Digital Defense

Enabling agility
in an ambiguous and
uncertain world

SAP

Run Simple

A MESSAGE FROM ANGUS

"Effective, rapid, and coordinated deployment of digital technology across the defense and security mission requires agility and vision to maximize cognitive and physical superiority."

Angus MacGregor-Millar
Global Vice President
Defense and Security Industry
Business Unit
SAP SE

Dear Customers and Partners,

The risk, complexity, and diversity of defense and security continues to expand while many budgets continue to shrink. These changes challenge the ability to meet mission and readiness goals. The successful ability of organizations to embrace digital transformation, and to assess the opportunities offered to increase agility and intelligent operations in joint and coalition environments, will be paramount in our success.

Military leaders that I meet with indicate that better information and more dynamic analytics are continually necessary to develop innovative strategies to meet the challenges in this volatile world. Digital warfare against companies and countries is emerging, while digital reconnaissance delivers fast but ambiguous information. Insights and visionary adaptation are critical, and new transformative technologies can provide the enablement.

At the center of SAP's solution strategy is the digital core. Resource stewardship is translated in real time to suppliers, operators, facilities, aircraft, vehicles, and vessels – and even the sensors and devices of operators. The connectivity afforded by a single set of transactional and analytical data in the digital core eliminates ambiguity and provides a clear, up-to-date view of the reality for better situational awareness and decisive action. It is resilient and can operate cooperatively in austere and limited communication environments.

SAP did not invent network-centric defense and security principles, but we have been part of their evolution for more than 30 years. Today, strategic, operational, and tactical agility and dominance are the key objectives of digital warfare.

In order to meet dynamic needs, defense agencies need to focus their transformation efforts on a set of strategic priorities to reimagine:

- Ready and capable defense
- Service-member centricity
- Collaborative, cooperative, and secure digital defense
- Stewardship, affordability, and accountability

I firmly believe that our SAP technology enables innovative forces to reimagine operating environments and how system users and support integrate for optimal outcomes.

This white paper outlines digital technology trends, shares our vision of defense organizations harnessing the power of data and digital insight, and shows how the SAP platform may inspire innovative practices throughout your organization.

I hope the information presented is helpful, and I look forward to your feedback.

Angus MacGregor-Millar

Angus MacGregor-Millar
Global Vice President
Defense and Security Industry Business Unit
SAP SE

"Few people genuinely understand the exponential change that is being brought about . . . and even fewer people can comprehend the impact it will have on capability; and particularly on capability as we currently, doggedly, and determinedly cling to assessing it."[1]

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THE DIGITAL ECONOMY

The Big Picture: Transformative digital technology is a reality. The key for defense and security organizations is to practically leverage the technology to reimagine their operations.

Technology trends change everything

Technology has become so interwoven with strategies that the two cannot be separated anymore. This means technology trends are influencing defense and security strategy much more than in the past.

Technologies such as the Internet of Things (IoT), virtual reality, and augmented reality are fundamentally redefining the way service members live, work, and play – with huge implications for defense and security organizations. Other technologies such as artificial intelligence (AI), machine learning, and blockchain provide new and exciting opportunities but challenges in acceptance and adaptation.

The resulting pace of change is staggering. Defense and security operations are no exception, and leaders are moving to an era of the connected service personnel or operator, where leading-edge technology can keep them informed and protected. It can also improve areas critical to defense mission success – safety, efficiency, effectiveness, and security – while fielding the need to do more with less. [2,3]

Innovation is emerging from everywhere and anyone

Your adversaries have mastered the use of social media and the element of surprise to their advantages. They use and adapt to the latest off-the-shelf technology for communication, transportation, and so on in their daily operations. Defense and security leaders know the world has changed and is still changing – from all countries and especially across digital and online channels. Cybersecurity may be the next most extreme threat. Research shows 90% of CEOs believe the digital economy will have a major impact on their industry and understand system security and integrity are major concerns. Currently, fewer than 15% of those CEOs are funding and executing on the digital plan. [4,5,6]

It's about the operator

Operators expect a new type of experience: one that is frictionless, where interoperability is seamless, and where technology is invisible. Military leaders want to minimize human casualties and maximize situational awareness and mission effectiveness. [7] Supporting technology must be intuitive and efficient in leveraging advanced learning and analytics to maximize information results from all raw structured and unstructured data.

Access more information on the latest technology trends here:

Disruptive digital business models.

The rules have changed. The defense digital network is expanding, becoming more collaborative and cooperative.

- **Innovators are achieving agility**
  The NATO Smart Defence initiative is a cooperative way of thinking about generating the modern defense capabilities that the Alliance needs for the future. [8]

- **Small wonder can lighten the operator's load**
  Nanotechnologies and smart fabrics are helping the UK Armed Forces to reduce equipment weight and improve operational efficiency. [9]

- **Platforms (R)evolution**
  Platform-based organizations are capturing more of digital's opportunities for strong mission execution. [10]

Transformation will not result from doing things incrementally better, but by doing things fundamentally different.

The Future: Priorities for defense and security organizations

Strategic priorities for defense and security organizations

Defense organizations are complex, requiring agility in a volatile, uncertain, and ambiguous world. This agility is achieved through speed of innovation as well as cognitive and physical superiority in all domains (sea, air, land, space, and cyber). In working with our defense and security customers across the globe, we typically see investments and energy around four strategic priorities.

1. Ready and capable defense

Managing operational readiness in support of mission scenarios at home, regionally, and in support of international operations helps ensure capable forces are generated and ready to meet operational contingencies and expectations.

2. Service-member centricity

Putting the operators' point of view at the center of every decision is a key prerequisite for success in the digital age. Operators demand simple, seamless, personalized experiences across any channel, anytime, anywhere, and on any device.

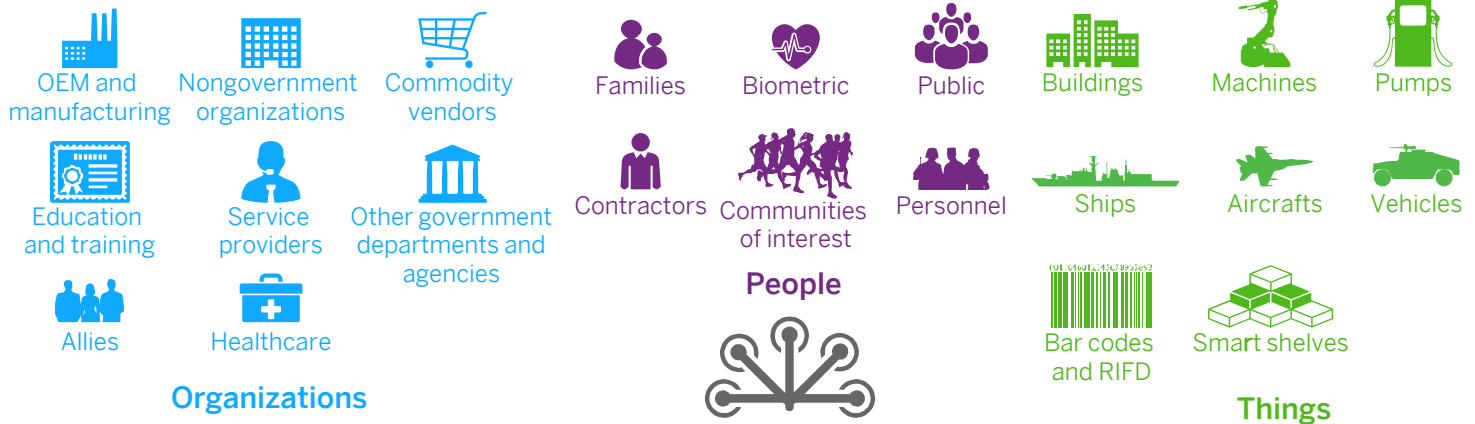### 3. Collaborative, cooperative, and secure operations

Connecting the end-to-end digital defense network offers new opportunities for automated replenishment, new performance-based service models, pooling and sharing, and beyond.

4. Resource stewardship, affordability, and accountability

Balancing readiness, equipment, personnel, and infrastructure and carefully managing resources helps to maximize capability output through responsible governance of resources to deliver the best value for its citizens and allies.

THE DIGITAL DEFENSE NETWORK

OEM and manufacturing | Nongovernment organizations | Commodity vendors | Families | Biometric | Public | Buildings | Machines | Pumps

Education and training | Service providers | Other government departments and agencies | Contractors | Communities of interest | Personnel | Ships | Aircrafts | Vehicles

Allies | Healthcare | | | **People** | | Bar codes and RIFD | Smart shelves

Organizations | | | | | | | **Things**

REIMAGINING

DIGITAL DEFENSE OFFERS NEW OPPORTUNITIES

In a connected world where every organization is becoming a technology organization, smarter products and services will refocus operations on mission and performance outcomes, blur industry lines, and integrate trusted physical and virtual value networks.

REIMAGINE OPERATING CONCEPTS

> Defense organizations have to adapt to rapid changes in the environment and adjust capabilities to address mission areas by innovating.

Ready and capable defense through the rapid introduction of disruptive technologies helps to reduce the resource burden and increase readiness. Using new technology as it presents itself helps to better address emerging requirements or things that differentiate the force and out-innovate the adversary. Organizations can pivot quickly to exploit new capabilities and benefits without interrupting a previously authorized program of record. Decision makers in the field will increase operational reach, autonomy, and combat effectiveness, achieving desired outcomes at every level with actionable information. An established digital defense network brings extensive experience together, employing cutting-edge technology.

Service-member centricity relates to designing everything from the individual's perspective to simplifying everything and orchestrating business processes across operator-facing functions. It enables delivering personalized experiences in context with each interaction. It helps create a single, harmonized experience for each operator while reducing the burden on personnel. And it engages the operator on the channels they choose at any moment while on operations, with full integration of core business processes.

Collaborative, cooperative, and secure digital defense forces develop field military capabilities for effective and efficient joint and multinational missions along the trusted digital defense networks. Nations pool and share equipment or capabilities, paying for performance and delivering results. Defense organizations provide capabilities to their own personnel at a lower cost by leveraging the specialized equipment and knowledge of their allies, other government agencies, and the industrial base. Interoperability becomes more important and allows sharing of common procedures, infrastructures, and bases to seamlessly communicate over the network. The continued focus on cybersecurity and the role of technology will be explored in more detail later in the paper.

Resource stewardship, affordability, and accountability must balance demands between operations and governance, establishing a performance management framework for planning and deriving performance insights. Resource management must move along the entire lifecycle that gets away from a "spend" culture and embraces a "cost" culture, ensuring best value requirements that are considered from a lifecycle perspective. Delegation authority to the lowest possible level must be enabled while maintaining accountability within certain parameters.

The **Canadian Department of National Defence** digitally collaborates with their performance-based logistics contractors.[11]

$5.8 million

In estimated annual cost avoidance in fuel and print savings through the delivery of electronic flight information publications and digital publications in the U.S. Air Force [12]

REIMAGINE PROCEDURES

> **When analytics and transactions are combined and executed in real time, procedures will never look the same.**

Collaborative military planning and force generation is established across joint coalition forces to develop viable and pragmatic options for informed decision making. By leveraging modular force concepts and integrated readiness assessments, military planners can compose options to government to respond to emerging crises. Total resource visibility provides the necessary insight to planners and decision makers to generate and deploy forces. Military planners can quickly develop options through a repeatable and flexible collaborative planning environment.

Seamless battle management and resource management integration will significantly improve the synchronization of operational actions and mission accomplishments. Resource management and battle management are the two sides of the same force element, while resulting mission planning and execution will be seamless. Aircraft sortie generation matches mission demands, informed by resource visibility and ability through feasible options that can be acted on.

Optimized asset and human physical performance based on predictive capabilities and emerging hyperconnectivity and bandwidth can be embedded or affixed with sensors to gain greater visibility into the physical performance of fixed assets, aircrafts, ships, land systems, and personnel.[13,14] Predictive analysis techniques are employed as an early warning to detect potential failure or fatigue of systems and help improve human and machine system availability at lower lifecycle cost.

Enable an **optimized sustainment chain** to reduce the risks to personnel and lighten the load that deployed units must carry. Autonomous systems can take on tasks with limited or no human intervention, relying on an extensive array of sensors to provide the system with situational awareness. As troops are frequent targets of improvised explosive devices and insurgent attacks, autonomous vehicles reduce the number of truck resupply convoys and the troop escorts to protect soldiers on the ground. Reduce the logistics footprint by improving the tooth-to-tail ratio.

Financial analysis and planning in real time allows defense organizations to optimize their allocated resources to balance risk and opportunities. Provide accurate, timely, and relevant data that connects operational output and performance data to financial data. Military planners can conduct real-time assessments of the impact of future deployments based on current budgetary constraints and rate of spend. Understand the impact of resource allocation; balance tactical and strategic risks.

Transport for London uses the SAP HANA® platform for both IoT and Big Data processing to develop options for decision making.[15]

The **U.S. Army** has near-real-time access to transaction statuses; users can identify and solve problems almost as soon as they occur.[16]

The **Royal Canadian Navy** uses 3D printing to manufacture parts no longer commercially available.[17]

REIMAGINE PERSONNEL

> Best practices in recruitment and retention recognize that organizations must fundamentally change the way people work and the way technology supports them.

Win the "war for talent" in the digital economy to attract and retain top service members with the best technology and access to information. Achieve challenging recruitment and retention goals in the current economic climate that are most severe, where demand in the private sector is high for trained and competent people with specialized or technical skills. Recruiters and career managers can optimize person-to-job matching in which personnel has the greatest chance of successful job performance and career-long job satisfaction.

Create a better-educated workforce through the use of university relationships to create technologically savvy process thinkers. Use the SAP® University Alliances program through member schools of your choice to educate and train your workforce. Align college-level educational certificate and diploma-producing programs with the educational progression of your workforce to provide college-level credit while improving skills.

Use interactive technology to improve user experiences and performance, including mobility, voice recognition, visualization, and immersive technologies, and couple contextually aware and anticipatory data to improve individual and team cognitive performance. Operators will be equipped with wearable technology that provides enhanced situational awareness, and augmented reality will provide operators with the ability to fuse input from their primary senses with real-time data from other sources to better discern between friend or foe.

Eliminate human work by applying autonomy to the process (for example, smart shelf: ammunition reordering with machine learning). Business processes are simplified as embedded sensors and are participants in the process itself by acting on the behalf of humans. Armored vehicles could autonomously send replenishment requests for fuel and ammunition as well as for maintenance. Increased operational efficiencies and effectiveness will carry through all forces' readiness.

Use predictive learning and self-learning software to improve machine-to-machine and machine-to-human collaboration and optimize decisions based on competing factors. Advanced analytics capabilities will recognize patterns to provide decision makers with recommendations. A soldier carrying a heavy load is equipped with an array of biometric sensors, enabling his or her movement patterns and vital signs to be analyzed in real time. The team leader can be alerted in the event of signs of fatigue or risk of injury. Enhanced decision making and more acute operational performance is secured.

At **Northrop Grumman,** each 3D-viewable graphic represents the most current configuration-managed CAD data available and is complemented by real-time status updates and business information that assure precise decision making.[18]

Recruits from the **New Zealand Defence Forces** get sized and equipped with their new uniforms using RFID technology.[19]

REIMAGINE CYBERSECURITY

As your defense and security organizations move forward with their digitalization, you need to rethink how you deal with security toward where frictionless interaction with trusted ecosystem participants can be enabled, especially as it permeates the entirety of the organization.

Trusted cooperative digital relationships are critical as defense and security organizations across the globe go through digital transformations. Threats are more powerful than before, and the expanding networks of individuals, devices, and business partners that digital defense and security organizations manage offer a variety of opportunities for adversaries. As such, managing security across the digital defense network must be accomplished through technology and proper governance (for example, NIST's Cybersecurity Framework).

SAP has a very long history of helping customers with their mission-critical applications and analytics. SAP continues to ensure its software is not only secure but also incorporates all aspects of security theory. SAP is in a unique and key position to drive what the enterprise software industry has lacked for more than 20 years: the ability to finally incorporate security into applications, delivering the ultimate protection of content and transactions.

Monitoring and act in time and trusted partners is a lifetime topic, that is, the landscape needs to be continuously monitored and analyzed for security breaches. Procedures and governance must be in place to act on incidents in a timely and effective manner. Real-time incident response and forensics accelerate detection and limit threat impact. Supplier relationships are key in establishing trust and accuracy of data, as more noncore processes are outsourced.

Securing data with 360-degree correlation in an omnichannel environment requires all channels to stay compliant with data privacy and regulations. Understanding local data controls and establishing encryption and classification criteria remain important across networks, end points, applications, and data.

Securing interactions within the value chain is important, and joint service-level agreements (SLAs) should be in place with partners. Interactions must be authenticated at a level matching value, risk, and usability. Checks should be implemented at all levels to prevent widespread impact. Next-generation context and application-aware firewalls enhance both protection and performance.

Securing identities and access to digital information must be restricted to authorized users. Central identification and authentication, regardless of channel or device, and a robust but fine-grained authorization system are key.


In 2015 careless and untrained insiders are noted as the largest source of security threats at federal agencies. This increased from 42% in 2014 to **53% in 2015.**[20]

Five out of six large companies were targeted by cybercriminals in 2014, a **40% rise over the previous year.**[21]

Globally, cyber crime costs businesses **US$375-$575 billion** annually and a net loss of up to 200,000 jobs in the United States alone.[22]
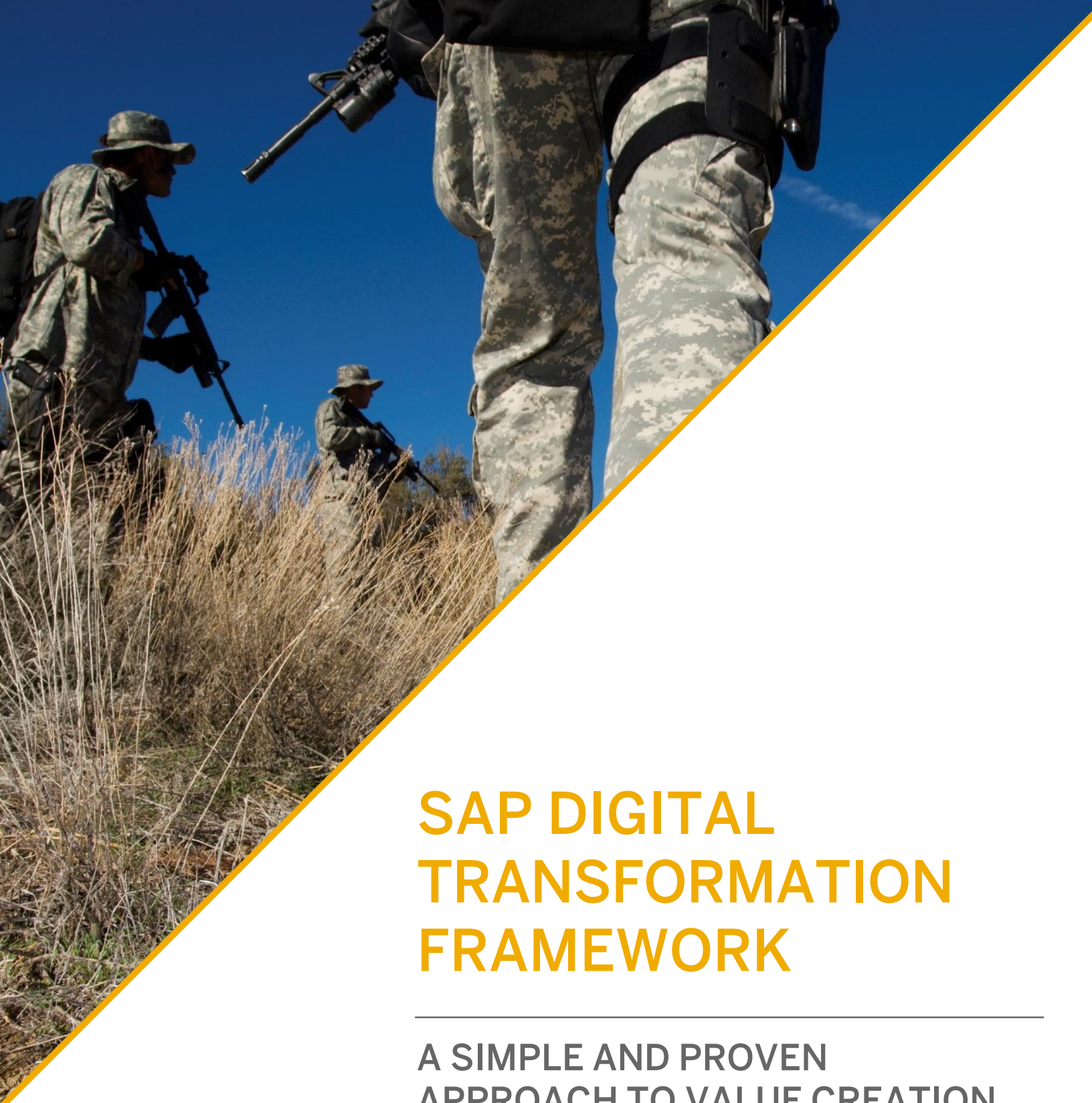
SAP DIGITAL TRANSFORMATION FRAMEWORK

A SIMPLE AND PROVEN APPROACH TO VALUE CREATION THROUGH DIGITALIZATION

Every organization across all industries requires a simple digital approach to build a pragmatic and executable vision of its digital strategy.

FIVE PILLARS OF A DIGITAL STRATEGY

Every organization needs to think about the five pillars of a digital strategy

We have looked at the strategic priorities that defense and security organizations are pursuing and how they have to reimagine their operating concepts, procedures, and personnel functions to do that.

Let's now look at how SAP can help enable them to do this by providing the following architecture.

As defense and security organizations are transforming themselves to gain greater agility, they need an IT architecture that provides both stability and long-term reliability for the core enterprise processes, and at the same time allows for flexibility in areas where change is happening on a constant basis.

This concept, which is often referred to as "bimodal IT," is brought to life through the SAP Digital Transformation Framework methodology, pictured below.

- The **digital core** is the foundation for the core enterprise processes, which need to run consistently and uninterrupted. It provides real-time transactions and analytics, the ability to work with Big Data, and connectivity to the outside pillars of the framework.

- Your **operators** requires flexibility in the way they interact with you through multiple channels.
- The **digital assets and services** are the equipment you are providing to your operators and that you need to connect to your digital core. Here, a large amount of flexibility is needed to connect new sensors on a constant basis.
- Flexibility and adaptability in working with **suppliers and partners** are key to onboard them quickly and shift requirements to alternates.
- A lot of flexibility is required when recruiting **service members** and retaining an agile workforce.
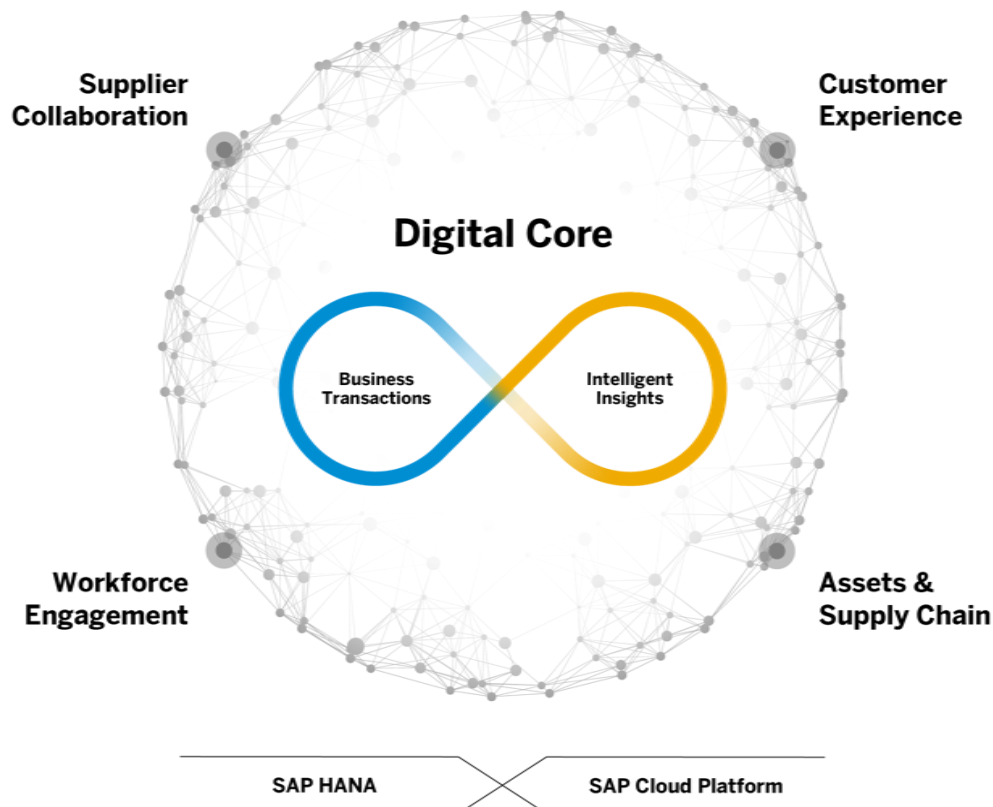
DIGITAL STRATEGY: THE DIGITAL CORE
SAP HANA: The Great Simplifier

In order to reimagine everything in digital defense, agility and flexibility are required to adjust course at any time. This involves two key concepts: **simplification** and **innovation**:

- **Simplification** is all about doing what we are already doing, but better, faster, and cheaper.
- **Innovation** is all about reimagining operating concepts and operator value by leveraging the five technology trends.

The diagram below illustrates the heart of the digital defense transformation. The idea is very simple, but it took years to make it a reality: Bringing together transactions and analytics on the same platform and uniting structured data (for example, finance) with unstructured data (text, video, and voice) will change how defense organizations plan, execute, and innovate.

In-memory computing is a concept brought to life by the breakthrough SAP HANA platform. While relatively young by commercial standards, SAP HANA's rapid adoption across multiple industries validates its massive potential for digital businesses.

With in-memory computing, we can now finally:

- **Use Big Data** from sensors, weather, social, and geospatial sources. Bringing all data signals together leads to the optimal recommendation, which can be instantly acted upon in transactional systems through human and machine-to-machine interfaces
- **Extend the business process** to interoperate with trusted members of the digital defense network in near-real time through advanced business networks
- **Modernize business processes** from planning to execution, running them in real time with no data replication and no batch programs

These capabilities open infinite new ways of optimizing business, driving business digitalization, simplifying everything, reducing cost, and providing the agility required in a rapidly changing world.

SAP constructed an innovation road map designed to bring in-memory computing together with cloud computing and mobility. This strategy has been embraced by early adopters who are leading the transition to digital.

SMARTER DECISIONS + SMARTER TRANSACTIONS = SMARTER DEFENSE
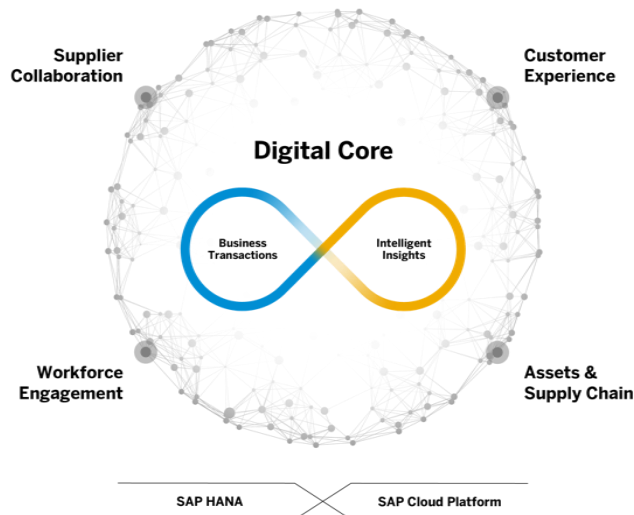
87%
Of finance executives say meeting growth targets requires **faster data analysis**, but only 12% can respond to information requests in real time[23]

70%
Of customers are "very satisfied" when their needs are met over three or more touch points[24]

50%
More likely for networked companies than peers to have increased sales and higher profit margins[25]
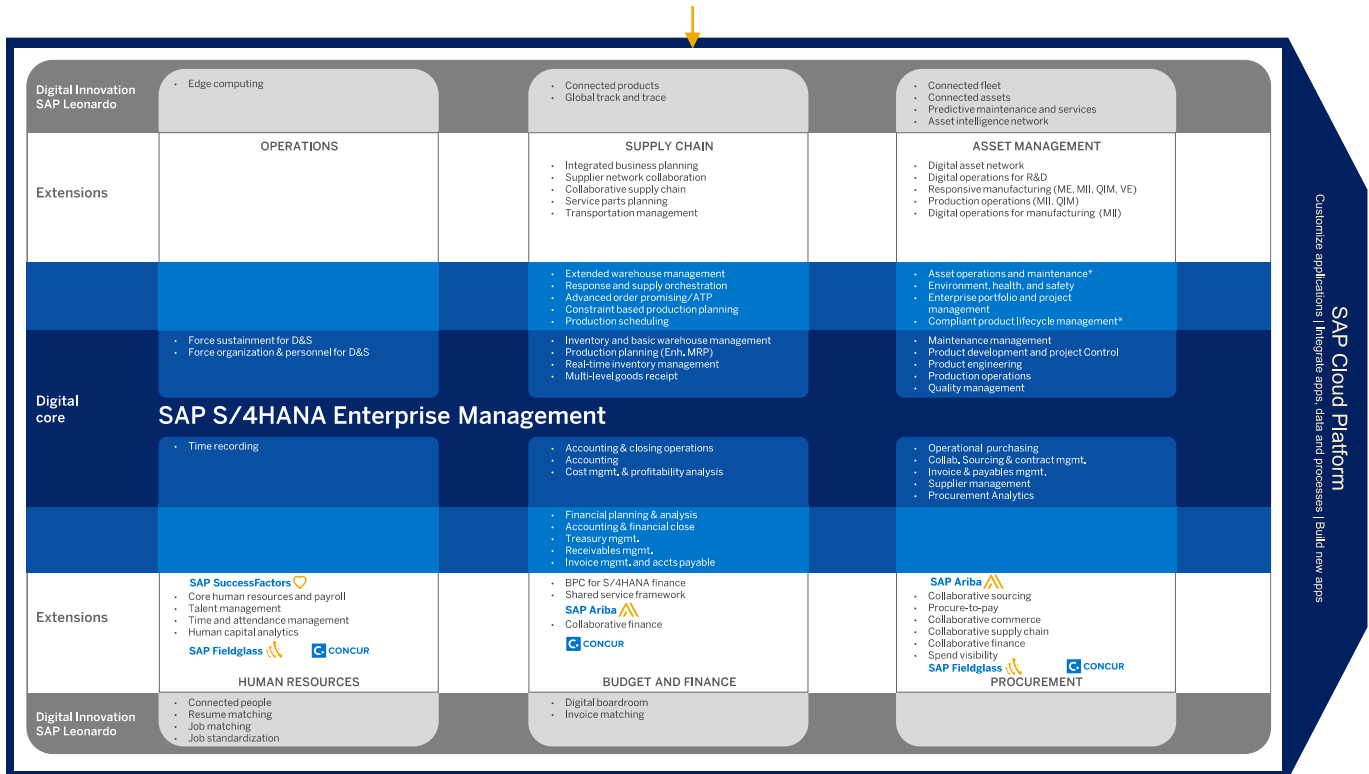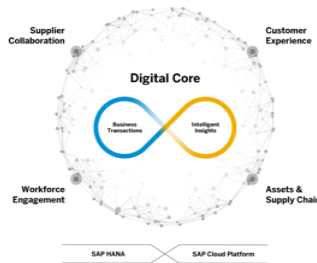
$3.9–$11 trillion
Estimated potential economic impact of the Internet of Things per year by 2025[26]

SAP PORTFOLIO WITH SAP S/4 HANA AND SAP LEONARDO

To execute on their digital strategy, defense and security organizations will not only need to reengineer their business processes – they will also have to evaluate if they have the right technology platform that can deliver on the vision. The winning platform will require an IT architecture that provides both stability and long-term reliability for core enterprise processes while allowing for flexibility in areas of frequent change. The digital core is the foundation for the core processes that need to run consistently and flexibly. It provides uninterrupted and real-time transactions and analytics, the ability to work with Big Data, and connectivity to line-of-business extensions that enable supporting processes such as talent sourcing and networks.

SAP S/4HANA® was specifically developed to represent the digital core in this bimodal IT architecture. It provides defense and security organizations with a proven framework to adopt industry best practices while attaining operational excellence – specifically, but not exclusively, across core industry capabilities, such as real-time supply chain and digitalized execution.

SAP Cloud Platform — Customize applications | Integrate apps, data and processes | Build new apps

Digital Innovation SAP Leonardo
- Edge computing
- Connected products
- Global track and trace
- Connected fleet
- Connected assets
- Predictive maintenance and services
- Asset intelligence network

Extensions

OPERATIONS

SUPPLY CHAIN
- Integrated business planning
- Supplier network collaboration
- Collaborative supply chain
- Service parts planning
- Transportation management

ASSET MANAGEMENT
- Digital asset network
- Digital operations for R&D
- Responsive manufacturing (ME, MII, QIM, VE)
- Production operations (MII, QIM)
- Digital operations for manufacturing (MII)

- Extended warehouse management
- Response and supply orchestration
- Advanced order promising/ATP
- Constraint based production planning
- Production scheduling

- Asset operations and maintenance*
- Environment, health, and safety
- Enterprise portfolio and project management
- Compliant product lifecycle management*

Digital core

- Force sustainment for D&S
- Force organization & personnel for D&S

- Inventory and basic warehouse management
- Production planning (Enh. MRP)
- Real-time inventory management
- Multi-level goods receipt

- Maintenance management
- Product development and project Control
- Product engineering
- Production operations
- Quality management

SAP S/4HANA Enterprise Management

- Time recording

- Accounting & closing operations
- Accounting
- Cost mgmt. & profitability analysis

- Operational purchasing
- Collab. Sourcing & contract mgmt.
- Invoice & payables mgmt.
- Supplier management
- Procurement Analytics

- Financial planning & analysis
- Accounting & financial close
- Treasury mgmt.
- Receivables mgmt.
- Invoice mgmt. and accts payable

Extensions

SAP SuccessFactors
- Core human resources and payroll
- Talent management
- Time and attendance management
- Human capital analytics

SAP Fieldglass | **CONCUR**

HUMAN RESOURCES

- BPC for S/4HANA finance
- Shared service framework

SAP Ariba
- Collaborative finance

CONCUR

BUDGET AND FINANCE

SAP Ariba
- Collaborative sourcing
- Procure-to-pay
- Collaborative commerce
- Collaborative supply chain
- Collaborative finance
- Spend visibility

SAP Fieldglass | **CONCUR**

PROCUREMENT

Digital Innovation SAP Leonardo
- Connected people
- Resume matching
- Job matching
- Job standardization

- Digital boardroom
- Invoice matching

Digital core: Core solution capabilities delivered as part of SAP S/4HANA Enterprise Management

Digital Core: Solution capabilities that are also part of SAP S/4HANA Enterprise Management, but added/purchased as needed.

Extensions: Cloud-based (LoB) solution extensions that are *fully integrated* with SAP S/4HANA Enterprise Management, but added/purchased as needed.

Leonardo: Solution capabilities that are powered by a Leonardo technology and included in the Leonardo suite and how to add/purchase is not shown on this diagram.

Learn more about SAP solutions today and discover planned innovations by accessing the SAP road map for defense and security here:

Defense and Security organizations are complex requiring agility in a volatile, uncertain, and ambiguous world:

1. Speed of innovation is essential.

2. Cognitive and physical superiority in all domains (sea, air, land, space and cyber) is required.

SAP

They pursue **four key initiatives** which require **new business capabilities** along the value chain

	Military Planning and Operations	Military Supply Chains	Maintenance and Engineering	Human Resources	Budget and Finance	Procurement
Ready and capable defense	• Management and Development of Flexible Organizations • Operational readiness • Course of action Development for Planning and Managing a Table of Organization, Personnel Staffing, Material and Equipment Staffing, Financial Planning and Real Estate	• Demand Sensing • Supply Chain Planning • Inventory Optimization • Service Level Determination • Sense and Respond to Demand Insights • Management Review and Analysis	• Asset Strategy and Performance • Predictive Maintenance and Service • Maintenance Planning and Scheduling • Configuration Management • Flight Operations Support	• Organizational Management • Position Budgeting and Control • Contingent Workforce • Workforce Planning, Reporting & Analytics • Goal and Performance Management • Succession Management • Recruiting & Retention	• Strategy Management • Planning, Budgeting, and Forecasting • Budget Execution • Monitoring and Reporting • Product Cost Management • Capital Program Management	• Requirements Definition • Spend Visibility • Supplier Discovery & Evaluation
Service-member centricity	• Command and Control Interoperability • Operational readiness • Planning of Material and Equipment • Dashboards and self-service analytics • Decision Automation • Social Collaboration	• Sense and Respond to Demand Insights • Material and Equipment • Dashboards and self-service analytics • Decision Automation • Social Collaboration • Physiological & machine sensors	• Environment, Health and Safety Management • Mobile Maintenance • 3D Visualization • Augmented Reality Maintenance	• Manager & Employee Self-Service • HR Shared Services • Workforce Reporting & Analytics • Goal and Performance Management • Talent Assessment & Learning • Recruiting, Retention and Onboarding	• Financial simulation • Travel and Expense Management • Financial Reports and Dashboards • Real-time Financial Position & Funds Availability	• Self-Service Requisitioning • Real-Time Reporting and Monitoring • Procurement Document Authoring • Real-time Financial Position & Funds Availability
Collaborative, cooperative and secure operations	• Command and Control Interoperability • NATO Functional Area Services Interoperability • Management and Development of Flexible Organizations • Operate in a communication challenged environment	• Collaborative Supply Network • Demand and Supply Collaboration with Planning • Demand and Supply Collaboration with Order Execution • NATO Functional Area Services Interoperability	• Capital Project & Asset Collaboration • Predictive Maintenance and Service • Flight Operations Support	• Contingent Workforce • Workforce Reporting & Analytics • Predictive Analytics • Social Collaboration	• Product Cost Management • Grants Management • Buyer/Seller (inter/intra service) Collaboration • Foreign Military Sales • Payments and Bank Communications • Capital Project & Asset Collaboration	• Foreign Military Sales • Purchase Order Collaboration • Supplier Collaboration • Managed Catalogs • Invoice Collaboration • Supplier Discovery & Evaluation • Capital Project & Asset Collaboration
Resource stewardship, affordability and accountability	• Options Development for Financial Planning • Operational readiness • Accounting • Financial Reporting & Disclosure • Asset Accounting • Central Records and Document Management	• Demand, Supply, and Finance Alignment • Extended Warehouse Management • Transportation Management • Environment, Health and Safety Management • Central Repository for Records and Document Management	• Capital Portfolio & Investment Management • Environment, Health and Safety Management • Maintenance Planning and Scheduling • Maintenance Execution • Product Costing • Energy Management	• Benefits & Payroll • HR Shared Services • Position Budgeting and Control • Workforce Reporting & Analytics • Recruiting & Retention • Terms of Service Management	• Financial & Cost Accounting • Financial Closing • Asset Accounting & Valuation • Revenue Accounting • Fraud detection and investigation • Enterprise Risk Management	• Energy Management • Spend Visibility • Category & Contract Procurement Management • Solicitations (RFx) • Fraud detection and investigation • Enterprise Risk Management

* Benefits are based on early adopters of SAP S/4HANA or conservative outside-in benefits due to moving from a traditional ERP to enhanced SAP S/4HANA and LOB/cloud capabilities. Please scroll down for overview.

Typical business benefits*

• Collaborative planning effort: -3-5% • Time to mission ready: -10-30% • Readiness reporting effy.: +40-80%	• Inventory Carrying Cost: - 2-4% • Day in inventory: - 10-12% • Total logistics cost: - 10-12%	• Unplanned Asset Downtime: - 5-10% • Scrap value: - 10-15% • Engineering Change Cost: - 10-40%	• Employee Engagement: Up to +15% • Training spend: - 10-20% • Direct recruiting spend: - 10-20%	• Audit cost: - 20-40% • Budgeting & forecasting cost: - 25-50% • Days to close annual books: - 40-50%	• Operational proc. productivity: - 15-20% • Contract spend visibility: +10-15% • AP processing cost: - 5-6%

Internet of Things | Machine Learning | Analytics | Blockchain | Big Data

Digital Innovation SAP Leonardo

SAP Cloud Platform	Analytics Services	UX Services	Mobile Services	Security Services	Collaboration Services
OPERATIONS	**SUPPLY CHAIN**	**ASSET MANAGEMENT**	**HUMAN RESOURCES**	**BUDGET AND FINANCE**	**PROCUREMENT**
• Edge computing	• Connected products • Global track and trace	• Connected fleet • Connected assets • Predictive maintenance and services • Asset intelligence network	• Connected people • Resume matching • Job matching • Job standardization	• Digital boardroom • Invoice matching	

Extensions

	• Integrated business planning • Supplier network collaboration • Collaborative supply chain • Service parts planning • Transportation management	• Digital asset network • Digital operations for R&D • Responsive manufacturing (ME, MII, QIM, VE) • Production operations (MII, QIM) • Digital operations for manufacturing (MII)	**SAP SuccessFactors** ♡ • Core human resources and payroll • Talent management • Time and attendance management • Human capital analytics **SAP Fieldglass** \\\ **CONCUR**	• BPC for S/4HANA finance • Shared service framework **SAP Ariba** /\ • Collaborative finance **CONCUR**	• Collaborative sourcing **SAP Ariba** /\ • Procure-to-pay • Collaborative commerce • Collaborative supply chain • Collaborative finance **SAP Fieldglass** \\\ • Spend visibility **CONCUR**

Digital Core SAP S/4HANA

	• Extended warehouse Management • Response and supply orchestration • Advanced order promising/ATP • Constraint based production planning • Production scheduling	• Asset operations and maintenance* • Environment, health, and safety • Enterprise portfolio and project management • Compliant product lifecycle mgmt.*		• Financial planning & analysis • Accounting & financial close • Treasury mgmt. • Receivables mgmt. • Invoice mgmt. and accts payable	• Operational purchasing • Collab. Sourcing & contract mgmt. • Invoice & payables mgmt. • Supplier management • Procurement Analytics
• Force sustainment for D&S • Force organization & personnel for D&S	• Inventory and basic warehouse management • Production planning (Enh. MRP) • Real-time inventory management • Multi-level goods receipt	• Maintenance management • Product development and project control • Product engineering • Production operations • Quality management	• Time recording	• Accounting & closing operations • Accounting • Cost mgmt. & profitability analysis	

Download this poster and more material on the digitalization of D&S Organizations here:

HOW DOES IT ALL COME TOGETHER?
Reimagine interdiction operations

While each of the five digital business pillars delivers significant value as a stand-alone capability, the ultimate goal is to design the next generation of business processes that will span across all the digital pillars. Conducting drug interdiction at sea will not stop at dispatching military boarding parties. The whole digital defense network has to be aligned with the desired outcomes and optimize the limited available resources through pervasive situational awareness.

AGILE MARITIME DRUG INTERDICTION OPERATIONS:
PROMOTE MARITIME SECURITY IN ORDER TO COUNTER TERRORIST ACTS AND ILLEGAL ACTIVITIES[52]
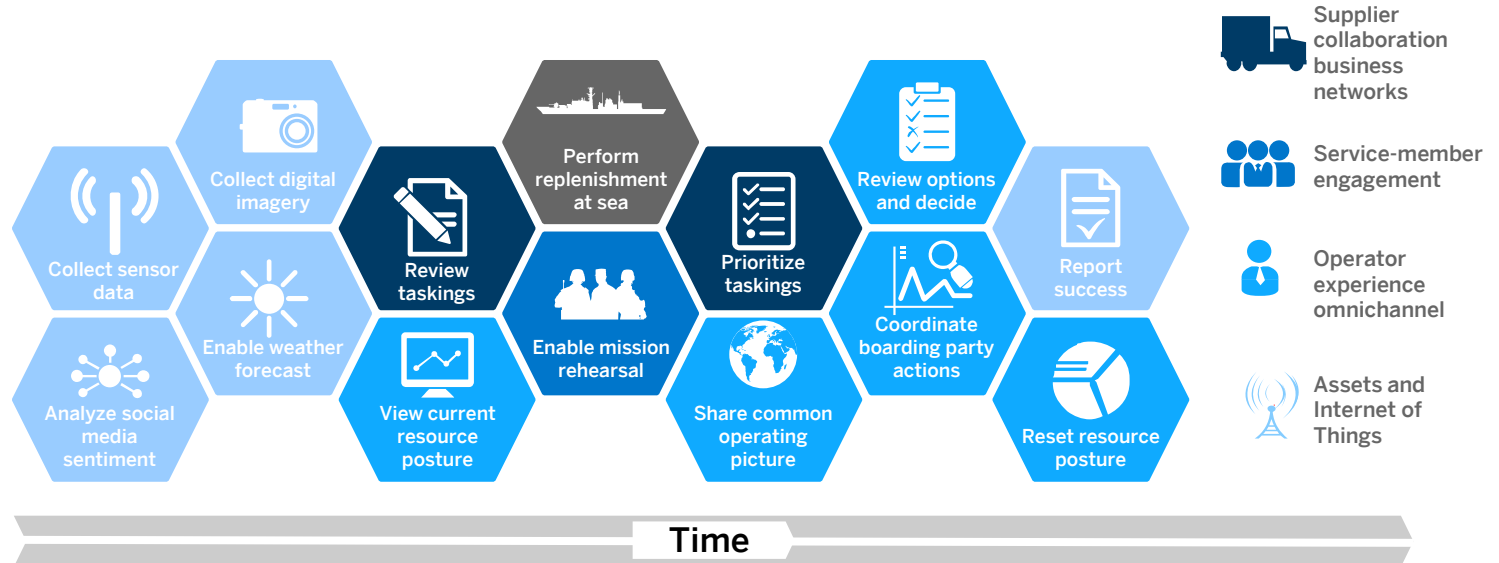
The digital defense network illustrates how both open source intelligence harvested through social media, platform sensor data, and weather and digital imagery are seamlessly fused to form the current intelligence picture. In parallel, the commander is able to monitor the resource situation and react to fresh task orders. As necessary, the maritime interdiction force is replenished and undergoing joint rehearsals.

Based on the current and real-time intelligence report in conjunction with a shared common operation picture, the commander is able to review the options, prioritize, initiate, launch, and coordinate the mission.

Finally, the maritime commander is able to report on the success of the mission to political stakeholders, reset the force's posture, and await the next tasking.

The predictive nature of the future solution will change how the coalition operates by anticipating need and harnessing the synergistic effect of the digital defense network, and will also ultimately change how maritime drug interdiction operations are conducted by mitigating the risk of surprises. Decision makers and their staff can rapidly develop pragmatic options to achieve the desired outcomes. The benefits of this scenario are significant:
- Operate in communication-challenged environments
- Achieve seamless collaboration
- Maximize situational awareness
- Minimize duplicative effort
- Prioritize deployment of available resources
- Promote maritime security
- Prevent illegal traffic in drugs and, in turn, improve quality of life

30%–50%
Reduced enterprise-wide IT spend on data integration[27]

20%–30%
Reduced time spent by business staff compiling information[28]

10%–15%
Improvement in decision making through better information availability[29]

FROM YOUR CURRENT STATE TO DIGITAL

THE JOURNEY TO BECOMING A DIGITAL ORGANIZATION BEGINS WITH PLANNING A DIGITAL TRANSFORMATION ROAD MAP

THE KEYS TO SUCCESS
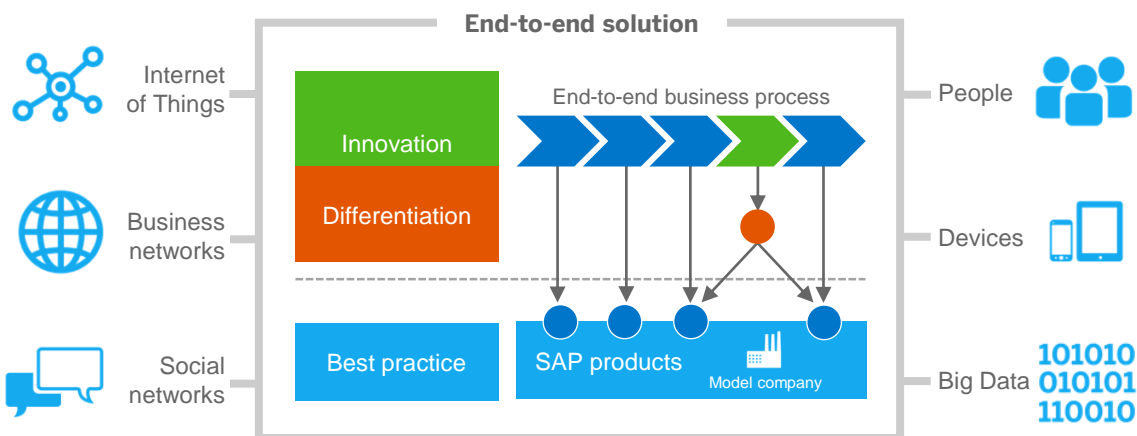## Transforming from your current state to digital

In the digital economy, simplification and business innovation matter more than ever. To do this effectively, it's important to cover the end-to-end digital transformation journey, ranging from planning a digital innovation road map and implementation plan with proven best practices to the ability to run all deployment options and ultimately optimize for continuous innovation with a focus on outcomes.

The end-to-end digital transformation journey

PLAN	BUILD and LAUNCH	RUN	OPTIMIZE
well to manage expectations	with proven best practices	all deployment models	for continuous innovation
Simplify and innovate	**Standardize and innovate**	**Run with one global support**	**Optimize to realize value**
• Reimagined business models, business processes, and work	• Model company approach to accelerate adoption with model industry solutions	• One global, consistent experience	• Continuously captured and realized benefits of digital transformation
• SAP Digital Transformation Framework as a guide for digital transformation	• Design thinking and rapid tangible prototypes	• End-to-end support – on premise, cloud, or hybrid	
• Value-based innovation road maps	• Coengineered industry innovations delivered with agility		

And to move forward with speed and agility, it helps to focus on live digital data, instead of Big Data, and combine solution know-how and industry-specific process expertise with data analytics so that the right digital reference architecture is defined and delivered. In that context, we believe that a model company approach is very relevant to enable you to transition from your current state to digital. Model companies represent the ideal form of standardization for a specific line of business or industry. They are built on existing SAP solutions using best-practice content, rapid prototyping solution packages, and additional content from customer projects. They provide a comprehensive baseline for rapid, customer-specific prototypes, cloud demos, and quick-start implementations.

Model company approach

End-to-end solution

Internet of Things — Business networks — Social networks — Innovation — Differentiation — Best practice — SAP products — Model company — End-to-end business process — People — Devices — Big Data — 101010 010101 110010

SAP DIGITAL ORGANIZATION SERVICES
Enabling your success in digital transformation

SAP has a broad range of services to cover the end-to-end digital transformation journey, ranging from advising on a digital innovation road map and implementation plan with proven best practices to the ability to run all deployment options and ultimately optimize for continuous innovation. We provide both choice and value within our service offerings, allowing you to tailor the proper approach based on your specific company expectations and industry requirements.

- 25,000 professionals in 70 countries
- Serving customers in 130 countries
- Outcomes delivered as one team in one contract
- Projects connected in real time to a global network of support functions through SAP Mission Control Center
- SAP MaxAttention™ and SAP ActiveEmbedded services to safeguard investment
- Consistent experience – on premise, cloud, or hybrid
- Standardized adoption of processes and tools
- Streamlined onboarding and ramp-up of stakeholders

From proposing a comprehensive digitalization proposal to realizing and running it, SAP delivers on the digital transformation promise to its customers on time, on budget, and on value.

SAP value delivery relies on unique differentiating assets:

| Exhaustive service portfolio | SAP Model Company | SAP Activate methodology | SAP Solution Manager | SAP Mission Control Center |

| Expert organization | Global reach | Partner ecosystem | Industry expertise | Focus on business outcome | Co-innovation |
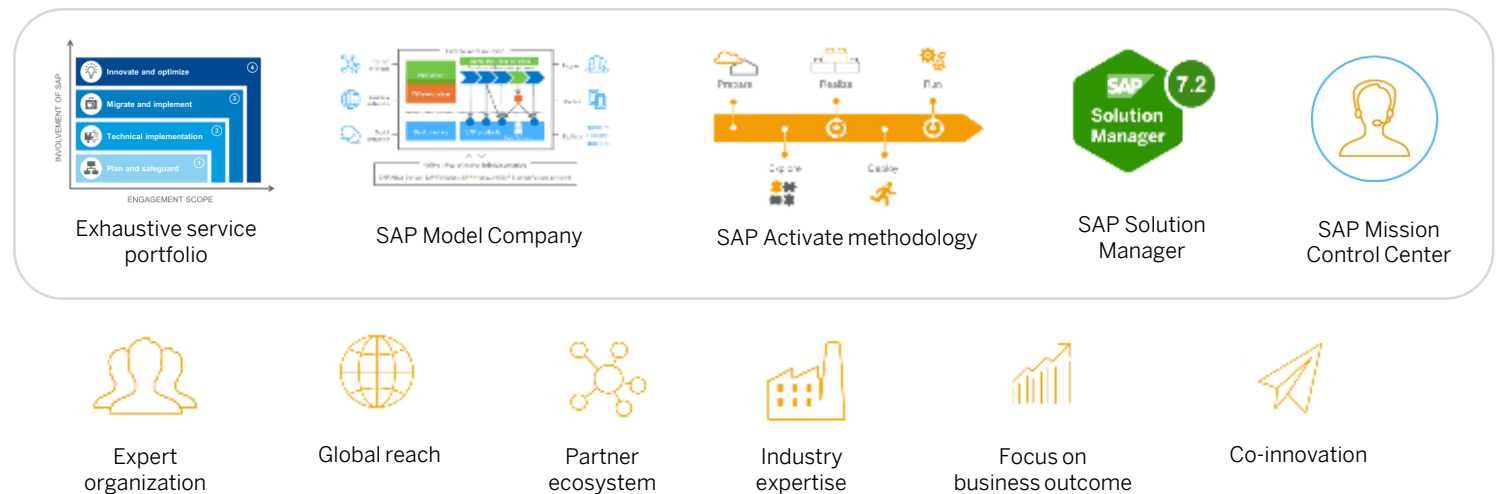
The SAP Digital Business Services organization delivers digital innovation with simplification and accelerated implementation, which is key to adoption and value realization. Continuous improvement is supported through ongoing assessment of real-life data insights and joint governance with customers.

SAP value delivery focuses on the following deliverables:

Digital business foundation	**Business insights**	**Continuous improvement**
• Digital business model	• Digital boardroom	• Joint value governance
• Flexible, scalable enterprise architecture	• Predictive customer insights	• Sustainable engagement model
• Platform for the digital future	• Value realization dashboard	• Innovation without disruption
• People and culture transformation	• Agile decision making and execution support	• Simplification

COMPREHENSIVE SAP ECOSYSTEM
Orchestrating the world to deliver faster value

Our comprehensive ecosystem for the defense and security industry offers:

- Integration into a wide range of business services (suppliers, finance, key vendors, travel, and so on)

- Open architecture: choice of hardware and software

- Complementary and innovative third-party solutions

- Reach – partners to serve your operations of any size anywhere in the world

- A forum for influence and knowledge

- A large pool of industry experts with broad and deep skill sets

The Defense Interest Group (DEIG) is a customer user group formed in 1999. The group meets twice a year with the purpose of networking, educating each other, and influencing SAP.

BUSINESS NETWORK

- 2.1 million suppliers
- 200 major travel partners (air, hotel, and car)
- 50,000 service and contingent labor providers

INFLUENCE FORUMS AND EDUCATION

- 32 user groups across all regions
- 40+ industry councils
- SAP community with >24 million unique visitors per year
- 2,650 members of SAP University Alliances

IMPLEMENTATION SERVICES

- 3,200 services partners overall
- Delivery of defense-specific solutions and services

INNOVATION

- 1,900+ OEM solution partners to extend SAP solutions
- 3,200 startups developing applications on SAP HANA

DRIVING CUSTOMER VALUE

PLATFORM AND INFRASTRUCTURE

- 1,400 cloud partners overall
- 30+ defense platform partners

CHANNEL AND SME

- 4,800 overall channel partners

WHY SAP

DIGITALIZATION IS A NATURAL NEXT STEP FOR A PERFORMANCE-DRIVEN DEFENSE AND SECURITY ORGANIZATION

It took years of innovation, strategic investment, and the forging of new, strategic relationships to build the end-to-end digital business platform.

SAP IS COMMITTED TO INNOVATION

Vision	Help the world run better and improve people's lives
Mission	Help our customers run at their best
Strategy	Become the cloud company powered by SAP HANA

GLOBAL PRESENCE AND RELEVANCE

- **82,000 employees** representing 130 nationalities
- **335,000 customers**
- SAP operates in **190 countries**

INDUSTRY AND LOB FOCUS

- Solutions for **25 industries and 12 LoBs**
- **98% of the most-valued brands** are our customers
- **76% of the world's transactions** are managed on SAP software

DIGITAL ECONOMY READY

- **120 million** business cloud users
- **1.9 million** connected businesses
- **>$800 billion** in B2B commerce
- **>99% of mobile devices** connected with SAP messaging

INNOVATION LEADER

- 2011: **SAP HANA** launched
- 2012: **SAP Cloud solutions** launched
- 2014: **SAP business networks** are the largest marketplace in the world
- 2015: **SAP Cloud Platform**
- 2016: **SAP S/4HANA, the next-generation business suite**

DEFENSE AND SECURITY ORGANIZATIONS ENABLED BY SAP

- **40+ years** of industry expertise
- **300+ defense and security customers** across 44 countries
- **10 of 10** largest defense manufacturing companies

Source of all data: SAP internal data and analysis

U.S. Army

The Logistics Modernization Program uses SAP HANA to provide the U.S. Army with the ability to manage rapidly growing data volume in its integrated supply chain, maintenance, repair, and overhaul (MRO) operations that currently handle 2 million transactions daily, $25.5 billion in inventory, 50,000 vendors, and more than 21,000 users (and growing). The solution reduces the planning cycle and delivers real-time reporting and analysis.[30]

36%

Lower budgeting and forecasting costs for organizations where the finance organization is able to update forecasts and conduct simulations[31]

RESURCES

Listed below is research that was used as supporting material for this white paper.

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SAP

Run Simple