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SAP Value Paper | PUBLIC

# Transform Your Aerospace and Defense Organization into an Intelligent Enterprise

## Achieve Value with Intelligent ERP

THE BEST RUN



# The Power of Intelligent ERP

## Leading A&D companies use market dynamics to create and capture new business opportunities.

Aerospace and defense (A&D) companies have always been at the leading edge of technology innovation. Consequently, ideas such as “smart” aircraft and factories are nothing new to the industry. The objectives of these innovations focus on the effective management of finite resources and the ability to provide more for less. Meeting these objectives at a faster pace while facing less risk is dependent upon an enterprise-wide business process platform that acts as a semantic layer providing insights into all data sources – the digital core. But how does a digital core with a single source of truth help drive innovation?



### Respond to Rapid Changes

Operational excellence is core to A&D, and it requires companies to be agile in their response to continuous change within the industry. Empowering decision-makers by breaking down silos and providing insights optimized across the value chain is critical to addressing rapid changes. Intelligent ERP provides the foundation to enrich process information with operational data, using the Internet of Things (IoT) and other innovative technologies, which enables real-time decision-making and strategic differentiation.



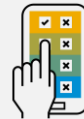
### Develop New Revenue Streams

Massive amounts of data are generated every day by modern machines and digitalized products. It is critical for A&D businesses to capitalize on this data to enable smarter factories and to create the platform needed to develop differentiated service offerings. The ability to capture and correlate data across different sources allows monetization of the data and optimized product lifecycle costs.



### Harvest the Power of the Network

Digitalized supply chains provide new insights that address issues early on. This reduces costs while increasing customer satisfaction. Supply chains and logistic operations become better-connected, dynamic, multitier production and sustainment networks that foster cross-domain and partner collaboration. This enables technologies such as blockchain that support secured data exchange. Synchronize and collaborate within the digital ecosystem to optimize products over their entire lifecycle while improving the customer experience.



### Manage Innovative Opportunities

As the speed of innovation increases, the alignment of business objectives with financial targets during introduction becomes more crucial. A company's pace of innovation and future success will be determined by whether it has the flexible foundation to effectively manage these two pieces across the entire enterprise and life stages of its product. Additionally, as new business models, such as “information as a product,” become more prevalent, the need for a semantic layer across all enterprise systems will grow. Players with a strong technology background will be able to challenge the barriers to market entry.



### The Intelligent Enterprise

Embedding intelligent technologies into SAP S/4HANA® is a key value contributor to enable an A&D organization to become an intelligent enterprise. The principle behind an intelligent enterprise is to automate and extend business processes, enabling transformation of the entire business model. Intelligent technologies such as collaborative artificial intelligence, robotic process automation, and machine learning are the foundation of an insight-to-action-driven enterprise. Leading A&D companies have already begun the journey toward becoming an intelligent enterprise.

# Drive Business Value with Intelligent ERP: SAP S/4HANA Customer Stories

## Newport News Shipbuilding

“

At the end of the day, it's all about creating value for our customers and creating value for our shareholders. The mission I have is to drive change. So we are working with SAP to co-innovate in what we need to do.

”

Bharat Amin, Vice President and CIO, Newport News Shipbuilding

[Watch the Newport News Shipbuilding video](#)



Using 3D models reduced time for visualization from 6 months to a few weeks.



# Drive Business Value with Intelligent ERP: SAP S/4HANA Customer Stories

## Viessmann

“

By enabling us to harness emerging technologies and run integrated processes across every part of our business, **SAP S/4HANA is helping us compete in the digital age.**

”

Harald Dörnbach, Managing Director, Viessmann IT Service, Viessmann Werke GmbH & Co. KG

[Read how Viessmann established a digital core with a next-generation ERP solution](#)



### Increased

Parts availability of crucial spare parts through internal prioritization

# Strategic Priorities in a Digital Age

This digital age is disruptive. A&D companies need strategic priorities that drive transformation. SAP envisions reimagined end-to-end (E2E) business scenarios to support the strategic priorities of the digital economy.



## Customer centricity

Putting the customer's point of view at the center of every decision is vital for success in the digital age. This does not stop with business development or product design but also applies to how products are built and what services are offered. Digital services must provide tailored benefits, improve product performance, and support outcome-oriented service models to reduce cost and risk.

**E2E scenario : Reimagine the new art of customer-oriented aftermarket engagement** – Rethinking the entire business from the customer's perspective



## Digital business networks

Designing network value streams, which enable collaboration, benefits all business partners while leveraging the knowledge of the best-of-breed partners. Scalable and secure, many-to-many networks can distribute critical business information across the network, automate real-time network-level analytics, and enable secure, streamlined collaboration across departments and companies.

**E2E scenario: Reimagine integrated demand and supply planning** – Transforming your traditional linear supply chain into a responsive, digital supply network



## Driving innovation

Continuous innovation is impacting A&D products and processes alike. With even more technology embedded, OEMs aim to make products smarter, more reliable, and more affordable for customers. Process automation benefits from greater IoT integration, while 3D printing is further adopted across the industry.

**E2E scenario: Reimagine efficient delivery of highly customized products** – Speeding up design and collaboration process for smart product offerings



## Agile manufacturing

Smart, connected factories with advanced automation and integration of shop-floor processes deliver granular data for optimizing products and processes and improving compliance. Production and supply chain processes gain flexibility and accelerate reactions to changes in demand, supply, and resources, driving optimization in virtual capacity and operational efficiency.

**E2E scenario: Reimagine engineering-driven production** – Achieving efficient manufacturing engineering and operational excellence by managing and controlling manufacturing changes and shop-floor operations



## New business models

New business models are disrupting traditional business models, creating new markets, and generating new revenue streams by delivering outcomes. They use data as a product, for example, for new after-sales services.

**E2E scenario: Reimagine profitable, performance-based contracting** – Increasing asset performance and profitability of outcome-based service contracts efficiently

Customer Centricity

# Reimagine the New Art of Customer-Oriented Aftermarket Engagement

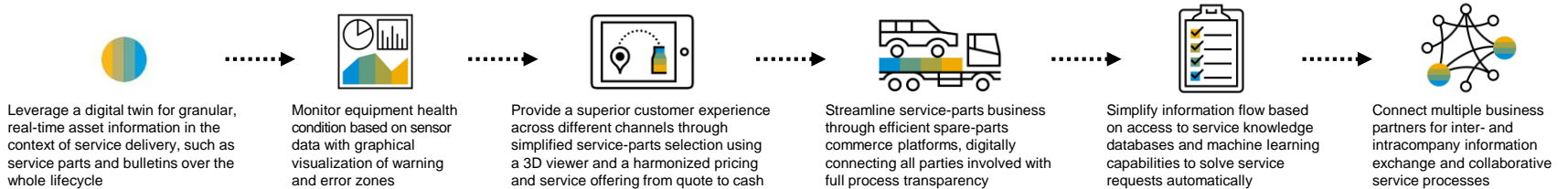
Providing an exceptional customer experience means capturing feedback from both the equipment and the people using it. And it does not stop with business development or product design but also applies to how products are built and what services are offered. Digital services must provide tailored benefits, improve product performance, and

support outcome-oriented service models to reduce cost and risk. SAP S/4HANA provides a full digital representation of customer assets along their lifecycle to deliver an embedded, collaborative, and real-time set of next-generation processes and systems for a customer-oriented, omnichannel, profitable, and predictive service business.

### Traditional scenario



### A new world with SAP



### Top value drivers\*

10%–20%

Increase in revenue from new products

10%–20%

Increase in customer satisfaction

15%

Increase in market agility and responsiveness

\*Benefits are based on results from early adopters of SAP S/4HANA or are conservative outside-in estimates of the benefits of moving from a traditional ERP system to enhanced SAP S/4HANA with line-of-business and cloud capabilities. As each enterprise is at a different level of maturity, our recommendation is that you work with SAP to determine the value proposition for your enterprise.

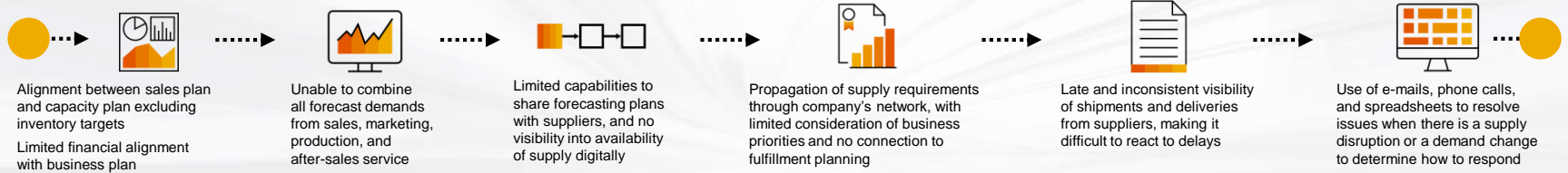
Digital Business Networks

# Reimagine Integrated Demand and Supply Planning

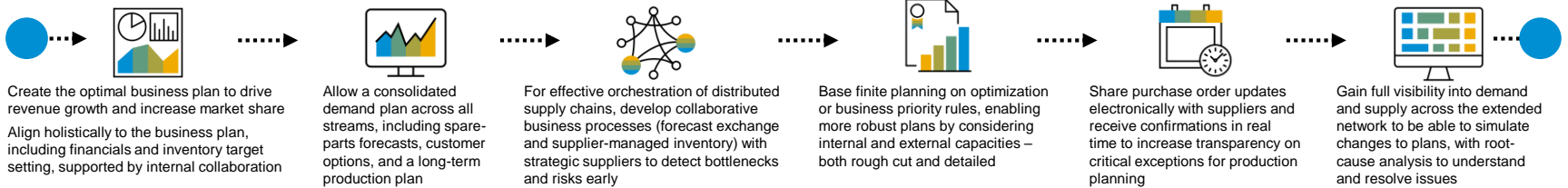
Combining operational and experiential data into core processes along with intelligent technologies such as autonomous robots, additive manufacturing, and machine learning will help reimagine global resource orchestration across company boundaries. Manufacturers will have the ability to respond faster and more accurately to

fluctuating customer demand, a changing workforce, and a robust supply network. With SAP S/4HANA, A&D companies can define their business objectives while making the tactical and operational decisions to accurately predict demand, strategically manage inventory, and have full visibility into the supply network.

## Traditional scenario



## A new world with SAP



## Top value drivers\*

5%–7%

Reduction of total landed costs

8%–10%

Reduction of revenue loss due to stock-outs

10%–12%

Reduction of days in inventory

10%

Reduction of manufacturing cycle time

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Driving Innovation

# Reimagine Efficient Delivery of Highly Customized Products

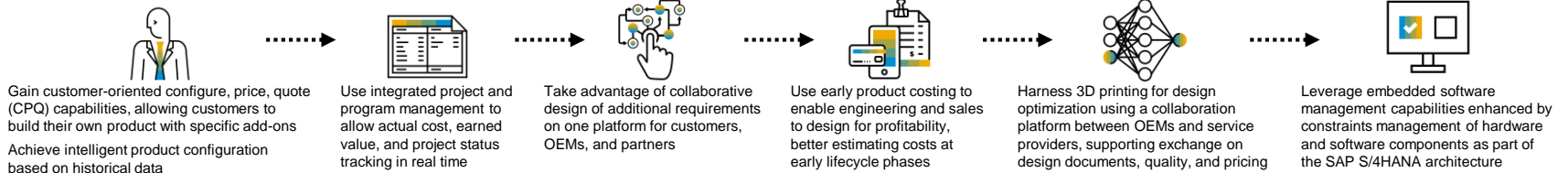
Shorter innovation cycles and rapidly changing customer needs are challenges the industry has to face due to its long product lifecycles. To incorporate the latest technologies and account for varying customer needs in products, development, testing, and certification processes have to become less time consuming and more

agile. With the SAP® Intelligent Product Design solution, A&D companies can provide their customers with individualized products faster and at a lower cost while maintaining quality and safety.

## Traditional scenario



## A new world with SAP



## Top value drivers\*

15%

Increase in market agility and responsiveness

10%

Reduction of total manufacturing cost

10%–20%

Increase in revenue from new products

10%–20%

Increase in customer satisfaction

\*Benefits are based on results from early adopters of SAP S/4HANA or are conservative outside-in estimates of the benefits of moving from a traditional ERP system to enhanced SAP S/4HANA with line-of-business and cloud capabilities. As each enterprise is at a different level of maturity, our recommendation is that you work with SAP to determine the value proposition for your enterprise.



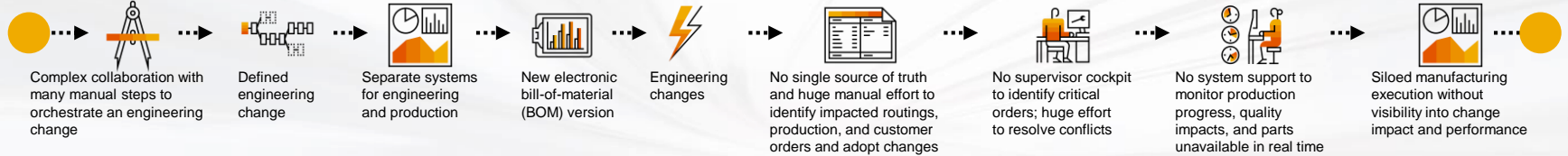
Agile Manufacturing

# Reimagine Engineering-Driven Production

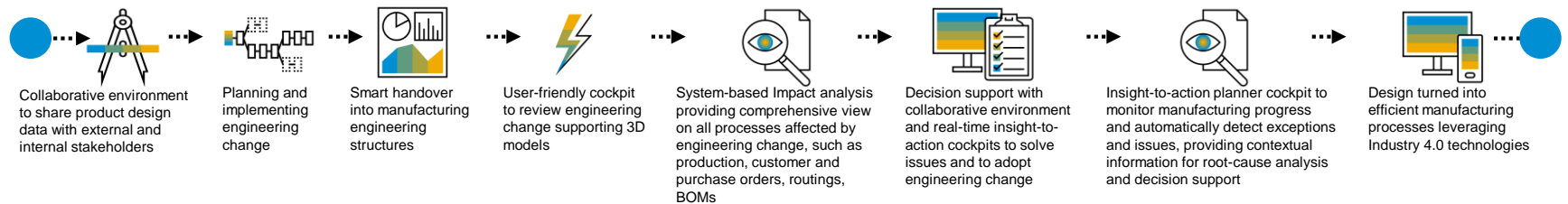
In the past, A&D manufacturing operated in a siloed fashion with inputs from product lifecycle management and ERP. But now, A&D manufacturing must be absorbed into a common digital thread, responding in real time to drive collaboration between engineering and production. SAP S/4HANA and SAP solutions for digital manufacturing

enable A&D companies to bridge the gap between engineering and manufacturing by providing a single source of truth for manufacturing master data. They can react faster to engineering changes and manage and control manufacturing and shop-floor operations to realize Industry 4.0.

### Traditional scenario



### A new world with SAP



### Top value drivers\*

15%

Increase in market agility and responsiveness

20%–30%

Reduction in R&D cost

10%

Reduction of change management costs

Up to 10%

Reduction of total manufacturing costs

\*Benefits are based on results from early adopters of SAP S/4HANA or are conservative outside-in estimates of the benefits of moving from a traditional ERP system to enhanced SAP S/4HANA with line-of-business and cloud capabilities. As each enterprise is at a different level of maturity, our recommendation is that you work with SAP to determine the value proposition for your enterprise.

New Business Models

# Reimagine Profitable, Performance-Based Contracting

New service-based business models are disrupting the traditional relationship manufacturers have with their customers. Manufacturers are now delivering tangible outcomes while creating new markets and generating new revenue streams. Aerospace and defense businesses are using data as a product, for example, to

enable new after-sales services. These new services come with performance-based contracts that allow customers to use products without buying them, but instead pay for the effective usage or output. SAP S/4HANA enables A&D manufacturers to operate these new business models efficiently and in an integrated manner.

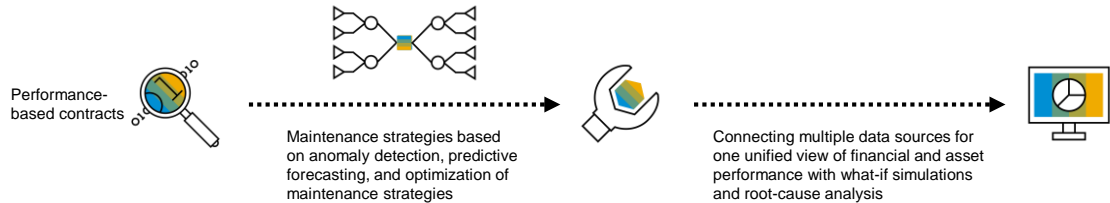
### Traditional scenario

- No real-time and holistic view of asset performance
- Limited opportunities to optimize maintenance cost, risk, and performance and act more proactively
- Risk of failure with customer



### A new world with SAP

- Dynamic maintenance management across all resources
- Contract analytics to analyze granular performance and costs and more effectively manage performance contracts
- Monitoring, scoring, and prediction of asset health based on machine learning algorithms
- Optimizing return on assets across lifecycles by monitoring, reviewing, and improving maintenance activities



### Top value drivers\*

**3%–10%**

Improvement of service profit margin

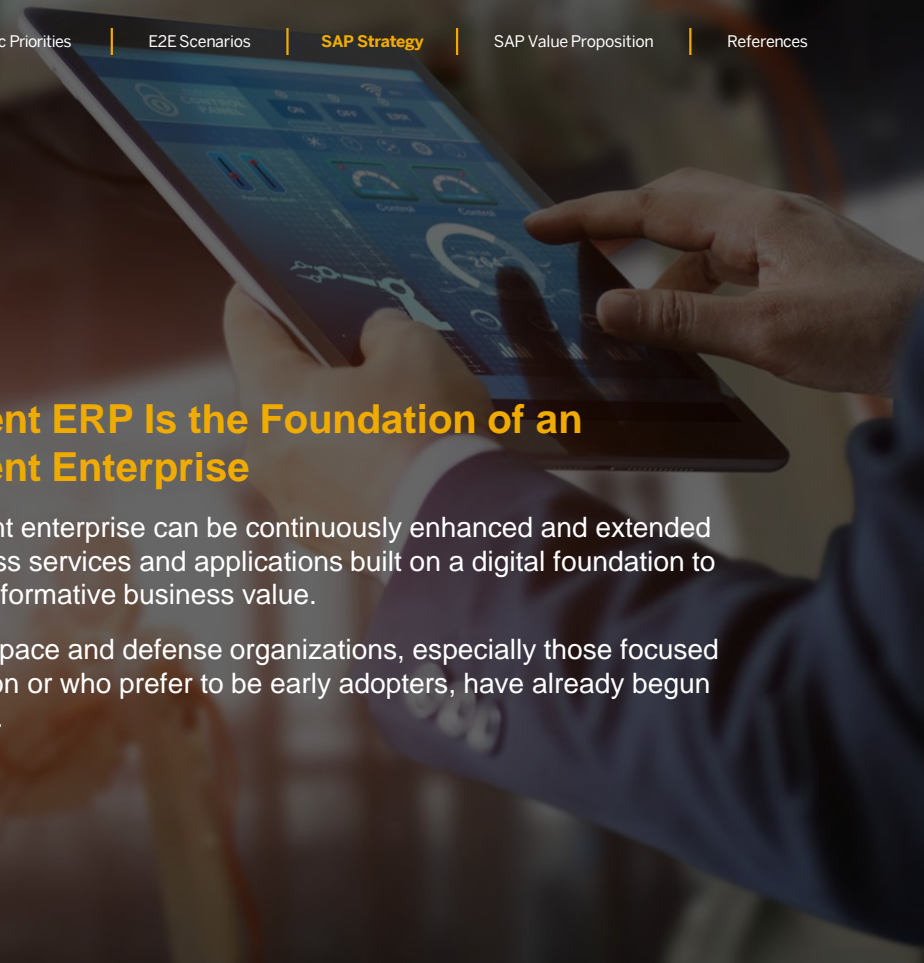
**Increased**

Return on assets and optimized asset performance

**Increased**

Asset performance and reduced maintenance cycle times

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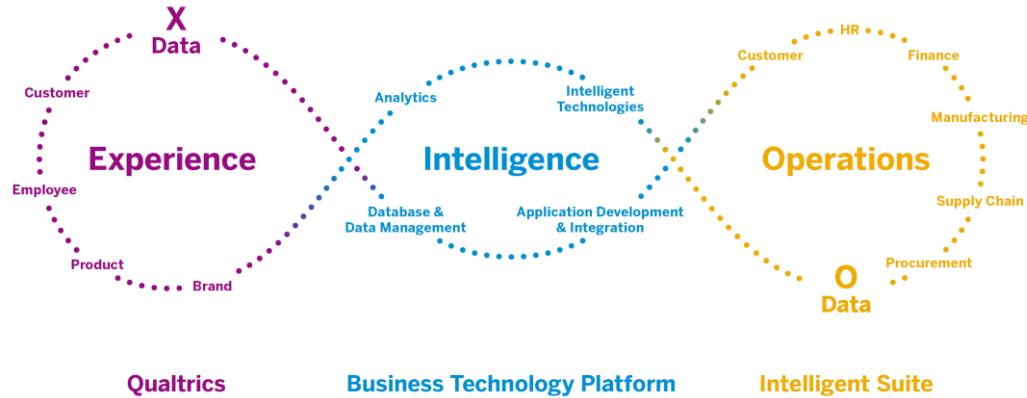
## Intelligent ERP Is the Foundation of an Intelligent Enterprise

An intelligent enterprise can be continuously enhanced and extended with business services and applications built on a digital foundation to create transformative business value.

Many aerospace and defense organizations, especially those focused on innovation or who prefer to be early adopters, have already begun this journey.

# SAP Strategy – Deliver the Intelligent Enterprise

The Intelligent Enterprise connects experiences and operations using Experience Management solutions from SAP, our Business Technology Platform, and a suite of applications. The SAP Intelligent Enterprise Framework methodology incorporates these essential components to help customers achieve their business outcomes.



**Experience** – Experience data (X-data) from **Experience Management** solutions from SAP (Qualtrics) holistically measures and baselines stakeholder experiences across all touchpoints; prioritizes and predicts stakeholder needs and trends with key experience drivers; and acts and optimizes by tracking progress and experience improvement.



**Intelligence** – The **Business Technology Platform** provides unified data management to connect, discover, orchestrate, and manage both internal and external data; intelligent technologies and analytics to improve analytical and transactional workloads; and application services to simplify extension and integration across the intelligent suite.



**Operations** – The **intelligent suite** produces operational data (O-data) to automate day-to-day business processes, share insights across functions, and better interact with customers, suppliers, employees, and partners through applications embedded with intelligence.



# SAP S/4HANA Provides **New Capabilities** to Enable the Strategic Priorities of A&D Companies

SAP S/4HANA Innovations	Economic Value Added			
	Increased profitability (revenue and costs)		Optimized usage of capital (working capital and equipment)	
<b>Customer Centricity</b>	<ul style="list-style-type: none"> <li>Advanced variant configuration</li> <li>Solution quotation and billing</li> <li>Sales force support</li> </ul>	<ul style="list-style-type: none"> <li>Exception-based sales order fulfillment cockpit</li> <li>Predicted delivery delay</li> <li>Supplier delivery prediction</li> <li>Project and portfolio management</li> </ul>	<ul style="list-style-type: none"> <li>Advanced available to promise</li> <li>Extended service parts planning</li> <li>Streamlined MRO</li> </ul>	<ul style="list-style-type: none"> <li>Real-time inventory management</li> <li>Predictive stock in transit</li> </ul>
<b>Digital Business Networks</b>	<ul style="list-style-type: none"> <li>Alternative-based confirmations</li> <li>Supply assignment during back-order processing</li> </ul>	<ul style="list-style-type: none"> <li>Analysis of delivery performance</li> <li>Real-time supplier evaluation analytics</li> <li>Supplier delivery prediction</li> </ul>	<ul style="list-style-type: none"> <li>Predictive and live material requirements planning (MRP)</li> <li>Demand-driven replenishment</li> <li>Constraint-based planning</li> <li>Prediction of slow-moving materials</li> </ul>	<ul style="list-style-type: none"> <li>Extended warehouse management</li> <li>Extended transportation management</li> </ul>
<b>Driving Innovation</b>	<ul style="list-style-type: none"> <li>Project and portfolio management</li> <li>Product compliance</li> </ul>	<ul style="list-style-type: none"> <li>Embedded software management</li> <li>Advanced variant configuration</li> </ul>	<ul style="list-style-type: none"> <li>Production engineering</li> </ul>	
<b>Agile Manufacturing</b>	<ul style="list-style-type: none"> <li>Production supply and kanban processing</li> <li>Nonconformance management</li> </ul>	<ul style="list-style-type: none"> <li>Change management</li> <li>Engineering/manufacturing collaboration</li> <li>Production operation cockpits</li> </ul>	<ul style="list-style-type: none"> <li>Predictive and live MRP</li> <li>Demand driven replenishment</li> <li>Constraint based planning</li> </ul>	<ul style="list-style-type: none"> <li>Extended production operations</li> <li>Production scheduling</li> <li>Prediction of slow-moving materials</li> </ul>
<b>New Business Models</b>	<ul style="list-style-type: none"> <li>Central procurement</li> <li>Streamlined MRO</li> </ul>	<ul style="list-style-type: none"> <li>Subscription contracts, billing, and revenue management</li> </ul>	<ul style="list-style-type: none"> <li>Subscription contracts</li> </ul>	

# SAP's Value Proposition for Aerospace and Defense Companies

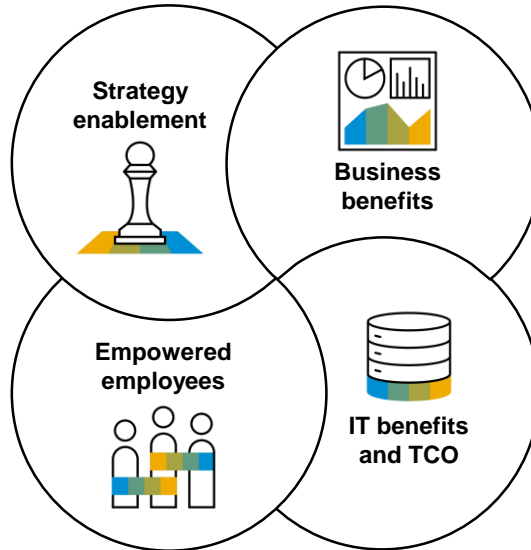
SAP S/4HANA provides A&D companies with a proven framework to adopt industry best practices while attaining operational excellence across the full value chain.

## Strategy enablement

- Reduced complexity through simplified and more-efficient and adaptable core processes
- Agile, faster, and more data-driven operations
- Accelerated creation of new business models
- Accelerated mergers and acquisitions synergy and on-the-fly reorganizations
- Optimization across a value chain through a 360-degree view of the enterprise
- Comprehensive platform for digital transformation road maps

## Empowered employees

- Actionable insights on unified, real-time data and built-in system suggestions driving better decision-making
- Empowered users through role-driven, user-centric processes and self-service business intelligence
- Accountability through real-time KPIs
- Optimized exception processing through system-based work prioritization
- Increased productivity and user adoption with a new, intuitive SAP Fiori® user experience on all devices



## Business benefits\*

- Increase project manager productivity up to **10%**
- Increase revenue from new business models by **5%–8%**
- Increase revenue from after-sales service using predictive maintenance by **5%–10%**
- Reduce in total manufacturing costs up to **5%**
- Reduce R&D costs by **15%–20%**
- Reduce inventory levels by **10%–20%**
- Reduce order fulfillment lead time by **10%–15%**
- Increase on-time delivery by **10%–20%**
- Increase customer satisfaction by **10%–20%**
- Reduce time spent on period-end close by **50%**
- Increase report generation by **30%**

## IT benefits and TCO

- Merged OLAP and OLTP
- Standardized systems and processes
- Connectivity to business partners, the workforce, and the IoT
- Central, scalable platform that can grow with needs
- Reduced data footprint
- Simplified landscapes
- Native integration
- Lower total cost of ownership by **20%**

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# Customers Are **Achieving Value** with SAP Solutions

## Newport News Shipbuilding – Huntington Ingalls Industries



**Industry:**

Aerospace and defense



**Customer Web site:**

[nns.huntingtoningalls.com](https://nns.huntingtoningalls.com)

Click [here](#) to watch the video.



**SAP solution:**

SAP S/4HANA

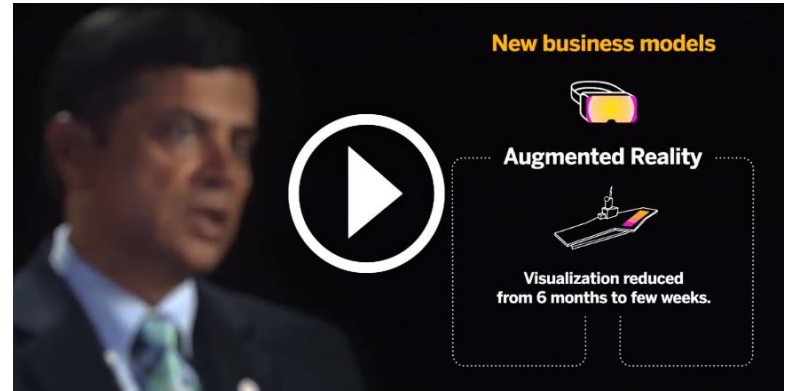
As the U.S. Navy relies on Newport News Shipbuilding (NNS) for all of its nuclear-powered aircraft carriers, Newport News relies on SAP software to create 3D models and instructions for shipbuilders, reducing time required for plan certifications from months to weeks. NNS's mission is to optimize its workforce experience and streamline production processes by introducing mobile access to step-by-step instructions, including 3D visualizations.



**We want to achieve radical change.** This kind of transformation cannot be done without partners. So we are working with SAP to accelerate our digital transformation.



Bharat Amin, Vice President and CIO, Newport News Shipbuilding



**New business models**

**Augmented Reality**

Visualization reduced from 6 months to few weeks.

# Customers Are **Achieving Value** with SAP Solutions

## Viessmann



**Industry:**  
Industrial machinery  
and components



**Customer Web site:**  
[www.viessmann.com](http://www.viessmann.com)

Click [here](#) to read the business  
transformation study.



**SAP solutions:**  
SAP S/4HANA,  
SAP Integrated Business  
Planning for Supply  
Chain solution

As a premier manufacturer of energy solutions for the entire living space, Viessmann Werke GmbH & Co. KG has been an innovator in its field since 1917. With an increasingly diversified product and services portfolio, customers ranging from private homes to large businesses, and a growing global presence, Viessmann needed to streamline processes and improve customer interactions. The company wanted to offer online product configuration capabilities, integrate customer orders into the Viessmann production schedule, and enhance customer experiences. To help make it happen, Viessmann built a digital core to support and future-proof operations across the enterprise with a next-generation ERP solution.



By enabling us to harness emerging technologies and run integrated processes across every part of our business, **SAP S/4HANA is helping us compete in the digital age.**



Harald Dörmach, Managing Director, Viessmann IT Service, Viessmann Werke GmbH & Co. KG



### Key achievements:

- Accelerated calculation time for material resource planning by more than **85%**
- Integrated operations from production to shipping
- Ensured faster availability of crucial spare parts through internal prioritization in the case of shortages
- Predicted and fulfilled future demand profitably, enabled by SAP Integrated Business Planning for Supply Chain
- Provided mobile information access and intuitive functionality with the SAP Fiori user experience
- Increased integration with sales and enabled better-informed agents, thanks to a 360-degree customer view



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