Department for Transport

Transport-Technology
RESEARCH INNOVATION GRANTS
Department for Transport

Transport Technology Research Innovation Grants Programme (T-TRIG) 2020

Cohort Brochure

Delivered by

CATAPULT
Connected Places

The Department for Transport's Office for Science is delighted to be supporting 23 research and innovation projects through the 2020 Transport Technology Research Innovation Grants Programme (T-TRIG). This programme, delivered by the Connected Places Catapult, is now in its seventh year and since 2014 has provided £6m of grants to support over 190 projects, from across the breadth of the transport technology spectrum.

The 2020 T-TRIG Programme has been designed to address the challenges that de-carbonisation and the COVID-19 pandemic are presenting to the UK's transport industry. Therefore, this year's projects fall into either one of these challenge areas or into T-TRIG's traditional open call.

The funding will bolster research and development into the most cutting-edge technologies that small businesses and universities are currently developing. T-TRIG is an enabling fund and represents the start of a journey that will culminate in the successful launch of new products and services that will make the UK's transport systems more sustainable, efficient, safe and accessible.

T-TRIG Transport-Technology RESEARCH INNOVATION GRANTS Department for Transport

Esoterix — www.esoterix.co.uk

Carbon ThreeSixty — www.carbonthreesixty.com

greenway innovations

Lifeband Be Smarter, Feel Smarter — www.impli.org

Incremental — www.incrementalsolutions.co.uk

ROUTE REPORTS — www.routereports.com

ANTEAM — www.anteam.co.uk

UNIVERSITY OF SURREY — www.surrey.ac.uk

ARMADA TECHNOLOGIES — www.armada-technologies.co.uk

METEOR POWER — www.meteorpower.com

duodrivetrain end-to-end performance engineering — www.duodrivetrain.uk

FH FERNHAY — www.fernhaypartners.com

Paua — www.pauatech.com

PMW Technology — www.pmwtechnology.co.uk

PRAGMATEX — www.pragmatex.co.uk

Q — www.qdot.tech

UNIVERSITY OF CAMBRIDGE — www.cam.ac.uk

Cranfield University — www.cranfield.ac.uk

UCL — www.ucl.ac.uk

CLAYTEX — www.claytex.com

HOUNDSTOOTH WIRELESS — www.houndstoothwireless.com

Sensoriis — www.cambsensoriis.com

SysElek — www.syselek.com

Covid-19 Recovery

Esoterix Systems	FAST - Find A Space on a Train	The FAST project aims to supply accurate, real-time carriage information on how busy a train is, using historical and live weight data to provide capacity estimates on rail, enabling passengers to choose whether to travel and, if so, where to board.
CarbonThreeSixty Ltd	Vertiprop - novel propeller materials and manufacture	VertiProp is a rapid impact feasibility study to investigate and develop next generation, high performance composite propellers for large autonomous vertical take-off drones and future urban air mobility (air taxi) vehicles. Such drones can aid the delivery of medical supplies and essential goods where traditional transport infrastructure is stressed or non-existent.
Greenway Innovations	Using de-ionised air to remove airborne Covid-19 virus in trains	This project is targeted at COVID-19 Recovery within public transport, specifically looking at air provision on trains. Greenway Innovations will scope the potential to use di-ionisers on trains to remove airborne Covid-19 virus strains, creating as a sense of safety that will achieve recovery within the transport sector.
Impli	Lifeband - Contact Awareness Bracelet For the Visually Impaired	Impli are developing a wristband-based contact awareness bracelet that allows people with visual impairments to be alerted when their safe social distancing has been compromised. The solution, the LifeBand Vibe, will extend the capability of the generic LifeBand COVID tracking wristband, by incorporating "haptic" vibration capability to provide regular subtle alerts to wearers in circumstances when their safe social distancing may have been compromised without them realising.
Incremental Solutions	Good To Go (G2G) – Providing greater information to passengers to restore confidence for travel on public transport	Incremental Solutions propose a novel proof of concept bus and train journey planning smartphone application, formed through data fusion of their existing GPS, train capacity data, open data schedules and train cleaning updates. The purpose of this project is to significantly enhance the information that is currently available to the general public, particularly during and post COVID-19, to allow greater clarity and assurance that using public transport is a safe means travel.
Route Reports	Real-time computer vision passenger counting and PPE detection for public transport	To help the transport industry recover and continue operations in light of the COVID-19 pandemic, Route Reports proposes a computer vision-based passenger counting and personal protective equipment (PPE) detection solution with the aim of increasing and monitoring compliance and safety amongst passengers, while managing and monitoring transport capacity.
University of Surrey	Rapid air extraction in public transport through ducted Alternate-Current Dielectric Barrier Discharge (AC-DBD) plasma actuation	Researchers at the University of Surrey plan to develop a prototype for effective air extraction and decontamination to minimise COVID-19 and other airborne virus transmission on public transport and in other confined environments. A novel method is used involving an electro-motive wind to achieve local air extraction.

De-Carbonisation

Anteam Ltd	AI-driven low-carbon last-mile logsitics	This project focuses on the development of an alternative logistics system that minimises CO_2 emissions and its impact on the strategic road transportation network. Customers will enjoy rapid delivery of their goods, at competitive prices, whilst knowing that they have also contributed to the reduction of CO_2 emissions. In this project, a suite of tools will be developed to enable real-world, optimised solutions to be found within a complex set of constraints from the current challenges on planning and executing the delivery of goods.
Armada Technologies	Air Lubrication System for maritime fuel efficiency gains	This project targets the demonstration of a passive sub process required to efficiently inject lubricating air bubbles across the bottom of a ship in transit. The overarching aim is to collectively unlock the deployment opportunities needed to accelerate the de-carbonisation of the shipping sector.
DuoDrive	TorqueSight - advanced sensor system for maritime propulsion efficiency gains	This project will show that the retrofitting of small ships is possible to allow them to substantially reduce their carbon footprint or to even transition to zero-carbon propulsion, whilst benefitting from the additional energy savings using technologies derived from the automotive sector which are to be incorporated.
Fernhay Partners	Decarbonising domestic freight through active travel last mile deliveries	The unprecedented rise in ecommerce and the associated increase in the use of vans to service that need is leading to problems including congestion, kerbside access and carbon emissions. In order to remove vans from urban areas and keep meeting the demand for ecommerce, we need to transfer freight to active travel solutions including cycling and walking. This project addresses freight cycling – seeking to overcome barriers to its widespread adoption.
Meteor Power	Hydrogen As A Combustion Engine Fuel Additive	Meteor Power's project will focus on developing a new electrolysis unit capable of separating water in addition to a water/urea mix. Early calculations suggest the result of water electrolysis will be an increase in power, in addition to emissions improvements, despite having to power the electrolysis process.
Paua	Plug&Charge	Paua Plug & Charge seeks to ease the pain of public EV charging by investigating the easiest way to enable a driver to run an electric vehicle charge session. The vision is to plug in your car, charge, unplug and drive away with charging and payment automatically managed.
PMW Technology	Pilot Diesel Engine Exhaust Gas Treatment Trial for A3C Carbon Capture Process	This project addresses de-carbonisation of marine transport. Its objective is to develop and validate a prototype carbon capture process for marine diesel engines. The team will add essential pre-treatment components and evaluate the performance of the A3C process in carbon capture trials using real engine exhaust gases.
Pragmatex	BAT-Mobile – deployable EV charging solution	This project aims to explore the use of modern battery technology to provide a rapid charging solution for electric vehicles without needing a high power grid connection. The solution proposed would be scalable and portable to meet a variety of EV charging re-quirements. It will also have the capability to convert to AC, opening up a wider range of opportunities such as the replacement of noisy and polluting diesel generators.
Qdot Technology	Battery Uniform Tab Cooling (BUCT)	Qdot seek to apply battery thermal management to enable extremely fast charging and maximise the reliability of cell systems by ensuring even thermal performance during operation. The team will be developing a proprietary cooling solution for batteries that allows recharging for 200 miles of range in 10 minutes.

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University of Cambridge	Diagnosis of Excessive Carbon Emissions from Heavy Goods Vehicles using Digital Twin Technology	This project aims to develop and validate a low-cost, automated, data-driven tool for identifying HGVs that generate excessive carbon emissions due to vehicle deficiencies (i.e. tyre wear) and inefficient driver behaviour.
University of Cranfield	Solar-Hydrogen-Storage Integrated Electric Vehicle Charging Station in Future Cities	This project proposes a prototype design of the solar-hydrogen-storage (SHS) integrated electric vehicle charging station. Planning of the SHS-EV charging stations will be conducted in UK cities, by optimising the location and phased construction plan, in relation to the city's existing petrol stations, transport network, local solar irradiance and electric demand centres.
University of College London	Feasibility Study of Integrated Automotive Traction Inverters With On-board Charging Capability For Plug-in Electric Vehicles	The aim of this proposal is to prove the feasibility and quantify the economics of a highly efficient reconfigurable multi-port converter topology with a bi-directional power flow capability between the electric vehicle and the power grid.
Open Call		
Cambridge Sensoriis Ltd	Autonomous Drone Freight Transportation, All Weather Resilience and Safety	This project enables autonomous drone freight transportation beyond operator line of sight. High frequency radar will be used to sense and avoid obstacles and for navigation in areas with poor GPS satellite coverage.
Claytex Services Limited	SAVAir, Safe Autonomous Vehicles at Airports	Claytex will create a simulator that can be used to assess the safety of an autonomous vehicle operating in the airside environment. The team will provide a virtual driving test for the vehicle control system that covers its range of operation.
Houndstooth	Self-meshing drone detection networks	Houndstooth Wireless aim to select, develop, integrate and demonstrate their self-meshing network technology. This will allow a plug and play operation of drone detection over wide, complex geographic areas, reducing set-up costs and providing increased network resilience.
SYSELEK (UK)	Secure Border-Ready Freight	The Secure Border-Ready Freight project proposed by SYSELEK will address the impending problem of high volumes of unitised freight traffic between customs clearance sites and major UK ports.

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For more information about the T-TRIG Programme, please visit:
https://cp.catapult.org.uk/opportunities/t-trig-programme/

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