



# WELL CONNECTED

**Rob Mather** reveals how technology is leveraging data to provide mission-critical insights for the connected frontline of the future

**T**echnology is changing the battlefield as we know it. Warfare is becoming reliant on an even more intricate data lake across combat zones – think soldier health monitoring, to accurate kit insights. This increased force connectivity is thanks to the increasing use of mature technology – and it's becoming instrumental in ensuring mission success.

Landmark legislation such as the 1985 Goldwater-Nichols Department of Defence Reorganisation Act crystallised the vital importance of better connectivity for the military. This act, driven by a significant need for improved inter-service cooperation, mandated the development of comprehensive plans for intelligence sharing and operational coordination during joint military operations. These efforts laid the groundwork for improved information exchange. Technology is the

catalyst of change. Fast-forward to now and, rather than regulatory-driven change, we're moving into an era of technology-driven connectivity – as smart devices enter the battlefield to monitor the health of warfighters, equipment and critical devices.

We're seeing an explosion of asset connectivity that is starting to build a truly connected battlefield, not just on the ground, in the air or at sea, but with some help from space too.

There are five key developments that we will be exploring here, powering the connected battlefield now, and into the future:

## INTERNET OF MILITARY THINGS

The internet of military things (IoMT) is the growing militarisation of IoT – where IoT enabled sensors and devices provide a network of data that provides a deeper level of insight into a fighting force than ever before.

IoMT presents widespread opportunities, including enhanced efficiency, real-time decision-making and improved situational awareness. The Australian Army has published a paper looking at IoMT describing it having: “much scope for the development of additional capabilities in the future through the integration of sensors, robots, munitions, wearable devices, vehicles and weapons.”

Successful IoMT deployments take Command, Control, Communications, Computers (C4) Intelligence, Surveillance and Reconnaissance (ISR) processes to a higher level by exploiting large volumes of collected data for optimised decision-making. The ability to connect scattered systems and networks with IoMT data feeds into a large integrated network will be a key component in the move to a connected battlefield.

## REAL-TIME SOLDIER HEALTH INSIGHTS

Another revolutionary and growing area of connectivity on the battlefield is the ability to be able to monitor the health of troops on the field. In most modern fighting forces, almost every soldier now has biometric monitoring devices which use sensors to track heart rate, body temperature, blood oxygen levels and stress levels so commanders can make decisions based on this human data. NATO, for example, is currently supporting the development of new wearable technology: “designed to minimise casualties during combat operations. It involves soldiers wearing various body sensors that will help medics collect vital data and determine the extent to which a soldier may be injured more accurately than a field medic would be able to conclude.” Add to this communication transmitter-receivers, GPS devices, night-vision aids, and other comms devices – and there is a huge proliferation of tactical-level data available. Furthermore, each one of those devices is actually an asset that forces need to track the performance of, further exacerbating the data deluge.

## SMART ASSETS

There is no longer just a one-way flow of info out to the asset from command. Many smart assets are now collecting data and engaging in two-way communication with other assets, and that two-way communication turns them into stakeholders.

A single US Air Force unmanned aerial vehicle can generate 70 terabytes of data within an operational span of 14 hours. Multiply that by 1,000 in a drone swarm scenario and you can start to see the challenge facing commanders today in collecting the vast amounts of data available and distilling that data into actionable insights.

Or, consider a scenario where the asset itself, combined with predictive maintenance solutions, can tell the operator before the machine breaks down that a part is going to fail and alerts the operator, possibly even self-triggering a repair workflow by picking parts and scheduling a technician.

However, getting a total view of asset readiness from this vast dataset can be challenging – and further complicated by the involvement of defence contractors who may be responsible for performance-based logistics (PBL) agreements to keep assets mission-ready.

## LOOKING INTO SPACE

The dimensions of the battlefield itself are also now changing. What used to be air, land, sea and time has now become, air, land, sea and space. It could even be argued this is now air, land, sea, space, plus cyber space.

While not militarised, advances in communication satellites have become extremely beneficial in recent conflicts – even utilising technology from the civilian side. For example, when SpaceX Starlink satellites were moved over Ukraine, which showed a flexibility and an adaptability of an infrastructure to quickly move to support an emerging conflict.

## THE EXPLOSION OF ASSET CONNECTIVITY IS STARTING TO BUILD A TRULY CONNECTED BATTLEFIELD

Data reach broadens here too. According to Deloitte, the amount of data that is being sent to and from space will likely grow to more than 500 exabytes of information from 2020 to 2030 (a 14x increase). On top of this, 98 percent of senior executives surveyed said that demand for space data is increasing as it has broader use and significance across end-markets.

## DATA WILL CHANGE THE BATTLEFIELD

So, we have the internet of military things plus the asset operators and the munitions themselves such as drone swarms and data feeds from space meaning we are now dealing with a very sophisticated connected battlefield. Common to all of these connected battlefield advancements is the proliferation of data. Forces must be able to turn this vast pool of data into critical insights that can influence mission success.

But if these developments operate in a decentralised manner, defence forces are not getting the immense value of the real-time aggregation of terabytes and terabytes of data every single second in a wartime scenario. As per Capgemini: “This data must be sorted and digested for end-users, ensuring they can access essential insights quickly.” This is where a data lake for asset management can provide command-level insights on all in-service assets.

If you're a fighting force, you need a framework overarching all of this to tie data together in that one single solution with the ability to collect, analyse, and redistribute all of that data to the correct audience in a useful format. Combining forecasting and predictability with a presentation layer drives Total Asset Readiness on a whole new level, giving commanders a clear real-time view of the assets at their disposal, in the context of the mission they need to complete.

Defence forces need to leverage an all-in-one asset management solution in order to ensure high-quality force connectivity. Data-driven decision-making, proactive asset readiness, resource reporting and soldier health monitoring will drive connectivity on the frontline – and harbour mission success across the entire force ●

**Forces must be able to turn this vast pool of data into critical insights that can influence mission success**

**ROB MATHER** is VP Aerospace and Defence at IFS.