The Intelligent Enterprise
for the Cargo Transportation and Logistics Industry

Paving the future of logistics with innovation and technology

THE BEST RUN **SAP**

Paving the Way for
Sustainable Business Model Innovation

The demands of running global supply chains are more challenging than ever. Cargo transportation and logistics have always been complex, but now the industry must also manage key market trends:

- **Global transport disruptions** caused by pandemics, earthquakes and other natural disasters, accidents, geopolitics, cyberattacks, and demand peaks create severe supply chain congestions at global and local level.

- The booming e-commerce industry, coupled with a rise in reverse logistics operations and trade-related agreements, generates **logistics market growth.**

- **Higher costs** of transport, factoring for the increase in the cost of energy and fuel and the poorly maintained infrastructure, lead to capacity constraints and the lack of qualified workforce to absorb the demand peaks.

- Advanced real-time data management capabilities, warehouse automation, and **digitalization** of the entire supply chain will enable a consistent, innovative, customer-centric, and agile approach.

- **New logistics companies** are providing technologically driven services by investing in blockchain solutions, mobile technologies, and logistics software platforms to gain a competitive advantage in a fiercely competitive marketplace.

- Their customers are trying to become **more resilient** by building in redundancy across suppliers, nearshoring, reducing the number of unique parts, and regionalizing their supply chains.

Due to these trends, we expect the cargo transportation and logistics industry to see changes as long-haul companies consolidate and new technologies become more readily available. Technology advancements such as 5G are expected to gain momentum as enablers of new levels of real-time data. At the same time, autonomous trucks have the promise to revolutionize the trucking industry.

Services will expand across all modes of transportation and will be sold and managed by a global network of interconnected providers. On top of this, we see how governments and markets are working to address the global sustainability challenges.

Business Model Innovation

These are dangerous times for the "dinosaurs" in the cargo transportation industry. For a long time, they could rely on their network, economies of scale, and size to be able to offer the best price to customers. But customer requirements have changed. With factors such as sustainability, transparency, and flexibility creeping into customers' buying decision, cargo companies need to be able to respond to more requirements than simply a competitive price.

Digital entrants consolidate information of multiple transportation service providers and endanger cargo companies to be commoditized even more and to lose direct customer relationships.

With the help of digital tools, cargo companies will be able to offer compelling services to customers to drive customer satisfaction and retention.
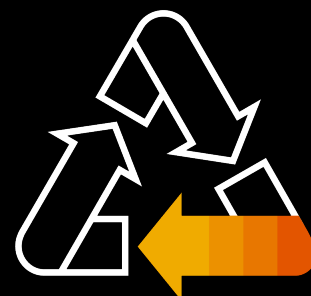
Strategies for Cargo Companies to Run as Intelligent Enterprises

To prepare for the next phase of market evolution, we recommend that cargo companies adopt a greater degree of resilience, adaptability, and flexibility for their business. And we suggest that they maintain a sharp focus on three key critical priorities that will help drive innovation in a digital enterprise that's in the midst of change:

Digitalize the customer experience by leveraging a 360-degree view of your customers so you can build stronger strategic relationships and add value across the logistics business network through services such as new last-mile delivery models.

Generate new business models by reimagining your processes to enable diversification that drives new, unique selling points and outcome-based initiatives.

Digitalize operations through efficiently managing the flow of your customer orders and dependent assets by enabling predictive insight and analytics that bring real-time visibility to network transactions and equipment health.
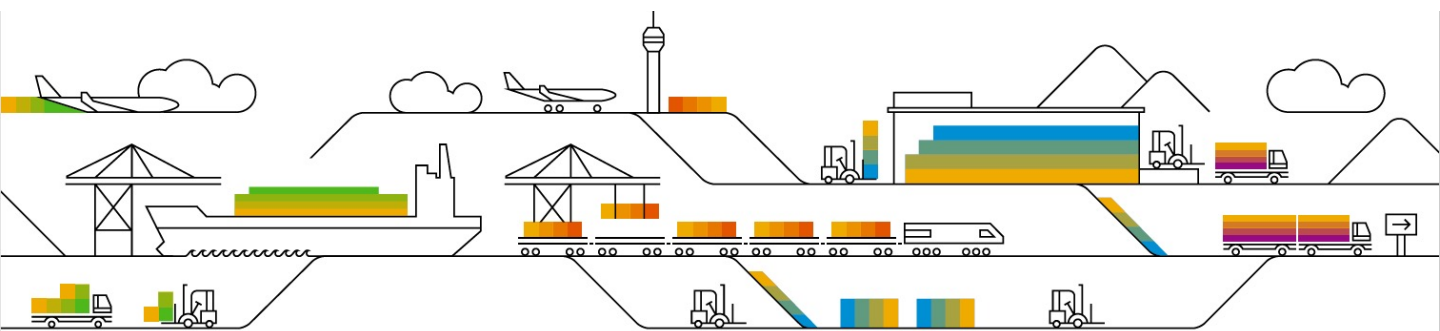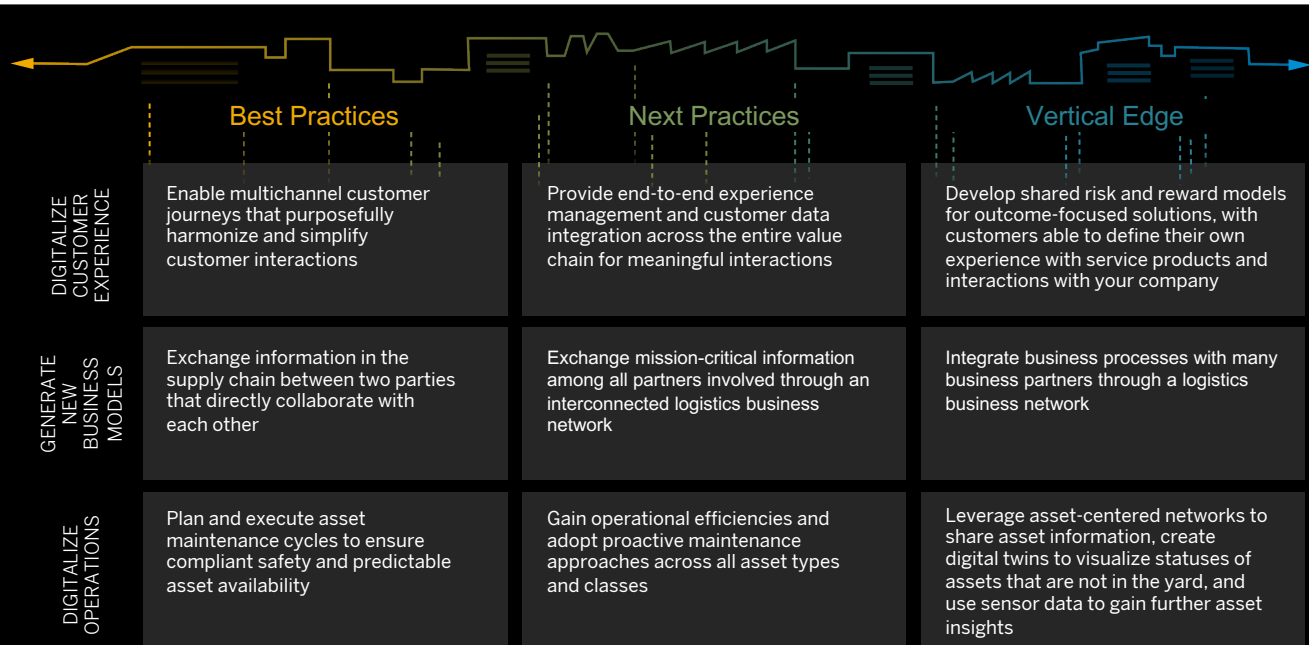
Focus on Digitalizing Operations

Schnellecke Logistics SE keeps customers in the automotive industry and their supply chains running around the world with logistics services and supplies. Today, the company needs to meet customers' needs with increasing efficiency and knows that quick access to operational data is key to its success. After integrating smart container technology into its core business processes as part of an overall digitalization strategy, Schnellecke decided it was time to create a digital control tower that puts data in the hands of employees.

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.

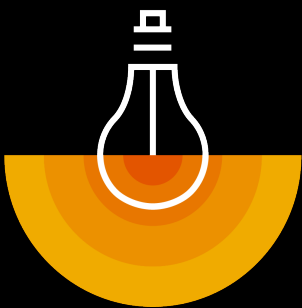|	Best Practices	Next Practices	Vertical Edge
DIGITALIZE CUSTOMER EXPERIENCE	Enable multichannel customer journeys that purposefully harmonize and simplify customer interactions	Provide end-to-end experience management and customer data integration across the entire value chain for meaningful interactions	Develop shared risk and reward models for outcome-focused solutions, with customers able to define their own experience with service products and interactions with your company
GENERATE NEW BUSINESS MODELS	Exchange information in the supply chain between two parties that directly collaborate with each other	Exchange mission-critical information among all partners involved through an interconnected logistics business network	Integrate business processes with many business partners through a logistics business network
DIGITALIZE OPERATIONS	Plan and execute asset maintenance cycles to ensure compliant safety and predictable asset availability	Gain operational efficiencies and adopt proactive maintenance approaches across all asset types and classes	Leverage asset-centered networks to share asset information, create digital twins to visualize statuses of assets that are not in the yard, and use sensor data to gain further asset insights

Business Process Innovation

For cargo transportation 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.

Business Networks

Digitalization has increased the information and data produced by a large factor. Consequently, every participant in a value chain consumes and produces business-critical information.

However, sharing these data points has become a delicate topic, as companies have understood that valuable information can also be monetized. Therefore, not all information has been willingly shared. In the last few years, it has become clear that the benefit of transparency outweighs the potential revenue streams that could be generated with information monetization. In a sequential value chain, information could simply be received and forwarded, but in the interconnected world we live in today, sharing information is no longer a sequential but a bilateral task.

Business networks enable entire industries to run more efficiently by sharing business-critical information in real time with all parties involved in the value chain.
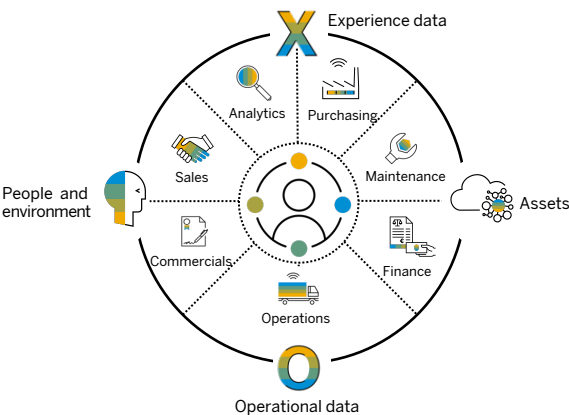
Customer Experience

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, transportation and logistics companies should prioritize customer experience and relationships as a differentiator.

BEST PRACTICE

Enable multichannel customer journeys that purposefully harmonize and simplify customer interactions
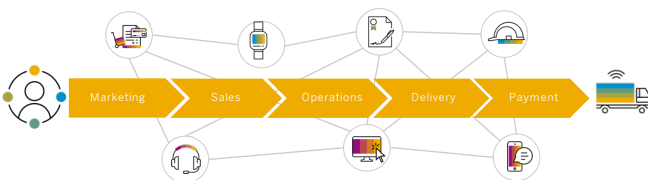
- Provide customers equipment and services that address their needs and appetite for customization
- Support operational transparency and efficiency between the front and back office to deliver configurable solutions and equipment
- Switch between digital self-service, digitally enabled human interactions 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 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 services-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 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.

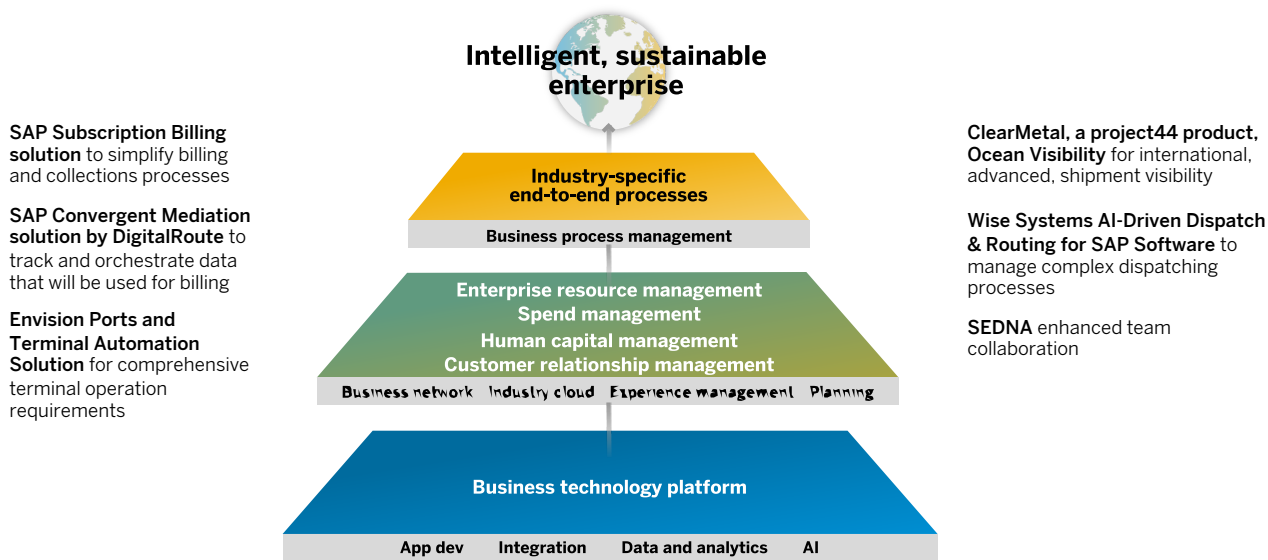| **Increased**	**500%**	**1.5 x**
Customer success by providing competitive and profitable rates	Reduction in the number of tariff lines due to the standardization and simplification of pricing processes employees	More payment transactions managed by the same number of employees

Source: SAP Performance Benchmarking

SAP® Solutions: Maximize Customer Experience

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

Required Capabilities

Commercials
- Productize services to help provide consistency across business units and geographies
- Provide customers with a real-time view into their spending
- Generate clear, intuitive invoices for all services on a single bill
- Provide proactive, personalized communication

Operations
- Identify smarter network strategies to orchestrate logistics services
- Eliminate disputes, discrepancies, and delays in transit
- Monitor in real time to determine operational needs
- Provide a view of the customer's service levels, needs, and shipping patterns

Asset management
- Use digital twin technology to manage assets, parts, and equipment
- Monitor asset operations and maintenance for asset history and financial impact
- Reduce fixed asset maintenance expense

Sourcing and procurement
- Enable flexible purchasing with agile supplier network management
- Use sensor data and predictive algorithms to determine the optimal time for maintenance
- Conduct product and user satisfaction and experience analysis

Finance and HR
- Attract, train, and retain current and new workforce
- Identify, forecast, and address skill gaps
- Reduce disputes, and improve days sales outstanding
- Intelligently clear payments
- Ensure profitability
- Mitigate risk through real-time financial performance

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

SAP Subscription Billing solution to simplify billing and collections processes

SAP Convergent Mediation solution by DigitalRoute to track and orchestrate data that will be used for billing

Envision Ports and Terminal Automation Solution for comprehensive terminal operation requirements

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

ClearMetal, a project44 product, Ocean Visibility for international, advanced, shipment visibility

Wise Systems AI-Driven Dispatch & Routing for SAP Software to manage complex dispatching processes

SEDNA enhanced team collaboration

"At Gulftainer, we are committed to providing the highest standards of operational efficiency via constant innovation and digitalization of our processes and services. SAP S/4HANA enables a more efficient, cost-effective movement of international business through their terminals, providing the actionable data necessary to increase productivity and enhance customer experience."
Vinay Sharma, Group IT Director, Gulftainer Company Limited

15%
Increase in equipment availability, due to optimized planning and preventive maintenance Gulftainer

10%
Reduction in days taken to close monthly and annual books Gulftainer

ONE
Single view of master data for all processes Gulftainer
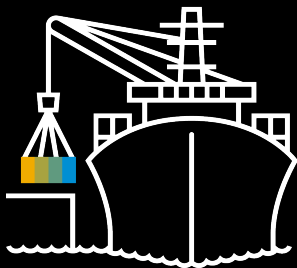
Generate New Business Models

While traditional supply chains communicate in a sequential way, a lot of information gets lost. Modern supply chains create additional value through their transparency, ability to include new members quickly and without high ex-ante costs, and interoperability.

A centrally orchestrated logistics business network enables transportation service providers to broaden their customer reach, receive more information from carriers, shippers, and consignees, and access new service providers themselves.

BEST PRACTICE
Achieve supply chain integration
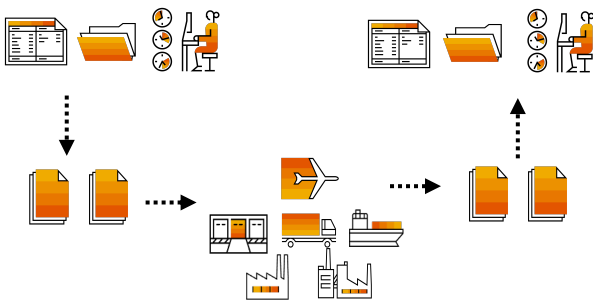
- Information in the supply chain is exchanged between two parties directly collaborating with each other.
- Integration between shipper and carrier is static through electronic data interchange.
- Connectivity is provided through portals.
- Receipt and confirmation instructions are provided by e-mail, fax, or phone.
- All this can result in information being altered or lost and received late.

NEXT PRACTICE
Enable dynamic, connected logistics
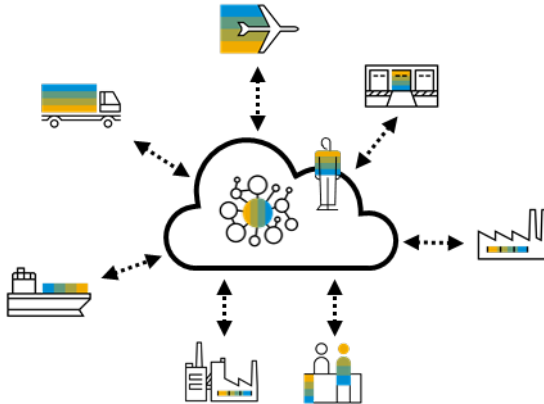
- Sales, operations, and final delivery are aligned on a common, multimodal, flexible platform, improving customer satisfaction.
- Linear supply chains are transformed into digital transportation networks.
- Standard operating procedures in your systems are sold and monitored in real time.
- New partners are seamlessly onboarded to the network and can create new value to the supply chain.
- Members of the supply chain gain access to new service providers and can exchange order, execution, and billing information.
- Time to market for new products is reduced.

Innovations at the Vertical Edge

Activate integrated business processes with many business partners through a logistics business network, exchanging mission-critical information across all members of the supply chain.

Improved compliance by using negotiated contract pricing	Increased savings by streamlining and automating processes and reducing exceptions	Reduced working capital through optimization of early-payment discounts

Source: Purolator Inc.
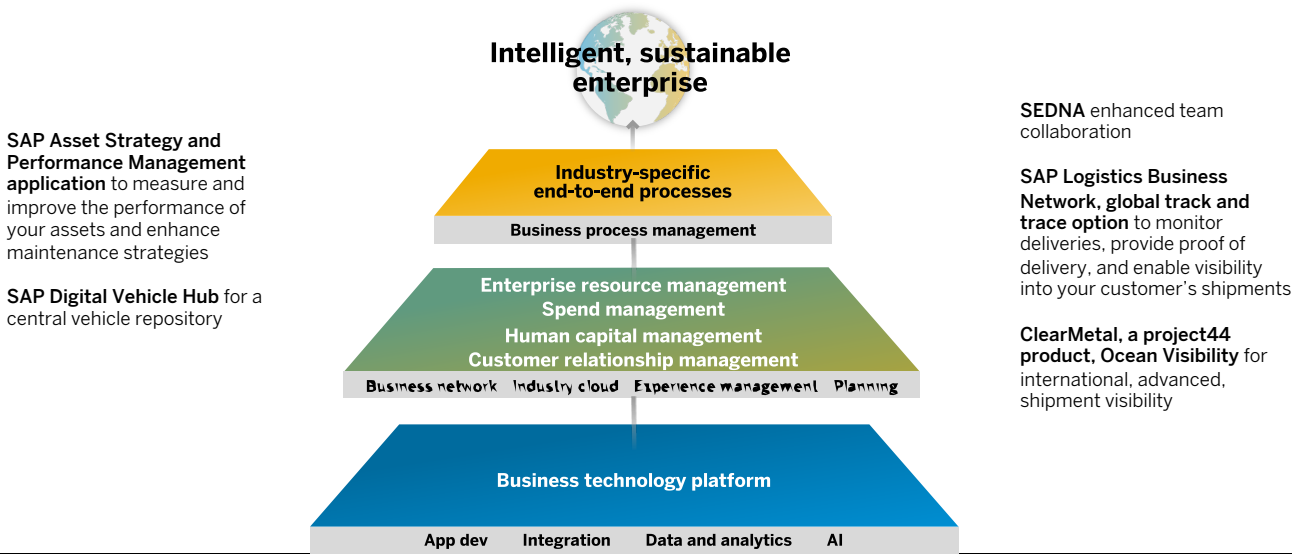
SAP Solutions: Generate New Business Models

As evolving supply chains and higher customer expectations continue to drive the need for a digital platform, cargo companies are deploying technology across open platforms from which they can orchestrate cargo delivery and information sources for their customers.

Services are becoming diversified across all modes of transportation, and cargo will soon be managed through an anonymous, global logistics network of players and providers. These partners will be selected based on factors such as routing, service-level agreement compliance, or eco-friendliness.

Required Capabilities

Operations

- Optimize information flows through the decision-support systems from and to the partner networks
- Couple and decouple with partners seamlessly across physical and virtual networks with real-time information exchange as customer, consumer, and market needs change
- Improve the efficiency in sharing documents across shippers, carriers, forwarders, and customs agencies
- Improve operations by reducing redundancy and increasing predictable demand sensing, synchronized workflow, and partner collaboration

Commerce and sales

- Provide a single face to the customer across all logistics networks
- Provide visibility on service status

Human resources

- Scale the workforce to address business demands while managing the contingent workforce effectively

Finance

- Reflect new payments and billing processes to streamline revenue and expense recognition such as blockchain

Sourcing and procurement

- Collaborate and share equipment information with manufacturers, service providers, and operators to maximize availability, improve efficiency, and create new business models
- Enable economies of scale and flexible ordering with strategic and agile global supplier network management

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

SAP Asset Strategy and Performance Management application to measure and improve the performance of your assets and enhance maintenance strategies

SAP Digital Vehicle Hub for a central vehicle repository

Intelligent, sustainable enterprise

Industry-specific end-to-end processes
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Business network   Industry cloud   Experience management   Planning

Business technology platform

App dev   Integration   Data and analytics   AI

SEDNA enhanced team collaboration

SAP Logistics Business Network, global track and trace option to monitor deliveries, provide proof of delivery, and enable visibility into your customer's shipments

ClearMetal, a project44 product, Ocean Visibility for international, advanced, shipment visibility

Purolator

SAP Ariba® solutions provided a single, unified and integrated source-to-settle suite that improves management of Purolator's key spend categories: transportation, SOW, and complex goods and services. Purolator leverages the power of the business network to collaborate digitally with suppliers and to digitize their invoice process.

Purolator is now realizing savings by streamlining and automating processes and reduction of exceptions.

Digitalize
Operations

Digitalization is providing cargo transportation and logistics companies with a way to optimize their return on assets. It will help them identify the right maintenance strategies as they simulate and predict problems and ensure safe operations while empowering field workers with all the information they need to execute maintenance activities on-site.

BEST PRACTICE

Drive availability of resources with regular asset maintenance cycles

- Time-based asset management irrespective of condition of assets.
- Reactive asset management practices
- Asset performance updated upon maintenance cycles
- Maintenance costs treated as inevitable spend
- Generic maintenance strategy for the entire asset portfolio

NEXT PRACTICE

Gain operational efficiencies and adopting proactive maintenance approaches across all asset types and classes

- Condition-based, prescriptive asset management.
- Monitoring, scoring, and prediction of asset health based on machine learning algorithms
- Maximizing productivity in maintenance activities and reducing maintenance costs while delivering a quality customer experience with assets that are safe, arrive on time, and are in excellent condition
- Dynamic maintenance management across all resources

Innovations at the Vertical Edge

Utilize equipment data to determine tailor-made maintenance plans to increase operational availability. Through asset-centered networks, equipment information can be shared among OEMs, dealers, and maintenance facilities; digital twins can visualize equipment status; and sensor data is able to monitor the real-time health of your assets.

Boosted
Operational efficiency and regulatory compliance

15%
Expected reduction in maintenance costs

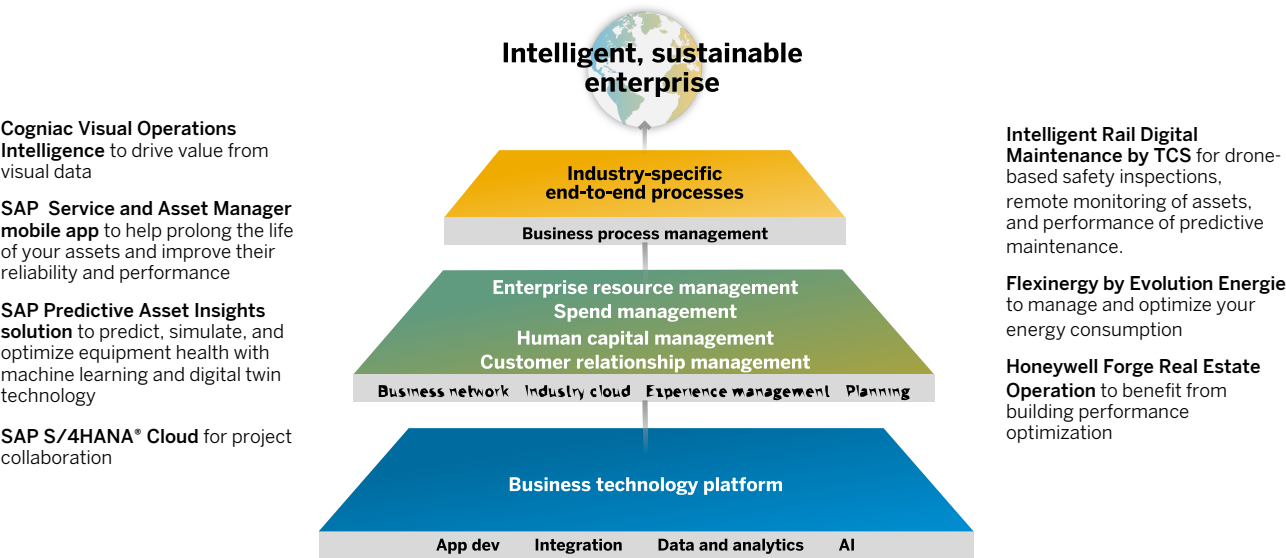Source: SAP Performance Benchmarking

SAP Solutions: Digitalize Operations

Logistics operations spans multiple disciplines, from planning transport orders to orchestrating activities with third-party providers to maintenance of assets.

Required Capabilities

Commercials	Operations	Asset management	Commerce and sales	Human resources
▪ Consolidate pricing and charging on a single platform ▪ Reduce billing-related inquiries	▪ Productize service delivery processes to help ensure repeatability and consistency across business units ▪ Reduce empty and deadhead miles through optimized, networkwide route planning ▪ Share information with internal and external stakeholders	▪ Use sensor data along with predictive technologies to increase longevity ▪ Improve asset management collaboration with manufacturers ▪ Support internal and external emissions and carbon footprint	▪ Automate manual customer interactions through event-driven, electronic communications	▪ Empower the front line with on-demand training and skills ▪ Improve the workforce with the use of robots and autonomous vehicles ▪ Empower back-office and front-office staff to access and interact with the logistics network

The architecture for the Intelligent Enterprise for logistics services 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.

Cogniac Visual Operations Intelligence to drive value from visual data

SAP Service and Asset Manager mobile app to help prolong the life of your assets and improve their reliability and performance

SAP Predictive Asset Insights solution to predict, simulate, and optimize equipment health with machine learning and digital twin technology

SAP S/4HANA® Cloud for project collaboration

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

Intelligent Rail Digital Maintenance by TCS for drone-based safety inspections, remote monitoring of assets, and performance of predictive maintenance.

Flexinergy by Evolution Energie to manage and optimize your energy consumption

Honeywell Forge Real Estate Operation to benefit from building performance optimization

The digital control tower and smart containers are two important parts of Schnellecke's large-scale digital transformation.

And because the transformation is based on SAP Business Technology Platform, Schnellecke can take advantage of a network of integrated technologies that work together across an end-to-end landscape. Achieving operational excellence has also resulted in higher customer satisfaction with fewer complaints and inquiries.

SBB optimized its reliability-centered maintenance processes with the ability to integrate real-time onboard and trackside monitoring data from multiple tracking systems.
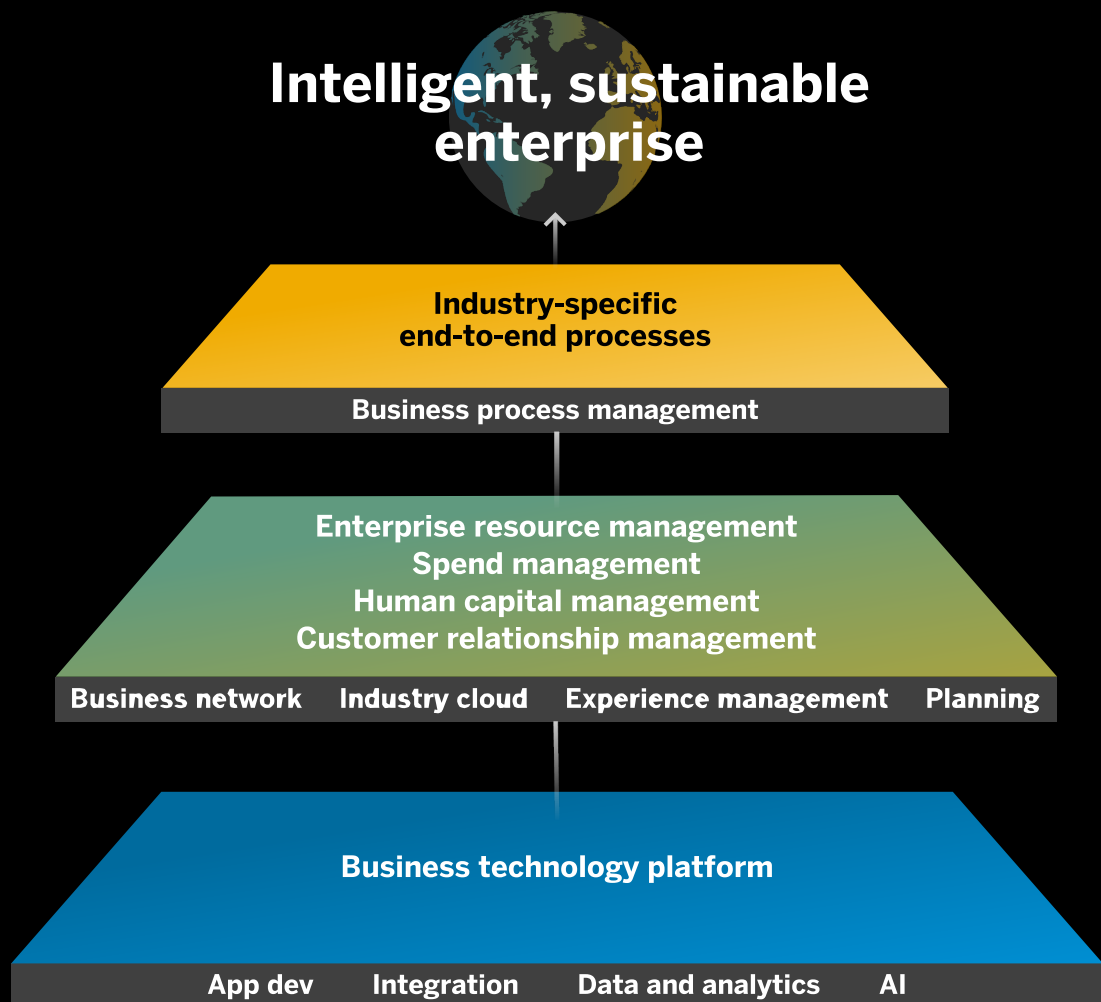
The company gained operational efficiencies by adopting a proactive maintenance approach.

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.

Intelligent, sustainable enterprise

Industry-specific end-to-end processes

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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 our solutions and 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.

SAP's Comprehensive Partner Innovation Ecosystem

SAP has been the proud solution provider for the cargo and logistics industry for almost five decades – starting from humble beginnings and growing into a position of supporting the core business of our customers. The 10 largest companies in the transportation industry 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 cargo and logistics companies can take into the digital economy to become intelligent enterprises. No matter which one they choose, our scalability, security, global reach, vibrant business networks, and business process knowledge across transportation, logistics and adjacent industries are the success factors for our customers, our ecosystem, and SAP.

Our cargo and logistics partner ecosystem includes, among others:

accenture   cogniac   Deloitte.   DESCARTES

DigitalRoute   ENVISION   GEOTAB management by measurement   HCL   here

IBM   .msg   NOVIGO   ORIANDA   OVINTO

project44   RIZING   SEDNA   TATA   utopia Perfect Data. Perfectly Possible.

Westernacher   wise systems   xpertMINDS CHANGING THE INDUSTRY

Engagement Model

SAP is the partner for the cargo and logistics 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 mitigate the risks in the digital economy.

Follow us

THE BEST RUN SAP