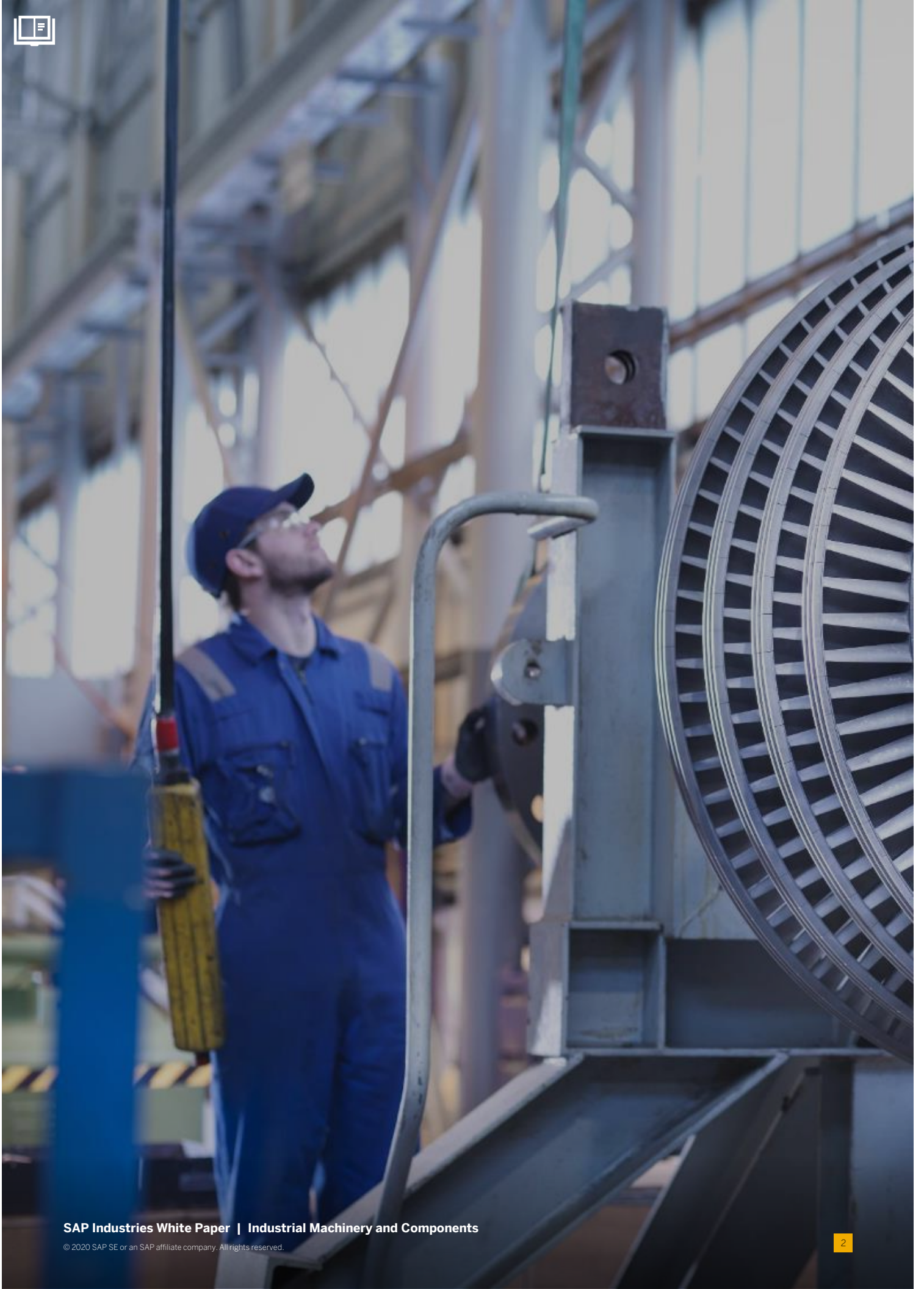


THE INTELLIGENT ENTERPRISE FOR THE INDUSTRIAL MANUFACTURERS

Helping create superior customer experiences through tailor-made solutions delivered at scale and as a service





“Industrial manufacturing companies that are intelligent enterprises consistently deliver on their promises and provide a delightful customer experience.”

Georg Kube

Global Vice President
Industrial Machinery
and Components
SAP SE



Watch the video about the Intelligent Enterprise for industrial manufacturers by Georg Kube.

Feedback or comments?
I would like to hear your perspective. Contact me at Georg.kube@sap.com

WELCOME

Dear Customers,

Gone are the days when the industrial manufacturing value proposition was relatively simple: industrial manufacturers made products and delivered them. Now, the industrial manufacturer’s job does not end with delivery. Driven by ever-more-demanding customers and supported by the widespread uptake of Industry 4.0 and the emerging power of machine learning and artificial intelligence, industrial manufacturers are developing new capabilities to track huge volumes of data generated by thousands of devices and are adjusting their manufacturing and service depending on the circumstances.

They must be responsive in real time, always on, and adaptable. **In short, just making an excellent product is no longer good enough.** Industrial manufacturers must be able to collaborate with their customers from discovery through design, service, and well beyond.

To take their place in today’s economy, industrial manufacturers must embrace dramatic business transformation driven by the adaptation of technical, cultural, and organizational change.

Why? Because customers demand service as they undergo their own transformation into fully digital service providers. Their customers are demanding the same of them. The result is a wholesale change in how industrial manufacturers should approach and interact with customers to ensure an optimal experience through every customer interaction point.

The path forward is clear – and complex. It requires a keen awareness of external forces as well as a sharp focus on internal strategic priorities. Innovations emerging from Industry 4.0 are examples of where new digital technologies can help make processes faster, more flexible, and more efficient.

Externally, the world is facing huge social, economic, and environmental challenges that promise to reshape the industrial landscape. Simultaneously, customer expectations are rising, digital transformation continues to present organizational challenges, competition is coming from unexpected quarters, and the globalization of markets and talent requires new levels of flexibility.

We see successful companies focusing on five strategic priorities:

- Be customer centric
- Serve the segment of one
- Embrace digital smart products and solutions
- Implement the digital supply chain and smart factory
- Develop service-based business models

By 2025, we expect that more than half of industrial manufacturers’ revenue will come from services. These services will be delivered anywhere in the world and will be based on highly customized, digitalized products. They will cover everything from simple break-fix services to the more complex outcome-as-a-service models and the monetization of data assets.

The companies that fully embrace the concept of the intelligent enterprise – meaning those that can weave together formerly siloed processes, intelligent technologies, and real-world data threads from customer and employee experiences – will lead the way.

These companies will run integrated, automated processes that are transparent and connected to the real world. They will talk to machines in the factory, chat with the products they make, interact with people, and be aware of traffic, weather, and customer opinions and feedback. This connection to the real world enables business processes to make smart decisions autonomously. They will anticipate and creatively solve problems – before anybody notices. Automation of these decisions will relieve people of repetitive work and enable them to focus on high-impact tasks.

In short, the winners will be the most customer-centric companies. They will be the companies that are committed to their own digital transformation to enable the transformation of their customers. These companies will champion a radical change in the business model by thinking about lifespan, performance, and use – just like their customers.

This paper takes a deep dive into the trends shaping our industry over the next five years and the path to innovation. In it we propose a set of priorities that will drive transformation and the tools that will make it possible.

The world is changing at an unprecedented speed, and our industry is positioned to be a driver of progress. Together, we can lead the way.

Sincerely yours,

Georg Kube
Global Vice President
Industrial Machinery and Components
SAP SE

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OUR PLACE IN THE NEW WORLD

The business environment and, in fact, the world at large are undergoing a significant shift – one that is creating both upheaval and opportunity. The transformation from a linear economy to a **circular economy** and the move toward **sustainable energy**, **integrated mobility**, and **livable cities** underscores the need for **trusted products**.

The industry itself is being reshaped by rising **customer expectations**, the need to develop new **digital skills and processes**, **competition** from

unexpected challengers, and the need for the **flexibility** to shift resources, production, and capital around the world.

Forward-looking industrial manufacturing companies recognize this as an opportunity to rethink the fundamentals of their business, invest in digitalization and Industry 4.0 principles, identify and address their own experience gaps, and build new capabilities rather than be left behind.

Mini Cases: Data in Action

[Grundfos](#), the world's largest pump manufacturer, is helping address today's global water and climate challenges. Experience management and always-on intelligence gathering let Grundfos listen to its customers at every digital touch point to improve brand loyalty and find new business opportunities.

How does taking steps to realize a smart factory vision keep more customers happy? See how [TECO](#), a Taiwanese manufacturer of motors and pumps, increased visibility into its production, digitalized its manufacturing processes, and integrated its business systems.



PAVING THE WAY FOR BUSINESS MODEL INNOVATION

We believe industrial manufacturing companies that are relentlessly focused on their customers will innovate their business models to deliver personalized solutions at scale and as a service in 2025. More than half of the revenue of industrial manufacturing companies will come from services delivered around and based on highly customized, digitalized products.

These services will span from simple break-fix services and value-added services to complex outcome or equipment-as-a-service models. They will also include new business models based on the monetization of data assets. Increasingly, industrial manufacturing companies will be able to more effectively use the data assets that are already being generated based on the business they conduct, leveraging innovative technologies such as digital twins, artificial intelligence, and predictive analytics.

At this time, when opportunity is huge but new market entrants are threatening traditional industrial manufacturing companies, it is essential to focus on the changing – and growing – needs of the customer to inform strategic priorities and technologies to build competitive differentiation and deliver winning products and services. Industrial manufacturing companies will also need to demonstrate true customer empathy by integrating customer sentiments and feedback through the entire value cycle.

Successful business model innovation, process optimization, and workforce productivity are directly linked to deliver great customer and employee experiences. In fact, research indicates that the best-performing companies are pulling away from the rest, widening the performance gap. They are doing this by delivering great experiences. And they are the most profitable because they adopt new technologies and deliver winning products and services more efficiently.



2.7x

Higher operating margin for companies that have a more engaged workforce¹

70%

Of IoT deployment will include AI solutions for autonomous or edge decision-making by 2023, supporting organizations' operational and strategic agendas²

40%

Of manufacturers will use field-asset IoT data to intelligently diagnose issues and resolve autonomously by 2024, improving unplanned downtime by 25%³

60%

Of manufacturers will use IoT platforms with digital innovation platforms to operate networks of asset, product, and process digital twins for a 25% reduction in cost of quality by 2025⁴

US\$3.7 trillion

Value creation potential of manufacturers and suppliers implementing Industry 4.0 in 2025⁵

>50%

Of all IT spending will be directly for digital transformation and innovation by 2024 (up from 31% in 2018) – growing at a compound annual growth rate of 17%⁶



FIVE PRIORITIES FOR SUCCESS

We have identified five strategic priorities necessary for industrial manufacturing companies to transform their business.



BE CUSTOMER CENTRIC



SERVE THE SEGMENT OF ONE



EMBRACE DIGITAL SMART PRODUCTS AND SOLUTIONS



IMPLEMENT THE DIGITAL SUPPLY CHAIN AND SMART FACTORY



DEVELOP SERVICE-BASED BUSINESS MODELS

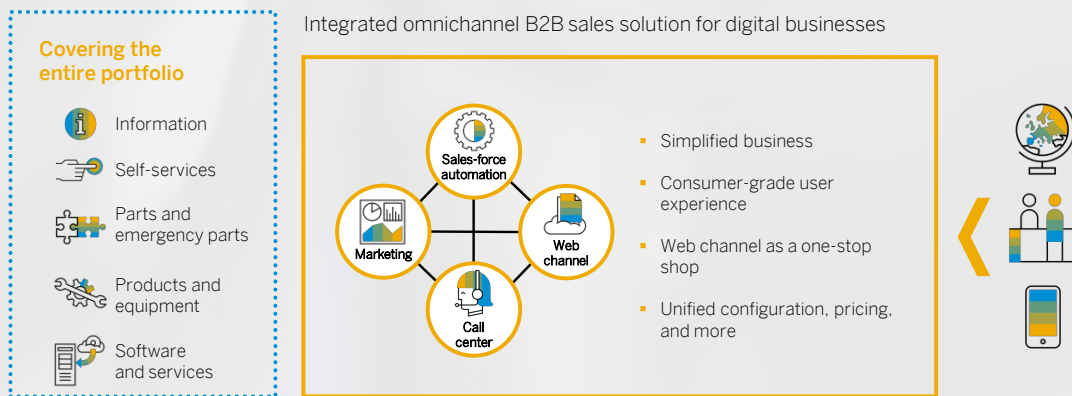


BE CUSTOMER CENTRIC

In 2025, industrial manufacturing companies will be able to maintain customer-for-life relationships with shared risk and a focus on long-term value based on a 360-degree understanding of their customers, starting with a holistic view of their customers' business processes and ending with the knowledge of how those customers use the products in their daily operations. Truly customer-centric companies will interact seamlessly with their customers on a constant basis through multiple channels, from Web to direct and including Internet of Things (IoT) connectivity (see Figure 1). They will position the customer point of view at the center of every decision to create great experiences by leveraging both operational and experiential feedback.

Industrial manufacturers will start toward this goal by evolving their current routes to customers into an omnichannel model. This means their customers can be served seamlessly, even with disruption to the ways they interact with manufacturers. This situation will then be extended to include a real-time view of the customer and their interactions, including customer feedback as well as a view of all products they bought, and real-time data to show how the products are performing and what condition they are in. These two perspectives will transform the collaboration, from sensing demand to delivering value through products and services.

Figure 1: The Vision of Customer Centricity



As customer and buying behaviors are changing on the consumer side, this will also have an impact on business-to-business (B2B) businesses.

30% of manufacturers, as a result of the demand for hypercustomized customer experiences, will provide personalized dashboards for customers to schedule service, learn about products, and collaborate by 2023.⁷

[Grundfos](#) needed to focus on addressing customer feedback – as customer touch points ballooned to 145,000 per day – to ensure it delivered a B2B customer experience that surpassed expectations. Abdul Dezkam, a lead insights specialist at Grundfos, remarked, “With our annual survey, we only find out about dissatisfied customers when it’s too late. This damages customer relationships, and, over time, we risk losing them.”



BE CUSTOMER CENTRIC FROM TRANSACTIONAL RELATIONSHIP TO ONGOING PARTNERSHIP

Since commoditization of offerings poses a big threat, industrial manufacturing companies should prioritize experience management as a differentiator.

TRADITIONAL SCENARIO



Customers interact with industrial manufacturers all year through many offline and online touch points, which can reach hundreds of thousands.

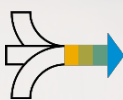
A customer satisfaction survey gets triggered **only once a year** to gauge customer pulse about the quality of interactions through the touch points.

Any negative experience is captured too late to make any reasonable intervention with the dissatisfied customers.

This damages customer relationships and, over time, runs a huge risk of losing valuable customers.

Revenue retention rates are negatively impacted. Competitors offering a better experience start gaining share of the market.

NEW-WORLD SCENARIO



Measure performance at every touch point – from sales visits to Web channel visits.

Go from standard, annual customer surveys to always-on intelligence.

Compare customer feedback from every touch point in the context of data in operational systems such as CRM to understand every customer's product needs and their buying history.

Close the loop with dissatisfied customers. For instance, a salesperson is alerted about every negative feedback, with recommendations for corrective actions.

Achieve simplified buying and service processes to create loyal customers and drive new opportunities.

POTENTIAL BENEFITS

+9

Increase in average rating across all touch points

Source: [Grundfos](#) customer story

3x

Increase in sales growth rate with happy customers versus unhappy ones



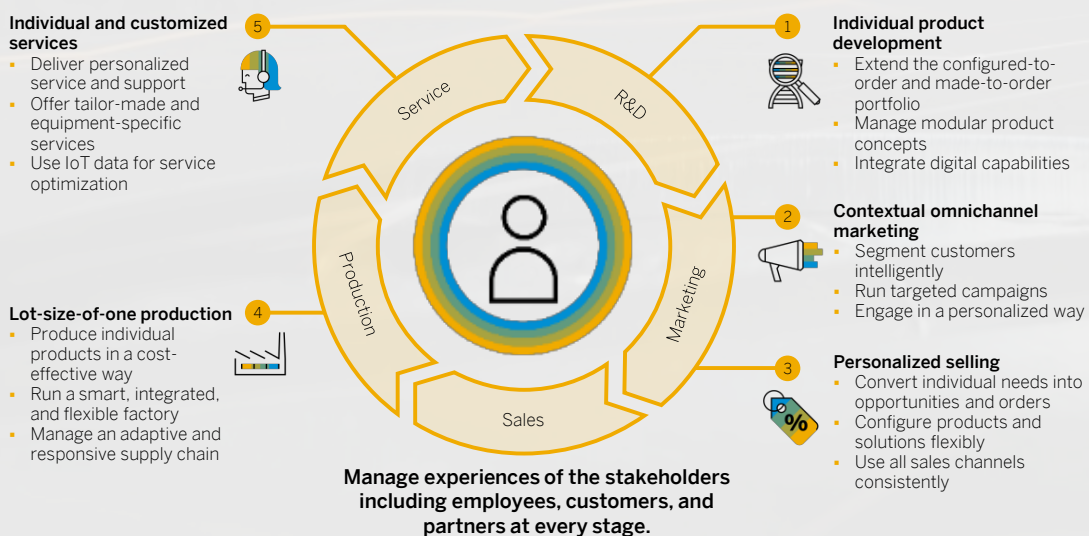
SERVE THE SEGMENT OF ONE

In 2025, industrial manufacturing companies will be able to deliver completely customized products, services, and solutions that precisely fit the needs of an individual customer based on sophisticated platform, configuration, and mass-customization strategies (see Figure 2). They will use Industry 4.0 principles and technology to drive automation, adaptability, and efficiency so they can deliver highly customized solutions at the price of standard products.

Industrial manufacturers will start toward this goal by rationalizing existing product options using machine learning to understand what really sells and what doesn't. Manufacturers will use

experience data to validate that their customers did in fact feel like a segment of one and perceive their products and services as individualized. They will use this understanding to evolve into platform and configuration models to cover the majority of customer requirements. They will then extend these models by adding requirements, engineering, and functional modeling to establish a more formal view of the links between customer needs and how they are implemented in the products. Once these relationships are clear, they will expose the functional models directly to end customers through configurators and, thereby, let customers define their own products on the fly.

Figure 2: The Vision of Serving a Segment of One



50% of manufacturers, driven by demand for product personalization, will have integrated simulation and configuration tools with customer profile data by 2024, thus achieving up to 2% gains in revenue.⁸

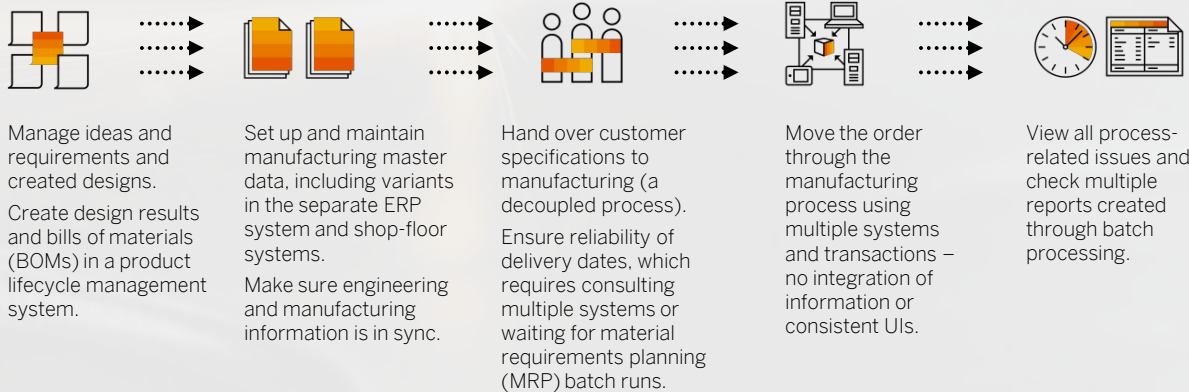
[GEA Group AG](#) has increased transparency into the available information on each of its customers, helping it respond promptly to customer requests. The company has harmonized sales, marketing, and service processes and has made all marketing and sales activities more customer oriented. This enables GEA to manage its business even as it becomes more complex and its customers grow more demanding. GEA is now able to adapt its processes to new requirements, making them suitable for the digital age.



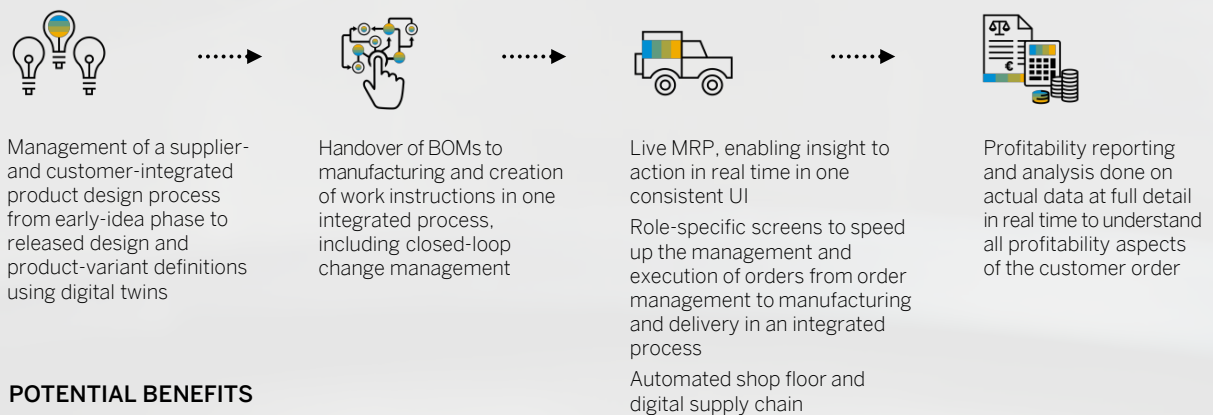
SERVE THE SEGMENT OF ONE FROM BULK MANUFACTURING TO MASS CUSTOMIZATION

Manufacturers must be able to capture all customer requirements effectively and drive mass customization to give every customer exactly what they want. The ability to manage the specifics of each order in every aspect of the industrial value chain in a consistent way – and similar to the cost of a standard order – is critical. To do this, all product and process information must be kept in a single place, and all business processes – from initial engineering through after-sales service – must be effectively executed and closely monitored. This requires connecting all sensors, devices, and machines on the shop floor – delivering granular data to optimize processes and to realize an Industry 4.0 strategy. Then the manufacturing processes can react faster to individual requirements economically, realizing the “segment of one” concept.

TRADITIONAL SCENARIO



NEW-WORLD SCENARIO



POTENTIAL BENEFITS

10%–12%

Reduction in total logistics costs

10%–20%

Increase in on-time deliveries

Up to 10%

Reduction in total manufacturing costs

Source: SAP Performance Benchmarking



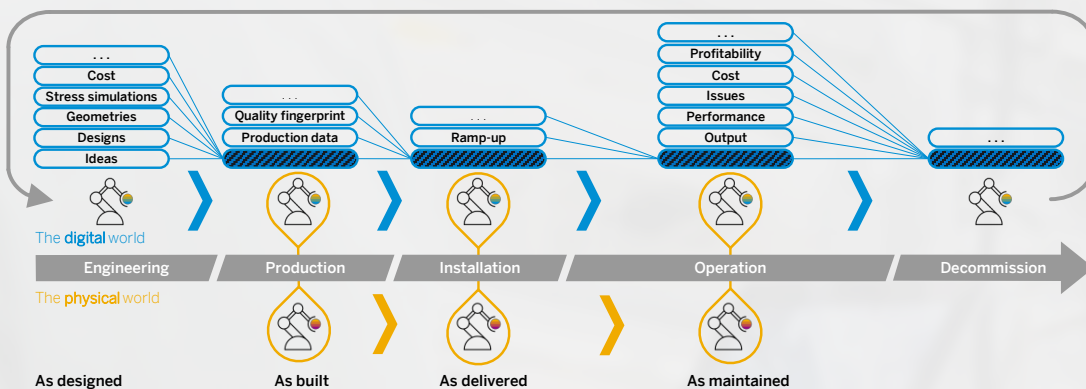
EMBRACE DIGITAL SMART PRODUCTS AND SOLUTIONS

In 2025, industrial manufacturing products will shift from being largely mechanical to having more and more digital functionality, allowing even more flexible configuration of products throughout a product's lifecycle. As a consequence, the value contribution of software will grow significantly.

Industrial manufacturers will start toward this goal by continuing to equip their products with software-based features for increased flexibility and with connectivity to enable remote access and monitoring. Manufacturers will be able to extend the original (physical) product with

completely digital services that will augment and extend product functionality. A digital twin will be at the heart of this digital experience. Combining insights into the end-users' experience and the relevance and value of digital capabilities, manufacturers will extend the lifecycle of the product and increasing lifetime revenue. As a direct feedback loop from the product back to the manufacturer is established and developed, product enhancements and future developments will be based on the actual usage and experience of the product, from first interaction to product retirement (see Figure 3).

Figure 3: A Digital Twin to Support the Entire Design-to-Operate Cycle



40% of manufacturers will have tied innovation and product lifecycle management to sales and operations planning systems to meet customer demand and needs more effectively by 2023, thus raising product success rates by 25%.⁹

Erich NETZSCH GmbH & Co. Holding KG (NETZSCH) deployed SAP® Asset Intelligence Network. By digitalizing physical assets and documentation, the pumps and systems unit is increasing visibility into asset and component details and improving collaboration between employees and with partners. The result is even better service and continued customer satisfaction, helping ensure that NETZSCH machinery and devices will be at the heart of innovation for a long time to come.



EMBRACE DIGITAL SMART PRODUCTS AND SOLUTIONS FROM SILOED PRODUCT LIFECYCLE TO EXPERIENCE- BASED PRODUCT LIFECYCLE

Unlike the past, when mechanical design was the main engineering step, today's products and solutions contain a vast array of electronics and many different pieces of software.

TRADITIONAL SCENARIO



Customer rents concrete breaker and has problems using equipment.



Fatigue, overheating, and high vibrations lead to low efficiency. Customer loses time and money because the equipment doesn't perform as advertised.



Customer complains to customer service department and, due to lack of insight and context, receives dissatisfactory service.



Customer returns equipment and rents from a competitor. Equipment company doesn't capture user feedback or reason for return.



Sales and market share of equipment company decline. Company has no idea why or how to fix the problem.

NEW-WORLD SCENARIO



IoT-enabled concrete breaker captures equipment and contextual information.



Equipment company monitors equipment in real time and sends customer survey immediately.



Operational data is merged with experience data and draws insights that are used to design even better equipment.



Churn scores and operational data are used in real time to make a retention offer to customer.



Data is used to design equipment that prevents overheating. Equipment company has satisfied customers, gets positive feedback, and increases sales and market share.

POTENTIAL BENEFITS

10%–20%

Increase in revenue from new products

10%–20%

Increase in customer satisfaction

Source: SAP Performance Benchmarking



IMPLEMENT THE DIGITAL SUPPLY CHAIN AND SMART FACTORY

In 2025, supply chains and manufacturing networks in industrial manufacturing companies will be fully integrated and automated, as well as completely modular and flexible to allow the seamless execution of different manufacturing strategies (see Figure 4).

Industrial manufacturers will start toward this goal by optimizing supply chain transparency across the enterprise as well as implementing “shop-floor-to-top-floor” connectivity for real-time visibility. Embracing Industry 4.0 technologies, subsequent steps will increase machine-to-machine

connectivity and collaboration, allowing autonomous decisions based on sensor data and machine learning algorithms. Manufacturers will combine feedback from connected stakeholders (customers, workers, suppliers) and associated processes to further improve overall manufacturing and supply chain performance. Intelligently connecting manufacturing, logistics, and supply chains enables companies to quickly address short-term demand impulses, supply fluctuations, and changes to customer orders, allowing a truly modular production process.

Figure 4: Five Levels of Connectedness for the Digital Supply Chain and Smart Factories

1. Shop floor to top floor
Intracompany vertical integration

2. Machine to machine
Autonomous machines

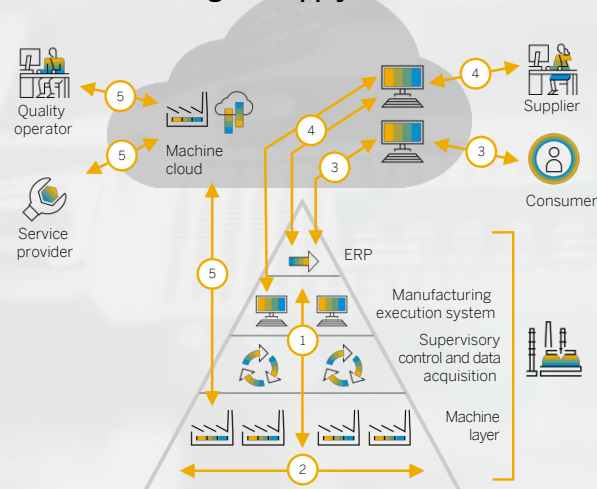
3. E-commerce integration
Direct integration of online configurators

4. Manufacturing collaboration

- Visibility
- Genealogy
- Quality
- Kanban or direct replenishment

5. Machine cloud

- Predictive maintenance
- Predictive quality



60% of manufacturers will shift their smart factory strategy focus from technology implementation to process change management by 2022, due to the need for operational resiliency with data-driven processes.¹⁰

[GEBHARDT Fördertechnik GmbH](#) wanted to go much further for its customers in the future – with smart manufacturing. It developed its own platform, Galileo IoT, which allows customers to evaluate data on all components in a facility. In this way, customers are able to avoid failures, plan maintenance better, and save costs. GEBHARDT can even use the platform to develop a new business model, moving away from being a simple supplier and toward being a comprehensive service provider for intralogistics.



IMPLEMENT THE DIGITAL SUPPLY CHAIN AND SMART FACTORY

FROM AN OPAQUE SUPPLY CHAIN TO THE CONNECTED SUPPLY CHAIN

Companies need a virtual, real-time representation of their assets – a digital twin. This allows all partners to collaborate in real time and provides remote monitoring and diagnostics using integrated IoT information and incorporating access to benchmarking behavior. Including predictive maintenance strategies, this Industry 4.0 approach will result in optimized production and reduced downtime.

TRADITIONAL SCENARIO



NEW-WORLD SCENARIO



POTENTIAL BENEFITS

Reduction in asset service and maintenance costs

Reduction in asset master-data creation and maintenance effort

Source: SAP Performance Benchmarking



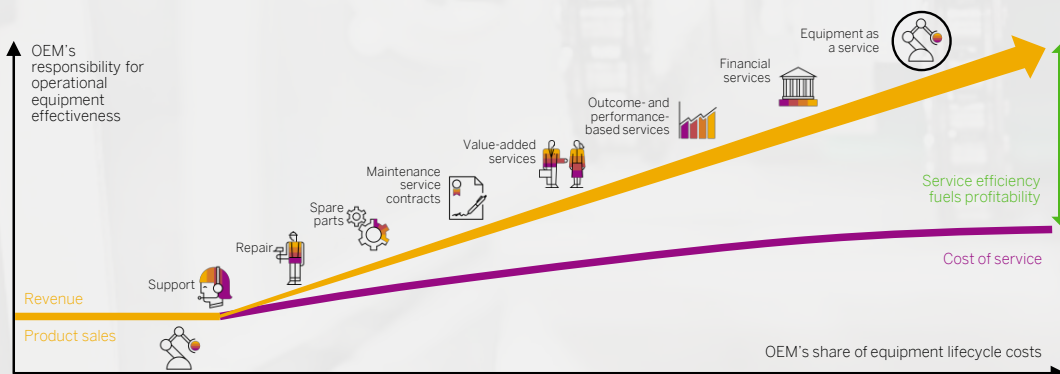
DEVELOP SERVICE-BASED BUSINESS MODELS

In 2025, the majority of industrial manufacturing companies' revenue will stem from services that are based on and built around smart products, the value they deliver, and the data they create. Companies will offer products as a service based on the value delivered to the end customer (see Figure 5).

Industrial manufacturers will start toward this goal by using remote condition monitoring of assets and artificial intelligence to identify and provide additional value-added services. As they continue to collect increasing amounts of data

from their own business operations and the use of their equipment by their customers, as well as the experience of their customers, service technicians, and partners, they will be able to offer new value-added and digital services, thereby monetizing the data by deriving insights of value for customers, partners, or end consumers. As they begin to better understand their customers, they can offer pay-for-outcome models due to their ability to assess which customers qualify for which type of business model based on the risk and long-term value of each customer.

Figure 5: Servitization and New Business Models Increase Manufacturers' Share of Equipment Lifecycle Spend



30% of manufacturers – driven by dynamic demand and empowered by data – will use innovation marketplaces by 2022 for on-demand services and software that raise margins by up to five percentage points.¹¹

From product design to installation, maintenance, and operation, [KAESER KOMPRESSOREN SE](#) delivers top-of-the-line air-compression solutions as a service. To tailor solutions for unique customers across multiple industries, KAESER needed to digitalize its design-to-operate process. By working with SAP to leverage the latest in IoT and digital engineering and service technology, KAESER can offer the most economical compressed-air station configuration from planning through implementation.



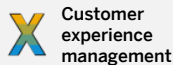
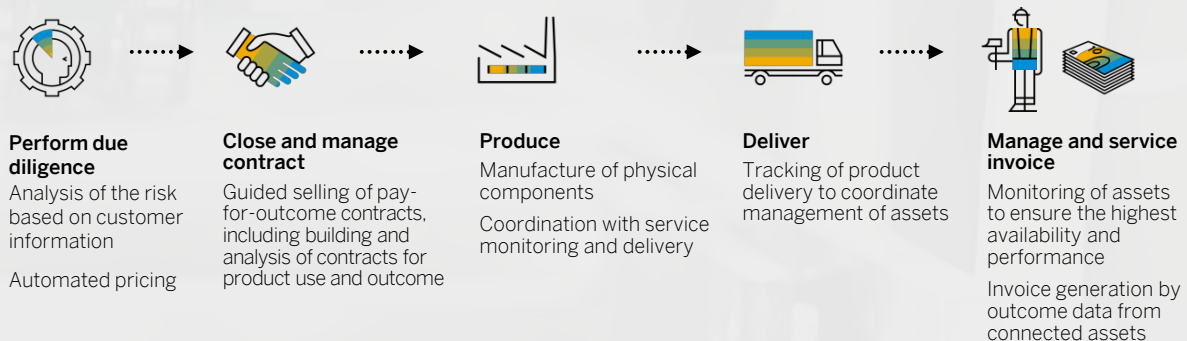
DEVELOP SERVICE-BASED BUSINESS MODELS FROM PRODUCTS TO SERVICES: ENSURING DELIVERY OF OUTCOMES

Innovative industrial manufacturing companies provide machines and equipment bundled with services and consumables and charge for the outcome. With that transformation, they generate new business, increase market share, accelerate new technologies and products, deliver more product-use insights, and create a more sustainable revenue stream. Industrial manufacturers will use the data from their assets, employing the IoT in conjunction with digital twins and machine learning to optimize the outcomes. The pay-for-outcome model is attractive for customers who intend to shift capital expenses to operating expenses, share business risk, or try new technologies with lower risks. It can help them adjust production capacity flexibly and have a more attractive balance sheet.

TRADITIONAL SCENARIO



NEW-WORLD SCENARIO



Capture customer experiences with service and delivery of agreed outcomes. Compare experience data against contract profitability and customer retention. Then optimize processes and service offerings and billing for traditional and outcome-based contracts.



POTENTIAL BENEFITS

3%–10%

Improvement in service profit margin

25%–30%

Improvement in subscription invoice processing time

Source: SAP Performance Benchmarking



KEY TECHNOLOGIES

Each of these priorities will be enabled by emerging intelligent technologies.

Machine Learning

Machine learning enables algorithms to “learn” from existing data. Once the algorithm is trained, it can then predict future outcomes based on new data.

The Internet of Things and Application of Industry 4.0 Technologies

Although manufacturers have been using the Internet of Things for some time, now the entire value chain can be connected from design to production to supply chain. This focus on Industry 4.0 philosophies and technologies is enabling faster, more-flexible, and more-efficient processes, which in turn supports even more personalization to meet customer needs. Data-driven insights of customer preferences can drive better designs, lower material costs, and reduce risk.

Data Platform to Manage Experience

Leaders are interlocking the operational performance data from companies’ business systems (what is happening) with the experience data coming from customers and employees (why it is happening).

Advanced Analytics

Empowered users can get real-time visibility into their changing environment, simulate the impact of business decisions, mitigate risk, and achieve better customer outcomes.

Blockchain

The blockchain model of trust, through massively distributed digital consensus, could reshape supply chains and commerce across the digital economy.

Virtual and Augmented Reality

Already in use to help workers with difficult or infrequent maintenance activities, this will become even more critical to attract and retain new talent.

Conversational AI

Voice interfaces will be the go-to technology for the next generation of applications, allowing for greater simplicity, mobility, and efficiency while increasing worker productivity and reducing the need for training.

Robotic Process Automation

Robotic process automation streamlines repetitive, rule-based processes and tasks in an enterprise and reduces cost through the use of software robots by replicating specific tasks or keystrokes.



65%

Of global manufacturers will realize a savings of 10% in operational expenses through process digital twins driven by IoT and machine learning routines that factor in unstructured data sets by 2023¹²

90%

Of manufacturers will leverage real-time equipment and asset performance data to self-diagnose issues in advance and trigger a service intervention to avoid unplanned downtime by 2021¹³

30%

Of manufacturers will be using blockchain and IoT (driven by increased requirements for sustainability) to provide reliable provenance, leading to a 90% increase in audit efficiency by 2025¹⁴

68%

Of discrete manufacturers consider Industry 4.0 as a top priority¹⁵

60%


Of G2000 manufacturers will address growing industry talent shortages by making significant investments in intelligent robotic process automation by 2023¹⁶


40%


Of manufacturers will leverage IoT-connected products and artificial intelligence tools to validate warranty claims, preventing claims submitted in error by 80% by 2023¹⁷

GETTING THERE: A PHASED APPROACH

Companies will become intelligent enterprises on three distinct tracks as they evolve their strategic priorities to match their company's vision. They will:

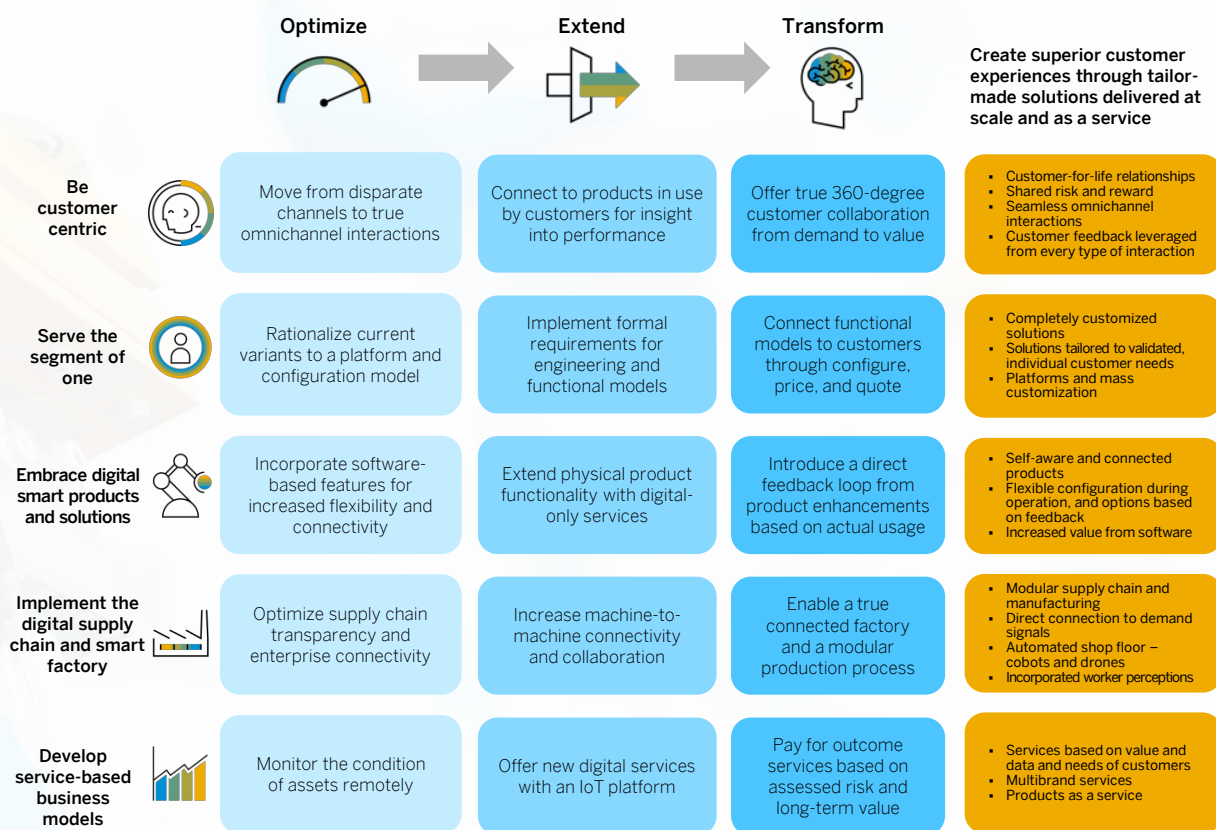
- 

Optimize what they already do by implementing a stable and scalable digital core to make processes more transparent and integrated
- 

Extend their current processes by connecting them to the real world using IoT technologies
- 

Transform their business using a constant stream of data, enabling new service-driven business models (see Figure 6)

Figure 6: Strategic Priorities Across the Maturity Framework





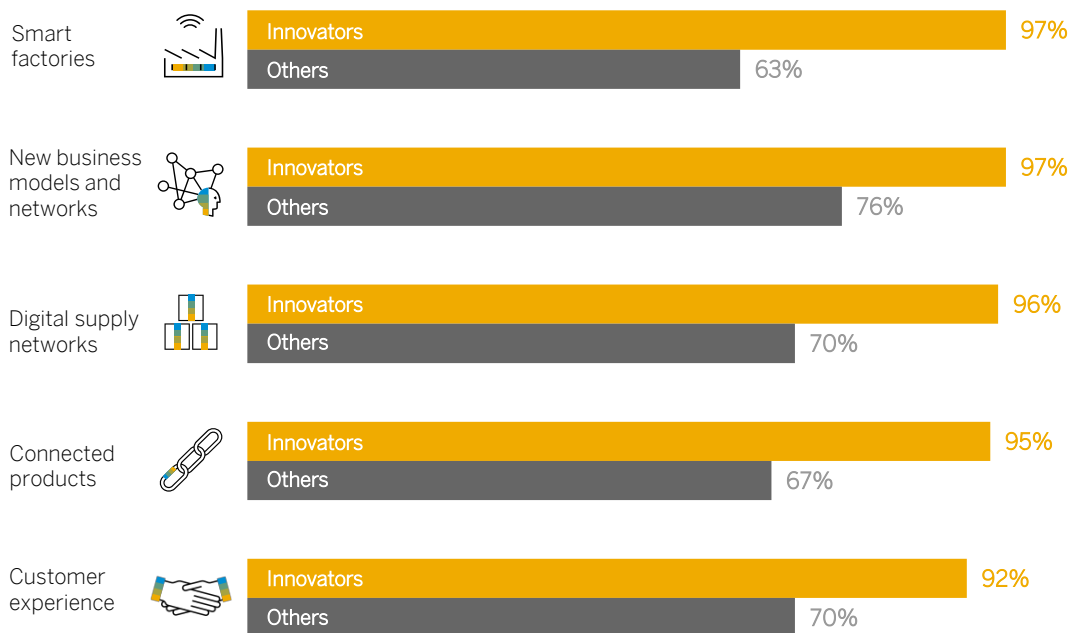
EARLY DIGITAL ADOPTERS LEAD THE WAY

How can you achieve these strategic priorities?

Start with reimagining your business together with your customers. Then build a path for even more optimization and intelligent automation to simplify your business and free up resources to invest in even more digital transformation programs, and find new business models and revenue streams.

According to a July 2018 study by Forrester Consulting that was commissioned by SAP, innovative companies focus on digital priorities to help them achieve digital transformation more than other manufacturing companies (see Figure 7).

Figure 7: Innovators Focus More on Digital Priorities Than Others¹⁸





SAP'S FRAMEWORK FOR THE INTELLIGENT ENTERPRISE

Most organizations understand what is happening in their business, but they may not always know why.

They know what's happening because they have systems that capture operational data (O-data) – about their customer transactions, supply chain, manufacturing, spending, and the activities of their workforce. They can see that data through reports and dashboards. They can see trends and predict what will happen next.

But to influence what happens next, companies need data about the interactions people have with their products and their business. Experience data (X-data) captures beliefs, emotions, opinions, and perceptions – “why” something is happening. And when companies know why something is happening, they can make an informed decision about the best way to respond.

To win in this experience economy, intelligent enterprises connect experiences with operations. They use both X-data and O-data to guide their business decisions. Intelligent enterprises collect insights from customers, employees, products, and brands at every touch point. They use powerful technologies to automate and integrate their data, processes, and applications, enabling them to sense risks, trends, and opportunities. And they act on this intelligence across every part of their business (see Figure 8).

Only SAP has the strategy, expertise, and solutions to deliver on this vision, enabling intelligent enterprises to turn insight into action.

Figure 8: SAP® Intelligent Enterprise Framework





HOW TO PLAN YOUR PATH TO THE INTELLIGENT ENTERPRISE

In the digital economy, intelligent technologies and integrated business processes are now driving digital transformation.

To do this effectively requires an end-to-end plan for becoming an intelligent enterprise. This includes creating an intelligent enterprise road map and implementation plan with proven best practices and deployment options that optimize for continuous innovation with a focus on intelligent outcomes.

The End-to-End Journey to Becoming an Intelligent Enterprise



Plan
well to manage expectations

Simplify and innovate

- Reimagined business models, business processes, and work
- SAP Intelligent Enterprise Framework methodology as a guide for digital transformation
- Value-based innovation road maps

Build and launch
with proven best practices

Standardize and innovate

- Model-company approach to accelerate adoption with model industry solutions
- Design thinking and rapid, tangible prototypes
- Coengineered industry innovations delivered with agility

Run
all deployment models

Run with one global support

- One global, consistent experience
- End-to-end support – on premise, in the cloud, or with a hybrid approach

Optimize
for continuous innovation

Optimize to realize value

Continuously captured and realized benefits of digital transformation

To move forward with speed and agility, it helps to focus on live digital data and combine solution know-how and industry-specific process expertise with data analytics so that the right digital reference architecture is defined and delivered. In that context, a model-company approach is aimed at simplifying and increasing the speed of the digital transformation journey. Model companies represent the ideal form of standardization for a specific line of business or industry. They are built on preconfigured SAP solutions and based on best practices supported by SAP, along with the business content that encompasses our experience and expertise relevant for the industry. They provide a comprehensive baseline and come with the accelerators to jump-start digital transformation projects.



COMPREHENSIVE SAP ECOSYSTEM ORCHESTRATING THE PARTNER ECOSYSTEM TO DELIVER VALUE FASTER

Our comprehensive ecosystem for industrial manufacturers offers:

- The Intelligent Enterprise as the overarching strategy to meet future requirements, providing:
 - SAP S/4HANA® co-development programs for customers and partners
 - Industry co-innovation programs for industry-specific use cases
 - Delivery of enterprise-to-enterprise industry clouds
 - Thought leadership, evangelism, and enablement by industry through events, councils, and regular customer exchange
- Integration into a wide range of business services (OEMs, suppliers, key vendors, and more)
- Open architecture, with a choice of hardware and software specifically designed to meet requirements
- Complementary and innovative third-party solutions to provide leading-edge and state-of-the-art technology

In addition, SAP is a founding member of the Open Industry 4.0 Alliance, which aims to overcome proprietary isolated solutions with a common reference architecture to accelerate the implementation of Industry 4.0 solutions and services.

Our partner ecosystem includes, among others:





SAP IS COMMITTED TO INNOVATION



10-Year Innovation Vision

SAP delivers fully intelligent business solutions and networks that span across company boundaries and promote purpose-driven businesses. These solutions will be the most empathic symbiosis between machine intelligence and human ingenuity.

- Self-running enterprise systems
- Self-organizing business ecosystems
- New markets and business models



Comprehensive Industry Coverage

SAP enables comprehensive coverage of the complete industrial manufacturing value chain across the enterprise. With its clear industry road map, SAP is the partner of choice for industrial manufacturers.

- More than 12,200 industrial manufacturers in 97 countries innovating with SAP solutions
- 99% of industrial manufacturing companies in the Forbes Global 2000 as SAP customers
- Support for all lines of business on a single platform



Proven Services Offering

By bringing together world-class innovators, industry and emerging technology expertise, proven use cases, and design thinking, we help industrial manufacturing companies develop innovations that deliver impact at scale.

- Proven methodologies to drive innovation, from reimagining customer experiences to enhancing operations
- Innovation that is fueled through a managed innovation ecosystem from SAP
- Ability to build your own innovation capability and culture

SAP supports industrial manufacturing companies in becoming intelligent enterprises – providing integrated business applications that use intelligent technologies and can be extended on SAP Cloud Platform to deliver breakthrough business value.



Learn more

- [SAP for Industrial Machinery and Components](#)
- [SAP Services and Support](#)



RESOURCES

Outlined below is external research that was used as supporting material for this paper.

1. "[The ROI of CX Transformation: The Business Case Report in the CX Transformation Playbook](#)," Forrester report, August 2019.
- 2.–4. "[IDC FutureScape: Worldwide IoT 2020 Predictions](#)," Doc. #US45591819, IDC, October 2019.
5. "[Capturing Value at Scale in Discrete Manufacturing with Industry 4.0](#)," McKinsey & Company, September 2019.
6. "[IDC FutureScape: Worldwide IT 2020 Predictions](#)," Doc. #US45599219, IDC, October 2019.
- 7.–9. "[IDC FutureScape: Worldwide Manufacturing Product and Service Innovation 2019 Predictions](#)," Doc. #US43135918, IDC, October 2019.
10. "[IDC FutureScape: Worldwide Manufacturing 2020 Predictions](#)," Doc. #US45594819, IDC, October 2019.
11. "[IDC FutureScape: Worldwide Manufacturing Product and Service Innovation 2019 Predictions](#)," Doc. #US43135918, IDC, October 2018.
12. "[IDC FutureScape: Worldwide Manufacturing 2020 Predictions](#)," Doc. #US45594819, IDC, October 2019.
13. "[IDC FutureScape: Worldwide Manufacturing Product and Service Innovation 2019 Predictions](#)," Doc. #US43135918, IDC, October 2019.
14. "[IDC FutureScape: Worldwide Manufacturing 2020 Predictions](#)," Doc. #US45594819, IDC, October 2019.
15. "[Capturing Value at Scale in Discrete Manufacturing with Industry 4.0](#)," McKinsey & Company, September 2019.
16. "[IDC FutureScape: Worldwide Manufacturing 2020 Predictions](#)," Doc. #US45594819, IDC, October 2019.
17. "[IDC FutureScape: Worldwide Manufacturing Product and Service Innovation 2019 Predictions](#)," Doc. #US43135918, IDC, October 2019.
18. "[Emerging Opportunities for Discrete Manufacturers to Deploy Industry Processes in the Cloud](#)," a Forrester Consulting thought leadership paper commissioned by SAP, July 2018.

Note: All sources cited as "SAP" or "SAP Performance Benchmarking" are based on our research with customers through our benchmarking program and other direct interactions with customers.



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