

# Intelligent Enterprise for Industrial Manufacturers

Delivering Tailor-Made  
Solutions at Scale and  
as a Service

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THE BEST RUN



# Paving the Way for Sustainable Business Model Innovation

The world is facing huge social, economic, and environmental challenges. To create a sustainable future, every individual and company has a role to play, and industrial manufacturers in particular have a special role. They build the digitally enabled and connected equipment and machinery that helps produce sustainable energy, enable the waste management and recycling capabilities for a circular economy, and create the infrastructure for livable cities. Simultaneously, they also need to respond to global trends that are reshaping the industrial manufacturing landscape, including:

- **Customer-driven change:** Customers expect smart products and solutions that fit their exact needs at competitive prices and in a “pay-as-you-go” or usage-based pricing model. Therefore, the ability to capture customer requirements effectively and then use those insights to drive mass customization is the key.
- **Digital as the new norm:** Digitalization is the way to respond to increased customer expectations but poses a number of challenges in itself. These can span from organizational setup and technical infrastructure to having the right talent to operate in a cybersecure environment.
- **A changing playing field:** As new competitors and business models appear, industrial manufacturers must redefine their core strengths and capabilities and learn to create value in industry value networks.
- **Globalization and right-shoring:** Companies need to be able to shift resources, production, and financial funds around the globe in a flexible way. This allows industrial manufacturers to make the best use of regulatory and location advantages and be able to respond quickly to disruption.

## Business Model Innovation

Gone are the days when the industrial manufacturing value proposition was relatively simple: Industrial manufacturers made products and delivered them. At best, they also provided “break-fix” services during their operation.

Now, the industrial manufacturer’s job does not end there.

Driven by ever-more-demanding customers and supported by the widespread uptake of the Internet of Things and the emerging power of machine learning and AI, industrial manufacturers are developing new capabilities to track and base services on huge volumes of data generated by thousands of assets and equipment. These services, involving highly customized, digitalized products, will cover everything from the simpler break-fix model to the more complex outcome-as-a-service models and monetization of data assets.



# Strategies for Industrial Manufacturers to Run as Intelligent Enterprises

Proven success strategies show a range of approaches to creating new business outcomes based on existing products and processes as well as developing disruptive new business models.

## **Customer centricity**

Putting the end customer's point of view at the center of every decision has to be the norm for success in the digital age. This does not stop in the sales department and should influence what products are built and what services are offered.

## **Serving the “segment of one”**

Providing solutions that precisely fit the needs of one single customer has been commonplace in traditional engineer-to-order environments. Now, that same level of configuration has to be applied to everyone in a cost-effective way. This requires the ability to capture customer requirements effectively and enable mass customization to give customers exactly what they want.

## **Digital smart products and solutions**

Differentiation and specificity in products stem from digital capabilities and value-added services that are bundled with the physical products. By delivering and using digital capabilities such as self-awareness of technical health and operational status, or business system connectivity, industrial manufacturers can differentiate themselves.

## **Digital supply networks and smart factory**

Digital technology on the shop floor and in the supply chain is not new. What is new is the way production and logistics are intelligently connected to the rest of the business and are able to deal with external impulses such as short-term demand and supply fluctuations or changes in the configuration of a customer order.

## **Servitization and outcome-based business models**

As traditional products are commoditized, industrial manufacturers are shifting from selling products to providing complete solutions and charging for outcomes, or even monetizing asset data. Generating more revenue from services is a goal for manufacturers who are looking for higher profit margins and increased customer intimacy.

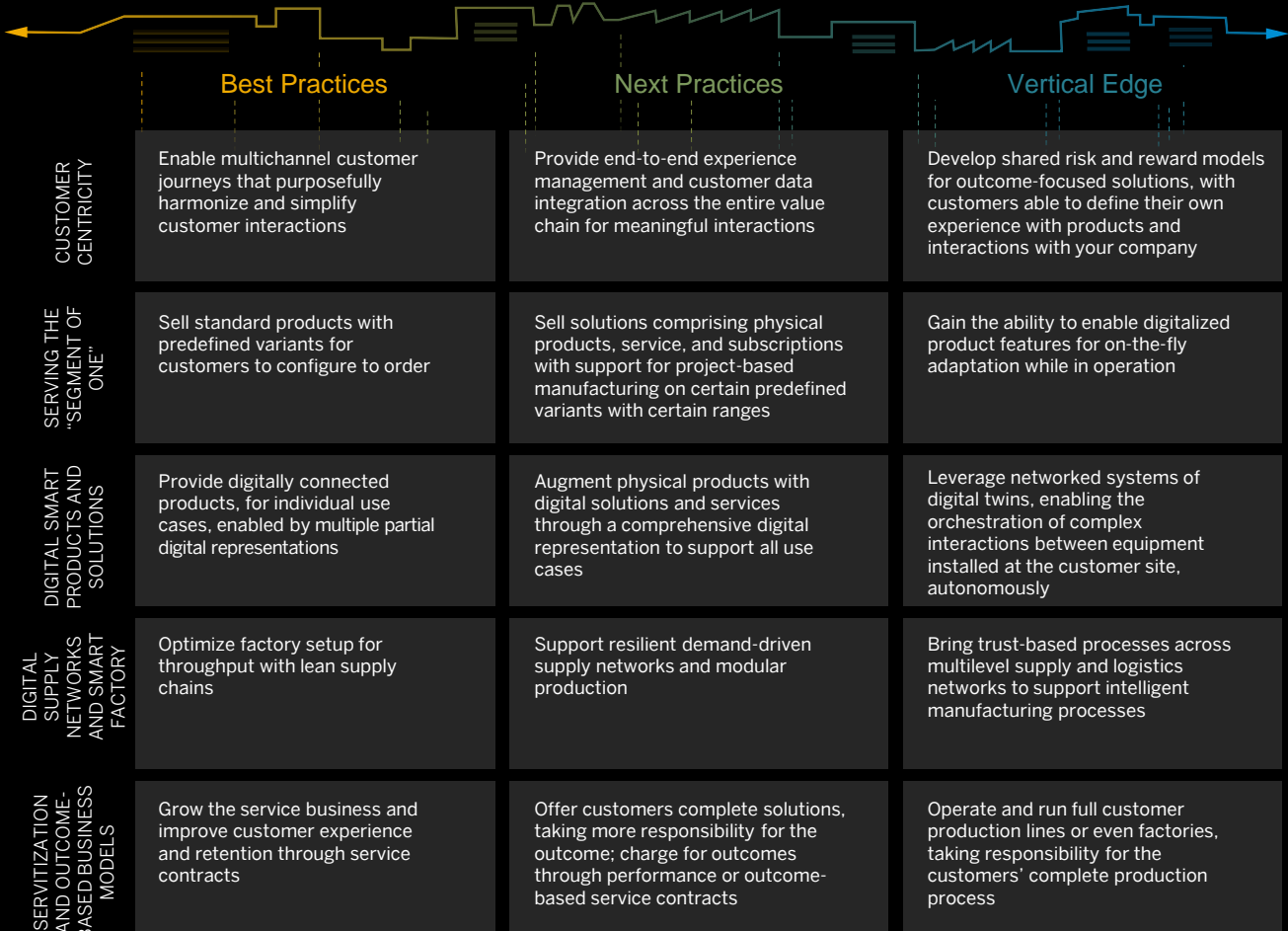
## **Focus on Customer and Purpose – Data in Action**

[Tetra Pak](#) ensures expansion of food availability across the world by offering products of outstanding quality and value to consumers. Connecting customer feedback to business operations significantly reduces response times from weeks to days and dramatically improves customer experience. Tetra Pak is also able to identify its customers' key reporting metrics so that it can focus on what matters most to its customers.



# From Best Practices to the Vertical Edge

In a digital world, innovation is no longer just the domain of the research and development teams who build the next generation of machinery. Innovation must become an integral part of each department and discipline so they all contribute to the evolution from best practices to industry next practices, right to the “vertical edge.” This enables cross-functional teams to experiment with new ways to create unique value for customers, thus generating top-line, bottom-line, and green-line improvements.



## Business Process Innovation

For industrial manufacturing companies, the journey to become intelligent enterprises is a collaborative effort between customers, partners, and SAP. The world is changing quickly, and there are many untapped innovation opportunities.

## Industry 4.Now

Industry 4.0 is also about industrial transformation using new digital technology that makes it possible to gather and analyze data across machines and business systems – the entire intelligent enterprise. This enables faster, more-flexible, and more-efficient processes to produce high-quality individualized equipment at lower cost. SAP believes that to truly achieve the benefits and impact of Industry 4.0 and become an intelligent enterprise, a company needs to embrace Industry 4.0 holistically across its entire organization.



# Customer Centricity

The world is changing. Customer expectations are constantly changing. So the way that the customer experience is viewed must also change. Companies will need to develop customer-for-life relationships, sharing risk and focusing on long-term value. This will be based on a holistic view of customers, their business processes, and how they use the products in their daily operations. Since commoditization of offerings poses a big threat, industrial manufacturing companies should prioritize customer experience and relationships as a differentiator.

## BEST PRACTICE

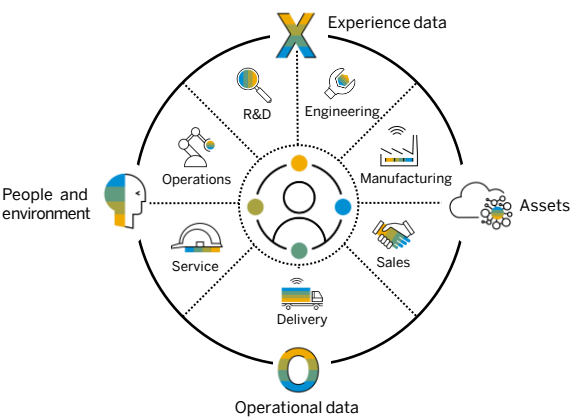
Enable multichannel customer journeys that purposefully harmonize and simplify customer interactions



- Provide customers equipment and services that address their needs and appetite for customization
- Support operational transparency and efficiency between the front and back office to deliver configurable solutions and equipment
- Switch between digital self-service, digitally enabled human interactions, and offline interactions, based on customer preference
- Extend sales and service automation into multichannel engagements to enable a simple handoff across channels and quick turnaround of quotes
- Engage with customers effectively when they are ready and wherever they are by removing all barriers to equipment and service sales

## NEXT PRACTICE

Provide end-to-end experience management and customer data integration across the value chain for meaningful interactions



- Enable an effortless and convenient solution and equipment-selling process focused on outcome
- Help ensure a single view of the customer's operational and experience data to deliver customized solutions and experience
- Leverage machine learning and usage data from Internet-connected equipment and services to propose value-added offerings to individual customers
- Use customer data and insights throughout the business operations to reduce friction points and improve customer experience
- Employ customer usage data and insights to design customer-centric equipment and services to gain competitive advantage

## Innovations at the Vertical Edge

Develop shared risk and reward models for outcome-focused solutions, with customers able to define their own experience with products and interactions with your company.

**-20%**

Reduction in customer attrition through reducing friction for customer experiences

**+15%**

Revenue lift due to smart personalization

**85%**

Of customer interactions will be automated by 2025



# SAP® Solutions: For a Customer-Centric Approach

Becoming customer centric means positioning the customer point of view at every decision – from engineering to sales and marketing, to manufacturing, and through to installation and services – to create great experiences at every interaction point. This needs new business capabilities throughout the entire value chain – provided by our industrial manufacturing solutions through our Intelligent Enterprise approach.

## Required Capabilities

### R&D and Engineering

- Enable concept testing with customers
- Deliver product innovations resulting from actual equipment use and operator experience feedback
- Collect structured requirements based on interactions with customers and design partners and market analysis

### Sales and Marketing

- Contextualize customer experience and engagement through every channel
- Engage omnichannel solution selling
- Organize and empower sales teams
- Constantly monitor brand performance
- Simulate and optimize intelligent pricing

### Supply Chain

- Foster responsive, demand-driven, collaborative supply networks
- Enable on-time delivery and advanced availability-to-promise capabilities
- Coordinate logistics and installation smoothly

### Manufacturing

- Adjust production orders with greater flexibility based on customer priorities
- Foster an agile and responsive manufacturing network
- Track and trace individual products

### Installation and Service

- Flow customer information across channels (including experience history)
- Personalize end-to-end service and parts processes
- Provide a service-knowledge database
- Conduct product and user satisfaction and experience analysis

### Finance and HR

- Use simulation and analysis to evaluate financial implications of strategic business choices
- Manage the customer portfolio strategically
- Attract and secure top talent
- Monitor employee engagement
- Enable social collaboration among teams

The architecture of the Intelligent Enterprise for industrial manufacturers combines the solutions of SAP® Business Network and the intelligent suite with industry cloud solutions from SAP and our partners to drive new business outcomes.

### SAP Logistics

**Business Network**  
– for an open and secure value-creation network

### SAP S/4HANA®

– for order fulfillment

### SAP Commerce

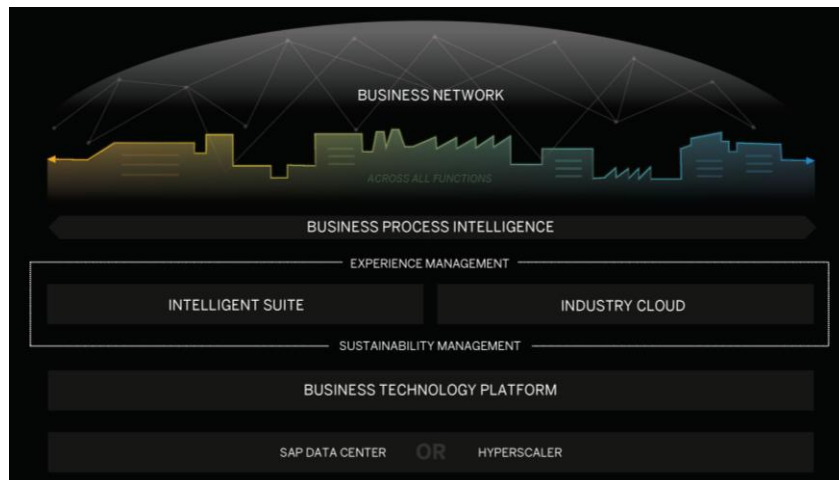
**Cloud solutions**  
– for omnichannel sales

### SAP CPQ solution

– for product configuration

### SAP Service

**Cloud solutions** – for omnichannel service



### SAP Entitlement

**Management solution** – for moving from product to software sales

### SAP Predictive

**Maintenance and Service solution** – for predictive quality

### SAP Variant Configuration

**and Pricing solution** – for exposing configuration and pricing models to the cloud

### Service Ticket Intelligence

**service** – for service response time improvements

### SAP Analytics Cloud

**solution** – for providing insights for better decision-making

[Grundfos](#) needed to focus on addressing customer feedback – as customer touch points ballooned to 145,000 per day – to ensure they delivered a **business-to-business customer experience** that surpassed expectations.

Abdul Dezkam, a lead insights specialist at Grundfos, remarks, “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.”

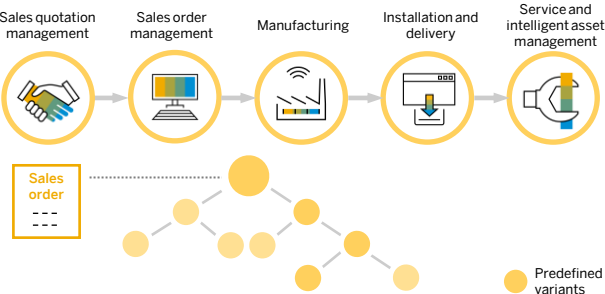


# Serving the “Segment of One”

Providing solutions that precisely fit the needs of a single customer has been commonplace in traditional engineer-to-order environments. Now, the ability to capture customer requirements effectively and enable mass customization is the key to giving all customers exactly what they want. Critical for this transformation is the ability to manage the specifics of each order in every aspect of the value chain in a consistent way, nearly at the cost of a standard order.

## BEST PRACTICE

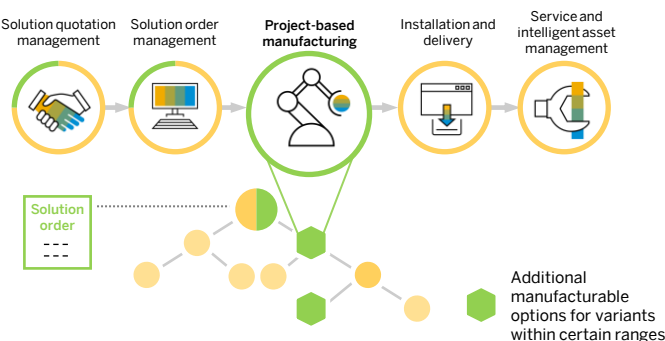
Sell standard products with predefined variants for customers to configure to order



- Predefined options and manufacturing platforms to cover the majority of customers' requirements
- Integrated quotation and order management, demand-driven planning, manufacturing, and delivery process
- Real-time inventory information for reliable order-promise dates impacting on-time delivery performance
- Efficient collaboration between sales and engineering with advanced variant configuration capabilities

## NEXT PRACTICE

Sell solutions comprising physical products, services, and subscriptions, with support for project-based manufacturing on certain predefined variants within certain ranges



- Using data-driven models to recommend variants for additional personalization to customer orders executed through a modular manufacturing approach
- Integrating product and process information to manage a supplier- and customer-integrated process from product design to supply chain, manufacturing, sales, and aftermarket services
- Enabling predictive material requirements planning for real-time simulation of potential requirements, production, and capacity adjustments, impacting overall delivery performance
- Project-based order execution with tight coupling between configure-to-order and engineer-to-order processing for the “additional limited engineering” requirement

## Innovations at the Vertical Edge

Gain the ability to enable digitalized product features for on-the-fly adaption while in operation.

### Increased

Margin solution sales

### Focused

Customer centricity with deeper personalization

### Improved

On-time delivery performance

# SAP Solutions: To Deliver a Segment of One

Customers are expecting customized products, services, and solutions that precisely fit their individual needs based on sophisticated platform, configuration, and mass-customization strategies. This requires solutions and technology to drive automation, adaptability, and efficiency so that industrial manufacturers can deliver highly customized solutions at the price of standard products. It also requires new business capabilities throughout the entire value chain – provided by our industrial manufacturing solutions through our Intelligent Enterprise approach.

## Required Capabilities

### R&D and Engineering

- Modularize product concepts and well-structured product families
- Use platform models across product families
- Select engineer-to-order capabilities during the sales configuration process

### Sales and Marketing

- Personalize marketing and sales across all channels
- Segment customers with sophistication
- Provide intelligently configured solutions combining products, services, and subscriptions
- Manage variants, including costing

### Supply Chain

- Plan sales and operations with flexibility at different levels (variant and product)
- Support responsive material requirements planning
- Promote efficient and flexible internal and external logistics and supplier collaboration
- Simulate multiple what-if scenarios

### Manufacturing

- Produce for a lot size of one with high asset use and optimal setup times
- Smoothly integrate sales orders with specific parameters with the shop floor
- Give electronic work instructions
- Increase flexibility of manufacturing capacity

### Installation and Service

- Offer tailor-made installation and services
- Deliver an equipment-specific service portfolio
- Gain full transparency into equipment lifecycle information
- Provide easy and individualized buying of services and parts

### Procurement

- Enable economies of scale and flexible call orders with strategic and agile global supplier-network management
- Onboard alternative suppliers with flexibility

### Finance and HR

- Analyze profitability instantly across multiple dimensions such as product groups, customers, projects, profit centers, and plants
- Onboard and train employees quickly and more easily

The architecture of the Intelligent Enterprise for industrial manufacturers combines the solutions of SAP Business Network and the intelligent suite with industry cloud solutions from SAP and our partners to drive new business outcomes.

### SAP Logistics

**Business Network** – for an open and secure value creation network

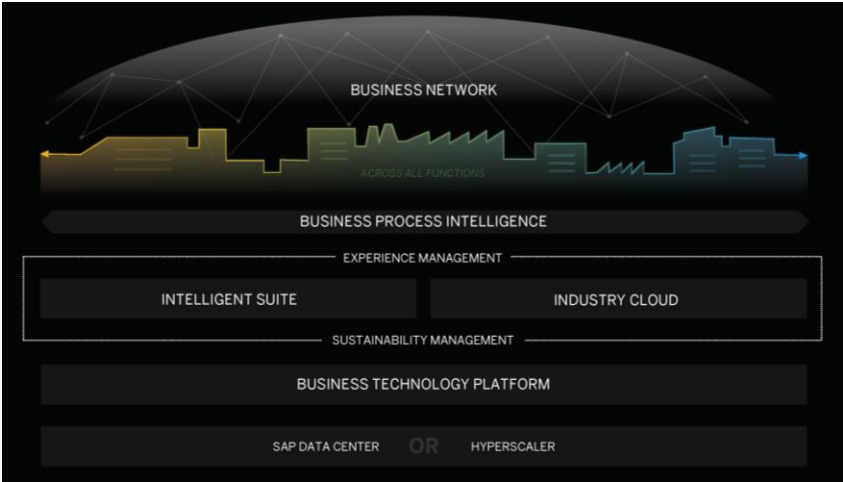
**SAP Ariba® solutions** for efficient source-to-pay processes

### SAP S/4HANA –

for integrated quotation and order management

### SAP Manufacturing

**solution** – for automated, integrated, and flexible manufacturing



**SAP Enterprise Product Development solution** – to accelerate product and project delivery

**SAP Digital Manufacturing Insights solution** – including predictive quality

**Impact Manager by Soley** – for automating insight into the product portfolio

**SAP Asset Strategy and Performance Management application** – for efficient asset operations and performance

**SAP Database and Data Management solutions** – to optimize analytics and insights to improve business outcomes

## MAN Diesel & Turbo

“We’ve calculated about 270,000 quotes and order lines where we had savings in manual work and a faster quote and order process.”

Harald Capek , Head of SEAIP, MAN Diesel & Turbo SE



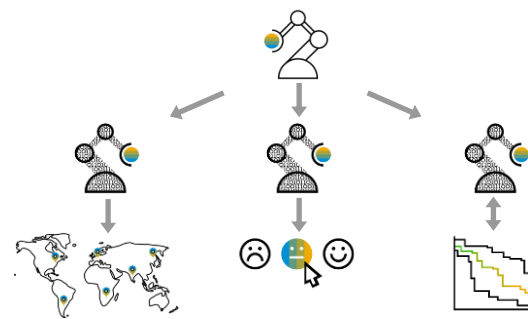


# Digital Smart Products and Solutions

Today’s smart products and solutions contain a vast array of electronics and many different pieces of software that are as important as the mechanical design. In fact, the value contribution of software continues to grow, augmenting and extending the original product functionality and enabling additional business models.

## BEST PRACTICE

Provide digitally connected products for individual use cases

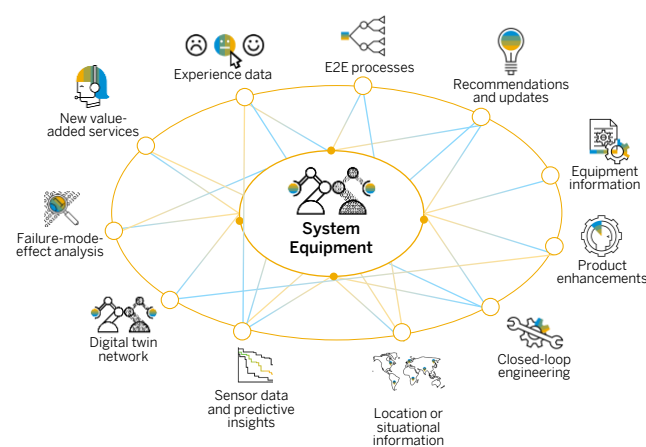


Individual use cases are enabled by multiple, partial digital representations that:

- Provide mainly point-to-point connections of different digital twins for business and technically critical products
- Enable use cases through remote monitoring and limited supervision
- Help ensure service-level fulfillment
- Validate new business models
- Enable equipment location determination
- Provide direct customer feedback on selected products

## NEXT PRACTICE

Augment physical products with digital solutions and services



Comprehensive digital representation to support all use cases and enable additional value add services through:

- Single digital twin as the digital asset representation and virtual counterpart of a physical object
- Establishing a 360-degree view of products and solutions to speed up end-to-end (E2E) scenarios
- Predicting, monitoring, and helping guarantee service levels
- Scaling and rolling out promising scenarios such as “closed-loop engineering”
- Comprehensive digital thread to synchronize the information flow, which “feeds” the twin and connects twins with each other
- Providing a continuous feedback and improvement loop for product enhancements based on actual usage and product behavior at a single customer level

## Innovations at the Vertical Edge

Leverage networked systems of digital twins, enabling the orchestration of complex interactions between equipment installed at the customer site, autonomously.

**Increased %**  
Of new products and  
service revenue

**Improved**  
Customer experience  
and satisfaction

# SAP Solutions: Design Digital Smart Products and Solutions

The ability to design, manufacture, and service digital smart products and solutions is essential – and is provided by our industrial manufacturing solutions through our Intelligent Enterprise approach.

## Required Capabilities

### R&D and Engineering

- Adopt a systems engineering (mechanical, software, and electronic) approach
- Embed the technology foundation for equipment networks
- Manage digital IP effectively
- Incorporate product and user experience feedback channels

### Sales and Marketing

- Enable collaborative solution and value selling
- Generate leads through predictive product replacement and precise segmentation
- Sell solutions and software

### Supply Chain

- Track digital components
- Actualize efficient replenishment strategies
- Enable 3D printing for spare parts
- Use a digital twin throughout the entire supply chain, including installation

### Manufacturing

- Install and manage in-product software
- Support advanced testing and connectivity management

### Installation and Service

- Provide services for digital smart products
- Manage the equipment lifecycle using a digital twin
- Enable a feedback loop in internal business processes, including the operator experience
- Support the retrofit of software and sensors in (smart) products

### Procurement and Finance

- Execute procurement strategies for 3D-printed service parts
- Bundle third-party service with products
- Identify and contract suppliers closely connected with product design and engineering
- Include payment models for digital services in product calculations and financial reporting
- Manage and help ensure digital rights compliance

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### SAP Ariba solutions

– for sourcing collaboration

### SAP Asset Intelligence Network

– for creating and maintaining digital twin information

### SAP S/4HANA and SAP Teamcenter

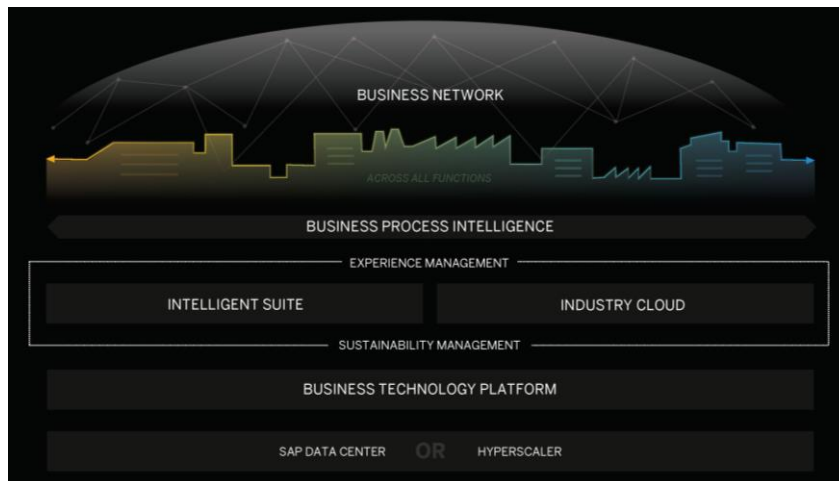
solution by Siemens – for integrated product development

### SAP S/4HANA

– for integrated portfolio and project management

### SAP EHS

Management application – for product compliance



### SAP Enterprise

**Product Development** – for collaboration to accelerate product and project delivery

### SAP Product

**Lifecycle Costing solution** – for detailed insights into product costs and margins

### CIDEON Cloud CAD

**Integration for PDM** – for connection of product data management with ERP

### SAP Blockchain

**Business Services** – for enabling secure blockchain services

[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.

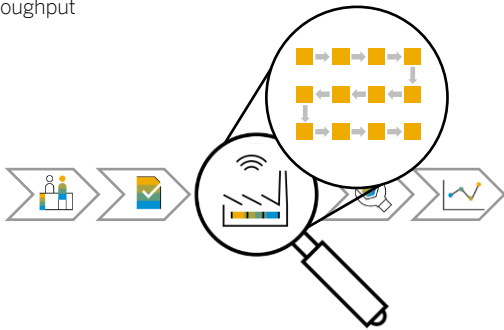
[Sartoris AG](#) optimized product development to create higher customer value. It gained a holistic view of all product development data from its ERP software with design information from computer-aided design systems, including data from mechanics, electronics, and software teams.

# Digital Supply Chain and Smart Factories

Supply chains and manufacturing networks in industrial manufacturing companies are becoming completely modular and flexible to allow the seamless execution of different manufacturing strategies while optimizing supply chain transparency to further improve supply chain performance.

## BEST PRACTICE

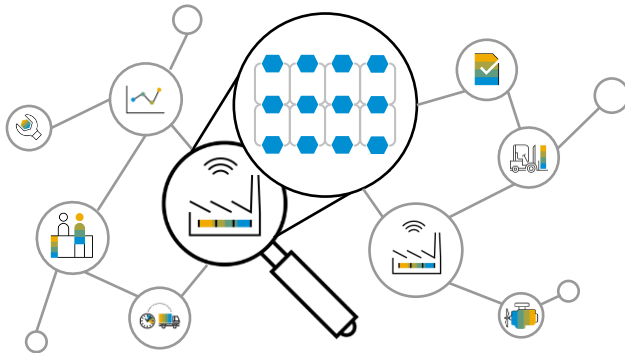
Support lean supply chains with optimized factories set up for throughput



- Optimizing material flow
- Transparent view of available stocks and more-efficient processing of inventory adjustments
- Agile manufacturing leveraging up-to-date concepts such as flow method and pull principle
- Implementing flexible automation in fabrication and assembly
- Preventive and condition-based maintenance
- Applying just-in-time, just-in-sequence, and Kanban techniques
- Providing a mobile user interface for factory workers
- Delivering “perfect” orders with integrated logistics execution processes, improving shipping quality

## NEXT PRACTICE

Support resilient demand-driven supply networks and modular production



- Predictive long-term supply network planning and simulation
- Demand-driven material replenishment planning and customer order prioritization, based on allocation
- Mitigation of supply network bottlenecks through detection, analysis, scenario planning
- One-piece flow in the whole supply chain
- Predictive maintenance
- Adaptive and modular production
- Virtual, augmented, and mixed reality user interface for factory workers
- Leveraging Industry 4.0 strategies to enable autonomous action and self-optimized manufacturing
- Automatic onboarding of machines and equipment

## Innovations at the Vertical Edge

Bring trust-based processes across multilevel supply and logistics networks supporting intelligent manufacturing processes. Incorporate machine learning into manufacturing processes, based on hyperconnected machines leveraging the digital thread with no media breaks.

### Improved

Manufacturing agility

### Increased

Effectiveness (not just efficiency)  
of manufacturing operations

### Reduced

Overall logistics cost

# SAP Solutions: Implementing a Digital Supply Chain and Smart Manufacturing

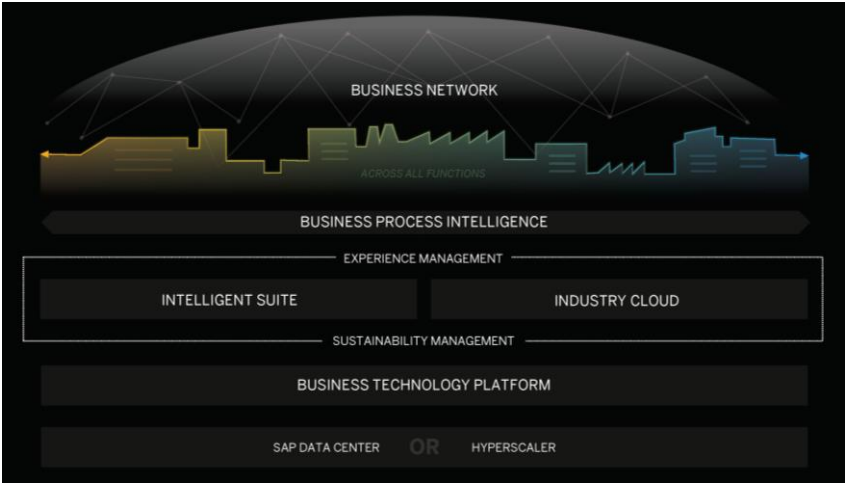
Operating a digital supply chain with smart and modular manufacturing needs new business capabilities – provided by our industrial manufacturing solutions through the Intelligent Enterprise approach.

## Required Capabilities

R&D and Engineering	Sales and Marketing	Supply Chain	Manufacturing	Installation and Service	Procurement
<ul style="list-style-type: none"> <li>Integrate manufacturing engineering with electronic and manual management of bills of material</li> <li>Visualize manufacturing processes digitally based on harmonized product data</li> </ul>	<ul style="list-style-type: none"> <li>Forecast sales precisely and reliably</li> <li>Align supply chain and sales planning</li> <li>Route customer orders directly into the factory as production orders</li> </ul>	<ul style="list-style-type: none"> <li>Achieve real-time, end to end visibility into supply chain management, from design to operation</li> <li>Plan demand and supply flexibly</li> <li>Integrate material management from the shop floor to the warehouse</li> </ul>	<ul style="list-style-type: none"> <li>Align operations with activities performed by automated equipment</li> <li>Support machine-to-machine integration</li> <li>Innovate plug-and-play processes</li> <li>Deliver benefit from a digital twin of the manufacturing facility</li> <li>Use dynamic routing</li> <li>Provide digital work instructions</li> </ul>	<ul style="list-style-type: none"> <li>Collaborate on equipment data through an asset network</li> <li>Smoothly hand over as-built, as-installed equipment information to services</li> <li>Leverage predictive service and maintenance</li> <li>Incorporate installer experience data</li> </ul>	<ul style="list-style-type: none"> <li>Allow contractual enablement of global supply chains with multitier supplier management</li> <li>Automate and simplify the integration of material and component suppliers</li> </ul>

The architecture of the Intelligent Enterprise for industrial manufacturers combines the solutions of SAP Business Network and the intelligent suite with industry cloud solutions from SAP and our partners to drive new business outcomes.

- SAP Logistics Business Network** – for an open and secure value-creation network
- SAP Asset Intelligence Network** – for maintenance of manufacturing lines
- SAP S/4HANA** – for integrated supply chain planning and execution
- SAP IBP applications for Supply Chain** – for a well-aligned supply chain and sales planning



- SAP Digital Manufacturing Cloud solution** – for setting up all manufacturing processes end to end and running them in an integrated manner with no media break
- Virtual Assistant for Manufacturing by Arkite** – for reducing the defect rate by providing tailor-made intuitive work instructions
- SAP Blockchain Business Services** – for securely sharing trusted records with customers and partners

## Unified Manufacturing to Continually Improve Quality

[Guangxi Liugong Machinery Co. Ltd. \(Liugong\)](#) deployed the SAP Manufacturing Execution application integrated with the SAP ERP, SAP Product Lifecycle Management, SAP Supplier Relationship Management, and SAP Supply Chain Management applications, as well as equipment and other systems.

“We have a fully integrated system for everything from R&D through production and sales. This helps us stay on top today and *continue evolving operations for the future.*”

Wei Luo, CIO, Guangxi Liugong Machinery Co. Ltd.



# Servitization and Outcome-Based Business Models

Innovative industrial manufacturing companies provide machines and equipment bundled with services, software, parts, and consumables. This helps generate new business opportunities and create a more sustainable revenue stream. Moving toward pay-for-outcome and service-based models is also attractive for customers who want to shift capital expenses to operating expenses, share business risk, or try new technologies with lower risks.

## BEST PRACTICE

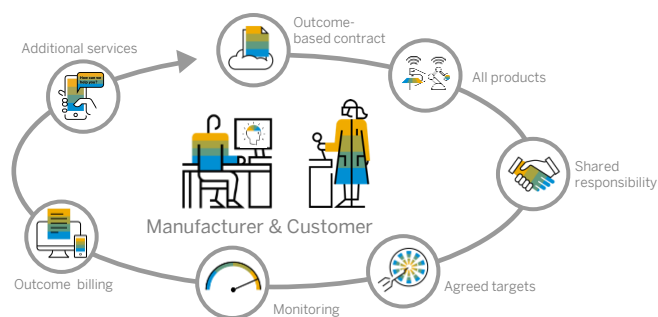
Grow the service business and improve customer experience and retention through service contracts.



- Offer services and contracts only for your own products
- Use modular service offerings and pricing, covering a broad range of services, from pure support to all-in services, with agreed-upon service-level agreements (SLAs)
- Let the customer (operator) take responsibility for the operation of equipment, with the manufacturer called out as needed
- Enable a more transactional relationship
- Focus on contract compliance and guaranteed technical quality of service
- Periodically charge fixed contract fees
- Leverage IoT-based remote condition monitoring to meet SLAs

## NEXT PRACTICE

Offer customers complete solutions, taking more responsibility for the outcome. Charge for outcome through performance- or outcome-based service contracts.



- Offer services and contracts for both your own and third-party products
- Guarantee outcomes, such as performance, yield, or cost
- Let the manufacturer take over more risk and responsibility for the operation of equipment
- Enable a more collaborative relationship
- Focus on customer-specific defined performance targets, such as equipment availability and performance
- Calculate contract fees based upon the outcome target achievement
- Leverage IoT-based predictive maintenance and use machine learning to meet these targets
- Take the opportunity to further augment service offerings with complementary digital services, such as apps for equipment operators

## Innovations at the Vertical Edge

Operate and run full customer production lines or even factories, taking responsibility for the customer's complete production process. Achieve highest equipment performance through data-driven asset optimization.

### Increased

Revenue of new products and services

### Increased

Revenue from services and product-as-a-service

### Increased

Share of wallet and profitability per customer



# SAP Solutions: Implementing Servitization and Outcome-Based Business Models

Strengthening the service business and entering new, outcome-based business models requires new business capabilities – provided by our industrial manufacturing solutions through our Intelligent Enterprise approach.

## Required Capabilities

### R&D and Engineering

- Design products with a focus on good serviceability
- Develop innovative, outcome-based services
- Design to offer digital services with data platforms

### Sales and Marketing

- Offer and sell complete solutions, consisting of physical products, services, and software
- Sell, manage, and monitor outcome and performance contracts
- Sell data, information, and digital services

### Supply Chain

- Supply service parts and consumables as part of outcome contracts
- Improve demand sensing and automate replenishment
- Simulate and optimize service parts planning and logistics performance

### Manufacturing

- Make manufacturing parameters available for service processes
- Leverage manufacturing practices for complex services, such as installation and retrofit

### Installation and Service

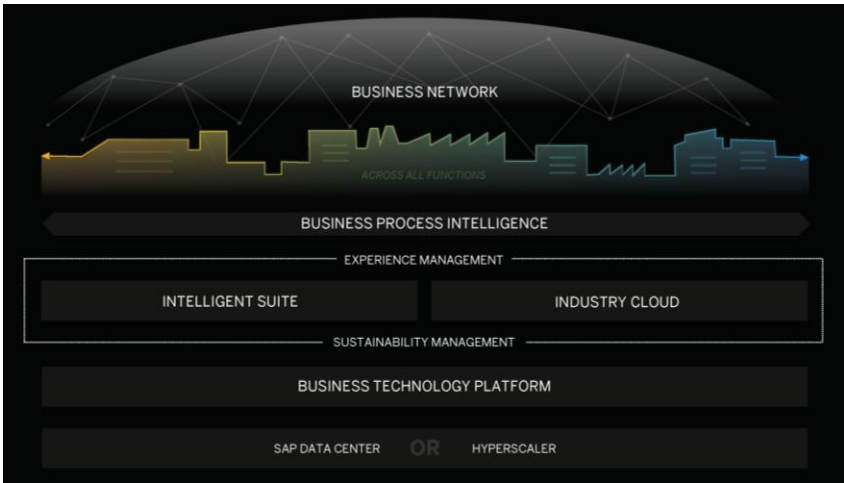
- Plan, execute, and close services with highest efficiency and profitability
- Deliver services to fulfill agreed targets from outcome and performance contracts
- Leverage intelligent technologies such as the IoT to improve existing and deliver new services

### Procurement

- Augment the service workforce by integrating contingent workers efficiently
- Collaborate with service partners and subcontractors
- Deliver the highest quality in the shortest time through service-parts collaboration

The architecture of the Intelligent Enterprise for industrial manufacturers combines the solutions of SAP Business Network and the intelligent suite with industry cloud solutions from SAP and partners to drive new business outcomes.

- SAP Asset Intelligence Network** – for asset-centric, collaborative business models
- SAP S/4HANA** – for comprehensive service and outcome processes
- SAP Service Cloud** – for front-office service experiences



- SAP Entitlement Management** – for managing contractual obligations
- SAP Predictive Maintenance and Service** – for IoT-based condition monitoring and predictive maintenance services
- Fit-Rent Rental Solution by FIT-Global** – for efficiently managing the rental business
- Service Ticket Intelligence service** – for intelligent support through machine learning
- SAP Internet of Things solution** – for new IoT-based service offerings

## Expanding the Business Model to Become a Supplier of Digital Customer Services

[INDEX-Werke GmbH & Co. KG](#), a producer of machine tools, provides the digital service platform iXworld that unites all services that customers need to run their machines smoothly.

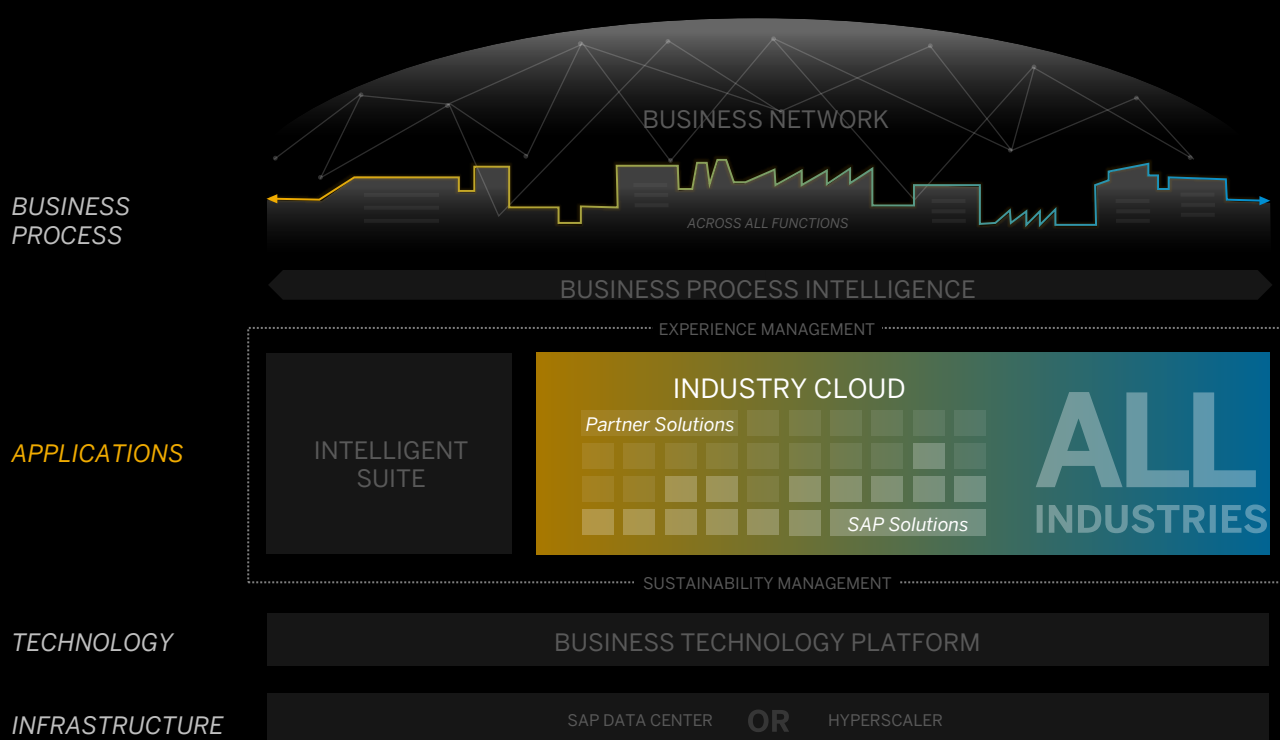
“Until now, we primarily sold machines. Now, we are expanding our business toward services. With the help of intelligent cloud solutions and experts from SAP, we can offer our customers comprehensive digital services to *optimize their production*.”

Werner Bothe, Head of Digitalization, INDEX-Werke GmbH & Co. KG



# SAP's Industry Cloud: A Joint Innovation Space

Business innovation is driven by everyone – customers, partners, and SAP. It starts with ideas: how to fix a problem, how to discover and unlock new value, how to deliver new business outcomes. Translating an idea into a business process or a solution needs an innovation space that comes with digital tools and content, to build and deliver quickly and predictably. This allows developers and business users to focus on getting things done to push new solutions out the door.



## Industry Innovation Spaces

Stand-alone applications struggle to deliver relevant business value. Enterprise applications always need access to essential business domains such as products, assets, factories, cost centers, employees, and customers. SAP's industry cloud provides direct access to business domains and processes in the intelligent suite through APIs. At the same time, our business and technology services provide the tools and infrastructure to create and run innovative industry cloud solutions.

## Intelligent Technology at Your Fingertips

Business innovation needs digital technologies that are ready to use to solve a business problem.

SAP's industry cloud, based on SAP® Cloud Platform, provides a full set of technologies ranging from user interfaces to robotic process automation to artificial intelligence and machine learning. All can be used easily in new solutions.

# Open Innovation Platform and Ecosystem

SAP's industry cloud is the way for our partners and SAP to deliver industry cloud solutions for customers that unlock new levels of efficiency, extend end-to-end business processes at the edge, and enable innovative business models.

SAP partners find a unique environment in our industry cloud in which the data domains and business processes of the intelligent suite and our business networks are readily accessible through open APIs. This allows our partners to accelerate innovation by focusing on the differentiating business capabilities they want to build and deliver to our joint customers.

This enables a spectrum of partnership and innovation models ranging from close co-innovation over identified white spaces to completely open innovation spaces with free competition to drive customer value.

The innovation models are complemented by a set of commercialization models that are strongly correlated to the value the solutions deliver to the business of our customers.

Freedom of choice is a key value, so customers can choose any partner or hyperscaler to deploy their industry cloud solutions.

## **Open Ecosystems Deliver More Innovation**

Open platforms, available to the wider ecosystem, have consistently delivered more innovation and choice for customers. Therefore, our industry cloud solutions can be run by the major infrastructure-as-a-service providers, giving our customers the freedom to implement their own individual platform strategy.

# RISE with SAP: Business Transformation as a Service

In today's world, the companies that thrive are those that adapt quickly. Optimizing and transforming the business is a customer journey triggered by today's challenges and tomorrow's opportunities in every industry.

RISE with SAP is a combination of modular services and solutions to enable the business and technology transformation journey of our customers, picking them up where they are today and taking them where they want to go – at their own pace.

**RISE with SAP has three foundational elements:**

## Business Process Redesign

BUSINESS  
PROCESS  
INTELLIGENCE



Business process intelligence benchmarks your process performance against your industry peers and recommends the areas where business redesign will yield the best results.

## Technical Migration

TOOLS &  
SERVICES



Tools and services from SAP and our partners support the transformation journey.

## Build Your Intelligent Enterprise

NETWORK



APPLICATIONS



PLATFORM



INFRASTRUCTURE



SAP S/4HANA Cloud helps you keep your business agile and responsive.

The business network connects you to customers, partners, and suppliers.

SAP Business Technology Platform and industry cloud solutions offer next practices and technologies for your business.

Your choice of infrastructure as a service (IaaS) is the foundation for your business in the cloud.

**RISE with SAP** enables organizations to avoid high up-front investment costs and focus on reduced TCO\* and fast time to value, with the flexibility they need. With RISE with SAP, it's simple: there is one hand to shake, one offering to customize, and one partner to manage operations, issue handling, and service-level agreements.

We look forward to joining our customers on their transformation journey into the future. Find more about RISE with SAP at [www.sap.com/RISE](https://www.sap.com/RISE).

\*RISE with SAP allows customers to realize the value of their investment sooner, with up to a 20% reduction in TCO over five years for SAP S/4HANA Cloud, private edition, as compared to a traditional ERP deployment.

Source: TCO reductions and timelines are modeled estimates from interviewed company data taken from the following IDC studies: SAP ECC and SAP S/4HANA TCO Study (Nov. 2020) and IDC SAP S/4HANA Business Value Study (March 2020). Timelines and estimates are intended for illustrative purposes only, and SAP makes no guarantees as to actual results.

# SAP's Comprehensive Partner Innovation Ecosystem

SAP has been the proud solution provider for the industrial manufacturing industry for almost five decades – starting from humble beginnings and growing into a position of supporting the core business of our customers. Ninety-nine percent of industrial manufacturing companies in the Forbes Global 2000 run SAP.

SAP's industry cloud opens the doors for a new level of co-innovation with customers and partners, enabling next practices and new business models that help our customers capture the new opportunities of servitization and outcome-based businesses and take the next step toward becoming intelligent enterprises.

Our open partner strategy gives our customers the choice of whom they work with to design the business models of the future; whom they partner with to define and implement business processes for efficiency and growth; and whom they trust with running their infrastructure.

There are many journeys industrial manufacturers can take into the digital economy to become intelligent enterprises. No matter which they choose, our scalability, security, global reach, vibrant business networks, and business process knowledge across industrial manufacturing and adjacent industries are the success factors for our customers, our ecosystem, and SAP.

Our industrial manufacturing partner ecosystem includes, among others:



## Engagement Model

SAP is the partner for the industrial manufacturing industry in the long run. We have established a co-innovation and collaboration model with many of our customers that is based on mutual trust and long-standing, value-based relationships.

This is the foundation to chart the journey into the new world of customer experience, segment of one, servitization, and outcomes, to capture the opportunities and tackle the risks in the digital economy.



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