already, IoT technologies track customers, products, and supply chains in 79% of companies, improving operations and increasing efficiency and customer responsiveness. Companies have increased revenue by over 16% in areas of their businesses that implement Industrial IoT (IIoT) technologies.

Eighty-nine percent of leaders recognize that taking care of customers and transforming the quality of their experiences gives their companies a competitive edge.

Merely selling a product limits your interaction with customers and generates revenue at the point of sale only. As a digital business, you can offer your product as a service and expand your value proposition to include the maintenance value chain. Helping you better engage your customers, empower your employees, optimize your operations and transform your products.

This is what digital transformation of business is all about--using technology to fundamentally shift the way you do business.

Manufacturers who choose to be at the forefront of this movement can expand their business models and drive new revenue streams.

Historically, manufacturing companies have typically focused primarily on products. Whether within a business to business or business to consumer scenario, the manufacturer and the customer had minimal interaction to engage and develop the relationship and experience across the value chain.

Manufacturers were left asking:
How can we make a better product to meet customer needs?
How can we streamline manufacturing processes for the product?
How should we position this product in the market?

Customers wondered:
Will the product meet my needs long term?
What kind of support do I have if I need it?
Will I use this enough to warrant my initial investment?

Designing a better product is certainly worthwhile, but the real value of transformation is an expanded business model. Focusing on the product alone limits meaningful dialogue with your customers and reduces your potential revenue to only the initial purchase.

By transforming to a digital business, you can better “servitize” your products by converting them into services that can disrupt the market with innovative products and services. Rather than receiving a one-off payment for a manufactured product, many manufacturers are evolving to pay as you go service-oriented business models, whereby they create an ongoing stream of revenue. Rolls-Royce’s power by the hour service package for aircraft engines, where they sell maintenance, repair and overhaul services per hour of flight. Michelin’s fleet management solution where they sell truck tires per kilometer driven, and also Atlas Copco’s contract air service, where they sell air compressors per m³ of compressed air delivered.

Technology can unlock the value that has been trapped within your organization. Now, you can realize higher margins while differentiating yourself in the marketplace. You can establish long-lasting relationships with your customers by offering continued support options and higher quality products. With a variety of pricing options such as pay-as-you-go models, you can increase your value proposition to your customers.
Microsoft provides tools, experience, and solutions for IIoT so you can seize the business value of an IIoT-based connected operations vision. Our solution-delivery experience has shown that manufacturers value the core tenets of Microsoft’s Connected Operations and Industrial Services solutions:

1. Realize greater value faster with the open IoT ecosystem.
2. Transform with low business risk by delivering change quickly and inexpensively.
3. Innovate faster by leveraging modular IIoT capabilities.
4. Deliver new services confidently within a holistic platform.

With a solution from Microsoft, you can connect decision makers with the information they need so they can manage assets and processes in real time. Enhance the traditional systems of record with a people-centric system of engagement that offers greater visibility and collaboration to transform businesses faster, more frequently, and more dramatically than ever before. Additionally, you can develop new business models by adding complementary services and offering a product as a service.
Apply a simple strategy and a practical approach to help accelerate your transformation. By using an holistic, modular approach to help you arrive at the next generation of business value-driven ideas quickly and with minimal risk. Start by applying advanced analytics or linking your existing devices to cloud-based engines for data aggregation and analytics. Then, upload existing data from your line-of-business applications so you receive an all-inclusive dataset of devices and applications.

The machine learning capabilities and business intelligence engines help you analyze data, visualize patterns, and generate personalized insights. In this way, our customers have gained unique insights, helping them create business value and make faster decisions.
Bring your digital experiences to life

The key to delivering the best experience and service regardless of where you are on your digital journey is to unlock new opportunities that influence business performance, differentiated experiences, and technology integration.

When you can break down decaying organizational siloes, turning rigid functional and operational structures into highly skilled, focused, and nimble transdisciplinary venture-like teams, your business gravitates towards a common purpose and shared culture.

Learn about your customers with a curious child-like wonder. Be insatiable in your desire to learn from the outside in and draw those learnings into your organization. Think creatively and critically to deeply understand industry-specific business strategies and needs that differentiate, bringing insights that help you do things you didn’t think possible previously.

**IMAGINE:** Challenge the convention and imagine the art of the possible by addressing the: “Imagine...? What if...?” scenarios. Research, visualize your solution, and get your prototypes quickly.

**REALIZE:** Champion technology adoption to accelerate the realization of value by improving business performance, speeding time to market, and delivering on your customer needs.

**EXPERIENCE:** Support the end-to-end lifecycle to build for the needs of your customers, employees, and organization by providing value-added services and digital experiences that differentiate.

**CONTINUOUS CYCLE OF VALUE CREATION**

- **ENVISION**
  - Generate ideas and visualize potential

- **DESIGN**
  - Build prototype and determine feasibility

- **PLAN**
  - Architect scenarios and business case

- **PRIORITIZE**
  - Impact vs. ability to execute

- **PRODUCTIVE USE**
  - Get feedback and remove adoption blockers

- **ADOPT**
  - Accelerate adoption and usage

- **MEASURE**
  - Monitor and track key performance measures

- **IMPACT**
  - Business value realized.
Manufacturers who have challenged convention, using technology creatively to imagine and realize the human and business value of digital experiences.
Qoros wanted to gain competitive advantage, attract and retain the younger generation of car buyer, accelerate time to market, and reduce the cost of commodities.

Qoros implemented a public cloud platform for clients to gain a connected car experience. They designed and deployed a telematics service to gain real-time customer insights.

- Built Technology Leadership to sell more cars.
- Accelerated time to market from 2 years to approximately 14 months.
- Reduced overall design and development costs by 30%.
EMPOWER YOUR EMPLOYEES

CHALLENGE

Toyota reimagined the workplace of the future by streamlining productivity and empowered employees to build better cars around the globe. Needed to integrate across sales, finance and manufacturing to come together as seamless “One Toyota” experience.

SOLUTION

Used technology to solve complex problems and unleash innovation to gain a competitive advantage, and made their world smaller by connecting people and information, improving collaboration and innovation by Integrated email, social networking, instant messaging and cloud storage, and faster technology adoption in the future with the new cloud-enabled digital platform.

OUTCOMES

- Built the workplace of the future and came together as “One Toyota” across sales, finance and manufacturing using modern devices and productivity services to build better and safer cars around the globe.
- $10k/minute of downtime avoidance.
- Reduced migration error rate from 10-20% to near-zero.
Leading global manufacturer ThyssenKrupp Elevator maintains more than 1.1 million elevators worldwide. They wanted to be more competitive by offering increased uptime and enhancing preventive maintenance to include predictive and preemptive service.

The solution connects thousands of elevator sensors and systems to the cloud and draws this data into a dashboard available on PCs and mobile devices for a real-time view of key performance indicators.

- Promoted reliability through predictive and preemptive maintenance.
- Rapid, remote diagnostics.
- Reduced costs.
- Rich, real-time data visualization.
| CHALLENGE | KUKA Systems Group, the designer of the first industrial robot, sought to design an automated manufacturing process capable of producing eight different Jeep Wrangler bodies on the same production line without interrupting production flow. |
| SOLUTION  | KUKA implemented a solution anchored by Windows Embedded and Microsoft SQL Server that connects 259 assembly-line robots with a controller, over 60,000 devices points, line-of-business applications, and back end systems to deliver continuous uptime and produce over 830 car bodies each day. |
| OUTCOMES  | • Rapid adaptation supports multiple models and helps produce a car body every 77 seconds.  
• Continuous uptime enables 24 hours of production per day for over 8 years. |
The edges are no longer the boundaries

Manufacturers that rise above the noise and look left when others are looking right build better brands. They have the foresight and empathy to see through the eyes of their customers to innovate and bring to market differentiated products, services, solutions, and experiences. Those manufacturers who create unique value, reinvent themselves, and move quickly to embrace change will cultivate long-lived relationships with their customers.

Microsoft Services empowers manufacturers to accelerate the business value imagined and realized from their digital experiences.