The Intelligent Enterprise
for Industrial Manufacturing Companies

Supporting sustainable and profitable businesses that deliver tailor-made solutions at scale and as a service

THE BEST RUN SAP

# 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 help 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 different pricing models such as "pay as you go" or usage-based. Therefore, the ability to capture customer requirements effectively and then use those insights to drive mass customization is the key.

Changing business landscape: In a fluid environment customers are becoming partners, partners are becoming competitors, and new competitors, markets, customers, and business models are appearing. Industrial manufacturers must redefine their core strengths and relationships and learn to create value in industry value networks.
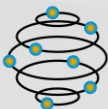
Ongoing disruption: Supply chain challenges are plaguing industrial manufacturers – including shortages of raw materials and chips. In addition, labor shortages and congestion are impacting transportation and production schedules. It is critical that industrial manufacturers are resilient and agile, able to quickly shift production, resources, and funds in a flexible way.

Increased environmental and social pressure: The focus on sustainability is increasing – from the cost of capital being determined by sustainability ratings to increased regulatory and voluntary reporting requirements covering the different sustainability aspects such as inclusion, sourcing, and emissions. This is impacting every process and department as well as the extended value chain.

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 and lot size one

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. Solutions must be provided that precisely fit the needs of one single customer 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.

Resilient 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. This helps enterprises be more agile and able to deal with external disruptions such as natural disasters and 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.

Sustainability and circularity

Sustainability has become top of mind for industrial manufacturers. In addition to meeting all regulations, they must help their customers and suppliers to be sustainable and stay competitive in a purpose-driven economy. In the future, enterprises will have to reimagine their business using models that save energy and natural resources and have a positive impact on all their stakeholders.

Reducing Complexity and Creating a Foundation for Future Growth

Learn how Komax reduced the complexity of its technology systems to ensure that they could continue to pursue new business growth,
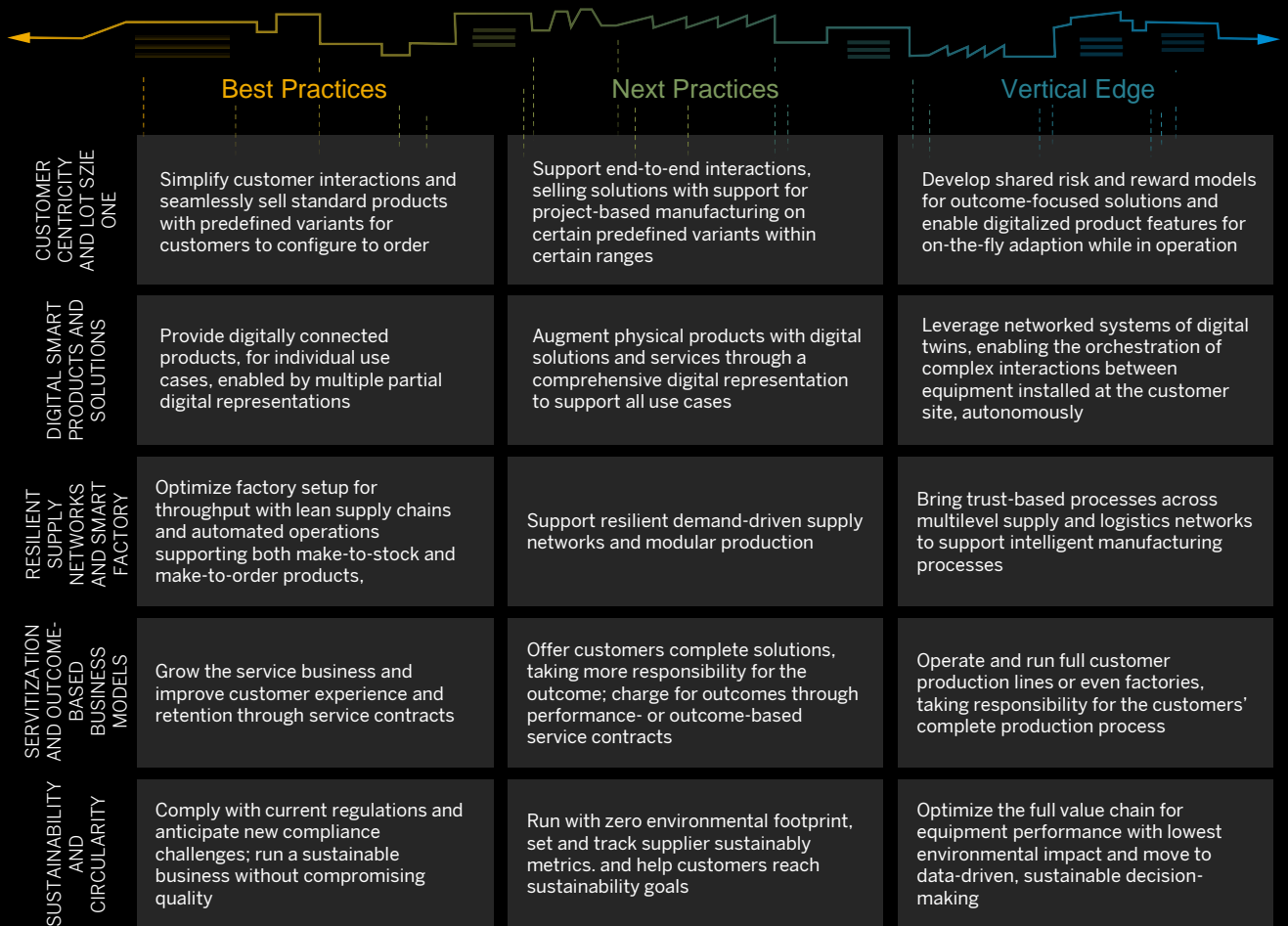
"As the market leader for wire processing solutions, we wanted to implement a solid platform for our growth. At the same time, we wanted to reduce the complexity of our legacy systems. SAP S/4HANA Cloud helped us eliminate that complexity and focus on our future growth."

– Tobias Rölz, Executive Vice President, Market & Digital Services, Komax Group

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.

	Best Practices	Next Practices	Vertical Edge
CUSTOMER CENTRICITY AND LOT SZIE ONE	Simplify customer interactions and seamlessly sell standard products with predefined variants for customers to configure to order	Support end-to-end interactions, selling solutions with support for project-based manufacturing on certain predefined variants within certain ranges	Develop shared risk and reward models for outcome-focused solutions and enable digitalized product features for on-the-fly adaption while in operation
DIGITAL SMART PRODUCTS AND SOLUTIONS	Provide digitally connected products, for individual use cases, enabled by multiple partial digital representations	Augment physical products with digital solutions and services through a comprehensive digital representation to support all use cases	Leverage networked systems of digital twins, enabling the orchestration of complex interactions between equipment installed at the customer site, autonomously
RESILIENT SUPPLY NETWORKS AND SMART FACTORY	Optimize factory setup for throughput with lean supply chains and automated operations supporting both make-to-stock and make-to-order products,	Support resilient demand-driven supply networks and modular production	Bring trust-based processes across multilevel supply and logistics networks to support intelligent manufacturing processes
SERVITIZATION AND OUTCOME-BASED BUSINESS MODELS	Grow the service business and improve customer experience and retention through service contracts	Offer customers complete solutions, taking more responsibility for the outcome; charge for outcomes through performance- or outcome-based service contracts	Operate and run full customer production lines or even factories, taking responsibility for the customers' complete production process
SUSTAINABILITY AND CIRCULARITY	Comply with current regulations and anticipate new compliance challenges; run a sustainable business without compromising quality	Run with zero environmental footprint, set and track supplier sustainably metrics. and help customers reach sustainability goals	Optimize the full value chain for equipment performance with lowest environmental impact and move to data-driven, sustainable decision-making

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.
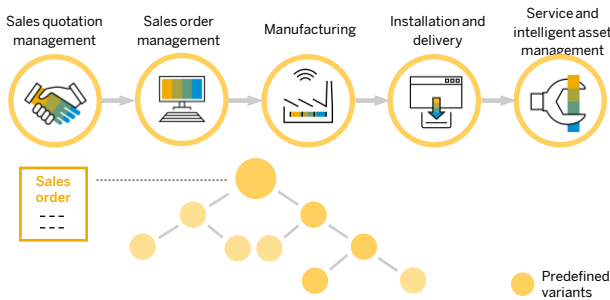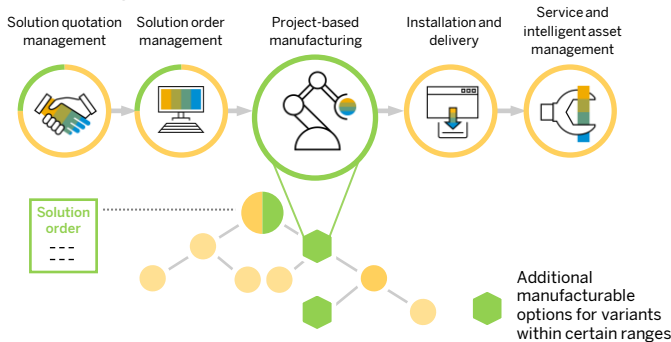
Customer Centricity and Lot Size One

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

Simplify customer interactions and seamlessly sell standard products with predefined variants for customers to configure to order

Sales quotation management · Sales order management · Manufacturing · Installation and delivery · Service and intelligent asset management

Sales order

Predefined variants

- Predefined options and manufacturing platforms to cover the majority of customers' requirements
- Support for operational transparency and efficiency between the front and back office to deliver configurable solutions
- 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 for advanced variant configuration capabilities

NEXT PRACTICE

Support end-to-end interactions, selling solutions comprising physical products, services, and subscriptions, with support for project-based manufacturing on certain predefined variants within certain ranges

Solution quotation management · Solution order management · Project-based manufacturing · Installation and delivery · Service and intelligent asset management

Solution order

Additional manufacturable options for variants within certain ranges

- Enabling an effortless and convenient solution and equipment-selling process focused on outcome
- Leveraging machine learning and usage data from Internet-connected equipment and services to propose value-added offerings and additional personalization to individual customers
- Employing customer usage data and insights to design customer-centric equipment and services to gain competitive advantage
- 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

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. Enable digitalized product features for on-the-fly adaption while in operation.

-20%
Reduction in customer attrition through reducing friction in customer experiences

+15%
Revenue lift due to smart personalization
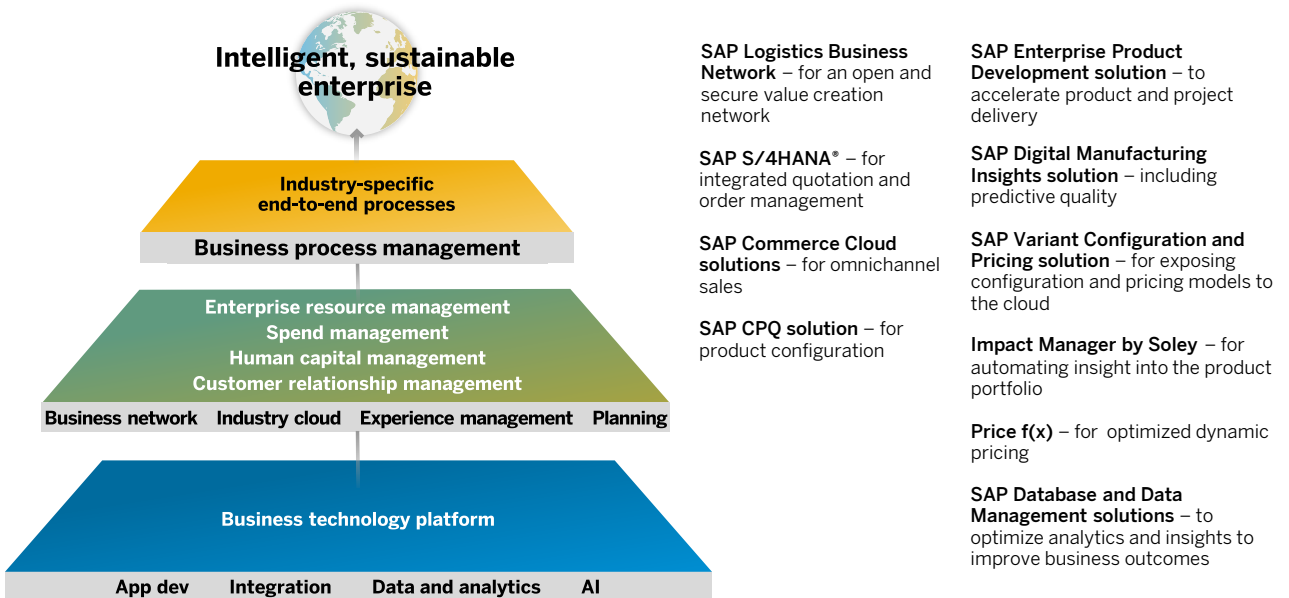
Increased
Margin on solution sales

Source: SAP Performance Benchmarking

SAP Solutions:
Be Customer Centric and Deliver Lot Size One

Customers expect customized products, services, and solutions that precisely fit their individual needs. They also expect great experiences at every interaction point. A sophisticated platform for configuration is required, and mass-customization strategies that focus on value creation. This leads to solutions and technology that 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.

Required Capabilities

R&D and Engineering	Sales and Marketing	Supply Chain	Manufacturing	Installation and Service	Procurement and Finance
▪ Deliver product innovations based on direct product feedback ▪ Collect structured requirements based on stakeholders interactions ▪ Offer selective engineer-to-order (ETO) capabilities during the sales configuration process (CTO+)	▪ Engage with customers on an omnichannel solution selling experience ▪ Bundle products and services while driving new revenue models ▪ Provide efficient sales processes for complex product configuration and pricing	▪ Plan sales and operations with flexibility at different levels (variant and product) ▪ Promote efficient and flexible internal and external logistics and supplier collaboration ▪ Foster responsive, demand-driven, collaborative supply networks	▪ 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 ▪ Adjust production orders with greater flexibility ▪ Track and trace individual products	▪ Personalize end-to-end services and parts processes ▪ Flow customer information across channels (including experience history) ▪ Gain full transparency into equipment lifecycle information ▪ Provide a service knowledge database	▪ Scale with an agile global supplier-network ▪ Onboard alternative suppliers with flexibility ▪ Analyze profitability instantly across multiple dimensions ▪ Manage the customer portfolio strategically

The architecture for the Intelligent Enterprise in industrial manufacturing companies starts with SAP Business Technology Platform and business applications from SAP, including industry cloud solutions that support organizations with their industry-specific end-to-end processes.

Intelligent, sustainable enterprise

- Industry-specific end-to-end processes
- Business process management
- Enterprise resource management
- Spend management
- Human capital management
- Customer relationship management
- Business network | Industry cloud | Experience management | Planning
- Business technology platform
- App dev | Integration | Data and analytics | AI

SAP Logistics Business Network – for an open and secure value creation network

SAP S/4HANA® – for integrated quotation and order management

SAP Commerce Cloud solutions – for omnichannel sales

SAP CPQ solution – for product configuration

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

SAP Digital Manufacturing Insights solution – including predictive quality

SAP Variant Configuration and Pricing solution – for exposing configuration and pricing models to the cloud

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

Price f(x) – for optimized dynamic pricing

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

Reinvent Sales with a Digital Twin

KAESER KOMPRESSOREN SE wanted to increase sales efficiency with automated simulations of complete compressor stations. It used a simulation-based digital twin that would increase the efficiency of its configure, price, and quote process to digitalize sales for new and improved insights. This automates the simulation tasks for the technical verification of customer configuration and allows what-if simulations to balance costs against customer requirements.

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
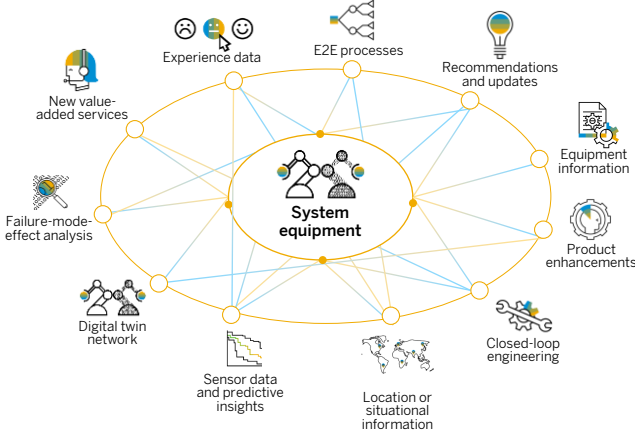Provide digitally connected and sustainable products for individual use cases
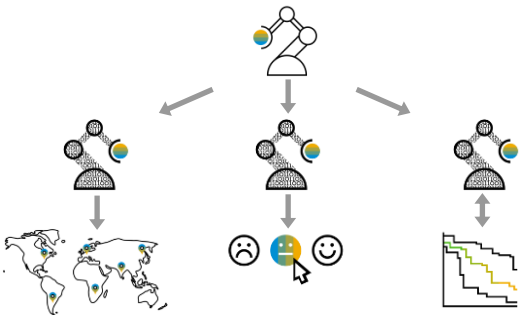
Individual use cases are enabled by multiple, partial digital representations that:

- 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
- Ensure and document compliance with sustainability regulations

NEXT PRACTICE
Augment physical products with digital solutions and services

Experience data | E2E processes | Recommendations and updates
New value-added services
Failure-mode-effect analysis
Digital twin network
System equipment
Equipment information
Product enhancements
Closed-loop engineering
Sensor data and predictive insights | Location or situational information

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
- Designing and sourcing to meet sustainability goals, ensuring complete traceability

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

Source: SAP Performance Benchmarking

SAP Solutions: Design Digital Smart Products and Solutions

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

Required Capabilities

R&D and Engineering	Sales and Marketing	Supply Chain	Manufacturing	Installation and Service	Procurement and Finance
▪ 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	▪ Enable collaborative solution and value selling ▪ Generate leads through predictive product replacement and precise segmentation ▪ Sell solutions and software	▪ Track digital components ▪ Actualize efficient replenishment strategies ▪ Enable 3D printing for spare parts ▪ Use a digital twin throughout the entire supply chain, including installation	▪ Install and manage in-product software ▪ Support advanced testing and connectivity management	▪ 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	▪ 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

The architecture for the Intelligent Enterprise in industrial manufacturing companies starts with SAP Business Technology Platform and business applications from SAP, including industry cloud solutions that support organizations with their industry-specific end-to-end processes.

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 Environment, Health and Safety Management (EHS) application – for product compliance

SAP Enterprise Product Development – to accelerate product and project delivery

SAP Product Lifecycle Costing solution – for insights into costs and margins

SAP Respsonsible Design and Production solution – for visibility into the supply chain

CIDEON Cloud CAD Integration for PDM – for connecting PDM systems with SAP S/4HANA

SAP Blockchain Business Services – for enabling secure blockchain services

Improve Competitive Advantage with Transparency Across Product Development

Endress+Hauser Level+Pressure reduced costs associated with product manufacture and development to help improve competitive advantage by enabling employees from multiple business functions to quickly and easily share and collaborate on cost-optimized product ideas.

Resilient Supply Networks and Smart Factories

Supply chain and manufacturing networks in industrial manufacturing companies are becoming more modular and flexible to allow the seamless execution of different manufacturing strategies. In addition, optimizing supply chain transparency and flexibility improves your ability to react quickly to unforeseen disruptions and ensure business continuity.

BEST PRACTICE

Support lean supply chains with optimized factories set up for throughput
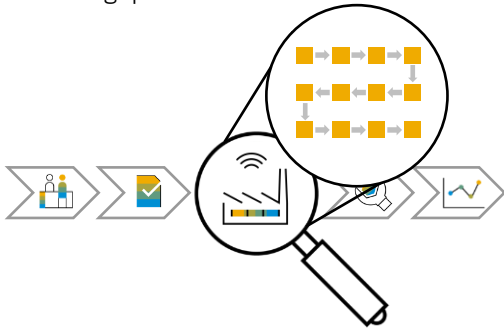
- Collaboration during design, using a digital thread to hand over engineering structures effectively
- Optimized material flow
- Transparent view of available stocks and more-efficient processing of inventory adjustments
- Agile manufacturing leveraging up-to-date concepts such as flow method and pull 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 and sustainable demand-driven supply networks and modular production
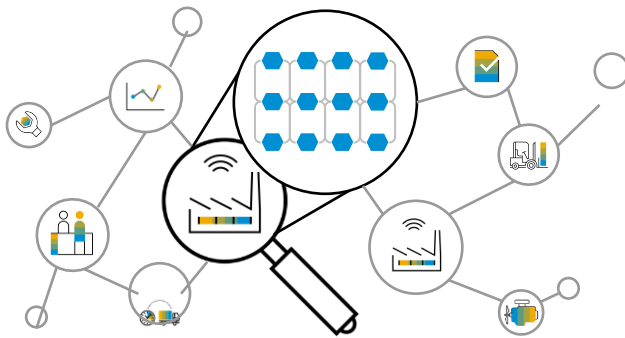
- Designed for multiple sourcing options to be able to adjust suppliers or region of supply easily
- Predictive long-term supply network planning and simulation – to help mitigate supply network bottlenecks
- Demand-driven material replenishment planning and customer order prioritization, based on allocation and backlog availability
- One-piece flow in the whole supply chain
- Automated warehouse operations with intelligent robots
- Predictive maintenance
- Adaptive and modular production supported by dynamic routings and autonomous robots
- 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

Source: SAP Performance Benchmarking

SAP Solutions: Implementing a Resilient Supply Network and Smart Factory

To operate a resilient supply network in conjunction with smart and modular manufacturing, you need new business capabilities – provided by our industrial manufacturing solutions through the Intelligent Enterprise approach.

Required Capabilities

R&D and Engineering

- R&D and Engineering
- Integrate manufacturing engineering with electronic and manual management of bills of material
- Visualize manufacturing processes digitally based on harmonized product data

Sales and Marketing

- Forecast sales precisely and reliably
- Align supply chain and sales planning
- Route customer orders directly into the factory as production orders

Supply Chain

- Achieve real-time, end to end visibility into supply chain management, from design to operation
- Plan demand and supply flexibly
- Integrate material management from the shop floor to the warehouse

Manufacturing

- Align operations with activities performed by automated equipment
- Support machine-to-machine integration
- Innovate plug-and-play processes
- Deliver benefit from a digital twin of the manufacturing facility
- Use dynamic routing
- Provide digital work instructions

Installation and Service

- Collaborate on equipment data through an asset network
- Smoothly hand over as-built, as-installed equipment information to services
- Leverage predictive service and maintenance
- Incorporate installer experience data

Procurement and Finance

- Allow contractual enablement of global supply chains with multitier supplier management
- Automate and simplify the integration of material and component suppliers

The architecture for the Intelligent Enterprise in industrial manufacturing companies starts with SAP Business Technology Platform and business applications from SAP, including industry cloud solutions that support organizations with their industry-specific end-to-end processes.

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 Integrated Business Planning for Supply Chain solution – for 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

Using Process Automation to Enable Transparent Outbound Processing

Discover how The Chamberlain Group fully monitors outbound transportation processes to improve deliveries and customer service. The company uses a digital solution that improves transportation processes, such as shipments and delivery. It achieves a high degree of process automation and improved transportation visibility for outbound processing of finished goods.

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.

Manufacturer — Service contract — Customer

- 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.

Additional services · Outcome-based contract · All products · Shared responsibility · Agreed targets · Monitoring · Outcome billing · Manufacturer and customer
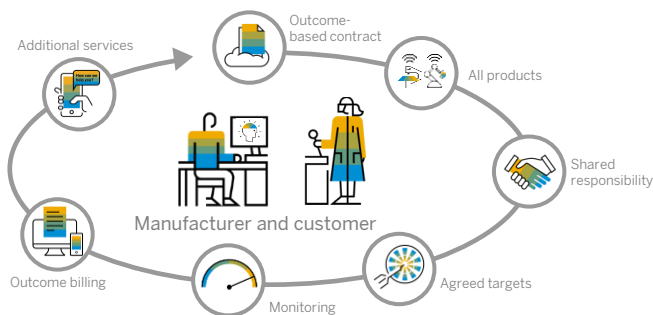
- Offer services and contracts for both your own and third-party products
- Guarantee outcomes, such as performance, yield, or cost
- Let the manufacturer take over more risk and responsibility for the operation of equipment
- Enable a more collaborative relationship
- Focus on customer-specific defined 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	Sales and Marketing	Supply Chain	Manufacturing	Installation and Service	Procurement
▪ Design products with a focus on good serviceability ▪ Develop innovative, outcome-based services ▪ Design to offer digital services with data platforms	▪ 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 service parts and consumables as part of outcome contracts ▪ Improve demand sensing and automate replenishment ▪ Simulate and optimize service parts planning and logistics performance	▪ Make manufacturing parameters available for service processes ▪ Leverage manufacturing practices for complex services, such as installation and retrofit	▪ 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	▪ 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 for the Intelligent Enterprise in industrial manufacturing companies starts with SAP Business Technology Platform and business applications from SAP, including industry cloud solutions that support organizations with their industry-specific end-to-end processes.

Intelligent, sustainable enterprise

Industry-specific end-to-end processes

Business process management

Enterprise resource management
Spend management
Human capital management
Customer relationship management

Business network | Industry cloud | Experience management | Planning

Business technology platform

App dev | Integration | Data and analytics | AI
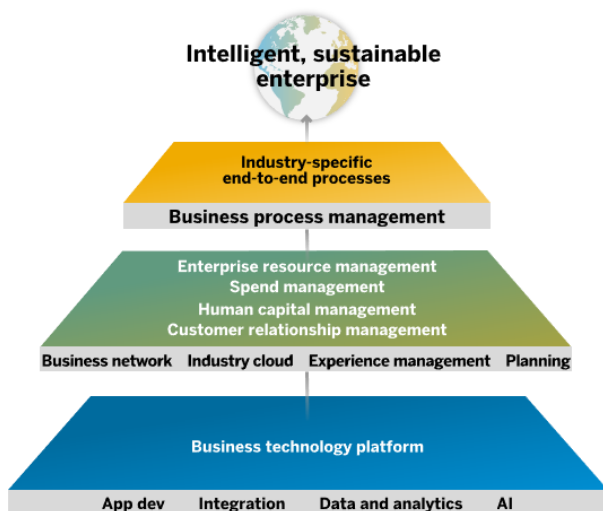
SAP Asset Intelligence Network – for asset-centric, collaborative business models

SAP S/4HANA – for comprehensive service and outcome processes

SAP Service Cloud solution – for front-office service experiences

SAP Predictive Asset Insights solution – for IoT–based services

SAP Equipment Services Cockpit – for managing asset-centric services

Fit-Rent Rental Solution by FIT Global – for full rental management

Frontline Augmented Reality by TeamViewer – for embedded AR remote support sessions

SAP Internet of Things solution – for new IoT-based service offerings

Using a Digital Asset Network to Create Instant Value for Both Manufacturer and Customers

See how BITZER SE is transforming to become a provider of compressor-enabled services to aid customers and gain competitive edge. The company is digitally connecting its compressors to let customers monitor real-time status, access configuration data and documentation, and review operational reports. This network will also enable predictive maintenance to help keep machines running efficiently – while helping Bitzer transform its business model to a provider of compressor-enabled services.

Becoming a Sustainable Industrial Manufacturing Business

Over time, sustainability has become an important topic for some companies. But now it is an imperative for manufacturers to manage their green line and comply with regulations. They must now evolve to help their customers and suppliers to be sustainable while staying competitive in a purpose-driven economy. In the future, enterprises will have to reimagine their business using models that save energy and natural resources and have a positive impact on their employees, customers, partners, and communities.

BEST PRACTICE

Improve internal processes and ensure compliance by complying with current regulations and anticipating new compliance challenges posed by governments and stakeholders. Run businesses sustainably without compromising on the quality of equipment and machinery and achieve great financial returns.
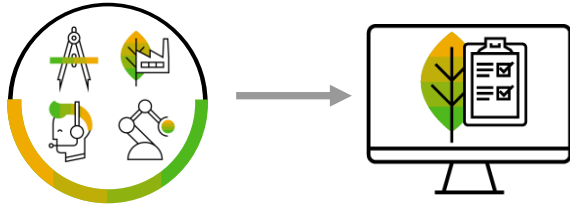
- Design and sell products that use minimum material and energy in production, are efficient, and don't pose a risk to the environment
- Account for and reduce carbon emissions of travel
- Increase digital customer interactions
- Optimize supply chain for efficiency and increase inshore manufacturing
- Reduce energy and water usage in production and choose green sources
- Source products and materials based on sustainable criteria
- Set up internal carbon accounting process with clear KPIs

NEXT PRACTICE

Achieve zero carbon emissions and positively influence ecosystem by extending sustainability efforts beyond running with zero environmental footprint to setting and tracking supplier sustainability metrics and helping customers reach sustainability goals. Create products and solutions that enhance and support sustainable operations throughout their lifecycle.

- Design for recyclability and circularity
- Reduce need for service through self-healing assets
- Implement mixed reality to reduce travel of technicians
- Provide end-to-end transparency on sustainability to the end customer
- Optimize energy usage in equipment operations through data driven improvements in emissions analysis
- Select suppliers with sustainable practices and products
- Benchmark energy usage and carbon footprint of products against competition in the field
- Set clear policies, monitor and invest in health, safety, and well-being of employees

Innovations at the Vertical Edge

Optimize the full value chain for equipment performance with lowest environmental impact by integrating environmental, social, and financial performance management and moving to data-driven, sustainable decision-making.

Increased
Environmental safety and compliance

Reduced
Carbon footprint and energy cost by
3%–10%

Decreased
Compliance reporting effort

Source: SAP Performance Benchmarking

SAP Solutions:
Achieve Your Sustainability and Circularity Goals

Having the right software is crucial to achieve, measure, and report on current and future sustainability goals. Carefully chosen solutions can help your business meet and exceed growing demands through their ability to quantify sustainability along the value chain and turn data into actions.

Required Capabilities

R&D and Engineering	Sales and Marketing/Service	Procurement and Supply Chain	Manufacturing	Finance	HR
• Design for minimum material and energy usage in production • Design for recyclability and circularity • Identify and assess climate risks throughout entire product lifetime • Design products with sustainable operational impact	• Reduce travel and account for carbon costing • Support digital customer interaction • Improve efficiency of maintenance processes • Provide carbon transparency to end customers • Rate customers on sustainability	• Optimize logistics processes to reduce carbon emissions • Improve efficiency of returns management • Optimize recycling with waste management partnerships • Source based on sustainable criteria • Select sustainable suppliers	• Reduce energy and water usage in production and choose green sources • Document emissions and ensure compliance • Drive zero accidents and downtime • Deliver surplus heat for community heating • Support efficient refurbishment practices	• Enable EU taxonomy reporting (or similar regulations) • Set up internal carbon accounting process with clear KPIs • Set clear sustainability guidelines for investments and partners	• Set clear policies, monitor and invest in health, safety, and well-being of employees • Ensure suppliers have ethical employment practices • Invest in local development programs • Avoid precarious working environments

The architecture for the Intelligent Enterprise in industrial manufacturing companies starts with SAP Business Technology Platform and business applications from SAP, including industry cloud solutions that support organizations with their industry-specific end-to-end processes.
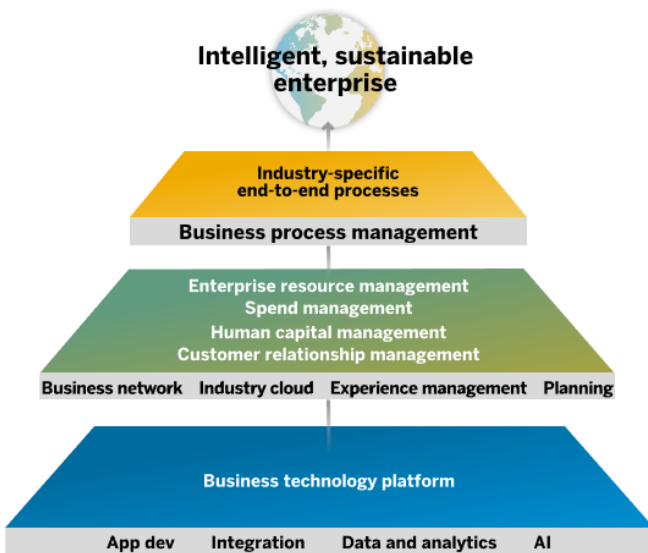
SAP Asset Intelligence Network – for asset-centric, collaborative business models

Ariba Network – for ethical sourcing

SAP Cloud for Sustainable Enterprises solution – to embed sustainable practices

SAP EHS Management – for product compliance

SAP Transportation Management application – optimizing transportation

SAP Sustainability Control Tower solution – for enterprise-wide sustainablity performance management

SAP Product Footprint Management solution – to calculate environmental impact of products

SAP Returnable Packaging Management solution – to manage inventory and logistics

SAP Responsible Design and Production – supporting calculations to optimize material choices

SAP Internet of Things – for new IoT–based service offerings

Decarbonizing Value Chains for a Green Future

Hitachi is not just talking the talk but walking the walk when it comes to sustainable transformation. Learn how the company is driving sustainable transformation and decarbonizing its business and entire value chain – while delivering renewable energy to the world – by working alongside partners, including SAP.

SAP's Industry Cloud:
A Joint Innovation Space

We enable our customers to become intelligent, sustainable enterprises by bringing together our comprehensive portfolio of solutions and technology in service to customers' business process needs.

- It starts with our platform technology that provides the foundation of application integration, extension to a robust ecosystem of solutions, and data and AI.

- Then our industry-leading business applications work together spanning front-end and back-end systems that only SAP can provide.

- This all comes together to provide the customer with support for the end-to-end, industry-specific business processes they need to run as an intelligent, sustainable enterprise. Learn more.
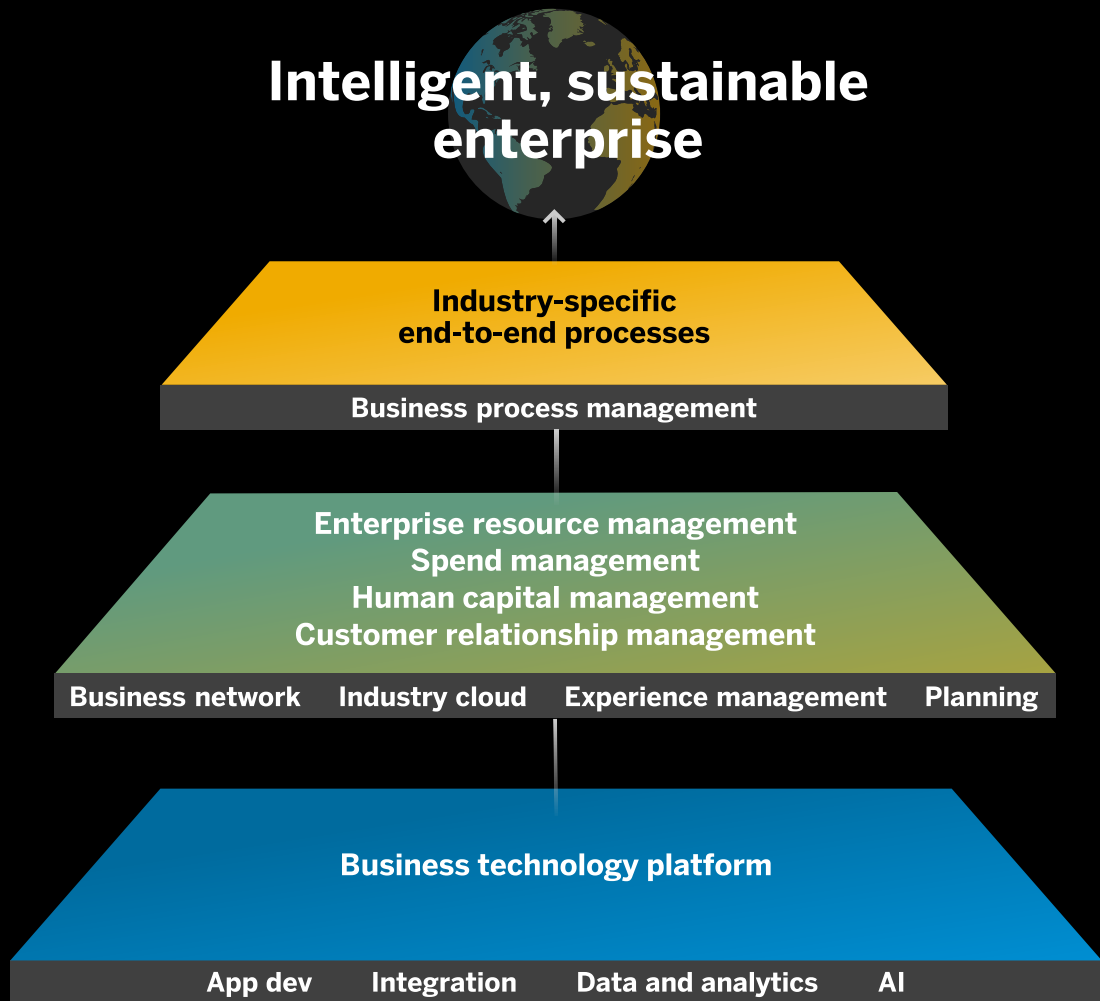
Industry Innovation Spaces

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 solutions, built on SAP Business Technology Platform, provide a full set of technologies ranging from user interfaces to robotic process automation to artificial intelligence and machine learning. All can be used readily 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: Driving Business Innovation Together

Every enterprise needs to develop new business models to avoid being disrupted, gain efficiencies to fund innovation, and transform mission-critical systems without business risk. RISE with SAP is the solution.

RISE with SAP is a comprehensive solution with:

- Cloud ERP for every business need
- Industry next practices and extensibility
- Analytics and business process intelligence
- Outcome-driven services from SAP and partners

Discover the value of RISE with SAP

Take the lead with industry innovation for top-line, bottom-line, and green-line growth

- ✓ Grow revenue by creating differentiating business models in your industry
- ✓ Increase margin with built-in industry-specific processes and best practices
- ✓ Unlock new efficiency with intelligent automation across mission-critical processes
- ✓ Manage sustainability with company-wide transparency and controls

Never stop improving with continuous insight to optimize business processes

- ✓ Prioritize optimization opportunities with instant analysis of processes, activities, and tasks
- ✓ Sharpen process performance based on actual system usage, best practices, and industry benchmarking
- ✓ Accelerate your progress with tailored insight on where to automate business processes with AI

Secure your business with a trusted partner for your needs, every step of the way

- ✓ Run your mission-critical operations at their best around the globe
- ✓ Reach the cloud without compromise with solutions for every business and every regulatory requirement
- ✓ Take charge of change using a versatile platform to speed innovation
- ✓ Own your tomorrow with a guided journey and outcome-driven practices from SAP and our partners

RISE with SAP is built to fit your needs

RISE with SAP is designed to support your business needs – for your industry, in your geography, for your regulatory requirements – with SAP responsible for the holistic service-level agreement, cloud operations, and technical support. It includes:

Cloud ERP	Business process intelligence	Business platform and analytics	Business networks	Outcome-driven services and tools
SAP S/4HANA Cloud	Business process intelligence starter pack	SAP Business Technology Platform (CPEA credits)	SAP Business Network Starter Pack	From partners

RISE with SAP is the foundation for an intelligent, sustainable enterprise in the cloud. We look forward to joining our customers on their transformation journey into the future. Find out more about RISE with SAP.

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:

accenture · Deloitte. · .msg global · all for one steeb · DocuSign · ALLGEIER · DSC · NTT Data Global IT Innovator · ARKITE · FIT Global · OPEN INDUSTRY 4.0 ALLIANCE · Atos · FUJITSU · OpenText · aws · Google · proaxia · 3DF Experts · HITACHI Inspire the Next · PRICE f(X) · BearingPoint · IBM · pwc · BlueBoot · Infosys · SIEMENS · Capgemini · INNOVAPPTIVE · SOLEY · cbs · itelligence · TATA · CIDEON · LeverX · Tech Mahindra · Cognizant · Microsoft · Vistex · mediafly · wipro · DELAWARE Consulting · mx mendix · WorkForce SOFTWARE

Now easier to try and buy solutions and extensions for industrial manufacturers

Try and buy leading partner solutions and SAP software for industrial manufacturers – from solution configuration to managing asset-centric services and manufacturing – on SAP Store.

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