

5 advantages of AI on the modern battlefield



Discover why AI can bring a step
change at the tactical level.



What is AI?

The Oxford Dictionary defines **Artificial Intelligence (AI)** as the theory and development of computer systems able to perform tasks normally requiring human intelligence, such as visual perception, speech recognition, decision-making, and translation between languages.

AI is a branch of computer engineering, designed to create machines that behave like humans.

Introduction to AI on the modern battlefield

Beyond the headline-grabbing uses of Artificial Intelligence (AI), there are numerous others that are improving processes and **easing the cognitive burden** and workload placed on manpower.

Much of the focus of the application of **AI for C2 purposes** is placed on higher command levels. Beyond the data processing and analysis functions, the introduction to AI will provide commanders with **decision-support tools**, systems that can manage tasks and resources, and – using natural language processing – analyse multi-source intelligence reports.

This ebook will outline that while communications are often challenging and computing power limited, there are still opportunities to benefit from AI. Further, it will highlight the **enhancements that AI technologies can bring** to C2 and situational awareness at the tactical level.



Advantage #1

AI & JADC2: The ability to handle vast volumes of complex data

The command-and-control (C2) aspect of warfare will certainly benefit from AI technology. Its ability to handle **vast volumes of complex data** will streamline and speed up decision-making processes and be essential in addressing the emerging requirements of multi-domain operations (MDO).

MDO will extend beyond the traditional land, air, and naval domains to also **encompass cyber and space-based warfare**. The Joint All Domain C2 (JADC2) aspect will require capabilities that can span all levels of command and address two key considerations: the sheer volume and diversity of data that will be available to commanders, and the speed of action required to affect a winning outcome.

The concept of a **'Battlefield Internet of Things'** will provide commanders at the tactical level with a wealth of data. If not properly managed, this could lead to information overload and ultimately have a negative impact – however, AI can help manage the complex nature of future warfare and turn data into actionable intelligence.



Advantage #2

Operational planning support

Terrain analysis tools are a proven, real-world example that can be employed. However, AI promises the ability to consider a **wide range of factors** that can have a significant impact on the outcome of a mission.

Furthermore, AI could also offer decision support, such as **suggesting routes** or proposing the assets to be utilised. The technology will not only enable commanders to quickly access and consider a much wider range of data than is possible at present, it also promises **intelligent and nuanced support**.



Advantage #3

Focus on **conducting an operation** rather than on managing systems

For commanders operating at the tip of the spear, there is a very real danger of information overload when planning and conducting missions. The cognitive burden is significant, and **AI can help commanders** spend as much time as possible 'heads up' on conducting an operation, rather than focusing on managing systems.

AI tools that can **access and analyse data sets** on previous attacks, likely enemy tactics, or communications blackspots, for example, could provide commanders with a far greater appreciation of what needs to be considered in planning an operation.



Advantage #4

Emulation of human abilities

AI will ultimately have the greatest impact in instances where it is **emulating a human's abilities** rather than just those of the human brain – that is, where it is able to assess information in the same way as a human. AI's ability to conduct **sensor fusion and track correlation** – drawing on a wide range of inputs and far quicker than human operators – will bring a step change in capabilities.

This could be especially beneficial at the tactical level, for example, **pattern of life analysis** tools could greatly enhance situational awareness. Analysing video footage and sensor data collected passively, software could alert a commander to extraordinary circumstances – such as changes in the environment or an increase in the number of potential combatants – and infer if an attack is likely.



The use of **Cloud infrastructure** is essential to ensure that elements operating at the tactical level have on-demand access to advanced AI capabilities. This is both a challenge and an advantage. Investing in the technology of the future and open architectures will give commanders an **operational advantage**.

In facing a near-peer threat, **speed of action** will be more important than ever, and the operational advantage that AI can bring will be disruptive.

Advantage #5

Speed of **action**



*AI can act as a **force multiplier** on the modern battlefield, and we are **continuously evaluating** how we can introduce AI capabilities to the **SitaWare** suite and deliver an **operational advantage** to commanders at all levels.*

Hans Jørgen Bohlbro,
Vice President Product Management,
Systematic Defence

The road to the **successful application of AI** is paved with challenges

There are **challenges associated with leveraging AI**.

They must be addressed and taken seriously. The biggest challenges to enable AI to be applied at the tactical level are:

- Access to data
- The validity of that data
- Trust in the results

The considerations around Cloud technology are too numerous to address here, but it is clear that if **C2 systems** are to benefit from accessing Cloud computing power, they

must be capable of **operating in communications-restricted environments** and over minimal bandwidth – especially given the limitations inherent at the tactical level and the potential for interference from an enemy.

Furthermore, if commanders are to truly **benefit from AI** their C2 systems require open architectures that can easily integrate new applications – given the speed at which new capabilities are developed – as well as have the ability to interoperate with partner infrastructure and systems.

Creating trust in AI systems is also an important factor. This will require algorithms to be built in such a way that they can explain their reasoning in terms that humans can understand and validate.

Finally, we must recognise the challenges associated with the collection and use of operational data. If we are to be assured that AI algorithms are making the most effective decisions, their development must include access to the necessary volume of valid, relevant data and not only that which is available commercially. Furthermore, militaries must **collect and store operational data** to ensure that future AI capabilities are developed based on the best data. Only by working together, can industry and the military ensure that AI solutions deliver an **operational advantage on the modern battlefield**.

Creating **advanced capabilities** through **AI**

AI is a **transformative technology** on the modern battlefield and is bringing a step change in capabilities to all domains. Its ability to handle vast volumes of complex data will streamline and speed up decision-making processes, acting as a **force multiplier for commanders**.

At Systematic, we are exploring the application of AI across the SitaWare suite. We have already introduced various aspects in our software, ranging from our **AI Assisted Toolbox** designed to improve work processes, to the use of machine learning for **anomaly detection** in the maritime domain.

We are now working on a range of advanced applications for AI that we believe will deliver an operational advantage. They include **decision-support tools** – such as for route planning and analysis – and the ability to analyse **multi-source intelligence reports** through the application of natural language understanding.

Find more on **AI in the Defence domain** on Systematic's website

→ [Lightening the C2 load – can AI bring a step change at the tactical level?](#)

→ [Central to meeting the complexities of JADC2? Artificial Intelligence](#)

→ [AI assisted toolbox: Streamlining C2 processes across the battlespace](#)



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