

# Industry X changes everything for manufacturing

End-to-end. Connected. Intelligent.



# A revolution only gets you so far

Manufacturers that adopted the principles of Industry 4.0 – or the fourth industrial revolution – over the last decade have accelerated their digital transformations, resulting in businesses and processes that are now more efficient, accurate and reliable. The companies that embraced this transformation achieved more flexibility and drove down costs while increasing quality.

If only that were enough.

The vertical top-floor to shop-floor integration and closed-loop manufacturing of Industry 4.0 isn't enough. As the global supply chain crisis demonstrates, manufacturers and those in related industries, are still evolving their resilience, before they can proactively address major industrial disruption. The legacy systems that many still run simply weren't built to deliver the quality and speed that's needed in a world of continual change.

And talk about those demands: Customer demands for the fast manufacture and delivery of fully customized products – “lot size: 1” – require more than digital manufacturing. They require smart manufacturing and delivery that seamlessly span the digital and physical worlds.

Even if you're insightful and driven enough to meet current needs, there's always tomorrow. No single transformation or revolution will suffice; better to think of your digital maturity as an ongoing process, one that's always evolving, so you can embrace continual change rather than fear it. To achieve that evolving digital maturity, you'll need a greater infusion of AI technologies, as well as a greater emphasis on resilience, agility and people-first practices.

The need for market leadership and sustainable competitive advantage requires a new approach and new way of thinking.



## Industry X

blends digital, AI  
and people to  
enhance what you  
make and transform  
how you make  
it, for a world of  
continual change.



# Introducing Industry X

That's Industry X. It combines emerging, connected and smart technologies to digitally transform what and how products and services are manufactured. An Industry X approach, embeds digital and intelligence into how manufacturers and those in related industries, run factories and plants, as well as design and engineer connected products and services.

Industry X builds on the premise that we'll continue to transform our industries. Industry 1.0 was centered around the steam engine and Industry 2.0 led us to mass production lines. Industry 3.0 introduced automation and computer systems to the production environment, and Industry 4.0 was and is all about integration of all processes and systems from product development to production, logistics and aftersales service and support.

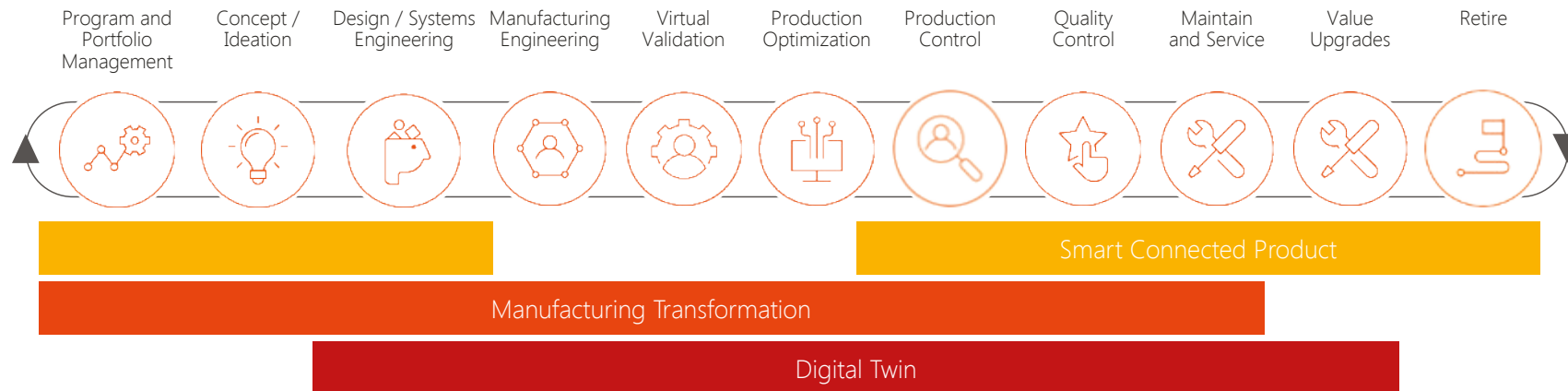
The now-emerging Industry 5.0 – which some call digital or next-generation manufacturing – is the first phase of the ongoing evolution we call Industry X. One key way it looks different from what came before is in its tighter integration among humans, bots, robots and AI.

Industry X doesn't require a rip-and-replace response from manufacturers. It builds on your past digitization work to not only reimagine manufacturing processes, but also to digitally reinvent your business' core operations, products, worker and customer experiences and even your business models. Industry X is your source for sustainable competitive advantage in the entire value chain around products, new revenue streams and market growth.

It's an approach conceived by [Accenture](#) and adopted and implemented by Avanade. With unique access to Microsoft innovation, and our own Accenture-backed industry expertise, we use the power of data and digital to help our clients redefine the products they make and how they make them.

We see [Industry X](#) arising from the confluence of three interconnected trends: manufacturing transformation, smart connected products and, critical to both, digital twins.

## Industry X aligns to the Manufacturing Product Lifecycle



# Manufacturing transformation to improve **agility and resiliency**

To embrace continual change, manufacturers need to make the core of their operations digital. They know it: [90% of executives agree](#) that to be agile and resilient, their organizations need to fast-forward their digital transformation with cloud at its core.

This isn't just an ERP issue, but an end-to-end sweep that includes design and engineering, shop floor and aftersales maintenance and service. And it's not just the targets of manufacturing transformation that need to be broad; so do the goals. Those include driving efficiency, but also driving higher automation, flexibility, safety and quality.

You should also focus on integrations, not only within your enterprise, but throughout

your broader ecosystem. Your legacy shop-floor equipment and your manufacturing execution system need to be integrated with your ERP, supply chain and remote service platforms, and surrounded with smart IoT devices, including cameras, sensors, microphones and smart gloves, as appropriate. This integration of systems, platforms and devices is strengthened by edge solutions that combine local independence for operations with the power of cloud-based solutions.

Achieving a manufacturing transformation isn't necessarily about replacing shopfloor and other current investments; it's about enhancing and evolving those investments.

## Client Story

KION's managers use intelligent factory to extend their vision

[KION Group](#) — the world's leading supplier of industrial vehicles and supply chain solutions — engaged Avanade to support its manufacturing transformation. Avanade delivered an intelligent factory for production management, which enables factory leaders to see all capacity and output information and follow up on efficiency and operations, even when away from the shop floor.

KION Group updates metrics in near real-time and engages service engineers through mixed-reality technology from Microsoft Dynamics 365, remote support and step-by-step holographic technical training. When engineers face problems at a client site, they can seek offsite experts through Microsoft HoloLens – which experts also use to provide high-quality training.

As a result, new engineers make repairs more efficiently, improve client satisfaction and reduce travel costs, helping KION Group to achieve sustainable growth.

# Smart connected products unlock better **customer experiences**

Making your products smart and connected gives your customers more of what they want: more convenience, functionality and quality. It also enables you to reduce the complexity of your product portfolio with configurable products. Smart connected products are crucial to unlocking better Customer Experience (CX) for more customers, improved service options, and greater post-purchase revenues and availability for clients through proactive failure detection and maintenance.

The design and architecture of an IT services landscape for smart products

call for a range of technologies and components, including embedded software, UI redesign, edge technology and cloud connection, remote service, predictive maintenance, and apps for the entire product lifecycle.

Manufacturers that plan to go big with smart connected products may also have to overcome disconnected systems and complex processes that restrict functionality and product quality. They should also prepare to address inflexible cultures, mismatched skills and a lack of insights that inhibit product differentiation and growth.

## Client Story

ABB Turbocharging's engineers use mixed reality to solve problems in the field

Avanade is helping [ABB Turbocharging](#) to adopt new, game-changing technologies to deliver specialized field-service support. The company uses Microsoft HoloLens 2 – an immersive mixed reality device that combines cloud and AI services – to ensure that the right skills are with the right people, at the right time, in the right place.

It delivers step-by-step instructions so field engineers can solve more issues on their own. If they need more support, they can connect to an expert and collaborate using Microsoft Dynamics 365 Remote Assist, accessible on the same HoloLens headset.

By making real-time intelligence and accelerated decision-making a part of employees' daily operations, this technology has enabled ABB Turbocharging to reduce downtime, speed time to repair, improve service-level agreement compliance rates and increase productivity.

# Digital twin: Speed time to market and **reduce costs**

Continual advances in cloud platforms, big data and predictive analytics have made digital twins a part of Industry X. Building and testing products and production systems in the digital world before you ever build a physical prototype can greatly speed time to market and reduce design and development costs. It's also a great way to reduce energy consumption — a growing factor in the context of costs and sustainability.

And it can help you outperform the competition to lead in the market, and not just in product design and development. Automated, remote telemetry processes enable digital twins of products and systems already in service to help you provide timely and proactive maintenance to existing customers, as well as new services with new revenue streams.

One of the key features of digital twins is their ability to answer “what if” questions in simulations. Many traditional approaches can provide great insights into what is actually

happening right now and what has happened in the past. In addition, digital twins provide usage information in the field and can answer questions of what would happen if changes were made in the product, in the manufacturing system or in the supply chain. All of these are key factors in managing risk and enabling flexibility and service.

Perhaps this is why most (55%) software technology decision-makers at manufacturing companies have adopted some form of digital twin, with another 18% planning to do so, according to [Forrester](#).

## Client Story

thyssenkrupp Materials Services moves to become more data driven

Global materials distributor [thyssenkrupp Materials Services](#) wanted to use AI in the cloud to optimize its delivery network while reducing costs. It wanted a cloud-based platform to analyze data and run simulations based on operational “what ifs.”

We helped thyssenkrupp identify the right concepts, technologies and how those technologies should be used. We built a POC on Azure using PaaS components and Power BI for visualization to see how simulations affected transportation costs and inventory levels. The solution saves the company money without sacrificing service. thyssenkrupp now sees the Avanade solution as the start of a fundamental shift in its culture toward a data-driven organization.

## The **Industry X** ecosystem spans the top floor to the shop floor

No single technology can provide all the functionality, and deliver all the benefits, of Industry X. From the top floor to the shop floor, across systems for engineering, manufacturing, ERP and more, Industry X depends on a complex ecosystem of applications, platforms, devices and more from a range of technology providers.

A cloud ERP system, such as Microsoft Dynamics 365 or SAP on Azure, is an essential component. The right ERP should feature broad interoperability with the various applications and platforms in the environment, so it can exchange data with those other systems and support business processes that span multiple solutions.

Engineering and shop-floor systems are also key components of the Industry X ecosystem. Existing offerings from a sweep of premier vendors should be configured and connected to become part of your Industry X implementation. Underpinning it all is a platform that supports the big-data needs of your analytics systems, and the IoT requirements of your environment's many devices.

Those connected IoT and edge devices provide more access points to your data and processes – data and processes that now are of greater strategic value to your organization. To protect them, your Industry X ecosystem should include end-to-end security solutions, as well.



# How to keep up with Industry X

Companies that want to achieve the broad benefits of Industry X – new revenue streams and business models, higher margins, keeping people safe and helping to ensure a sustainable future – have challenging journeys ahead of them.

Challenging, but not impossible. Avanade works with manufacturers and related industries today to integrate and orchestrate the elements of the Industry X ecosystem. We help these companies to do more with less and to achieve the broad benefits that Industry X promises.

And while your challenges are tremendous, your timelines and expenses don't have to be. Our Advisory Services can work with you to identify your distinctive needs and develop a roadmap to meet them. With our agile approach, we can help you to create a minimum viable product (MVP) within days. We can guide your development of plans and architectures to take advantage of what you have and identify opportunities for early gains in a few weeks.

# Why Avanade for your Industry X solution?

As a joint venture of Microsoft and Accenture, we have privileged access to Microsoft technology and Accenture expertise. We're Microsoft's leading partner. Our industry, strategic and technical expertise gives us a keen understanding of the complexities in manufacturing new products and services.

## Our credentials include:

- [IDC Marketscape](#) leader for Microsoft Implementation Services
- Leader for [Forrester Wave Dynamics 365](#)
- 2021 Microsoft Global Alliance SI Partner of the Year for the 16th time
- Microsoft Automotive Partner of the Year 2021
- Microsoft Finalist for Manufacturing Partner of the Year 2021
- Dynamics 365 Customer Insights & Customer Services Partner of the Year 2021
- Dynamics 365 Supply Chain Management & Finance Partner of the Year 2021
- Employee Experience Partner of the Year 2021

## We can help

Avanade provides the tools, technology and expertise to help businesses embed **Industry X** solutions and services for your industry.

Learn more at [www.avanade.com/industryx](http://www.avanade.com/industryx)

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### About Avanade

Avanade is the leading provider of innovative digital, cloud and advisory services, industry solutions and design-led experiences across the Microsoft ecosystem. Every day, our 56,000 professionals in 26 countries make a genuine human impact for our clients, their employees and their customers.

Avanade was founded in 2000 by Accenture LLP and Microsoft Corporation. Learn more at [www.avanade.com](http://www.avanade.com).

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