INVESTED IN
# BRITAIN

FOCUS ON: DATA IN ISR

Welcome

Welcome to the fourth Raytheon UK Invested in Britain newsletter. This month, we're focusing on the power of data and how its use and application is changing how we approach intelligence, surveillance and reconnaissance (ISR).

Over the past decade, using data was about process improvement. Now, we're looking at artificial intelligence, machine learning and automation to uncover hidden meanings from information – all of which will ultimately help analysts make quicker, better-informed decisions when they're needed most.

One of the key benefits from the progress we've made is the vast amount of information we're able to process, enabling us to zero in on the data that's relevant to a decision maker. In this newsletter, we'll discuss how we're putting that to use and helping military leaders make better decisions, through platforms such as our ISTAR aircraft and SeeMe small satellites.

Data powers each of these platforms, connects the domains of land, sea, air, space and cyber, and ultimately gives the UK, and its allies, an informational advantage. By capitalising on data, we'll make sure that the right people have the information they need at the right time to make the right decisions.

I hope this is of interest to you. If you want to find out more, or have any questions, please get in touch.
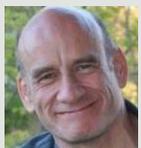
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Eyes in the sky

Since Raytheon Technologies delivered its first Space Enabled Effects for Military Engagements – or SeeMe – satellite to the Defense Advanced Research Projects Agency (DARPA), we're now focusing on the future applications of smaller satellites.

Providing timely and relevant information to soldiers once required large, expensive satellite constellations – but their high cost meant that the technology wasn't available to many.

Thanks to a growing market for private communications and reconnaissance, smaller, cheaper satellites are becoming increasingly accessible. Rather than replace larger orbiting equipment, these satellites will supplement existing ones.

Ground troops can't always get immediate access to larger military and commercial satellites. The smaller, SeeMe satellites will be dedicated to soldiers, providing them with real-time images from space when they're needed most.

Using its automated missile production lines, Raytheon Technologies can build large numbers of these highly reliable, small satellites quickly and affordably. Once each satellite reaches the end of its use, it will de-orbit and burn up in the atmosphere, leaving no debris in space.

FIND OUT MORE
Visit: https://raytheon.mediaroom.com/2018-10-03-Raytheon-delivers-first-SeeMe-satellite-to-DARPA
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Right data, right time

Raytheon UK's Defence Targeting Toolset (DTT) is helping the Ministry of Defence deliver up-to-date information to those who need it most.

DTT, a web-based browser application, makes sure everyone, from frontline personnel in a theatre of war to those planning targeting activities, sees exactly the same intelligence to support the delivery of military effects before making a decision.

This enables military operations, from supporting humanitarian efforts to intelligence sharing, to be delivered quicker and be less likely to be affected by human error, ensuring activities are undertaken in a safe and legally compliant manner.

DTT was brought into service in collaboration with the British Army in 2018. With an agile approach behind the toolset, it is continuing to provide extra functionality to users.

"We can update DTT regularly and change our focus depending on the priorities of the customer," explains Carl Dodd, Software Programme Manager. "For example, our lead user is 1st Artillery Brigade – but we're moving towards a joint focus for users in Strategic Command."

Using a modular and evolving micro services approach means we can keep up with changing technology and easily expand the platform to support coalition operations with our partners in the US and NATO. Ultimately, it's about getting technology into the hands of a warfighter and innovating at pace.

The ability to update the platform quickly isn't the only benefit DTT has over its international counterparts.

"DTT's data broker enables communication between service locations over degraded and low bandwidth bearers," continues Carl.

"Just like a streaming service lowers your video resolution to maintain a smooth feed, DTT can continue working with low bandwidth, high latency connections – and recover from loss of connection quickly."

Chris McFarlane, DTT Operations Manager for Artillery Systems, adds, "DTT has been embraced by 3rd UK Division and 1st Artillery Brigade, who have described the capability as an operational priority. Users can look forward to even more significant upgrades and enhancements over the next three years."

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From image data to intelligence

If you're an analyst, you'll look through thousands of petabytes of valuable image data.

"But a limited amount of intelligence can be pulled from a picture," explains Todd Kaiser, Technical Director, Constellation Management and Protection. "By fusing data from images with intelligence gathered from other sources, analysts can get a fuller picture."

This approach is called multiple intelligence sense-making, which helps analysts make better-informed decisions. That's why Raytheon Technologies is developing new cost-effective sense-making technologies to fuse different types of data together.

These programmes can process and fuse petabytes of data in seconds to generate high-level interpretations, telling analysts broadly what the data means.

"This sense-making technology helps provide actionable information, so analysts can make the right decisions quicker than their adversaries."

"The goal is not to completely eliminate humans from data-driven workflows, but to integrate computers deeper into the process, automating the fusion of data," explains Tom Jones, Technical Director, Intelligence Production Solutions. "This helps analysts provide better intelligence based on their expertise."

Making ISR faster with AI

Raytheon Technologies is using artificial intelligence and machine learning to improve the ISR capabilities of allied armed forces. The idea is that having the latest intelligence means forces can capitalise on any opportunity in a conflict.

"Speed is a big issue, which is challenged by huge amounts of data and a limited number of people to look at it," explains Jim Wright, Technical Director.

Our military customers can collect up to 22 football seasons' worth of video every day. That's an impossible amount to sift through manually – especially when operators have to make critical decisions quickly, such as protecting ships in crowded sea lanes.

Traditionally, operators have controlled sensors and analysed data by keeping their eyes locked on screens, pressing buttons and using joysticks to move things around – now those functions are becoming automated through smart software to lighten the operator's workload and use automation to help make decisions faster.

FIND OUT MORE
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www.raytheonintelligenceandspace.com/news/feature/artificial-intelligence-machine-learning-isr
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