BAE Projects Advance

BAE Systems are forecasting to hit major milestones in 2018 for two projects aimed at improving power and data distribution on the battlefield. Broadsword® Spine® and Tactical Hotspot are technologies being developed to support dismounted soldiers of the future.

Broadsword® Spine® is a power and data network built directly into clothing through the use of 'e-textiles' developed in partnership with Intelligent Textiles Limited. BAE Systems states the system allows electronic devices to be plugged straight into a vest, jacket, belt, or backpack, with custom-built connectors hooking directly into power and data sources via USB 2.0 connectivity.

One major advantage is weight savings, said Richard Cross, Engineering Lead for new products and capabilities at the company, with Broadsword® Spine® offering significant reductions when compared with alternative solutions.

"Soldiers carry a huge amount of equipment which can affect their ability to do their job, while long-term health issues could arise," he said. "We're looking at ways of reducing that through Broadsword Spine."

There are two aspects to this, he said. First, the e-textile is lighter than the equivalent cable. Second, the use of 'smart' electronics leads to greater efficiency in the use of power, reducing the number of batteries that need to be carried. This can be particularly beneficial to personnel who use highly complex equipment, such as those in Forward Air Control.

"There are significant savings in the weight of batteries simply by consolidating to one battery type and using that energy more efficiently," he explained.

BAE Systems initially developed some prototypes of Broadsword Spine several years ago, which were evaluated by elements of the US and British militaries. The company then decided to develop the system internally, using a more commercial approach than the standard military process. Rather than wait for a requirement to emerge, BAE Systems has taken on the cost and risk of development, and is marketing the product globally.

As of December 2017 the company was in the final stages of environmental qualification of Broadsword® Spine® which aims to "prove that it's suitable for all the harsh environments it's likely to encounter out in the field". Because e-textiles are a new product, "there's been some manufacturing techniques to perfect and to develop around an e-textile based production line", Cross added.

There has been interest in Broadsword® Spine®, said Cross, with a number of pre-production units being evaluated by a number of NATO countries. Production units should be available from some point in 2018, Cross said.

BAE Systems also expects to see progress on its Tactical Hotspot system over the course of 2018. Tactical Hotspot is a compact, mobile solution that can be securely deployed in an armoured patrol vehicle, the capability integrates the Falcon Tactical Trunk Network System (Broadband for the Battlefield) with the Bowman TacCIS and SATCOM-on-the-move, along with 4G, WiFi, the company's Web-Enabled Data Links (WEnDL®) and a full suite of Operational Communication Information Services. The system is being developed with General Dynamics and Airbus, and is designed for use with the British Army's new Strike brigades.

The UK MoD has awarded BAE Systems a £1.2 million contract to supply two experimental versions of the system. The Tactical Hotspot capability will provide frontline troops at the tactical edge with the communications capabilities and services they, at present, only receive at the command headquarters, said Craig Stewart, Engineering Manager at BAE Systems.

"The concept behind the Tactical Hotspot is to provide the currently 'disadvantaged' frontline troops with richer information services, superior situational awareness, resilient connectivity solutions and secure mobile communications in the tactical battlespace, thus ensuring that he or she is no longer disadvantaged," Stewart explained. "Currently the user cannot get the information they require when and where they require it. The Tactical Hotspot enables that."

The programme is in its very early stages, said Dave Lord, Tactical Hotspot Project Manager, with the British Army still deciding what kind of communications capability it will require for the Strike Brigades. The company has delivered a concept demonstrator, which will be tested on an adapted Panther Command and Liaison Vehicle. An initial trial will take place in January 2018, with larger exercises conducted throughout the year, after which the Army will have a more informed view of what its future requirement might be for such systems, Lord explained.

"The programme that we've been working on is to provide them with a demonstrator, to give them something they can use to work out what their requirements might be for a future product," he said.

In the future, Broadsword® Spine® and Tactical Hotspot could interact on the battlefield, said Stewart, with the latter providing the broader access to information and data that the former can then use. "Broadsword®Spine® is all about the use of power and data; the Hotspot provides a conduit to get that data to the soldier." The development of these two products is an indicator that BAE Systems has a focus on the future of battlespace data integration. The integration of these systems will provide significant benefits to soldiers on the battlefield. ■