



Department
for Transport



Transport Research and Innovation Grants

DRONES

Department for Transport

Drones Transport Research and Innovation Grants Programme (TRIG: Drones) 2021

Cohort Brochure

Delivered by

CATAPULT
Connected Places

The Connected Places Catapult is proud to be delivering the Department for Transport's 2021 Drones Transport Research and Innovation Grants Programme (TRIG: Drones).

This programme has been developed to build upon the foundations of the DfT's existing Pathfinder programme through ambitious plans to give UK plc a competitive advantage in the delivery of near-to-market drone flight and air traffic management capabilities.

The programme will have an impact by positioning the UK as a country open to technological innovation including as a source of expertise on the use of drones in industry and the public sector. It will help boost development and use of drones across the UK economy.



Drones Transport Research and Innovation Grants Programme 2021 Recipients

MOTION · ROBOTICS

www.motion-robotics.co.uk



www.pilotaware.com



www.rinicom.com



www.skytechdrones.co.uk



www.snowdoniaaerospacecentre.co.uk



www.surveyar.co.uk



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<p>Motion Robotics Limited</p> <p>MOTION · ROBOTICS</p>	<p>VISIOPHONIC: An Audio and Visual Based Detect and Avoid System</p>	<p>We will test the feasibility of a new detect and avoid systems for UAVs. In previous work we reached TRL2 for</p> <ul style="list-style-type: none"> a) an audio-phonic based system b) a vision-based system <p>Each approach has its pros and cons, but when fused a robust system is achieved. The separate TRL2 solutions will be taken to TRL4 fused all-in-one solution, using robotics + artificial intelligence techniques.</p> <p>The feasibility of the fused system will be tested on a high-fidelity simulation rig, the aim being to show we can detect craft at a distance of 3 to 5Km and to classify the UFO as an aeroplane, helicopter, UAV or bird flock.</p>
<p>PilotAware</p> 	<p>PilotAware Detect and Avoid</p>	<p>For drones there is an increasing need for onboard detect and avoid technology to see, sense or detect conflicting traffic or other hazards and subsequently take the appropriate action. Significant progress over the past few years has been made in detecting UAVs present in airspace, identifying them, and determining their existing flight path. With electronic conspicuity (EC) information made available by commercially available low-cost systems such as Flarm, PilotAware and CAP139 Devices, this project makes greater use of this information by developing an advanced collision avoidance algorithm capable of determining and executing a variety of evasive manoeuvres depending upon various levels of autonomy.</p>
<p>Rinicom Limited</p> 	<p>Mesh-In-The-Sky</p>	<p>To develop, test and demonstrate a proof of concept including a secure and robust broadband self-healing ad-hoc mesh network implemented on a software defined radio platform. This will utilise both the smart channel bounding and novel power efficient signal waveforms to enable interconnection of multiple UAVs over long distances in non-line-of-sight environments.</p>
<p>SKY TECH Ltd</p> 	<p>DART (Detect and avoid Augmented Reality Testing)</p>	<p>We propose the demonstration of a simple detect and avoid algorithm onboard a drone using augmented reality (AR). The aim is to conduct constrained sense and avoid tests where a hovering drone will take evasive action to a virtual aircraft. The threat will be classified by type of object and collision urgency based on computer vision and deep learning techniques. The individual components are relatively mature, and this project proposes a system of systems approach. Firstly, it will take place in a simulation environment with hardware in the loop (HITL) for Detect And Avoid (DAA) processing and flight control. These will be extended to a drone in flight using a ground station to stage the AR simulation.</p>
<p>Snowdonia Aerospace LLP</p> 	<p>Dragon's Roar ("Rhuo Ddraig")</p>	<p>Project "Dragon's Roar" will allow three small/medium enterprises, Snowdonia Aerospace, Swiftflight Avionics and WaveMobile, to collaborate on an innovative airborne radio technology that will enable a small/light drone to create a 4G/5G network in the sky for operation in areas of poor mobile signal connectivity –so called "hot spots" – that can be used by Emergency Services to locate missing persons and coordinate with ground personnel to effect a rescue. The project will develop the concept of operations, define the necessary avionics architecture, and build an integration test article.</p>
<p>SurveyAR Ltd</p> 	<p>Autonomous Swarm Atmospheric Assessment Platform [ASAAP]</p>	<p>This project will assess and develop (TRL 2-4) an autonomous drone swarm system to optimise weather and air quality (WAQ) monitoring in atmospheric boundary layer environments. Prototypes will be built and flown in controlled environments to test key concepts.</p> <p>This data is of value for weather model assimilation and monitoring on field, industrial, urban, and regional scales. The project will further review market validation/value of identified segments as well as take advantage of feedback to evolve to full product. The principles of development include: safe, accurate, reliable, affordable, mobile, efficient and useable.</p>



If you are interested in finding out more information about the grants or have any queries,
please contact us by emailing:

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cp.catapult.org.uk/opportunity/d-trig/



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