Microsoft

Digital transformation for defence and intelligence

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Introduction

Technology and innovation have always been critical for effective defence and intelligence activities. Today, cloud computing provides a critical platform for IT modernisation to deliver an efficient, flexible and security-enhanced environment to create strategic advantage. Sentiments about the cloud are changing from caution to preference for agencies around the world.

In fact, the value of digital transformation for defence and intelligence agencies goes beyond cloud infrastructure and platform models, and the economic and efficiency gains of modernisation. The cloud can multiply the value of siloed legacy systems and data through the application of intelligent services, such as advanced analytics, cognitive services, artificial intelligence (AI), the Internet of Things (IoT) and augmented reality (AR). And with the addition of capabilities such as predictive maintenance and new intelligent approaches to cybersecurity, a defence cloud can provide an edge in operational readiness.

The advantage of a Microsoft defence cloud extends beyond the core cloud computing benefits derived from the modernisation of legacy defence infrastructures. It's the advanced capabilities within the cloud that deliver strategic opportunities for the implementation of a technology offset strategy. In short, it's the software in the cloud that delivers the edge.

This ever-growing breadth of possibilities has the potential for dramatic impact across three key priorities of the modern mission, enabling organisations to:

- Modernise the defence and intelligence workplace: give military personnel the tools they need to more effectively carry out their mission, enhance their skills, and sustain and enable them with high-quality places to live and work.
- Optimise defence operations: enable faster readiness, improve operational visibility, increase the value of assets and make better decisions with data.
- Strengthen alliances and partnerships: securely share information with the right partners at the right time while maintaining control and the advantage of asymmetric intelligence.

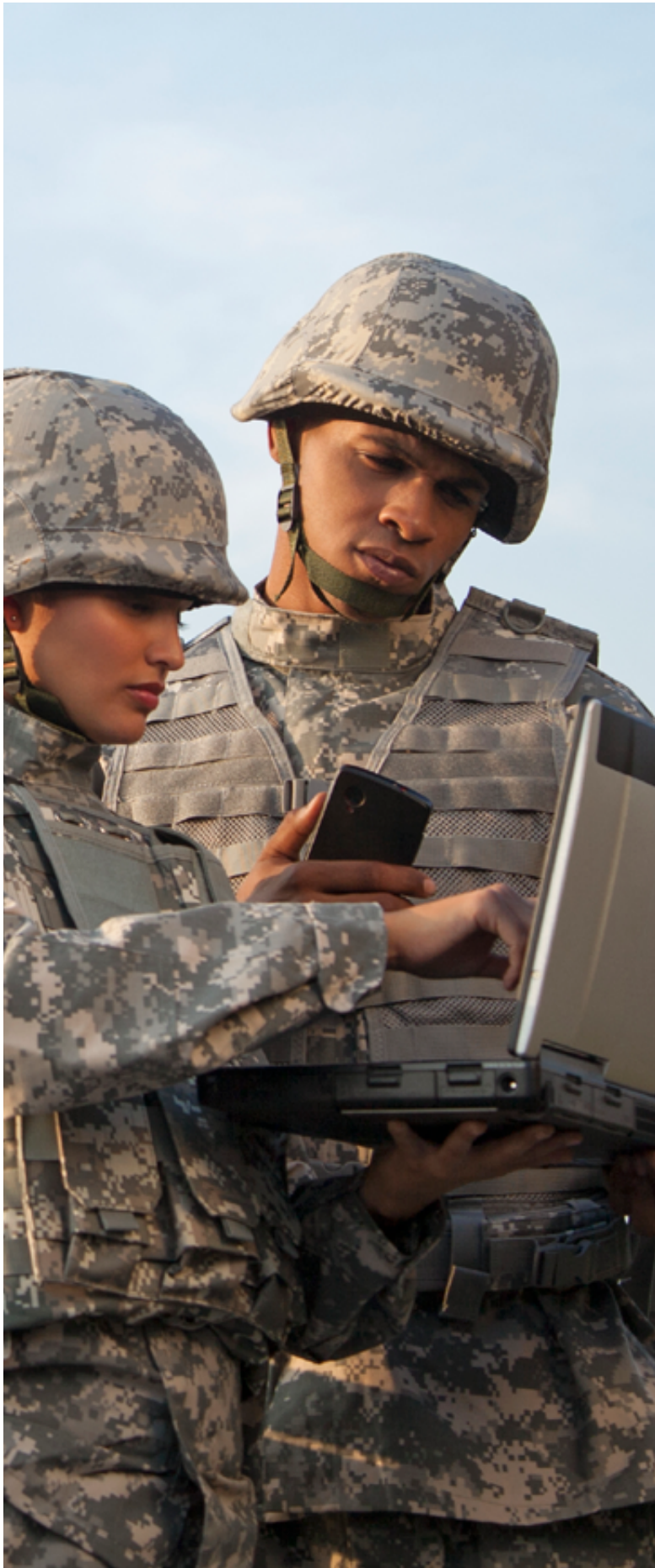
This eBook will provide insights into the digital transformation enabled by Microsoft cloud-based technologies, helping you advance your missions to promote stability and security for citizens, nations and multinational alliances.

Modernise the defence and intelligence workplace

Modern service members need a workplace that gives them the right information at the right time, provides a mission collaboration platform and supports teamwork, creativity and predictive thinking. Using cloud-based technology supports an environment that maximises the individual capabilities of military personnel, brings them together into a cohesive unit and optimises physical and digital work spaces to support mission execution.

Increase installation efficiency and quality

Militaries own and manage substantial infrastructure in the form of permanent and temporary bases, posts, camps and stations. This can add up to millions of square feet of buildings to be managed, as well as corresponding amounts of infrastructure and utilities. Creating safe, sustainable, connected installations helps support the force, the service member and the service member's family.



Military organisations can achieve these goals by leveraging technology developed for smart buildings and smart cities. One example of a city that has successfully become a smart city is Denver, Colorado, which is using IoT and machine learning to manage traffic, improve air quality and increase pedestrian safety.

Military and intelligence installations can take a similar approach. By enabling water, sewer and electrical infrastructure with IoT sensors that send data to the cloud, they can develop real-time digital twins and predictive models that support proactive maintenance, increased safety and more efficient use of budget and resources.

Achieve agile logistics and maintenance

Keeping equipment mission-capable requires knowing and managing its condition. In the past, the life cycle of a part was based on mean time between failure (MTBF), based on observations of averages. However, each part is used under unique, variable conditions, making static MTBF measurements less than accurate.

Today, using IoT and cloud analytics, it's possible to measure more sub-components more frequently – thousands of times per second in some cases. This provides an improved understanding of normal operation and the ability to predict when a part is approaching failure so it can be replaced before it interrupts a mission.

Tying these insights into a supply-chain system that can order parts automatically and just in time is transforming logistics and maintenance. With additive manufacturing technologies, parts can be created in the field as they're needed, with the integrity of plans protected through blockchain technology.

Enhance readiness

In a world of asymmetric conflict and non-traditional theatres, keeping personnel at the ready is increasingly challenging. Additionally, maximising the skills of enlisted personnel is critical to defence effectiveness. Organisations can take advantage of cloud-based solutions to keep active duty and reserve forces ready for action. Digital training and collaboration tools enable reserves to stay up to date and connected when they are going about their daily lives. From the first day of enlistment, AR technology can help individuals perform complex tasks with 100% accuracy, helping them fulfil their potential faster and serve their nations better.

Optimise defence operations

Operating a military or defence command has become increasingly complex as the pace of global change accelerates. Using the cloud enables intelligent automation across operational layers and provides greater visibility while increasing the effectiveness of data and insights.

Maximise command and control impact

Directing the right force to the right place at the right time is central to successful defence and intelligence operations. Cloud analytics are capable of ingesting enormous amounts of information and transforming it into visualisations and insights that drive effective action. With technology that reaches from the cloud to the intelligent edge, agencies can put data and tools to their best use. Edge processing means sophisticated machine learning technology can be put to work on data at the point of origin, thus supporting the personnel who have to make decisions, and identify which data should be sent to the cloud. With digital intelligence distributed at all levels of the command and control infrastructure, you can enable data-driven decision making in response to moment-by-moment changes in the operational environment.

Improve training and simulations

Traditional military simulations (or "war games") are time- and resource-intensive. That makes it challenging to keep pace with the ever-changing reality of war fighting environments. Augmented reality, gaming technology and the hybrid cloud are converging to change the game. Immersive training on systems and missions without the need for large-scale infrastructure means personnel can be ready faster, with more up-to-date situational awareness than ever before. Paper-based systems of the past can be replaced with digital systems that provide realistic training and simulation, and that can include AI-based analyses of accumulated data to improve training and readiness.

Optimise processes for efficiency

As with any large organisation, militaries rely on many complex systems and processes, from accounting to payroll to inventory. They often use the same enterprise resource planning (ERP) solutions common to enterprises around the world – and can stand to reap the same benefits from moving those business applications to the cloud.

By reducing the need to manage complex infrastructure and increasing availability, military and defence organisations can free IT and operations personnel to perform value-added tasks. At the same time, keeping ERP up to date is easier in the cloud, enabling agencies to take advantage of new features such as software as a service applications and secure mobile access.

Strengthen alliances and partnerships

Militaries and intelligence agencies conduct operations and exercises as multinational coalitions and must be able to share information securely across all classification domains. Combining the cloud with AI and machine learning can help them manage classified information at scale and enable secure sharing with less risk and more control.

Ensure data security to enable sharing

Knowing what to classify and at what level is key to military and intelligence partnerships. Classifying at too high a level means information is protected, but cannot be shared. Applying classifications that are too loose can lead to leakage of sensitive information. With an ever-growing flood of data, personnel need help understanding how best to classify data, and tools to protect it even after it is shared. AI-based information protection solutions in the cloud can help them identify information that could be sensitive, and then label and classify it in appropriate ways. By using rights management, reading and editing privileges can be managed and even revoked after a document leaves its original environment. Technologies like these can assist towards the goal of shared awareness and operations to improve security and defence.

Scale cybersecurity capabilities

Cyber warfare is a present and growing threat and is widely recognised as the fifth domain of international competition. The need for cybersecurity professionals is increasing faster than traditional training can prepare them. To help fill this gap, Microsoft is combining its leading cybersecurity knowledge and its proficiency in the gaming world to create immersive, engaging, next-generation cyber training. Using actual cybersecurity information for scenario development enables trainees to gain real-world expertise in combating cyberthreats in an environment designed to get them up to speed fast.

Drive collaboration and productivity

Sharing information and insights can lead to improved results in any environment, but especially in the military, where diverse perspectives and experiences can mean the difference between success and failure in critical situations. Traditional tools such as email and documents are still valuable, but modern cloud-based solutions enable greater collaboration than ever before. With voice and video meetings, real-time co-authoring and team-based chat available on any device – and secured with enterprise-grade protection – teams within and across organisations can work together to achieve their shared objectives.

Build a digital defence strategy

The following approaches can help you achieve transformation goals while meeting the distinctive needs of military organisations.

Maximise data value

- Look across functions and departments to find new uses for information.
- Break through data silos using open data standards and modern tools, such as data lakes.
- Choose platforms that support data autonomy, so you can easily move your data from one solution to another.

Focus on outcomes

- Start by selecting a measurable, tangible result to be achieved, rather than deploying technology first.
- Ensure measurable KPIs are in place and aligned with the organisation's goals.
- Engage with those who will be affected by the solution, from commanders to enlisted personnel, to ensure the solution will meet their real-world needs.

Modernise at a pace that matches the mission

- Take advantage of contemporary approaches such as APIs, microservices and virtualisation to enable gradual modernisation while continuing to utilise existing investments.
- Leverage hybrid capabilities that allow you to use on-premises and cloud services seamlessly and simultaneously.
- Start with quick wins that deliver immediate value and build on them, and use the cloud to experiment inexpensively.

Ensure security

- Enhance information security with cloud-based technology that uses analytics to provide services such as context-aware access control and intelligent threat protection.
- Ensure cloud providers can meet your compliance needs at all levels.
- Use dedicated cloud solutions that are purpose-built for military and intelligence needs.

Explore Microsoft solutions for defence and intelligence

Today's military and intelligence operations are readily embracing digital transformation. With the end-to-end, cloud-to-edge capabilities of Microsoft technology, they can improve readiness, modernise the defence workplace and enable greater collaboration with allies and partners. With data analytics and IoT, they can take action at mission speed. Critically, they can keep evolving threats at bay with enterprise-grade security services in a cloud environment that has the broadest set of compliance certifications.

With the ability to tailor environments across platforms, tools and services, and to deploy your apps on-premises or in the cloud, agencies have more freedom than ever to use modern technology in achieving objectives.

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