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Military technology: MoD announces winner of robot challenge

The robotic reconnaissance technology demonstrated in the Grand Challenge could be at the disposal of the British army within 18 months

James Randersonguardian.co.uk, Tuesday 19 August 2008 13.42 EDT



An autonomous mini-tank deployed by the winning team in the Ministry of Defence's Grand Challenge competition

British forces could soon be launching teams of autonomous spy robots to scope out enemy-held villages and towns. The technology was developed for [the Ministry of Defence's Grand Challenge](#), a contest to find the best robotic air and ground vehicles for identifying threats such as snipers and roadside bombs. If future work goes well, the technology could be at the disposal of the army within 18 months.

The Grand Challenge winner, announced today, was Team Stellar – a collaboration of small firms, researchers from Cranfield University and large industrial manufacturers. It beat off competition from 10 other teams whose creations included a swarm of quadrotors (helicopters with four rotors), a scaled-down JCB lookalike and a mini flying saucer.

The strange collection of craft were taking part in an ambitious competition to develop uncrewed surveillance vehicles that can help the military identify enemy positions in a town or city before sending in troops. The MoD earmarked £4.5m to stage the contest and develop the technologies for the battlefield.

The teams competed over three days at Copehill Down, a mocked-up German village on Salisbury Plain that the army uses for training soldiers in house-to-house fighting.

The robots' mission was to detect snipers, vehicles mounted with heavy weapons, enemy patrols and IEDs (improvised explosive devices) that were dotted around the village. They were given an hour to complete the task.

Team Stellar used a 7kg high-altitude robotic plane to first map the village before launching smaller, 1.8kg robots to fly between the buildings and take video and thermal

images. The team also deployed an autonomous mini-tank for more detailed reconnaissance.

All the vehicles are able to plot their own course and avoid obstacles once they have been given their mission instructions. The images they record are streamed in real-time back to the ground station where computer software analyses the pictures for potential threats.

The team was awarded the the RJ Mitchell Trophy, named in honour of the designer of the Spitfire and moulded from metal reclaimed from the wing of one of the second world war fighter aircraft.

"I am extremely pleased, we are thrilled. We worked very hard and it is a fantastic result," said team leader Julia Richardson.

Team Swarm and its fleet of quadcopters, which allow targets to be viewed from different angles, were commended as the "most innovative idea" in the competition.

The military already uses unmanned aerial vehicles (UAVs) such as the Predator and Desert Hawk to gather intelligence, but close-up information mostly has to be gathered by troops on the ground.

Major Matt Kelly, an urban operations specialist, was frank about why he wants robotic vehicles to do the job of reconnaissance instead of soldiers: "I need to know where the enemy is. I need to know where the civilian population is in order to kill the enemy more efficiently and effectively," he said.

"The Grand Challenge has proven a showcase for the wealth of talent that exists in the UK - not just in large defence firms, but in universities, schools and even garden sheds across the nation," said Baroness Ann Taylor, Minister for Defence Equipment and Support. "They have brought fresh, exciting ideas to the defence table which could have battle-winning applications for our armed forces."

The contest format had already been used to great effect by the Pentagon, whose own grand challenges have spurred huge improvements in autonomous vehicle technology. The contest is also a nod to publicly funded competitions for inventors in Britain's past, such as the 1714 prize to develop a solution to the problem of working out longitude at sea.

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