

News story: US and UK Armies lead the way in world-first for robotic vehicles

A robotics demonstration between the UK and US Armies in Michigan gave a glimpse into the future of getting supplies to the front line.

The Defence Science and Technology Laboratory (Dstl), together with the U.S. Army Tank Automotive Research, Development and Engineering Center (TARDEC) and the U.S. Army Armament Research, Development and Engineering Center (ARDEC) demonstrated unmanned trucks formed into driverless convoys, unmanned aerial vehicles, and a robotic all-terrain 4x4 steered via a remote tele-operator, British and American soldiers.

As a result, the Coalition Assured Autonomous Resupply (CAAR) demonstration showed initial capability in unmanned tactical resupply incorporating a combined line-haul convoy, autonomous 'last-mile' ground and air capabilities.

The 'last mile' represents the final leg of the logistics and resupply route between the most forward base and troops in the field and can be the most difficult and dangerous stage of logistics support to a combat zone. The line-haul convoy is the first time ever that a UK-US collaboration has joined together in this way, with a British Army MAN SV 6-tonne (HX-60) truck as a 'leader' vehicle in the convoy, followed by two US Light Medium Tactical Vehicles (LMTV) trucks.

Defence Minister Harriett Baldwin said:

One hundred years ago we pioneered tank warfare with our US allies, and today we remain right at the forefront of military technology together. This exercise has proven the success of our ongoing investment in science and technology as we see concepts becoming reality. This particular project is spearheading solutions to the notoriously dangerous operation of supplying our frontline on the battlefield. Delivering crucial food, fuel and ammo remotely will help save soldiers' lives.

Pete Stockel, innovation autonomy challenge lead for Dstl, said:

Following the communique signature between the two nations in 2014, we have been working closely with our American counterparts to develop effective demonstrations and assessments of important new autonomy technologies, which could one day reduce the burden on and risk to the military user, while improving logistics efficiencies and interoperability.

This is the first time that we have created a UK-US coalition semi-autonomous leader-follower convoy to bring to life concepts which will provide solutions to de-risk the Last Mile of logistics support to the front line. We are enormously excited to be working with our US colleagues on this project, delivering on the commitment announced at the Farnborough Airshow in 2016. It has been an exciting challenge to drive this forward at pace. This could be a step-change in how operational risk could be managed, costs could be reduced and – ultimately – lives can be saved, as a result of harnessing this rapidly-evolving technology.

For this early stage of the collaboration, safety drivers monitored the semi-autonomous vehicles which were controlled using real-time information or following GPS waypoints. The week-long experiment is expected to inform future autonomous capabilities. This is a new way of coordinating and delivering vital supplies to front-line operations, aiming to reduce risk to those troops and provide on-demand delivery of food, fuel or ammunition to the so-called 'last mile'.

This CAAR event is the first demonstration in a 3-year project with a goal of bringing to life a series of concepts which can provide unmanned support to the last mile. The convoy was led by a British MAN SV 6-tonne, two axle truck, travelling at speeds of up to 25 mph, providing the leader vehicle for the following two US LMTV trucks, using integrated robotics to make decisions about speed, steering and other driving functions.

The UAVs demonstrated included the British-developed Malloy Aeronautics Hoverbike. An advanced prototype quadcopter drone, it can deliver more than (100kg) of supplies, all using a simple tablet controller. It has potential to be used for humanitarian aid and could one day carry a casualty away from danger. This was the first time this version of the Hoverbike has been unveiled.

A tele-operated Polaris MRZR, fitted with Light Detection and Range (LIDAR), sensors, cameras and GPS. This was operated by British Soldiers from Combat Support Unit Trials Development Unit (CSS TDU) as part of a joint UK-US trials team. Using nothing more than an X-Box game console controller, Cpl Mortimer and LCpl Thorne, 'drove' the 4x4 around the area.

Colonel John McCrann, from Army Headquarters, said:

The British Army is keen to work with its US counterparts through Dstl to identify where autonomous technologies can benefit UK military capability.

Dstl brought together a wide range of military and industry partners to join commercial-off the-shelf (COTS) supplies with novel ideas and tech start-ups to produce a futuristic demonstration of how UK and US forces' tactical resupply could one day operate.

Jeffrey Ratowski, TARDEC's project leader for the Coalition Assured Autonomous Resupply (CAAR) effort, said:

We're using US and UK Soldiers to control multiple robotic assets including the convoy, the autonomous last mile- ground piece, and there's also an autonomous last mile- air piece.

For more information on the autonomy Last Mile Challenge, visit <https://www.gov.uk/government/organisations/defence-and-security-accelerator>