Results of Competition: SBRI: Using Geospatial Data to Solve Transport Challenges, Phase 1

Competition Code: 2009_GO_SBRI_MMM_COGC

Total available funding is 2,000,000

Note: These proposals have succeeded in the assessment stage of this competition. All are subject to grant offer and conditions being met.

Participant organisation names	Project title	Proposed project costs	Proposed project grant
SLINGSHOT SIMULATIONS LTD	Yorkshire Geospatial Twin	£45,784	£45,784

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
Use the Competition Code given above to search for this competition's results

Project description - provided by applicants
Public description The Yorkshire Geospatial Twin project is the next incremental step towards a National Digital Twin expanding on the work in Leeds by creating a 3D model of the entire region incorporating satellite, LIDAR, transport, and IoT data to provider a fuller picture of the world we live and operate in. This project involves scaling up the Leeds Digital Twin to span Yorkshire with a focus on 3 cities and their specific data and mobility challenges: Leeds York Hull This project is also supported by both BT and Arup.

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
HACK PARTNERS LIMITED	Using IoT sensor information and geospatial data to increase capacity of the rail network without compromising safety	£67,748	£67,748

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
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Project description - provided by applicants
Public description We will use IoT sensor information and geospatial data to create a technology that will detect train movement at a more granular level. As a result, we will be able to understand in more detail where trains are on the rail network. This can technology can be used to: Better understand how delays propagate throughout the network Discover where capacity can be increased using practical data not theoretical Detect how leaf fall can impact performance Understand how speed restrictions impact performanc

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
R4DARTECH LTD	IMMSATT - Insight and Management of Multimodal Unsegregated Active Travel and Transport	£74,875	£74,875

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
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Project description - provided by applicants
During the recent COVID-19 pandemic, more people were walking and cycling as a means of transportation. For this trend to continue post-pandemic, significant measures will be necessary to improve the safety of vulnerable road users in unsegregated rural and urban multi-modal transport environments. The recently announced government incentive, "Active Travel", is focussing on restarting the local economy by attracting people back into their town and city centres while supporting the recovery of local bus companies, and promoting active and sustainable means of transport for residents, including cycling and walking. R4DAR with support from Oxfordshire County Council (OCC) and the Satellite Applications Catapult will look at the feasibility, development and exploitation of recent advancements in imaging radar technology, combined with R4DARs novel identification capability to develop a geospatial data system that can integrate with current and future traffic management systems to sense, observe, identify and accurately position vehicles, bicycles, e-scooters and pedestrians on rural roads and in complex, high-density environments such as town and city centres. The enhanced geospatial data provided by this innovation will support the wide-scale adoption of active travel measures, providing a safer, greener environment for all users to enjoy. In Phase 1, we will study the feasibility of using a low-cost radar beacon which can be read by radar to provide localised high-resolution geospatial data enabling enhanced navigation and surveillance in unsegregated multi-modal transport environments. We will also investigate and consider how localised positioning, navigation, and surveillance data can be made ubiquitously available for integration into wider urban and rural traffic management systems. In Phase 2, R4DAR will draw on existing commercial partnerships which include expertise from aerospace, automotive, infrastructure, data systems, local government, and technology to develop and demonstrate a comprehensive geospatial data solution that will take advantage of the enhanced localised tracking and guidance benefits of the radar and beacon technology and combine it with other traffic management sensors, data management systems and communication technologies. The data outputs will be tailored to feed into a wide range of management systems enabling active modes of transport such as bicycles, e-scooters and pedestrians to be reliably detected, identified, monitored and tracked providing an extra level of safety not available today. A successful outcome of phase 2 will result in a transition to larger-scale deployments and customer trials in a range of environments.

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
MARINE SOUTH EAST LIMITED	SpacePort	£74,126	£74,126

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
Use the Competition Code given above to search for this competition's results

Project description - provided by applicants
Public description Portsmouth International Port is a medium-sized port, serving both ferries and container ships. It is located adjacent to Portsmouth city centre, where traffic to and from the port contributes to the city's air quality problem. Like many other cities, Portsmouth suffers from congestion which is getting worse. Many of the commercial vehicles involved are operating at very low capacity utilisation, which results in many more vehicles on the road. Advanced information system can offer a potential solution to this challenge. They can allow freight (from full containers down to individual consignments) to be tracked and processed seamlessly which allows vehicles to be operated more efficiently. The city council is also proposing to create consolidation centres which would allow freight movements to be optimised, and to move containers from the port to outside the city with zero-emissions. These centres will need to be fully integrated into the wider maritime logistics network. The SpacePort project aims to develop a pilot system to achieve this integration. It is led by marine sector specialist Marine South East (MSE) who are teaming up with the Connected Places Catapult (CPC). This cross-sector partnership will research and develop a solution to this challenge, based around smart application of geospatial data resources. MSE has a long track record in delivering successful, innovative projects and is currently working with Portsmouth International Port to pilot a smart port energy system. The project team will work closely with the port and Portsmouth City Council, to ensure that the solution meets the needs of the port and its customers whilst also delivering much-needed improvements to the quality of life within the city.

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
RELIABLE DATA SYSTEMS INTERNATIONAL LIMITED	Geospatial Position Accuracy Improvement	£74,254	£74,254

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
Use the Competition Code given above to search for this competition's results

Project description - provided by applicants
Public description The GPAI project uses geospatial data and an innovative positioning system to solve a Network Rail transport challenge Network Rail operates and maintains most of Great Britain's rail network. It is investing heavily in technology to increase capacity. Examples include digital signalling, traffic management and automatic train operation. These technologies require accurate train location to operate. Unfortunately, GPS does not operate well in the rail environment with deep cuttings, tunnels, covered stations and many structures blocking the signal or causing reflections. Even with good satellite visibility, accuracy is very often insufficient to determine which track a train is occupying when there are multiple parallel tracks. Consequently, Network Rail has to use expensive infrastructure-based systems to locate the train, including transponders, axle counters and track circuits. Challenge. The Network Rail Signalling Innovations Group (SIG), is involved in determining and validating the location of these infrastructure systems. The greater the confidence in their location, the smaller the error margin that needs to be built into the control system design and the greater the capacity that can be achieved. To make these measurements, Network Rail currently runs specialist engineering trains which are expensive to operate and, by their presence, reduce the track capacity available for passenger services. SIG wishes to move to low cost survey equipment mounted on the front of passenger trains. However, because of GPS limitations, it is not able to position the train to sufficient accuracy. It is therefore seeking solutions to improve the accuracy of low cost GPS-based location systems to within 1m. GPAI Project: Geospatial Position Accuracy Improvement is a proposed service that improves estimates of train location through repeat runs over the same route. It is particularly suited to passenger trains that make similar journeys on a daily basis. The improvement is achieved through innovative use of the Video Train Positioning System developed by RDS International. VTPS is a technology that locates a train using real-time image processing from a forward facing camera. The project will investigate GPAI feasibility through development of: requirements and business case proof of concept demonstrator technical and commercial routes to market. The project will be led by RDS, supported by Network Rail, One Big Circle and Porterbrook.

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
ADDRESSCLOUD LIMITED	LandSafe: Geocoding for Unpiloted Aerial Vehicles	£30,041	£30,041

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
Use the Competition Code given above to search for this competition's results

Project description - provided by applicants
Public description Last mile logistics accounts for 53% of supply chain costs. Coupled with the need to reduce carbon emissions, retailers and logistics operators are currently researching the use of Unpiloted Aerial Vehicles (UAVs) for last-mile delivery of goods to consumers. The NHS is currently trialling the use of UAVs to speed-up delivery of medications in response to Covid19. This project will produce a national suitability map of UAV landing sites for every address in Great Britain. This world-first data-set - LandSafe - will help operators assess the feasibility of UAV deliveries and support the creation of flight-safe corridors for UAVs to be used for consumer deliveries, emergency response and health care services. LandSafe will be created using a geospatial algorithm that will geographically determine whether each property has a suitable landing site. The algorithm will assess potential landing sites to see whether sufficient flat-ground is available and avoid aerial obstructions such as masts, pylons, and restricted airspace. When a suitable location is found the algorithm will provide the precise coordinates, enabling UAVs to navigate to their destinations safely and effectively. This project support's the UK's Geospatial Strategy by helping the adoption of UAVs for last-mile delivery, reducing transport costs, road congestion and carbon emissions. The resulting LandSafe data-set will enable: retailers to conduct commercial feasibility analysis of UAV last-mile delivery for all properties at the regional or national-scale support existing R&D in UAV deliveries by providing precise landing location coordinates for UAV navigation software enable online retailers to offer UAV delivery options at point-of-sale by verifying that a safe landing site exists at a customer's address. The project will be undertaken by Addresscloud, a company that specialises in geocoding, property intelligence and geographic risk information services. Addresscloud processes thousands of addresses every day, powering well-known brands like Riverford Organic Farms by helping them deliver organic produce to the right address, first-time and on-time. LandSafe will extend Addresscloud's logistics capability and enable the UK to become a world-leader in the emerging UAV delivery market, helping make deliveries faster, more-efficient and environmentally friendly.

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
MOTT MACDONALD LIMITED	Highway Network Digital Twin for Traffic Management	£67,487	£67,487

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
Use the Competition Code given above to search for this competition's results

Project description - provided by applicants

Public description
Inefficiencies in road networks reduce capacity and increase journey times for users and goods. Road capacity is not used evenly over space or time: usage peaks during morning and evening rush hours lead to inefficiencies; incidents reduce capacities unexpectedly. The ability to forecast traffic patterns in real-time, linked to traffic control systems, can improve network efficiency.

Computer-based traffic models that calculate routes that individuals take allow us to replicate real-world conditions across a traffic network for a single point in time. However, these models are not well-suited to responding to unforeseen incidents, which require rapid operational decision-making to mitigate their impacts.

Traffic conditions at specific points on the network are increasingly being captured by roadside sensors that monitor traffic volumes, vehicle emissions and other information in real-time. These data are very valuable, and many are routinely used for traffic management; however, they tell us only about conditions at specific points in space and time, and not conditions across the entire network.

Techniques for processing and identifying patterns in such data, using Artificial Intelligence techniques like Machine Learning are improving, and offer opportunities to apply these data in ever more complex real-time applications.

Traffic management can be significantly improved if there is a reliable, accurate representation of the whole of the existing road network and the real-world conditions it is operating under -- a 'digital twin'. Such a digital twin becomes a powerful forecasting tool when the routes that individuals take (or should take) are accounted for.

Our proposal is to build a real-time digital twin based on existing traffic models, this growing array of roadside sensors, and state-of-the-art Machine Learning techniques in order to be able to model traffic conditions on networks in real-time.

The digital twin will allow traffic to be actively managed, increasing road capacity and facilitating smoother traffic flow, particularly during "rush hour" and during unanticipated incidents. A digital twin could, for example, be used to predict the effects on traffic flow (and therefore capacity) of changing signs or opening/closing lanes before implementing such measures. In order to develop and operate a real-time digital twin to manage and increase road capacity, we must first demonstrate that we can automatically integrate real-time sensor data, a road network representation and traffic model. We will assess the feasibility of this level of integration along with the practicality of running a real-time solution in terms of calculation speed.

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
CITY SCIENCE CORPORATION LIMITED	Mobility as a Service & Behaviour Change for Decarbonisation	£74,440	£74,440

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
Use the Competition Code given above to search for this competition's results

Project description - provided by applicants
Public description MaaS is not yet delivering its full potential, in particular in influencing positive travel behaviours to help decarbonise while providing an enhanced user exprience. It has been widely anticipated that MaaS could provide a user-interface to seamlessly enable multi-modal journeys and a long-term hope that this would lead to increased use of shared mobility solutions. However, MaaS deployments have been piecemeal with limited integration and, most importantly, limited operational coordination and influence to provide a differentiated service to users. This situation has been described by some researchers as 'MaaS lite'. Our project changes this. Using cutting-edge advances in geospatial transport data, we develop a fully-integrated solution that can prioritise the most beneficial modes in real-time and influence positive travel behaviours to radically reduce congestion and transport carbon emissions.

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
SPACE SYNTAX LIMITED	Active Travel Explorer	£74,551	£74,551

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
Use the Competition Code given above to search for this competition's results

Project description - provided by applicants

Public description
Economic, social and environmental benefits are associated with safe active travel, with external benefits in the EU calculated at €0.18/km for cycling and €0.37/km for walking (driving costs €0.11/km) - https://www.sciencedirect.com/science/article/abs/pii/S0921800918308097.

However, delivering successful interventions is complicated. This is evidenced by recent coverage of street closures that present the conflicting experiences of different stakeholder groups (https://www.theguardian.com/lifeandstyle/2020/nov/01/car-free-neighbourhoods-the-unlikely-new-frontline-in-the-culture-wars?CMP=Share_iOSApp_Other).

The same type of intervention does not work everywhere, and to understand what is most likely to work requires understanding of the cause of the problem (not just the symptoms), and who lives there. It is a multi-scale, multi-system problem, and if the larger-scale conditions do not make walking or cycling convenient, closing streets, improving public realm, providing street lighting, cycle-lanes or pedestrian crossings will not improve things.

A holistic approach is needed to refine interventions based not just on what works for cyclists or pedestrians, but which must also consider the other users and uses who are in the same street, at the same time. This is especially important for user groups who are very young or old, less confident or able-bodied, and less likely to respond to statutory consultation processes.

Solutions require working across traditional disciplinary and departmental silos. Tools to help plan interventions exist but work within these silos instead of across them, and focus on symptoms, not causes. High streets contain pedestrians, cyclists, schools, houses and shops, but are classified as main roads, and often have more traffic routed to them.

Space Syntax proposes a user-friendly, web-based tool, to support non-specialist users. It will explain how core urban systems (streets, land use, public transport) interact to make walking and cycling possible. It characterises the streets in a city to explain which users, uses and modes of movement are in the same space at the same time, and identifies where it is (im)possible to travel actively. They are compatible with census data enabling vulnerable communities to be identified and considered. The underlying IUM has already been produced for England, Wales and Scotland.

The Active Travel Explorer tool is targeted at local authority planners, transport planners and public health specialists. It will be designed to integrate with their workflows, and instead of overlaying existing datasets, will focus on answering a sequence of design questions to identify priority areas, then tailor specific interventions. This will enable better interventions to be implemented, delivering government policy and wider benefits to society.

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
COMMS365 LIMITED	Optimising Electric Vehicle charging using sensors and geospatial data	£74,138	£74,138

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
Use the Competition Code given above to search for this competition's results

Project description - provided by applicants
Public description Reliable real time information on the availability and status of public electric vehicle chargepoints is essential to for the smooth transition to zero emission driving, while optimising the use of existing chargepoints is critical in order to improve the business case for commercial operators and to reduce the cost burden on the tax-payer. This project, for the first time in the UK, will use geospatial data from connected sensors and live dynamic data from electric vehicle chargepoints to provide live, dynamic information on the availability of electric vehicle chargepoints in managed parking spaces. Comms365, one of the UKs leading connected sensor companies, and their sub-contractor, not-for-profit electric vehicle experts, Cenex, will deliver this project at the request of challenge holder Derbyshire County Council. Information resulting from the real time data analysis will be used by the County Council to more efficiently enforce parking regulations thus preventing chargepoints being blocked by non-charging vehicles and to provide real time information on chargepoint availability via online maps and variable messaging screens. If successful, a chargepoint booking system will also be developed with the chargepoint operator in Phase 2.

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
HydroSurv Unmanned Survey (UK) Ltd	Smart Ports: Open-data assisted operations and maintenance within seaports	£74,104	£74,104

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
Use the Competition Code given above to search for this competition's results

Project description - provided by applicants
HydroSurv Unmanned Survey (UK) Ltd, (_HydroSurv_) is developing and showcasing a transformative geospatial decision-support system to put predictive and pin-pointed actionable intelligence in the hands of port authority decision-makers, deploying an innovation which builds on the momentum in the open-data movement, availability of earth observation data and recent advancement in the availability and coverage of low-cost in-situ data. In collaboration with international survey contractor Sulmara Subsea Limited, and 4 Earth Intelligence, this research and development project will work in close-collaboration with Cattewater Harbour Commissioners, Plymouth to steer and pilot the new solution with unrivalled gains for port authorities operating in an ever-increasing competitive marketplace. The innovation is a significant step toward rising human-assisted autonomy within seaports, that sustainably address current and future challenges around spatial constraints, pressure on productivity, fiscal limitations and threats to safety and security.

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
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Participant organisation names	Project title	Proposed project costs	Proposed project grant
RURAL TECHNOLOGIES LIMITED	MaaS: Enabling Rural Geospatial e-Solutions(MERGeS)	£69,392	£69,392

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
Use the Competition Code given above to search for this competition's results

Project description - provided by applicants

Public description
MaaS is the multi-modal use of transport to get from A-to-B cost and time-effectively. It relies on complex geospatial data which varies from trusted certainty of organisations to the socially-created by individuals. In between is data of its moment such as capacity and demand created by algorithms and the acceptance/decline of offer or connection.

MaaS: Enabling Rural Geospatial e-Solutions(MERGeS) enables rural areas to build-back better by addressing the key issues of transport silos and integration. Feasibility then prototyping enables innovation through existing methodologies applied to geospatial data and the development of a highly novel geospatial cybersecurity approach for clear routes to market.

Travel is an essential component of modern life. Mobility as a Service (MaaS) has social, economic and environmental benefits, but this is not a quick fix. It is far more easily deployable in urban areas. Why? Urbanites see hopping on a bus/train/tram to be normal/easy. Their app questions are transactional; when does it go?

MaaS in rural settings has major obstacles of inflexible supply/demand exacerbated by silo thinking not integrated customer-first solutions. Demand inconsistency and cuts in rural bus routes impact route-sustainability; the fix seen as spending more on historic failed approaches, not innovation for the future. Rural questions are firstly awareness and secondly behavioural change aligned to net-zero thinking.

MERGeS falls squarely into Geospatial Commission's missions. At its core is the ethical use/safeguarding of geospatial data across organisations; it improves access to better location data services in rural areas to level up left-behind communities and enables pragmatic innovation in areas of foreseeable connectivity issues.

MERGeS follows best practice and opportunities identified by KTN's Power of Place 2020 to collaboratively unlock data silos to advances in cloud-based computing to harness knowledge securely for more responsive seamless rural transport systems.

Decarbonising Transport, Setting the Challenge March 2020 "mobility innovation, will change the way vehicles are used. Clean, place-based solutions will meet the needs of local people; including how digital tools empower consumer choice."

The feasibility defines the prototype technical build that enhances practical usability of the component parts of traveller app, operator platform, backend & system control and analysis interface. Key technical challenges:

Obtaining and converting geospatial data from disparate sources into core database through APIs and semi-automated processes.
Synchronisation of data from central database/APIs to specific user applications within predefined timescales.
Creation of a simple, easy-to-use, user interface to ensure uptake of app.
Fundamental cybersecurity and individual privacy.

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
OPENSPACE GROUP LIMITED	Real-time geospatial digital twin to manage people flow in rail station	£74,640	£74,640

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
Use the Competition Code given above to search for this competition's results

Project description - provided by applicants
Public description This innovation project harnesses the power of a diverse range of geospatial rail data to build a predictive station and crowd management tool for St Pancras International Station. Building on OpenSpace's existing first of a kind station digital twin, the project will develop an outline proof of concept demonstrator with predictive crowd behaviour functionality that will augment the current twin. The wider ambition for the project is to expand the isolated station digital twin concept to multiple stations and towards the formation of a network digital twin. The project has really great potential to bring about a step-change in the way we think about managing stations and how the networks that connect them impact on this. The existing implementation is in active use at St Pancras and this new functionality will further enhance the Station Operations Team's ability to proactively manage the station and ultimately continue to improve the customer experience for those using the station and services.

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
NGENIUS LTD	Digital Active Travel Augmentation (DATA)	£64,658	£64,658

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
Use the Competition Code given above to search for this competition's results

Project description - provided by applicants
Our transport networks are an integral part of our everyday lives. From providing access to employment, to enabling increased social integration, it is essential that councils continually ensure transport provisions are made in line with the needs of their citizens. This is especially true when promoting active and sustainable travel, such as walking, cycling and public transport. The 2019 National Travel Attitudes Study (NTAS) stated that 61% of adults aged 18+ in England agree that "it is too dangerous for me to cycle on the roads", demonstrating that councils need to make drastic changes to their current models in order to move towards the future of sustainable mobility. Geospatial, data-driven solutions provide councils with the opportunity to create and monitor the next generation of transport systems. Through accessing a wealth of information concerning the live operation of their transport networks, councils are able to significantly improve their understanding of their effectiveness and safety for their citizens. The ngenius.ai DATA platform will enable local authorities to be "guided by data" as they decide how best to promote safe and sustainable active travel. Through harnessing the complex geospatial data that is already being captured through council-owned CCTV networks, authorities will be able to better serve citizens through: * Planning active travel routes using real-world demand data * Monitoring the safety of cyclists using cycle lanes * Inform effective priority for sustainable travel at busy junctions It is through using this data that councils will be able to build transport networks that are more efficient and provide a positive contribution to public health. As with all data collection, privacy must be the priority. The DATA platform will be built in complete compliance with GDPR regulations and in direct collaboration with local council authorities. It is important to state that our platform will not have access to any Personally Identifiable Information (PII), and all data gathered will be solely controlled and owned by the local authority concerned, with negnius.ai acting purely as a Data Processor. Equally, authority's data must be protected, and ngenius.ai's flexible approach will mean that only data that is deemed appropriate will be processed and/or stored in the cloud. As part of bringing the DATA platform to market, it will under-go G-Cloud certification to ensure it is approved for Public Sector use.

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Total available funding is 2,000,000

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
DYNAMON LTD	Developing a data analytics tool to help commercial fleets transition to zero-emission vehicles.	£73,895	£73,895

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
Use the Competition Code given above to search for this competition's results

Project description - provided by applicants
Public description Regulations to reduce road vehicle emissions mean that logistics fleets are facing the challenge of transitioning from traditional fossil fuel powered vehicles to zero-emissions vehicles. For fleets to manage the transition effectively they must understand the costs and business models of zero-emission vehicles. Whilst legislation sets out the long-term deadline for the adoption of zero-emission vehicles it does not define the path of transition. Without commercial and technical understanding driving the transition to zero-emission vehicles there will be delays in uptake of new technologies, missed opportunities for reductions in harmful emissions, and fleets will incur unnecessary costs. Dynamon can help to solve this problem. Dynamon is a team of data scientists and engineers that build data analytics tools to help logistics companies optimise their procurement decisions to minimise costs and reduce their impact on the environment. In this project Dynamon will create a software tool that will enable fleets to understand the total-cost-of-ownership (TCO) of different zero-emission vehicles in their specific operation. This tool will be usable by existing employees of commercial fleets, without expertise in data analytics or vehicle engineering, to provide them with accurate and actionable intelligence enabling them to make informed procurement decisions. The tools that Dynamon will create will combine zero-emission vehicle laboratory test data with multiple forms of geospatial data that describe the fleet's unique operation and environmental conditions. By combining these data sources Dynamon will build a digital twin of potential zero-emission vehicles that will accurately forecast key metrics such as energy consumption, range, cargo potential, charging requirements, etc allowing the optimum vehicle for the fleet's conditions to be confidently purchased. Dynamon will work closely with fleet partners Wincanton PLC and Sainsbury's PLC to ensure that the proposed solution is feasible, meets the needs of commercial fleets, and will have a credible business model to scale both nationally and internationally. Local councils Test Valley Borough Council and Hampshire County Council will provide support and promote this tool to large fleets as part of their ongoing commitment to reduce harmful emissions in their local areas.

Results of Competition: SBRI: Using Geospatial Data to Solve Transport Challenges, Phase 1

Competition Code: 2009_GO_SBRI_MMM_COGC

Total available funding is 2,000,000

Note: These proposals have succeeded in the assessment stage of this competition. All are subject to grant offer and conditions being met.

Participant organisation names	Project title	Proposed project costs	Proposed project grant
FLOCK LIMITED	Flock: Leveraging real-time and geospatial data to better quantify, mitigate, and insure drone flight risks for large enterprises	£89,116	£89,116

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
Use the Competition Code given above to search for this competition's results

Project description - provided by applicants
Flock is a VC- and Government-backed mobility insurtech, using real-time data to accurately identify, quantify and price complex risks. Flock rose to dominance in the UK drone industry, having launched the world's first 'pay-as-you-fly' drone insurance product for commercial drone pilots. Flock sells to thousands of drone businesses in the public and private sectors, from the BBC, to Netflix, to Hummingbird Technologies. Flock's clients leverage drones for major projects, such as NHS medical delivery flights and HS2 surveying. This SBRI project has been discussed extensively with NATS, a global leader in air traffic management and a very active participant in the UAV/drone space; NATS will be the "Public Sector Challenge Owner". With this project submission, Flock will bring the benefits of its real-time risk assessment and insurance technology to large and complex fleets of drones, including last-mile delivery drones, with an ambition to support a dramatic reinvention of global logistics and supply chains. By supporting the safe and de-risked transportation of cargo by drone, this project will tackle logistical challenges (including last-mile delivery, with an aim of dramatically reducing freight transport costs and risks over time). In this project Flock will build 'Flock Enterprise', a software capable of processing drone flight telematics data in real-time, combining this data with a range of third party geospatial data sets to generate accurate risk-insights and safety reports which will enable drone fleet operators to undertake their operations safely and at scale. Flock Enterprise will integrate with commercial flight-logging systems to capture drone flight-logs and calculate the quantified risk of every single flight automatically and in real-time. These insights will be communicated to pilots and added to a monthly report, providing fleet operators with a comprehensive understanding of their fleets' operational safety, their flight risk scores, and associated insurance costs. Flock will insure all of these flights with an extremely accurate per-flight insurance cost, thereby incentivising low-risk flights (a model which Flock has already proven with its 4,500 existing SME customers, but which has never been built for larger customers). Flock is already a market leader in this space and has now analysed and quoted over 1,000,000 drone flights. This project will build upon Flock's existing risk management platform which has already provided insights and insurance coverage to some of the world's leading drone organisations, including the BBC, Netflix, Atkins Global, Hummingbird, Skyports, and others.

Results of Competition: SBRI: Using Geospatial Data to Solve Transport Challenges, Phase 1

Competition Code: 2009_GO_SBRI_MMM_COGC

Total available funding is 2,000,000

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
Modal Limited	Increasing MaaS adoption with real-time journey detection and delay refunds	£73,744	£73,744

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
Use the Competition Code given above to search for this competition's results

Project description - provided by applicants
Public description The recent "The Future of Transport" report identified that modal and regional silos are a significant barrier in the UK's transport system. Mobility as a Service (MaaS) can help to break down these barriers and may also encourage a 'modal shift' away from cars. However, journeys on these platforms must be user-centric, seamless and accessible. Modal's proposed idea is an innovative software service to help improve MaaS and increase its user adoption. Our lead/potential customer is Transport for West Midlands (TfWM) who are working towards the goal of delivering a comprehensive MaaS offering. The service could be integrated into a future Transport for West Midlands (TfWM) MaaS app, or other transit apps, and would include: Real-time detection of train journeys completed by app users without any user interaction Automated delay refunds on one or more train operating companies in the TfWM region Standardised 'Open Transport' APIs to facilitate the sharing of customer account (ticket and journey) data Whilst scope of this project is limited to train services, it will lay the groundwork for expansion to other modes of transport such as buses, trams and micro-mobility. Real-time journey information captured by us will underpin new services on MaaS/transit mobile apps, making them more user-centric. In addition to automated delay refunds, examples include personalised disruption information, carbon tracking and loyalty schemes. Analysis of journey data could identify non-seamless interchanges or 'last mile' issues. Sharing customer information via standardised APIs means MaaS operators can integrate more easily with numerous transport operators and third party technology providers (e.g. Modal). This will help MaaS operators to expand and improve, making their service more accessible. In Phase 1 of the project, our R&D plan is to: Better understand the needs and requirements of MaaS operators and transit apps Confirm the commercial and market opportunity Develop a beta iOS app and journey detection model to deliver a 'step change' to the reliability and accuracy of Modal's existing service In Phase 2, we will develop a productionised service and run a large scale trial with TfWM and/or another organisation. The trial will form the basis of a case study, demonstrating that our technology increases the adoption of MaaS. Modal has already deployed similar technology on a mobile app for train commuters, All Change. All Change is rated 4.8 stars on the App Store, and pre-Covid reached ~1,500 users on South Western Railway.

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Competition Code: 2009_GO_SBRI_MMM_COGC

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
THALES TRANSPORT AND SECURITY LIMITED	ARGOS - Automated Rail Geospatial Observation System	£75,000	£75,000

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
Use the Competition Code given above to search for this competition's results

Project description - provided by applicants
Public description The needs of the passenger and freight customers to reach their destination safely are core to rail operator businesses. Railway track geometry faults are hard to identify and as part of a risk-based operation model, a process for the implementation of speed restrictions when these are identified is introduced to maintain an acceptable safety level. In doing so train services are affected and network capacity is reduced. Thales aims to develop the technology to deploy a geospatially based identification tool, capable of identifying track geometry risks early on and help manage response to minimise disruption to services. The solution will use in-service train data collected with Thales' Robust Train Positioning System, to detect underlying track conditions for analysis. During Phase 1 of the SBRI Geospatial Challenge, Thales will collect data with its partner GWR and analyse the feasibility of the solution.

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Results of Competition: SBRI: Using Geospatial Data to Solve Transport Challenges, Phase 1

Competition Code: 2009_GO_SBRI_MMM_COGC

Total available funding is 2,000,000

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
TRAVELAI LTD	ACCES - Advancing aCcessability through Community Engagement at Scale	£68,430	£68,430

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
Use the Competition Code given above to search for this competition's results

Project description - provided by applicants
ACCES - Advancing aCcessability through Community Engagement at Scale **"It's utterly humiliating when your access needs aren't met. The embarrassment of being excluded is painful. My access needs are probably just another chore on your list... but for me they are essential so I can participate in the world."** Amy Kavanah, DisabilityPower100 Campaigner Multiple mobility obstacles prevent the fifth of the UK's population that have a disability going about their lives, extending beyond the provision of accessible services: * Lack and fragmentation of reliable, pertinent information for disabled travellers * Incomplete inventories preventing asset owners from identifying accessibility issues and providing information * Poor visibility among officials and transport-operator staff of issues faced by disabled travellers. * Lack of whole-journey thinking: Interventions have no impact for a disabled person if impediments at other parts of her journey prevent her from travelling. The government's Inclusive Transport Strategy targets equal access for disabled people by 2030 and has numerous funding pledges including £300m for rail accessibility alone. **Data gaps & information interface** We will build on CityMaaS' artificial intelligence-led techniques to extract information from novel sources that is relevant to disabled travellers. We will explore the potential to extract information from satellite imagery, crowdsourced information, maps, and images and video. The information will be relayed and the geolocated user annotations will be gathered by embedding CityMaaS' engagement platform, built specifically for those with accessibility needs, in the app. Should the feasibility study reveal potential in the other sources, we have identified sector specialists that have signalled their support to join us in a Phase 2 application. **Drawing insights & evaluating impact** We will develop automated techniques to collate and draw insights from the journey data, geolocated issues input by users, answers to questionnaires, information extracted from novel sources. For disabled travellers, we propose **ACCES** an app that shows geo-located accessibility information, allowing them to verify said information and raise issues pinned to a map, delivers questionnaires relevant to their travel, and automatically logs their journeys so they can reinforce issues with evidence. **A public authority led challenge** The concept responds to the experience of problem owner Oxfordshire County Council. It builds upon commercially-available artificial intelligence

technologies of TravelAi (leaders in responsive surveying and travel detection using GPS) and CityMaaS (experts in geo-located transport-accessibility information and engagement).

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
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Results of Competition: SBRI: Using Geospatial Data to Solve Transport Challenges, Phase 1

Competition Code: 2009_GO_SBRI_MMM_COGC

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
EMU ANALYTICS LIMITED	Maritime ANalyTics Intelligence System - MANTIS	£58,127	£58,127

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
Use the Competition Code given above to search for this competition's results

Project description - provided by applicants
Public description MANTIS is a project focused on using geospatial data to address new and emerging challenges facing shipping and maritime navigational services within UK waters. The challenge is posed by the General Lighthouse Authority (and its sister organisation, Trinity House) who, under the jurisdiction of the Department for Transport, provide maritime aids to navigation services for the safety of all mariners, efficiency of maritime trade and protection of the marine environment throughout waters of the British Isles. The need is to better understand, and then predict, the impacts to shipping of the UK's stated aim to significantly increase off-shore wind farming capacity. This project will achieve this through the innovative analysis of ship movements and positions, throughout UK waters over periods of time, and utilising AI and machine learning technologies to identify evolving patterns of movement, leading to predictive outcomes for proposed future wind farm implementations. Lead applicant, Emu Analytics, is a young, UK-based micro-SME with extensive experience in creating innovative geospatial analytics and visualisation solutions designed for big, fast and real-time data. Its solutions are currently used extensively within the aviation sector, with notable users including IAG (British Airways), Heathrow and the Civil Aviation Authority, wherein analysis of aircraft behaviours and patterns within UK airspace are undertaken, using big geospatial aircraft positioning data. MANTIS will seek to adapt, evolve and transfer this expertise and capability from aviation to maritime, utilising the comparable maritime sector ship positional data, and ultimately producing a powerful, commercial grade solution that could be utilised by a broad range of public and private sector organisations.

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Competition Code: 2009_GO_SBRI_MMM_COGC

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
PRAGMATEX LIMITED	ATRAIL - Active Travel Route Audits using Integrated LiDAR	£74,909	£74,909

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
Use the Competition Code given above to search for this competition's results

Project description - provided by applicants
Public description The vision for ATRAIL is to deliver a low-cost footway and cycleway survey solution that can be used by local authorities to simplify and speed up the assessment of their footway and cycleway assets and streetscapes. This in turn will allow local authorities to adopt better asset management and maintenance strategies - improving the quality and safety of active travel infrastructure and thereby incentivising greater uptake of active travel by the public. Our phase 1 project will examine the technical and commercial feasibility of using low-cost Commercial Off The Shelf (COTS) sensor technologies (e.g. the camera and LIDAR sensors in the iPhone 12) to automate surveying of footways and cycleways to provide a holistic assessment of their condition, geometry and features that is currently only achievable from walked manual visual condition surveys and streetscape audits. The societal and health benefits of active travel are well researched and publicised. We strongly believe any barriers to active travel should be removed and that ATRAIL has a key role to play in improving the infrastructure for active travellers making it accessible, attractive and enjoyable for all sections of society.

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
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Competition Code: 2009_GO_SBRI_MMM_COGC

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
PROSPECTIVE LABS LTD	Co-operate: Networked Bus Priority	£74,965	£74,965

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
Use the Competition Code given above to search for this competition's results

Project description - provided by applicants
Public description Co-Operate is a flexible Bus Priority System that is delivered directly through the navigation software of individual vehicles and is designed to enable Local Authorities and transit operators to better manage the flow of buses, emergency service vehicles, public service vehicles, taxis and delivery vehicles (that all have access to bus lanes) in a manner that ensures an unobstructed path for emergency response and daily transit services. The system can be deployed without the need for expensive fixed infrastructure investment, enabling over and under capacity on the bus / road network to be managed more precisely, more flexibly and at a lower cost. Our feasibility study will engage public sector organisations and fleet operators in the Sheffield and Rotherham area. Our proposed trial will demonstrate the technology by controlling which vehicles can use certain routes within a defined control zone and provide routing and dispatch instructions to those vehicles. Initially this would be through a combination of voluntary access restriction and incentivisation and involve a minimum two vehicle fleets. The engagement will begin at a strategic level, to ensure political support and strategic alignment with public sector objectives, before engaging directly with the fleet (including bus operators and other fleets wishing to use bus infrastructure) and infrastructure operators to develop requirements. The feasibility study outputs will be used to validate the proposed use case, gather requirements and plan for the proof concept trial.

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
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Competition Code: 2009_GO_SBRI_MMM_COGC

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
CITY SCIENCE CORPORATION LIMITED	National Freight Model	£74,964	£74,964

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
Use the Competition Code given above to search for this competition's results

Project description - provided by applicants
The UK Freight system is extensive comprising around 195,000 enterprises, 2.5 million employees, and contributing £121 billion gross value added (GVA) to the economy. In most places, LGVs and HGVs contribute ~30% of transport carbon emssions. Every recent major UK study has noted the significant data limitations within freight with the NIC concluding that, as a result, there is "freight blindness" in the planning system. As a clear symptom of the current inefficiencies, it is thought that around 30% of UK registered HGVs on the UK's roads are "running empty". This is leading to a range of issues such as unnecessary costs, congestion, additional vehicle miles and higher emissions. The first step in developing any new freight solution is availability of adequate data at an aggregate and disaggregate level. Due to the particular commercial sensitivities of freight, wide-spread data is not available. However, modelling can help fill this gap. Our project fills this gap by bringing together extensive geospatial data and models from wide range of sources into a fully open National Freight Model available for use by local authorities, consultants, government and the public. The model will be designed such that route/volume/congestion can be explored and segmented through a wide range of categories to aid downstream analysis and application.

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
MOVEMENT STRATEGIES LIMITED	Next generation approach to highway management - a real time monitoring platform and predictive solution	£75,000	£75,000

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
Use the Competition Code given above to search for this competition's results

Project description - provided by applicants
This proposal is being submitted by Movement Strategies Ltd as the lead organisation, on behalf of the group which includes two sub-contractors, O2 and Imperial College London. Our public sector sponsor organisation is Portsmouth City Council. Our proposal is to develop an innovative solution that monitors traffic flow across the highway network in real time, whilst continuously updating a prediction of how the network will perform in the next hour. The proposal is aligned to "Theme 4: increasing capacity" because it helps to manage the capacity of the network thereby increasing its efficiency, without compromising safety. The key data set being analysed to monitor the performance of the network is mobile network data, generated by the O2 cell towers as driver and passenger devices connect to them along a route. This real time data stream has only recently become available and has a latency of less than 5 minutes. It is the application of the predictive models which utilise the latest and most sophisticated machine learning algorithms, again recently developed by the Centre for Transport Studies at Imperial College London, to the real time data where the real opportunity to advance the technical capability of the solution lies.

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
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Note: These proposals have succeeded in the assessment stage of this competition. All are subject to grant offer and conditions being met.

Participant organisation names	Project title	Proposed project costs	Proposed project grant
ICONIC BLOCKCHAIN LTD	Data-Driven Accessible Micro-Logistics Authenticated with Smart Contracts Using Satellites	£75,000	£75,000

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
Use the Competition Code given above to search for this competition's results

Project description - provided by applicants
The UK domestic parcels market is highly fragmented with 16 major national carriers, delivering in excess of 2.5 billion parcels in 2020\. Covid-19 pandemic has accelerated home-working and e-commerce trends. Concerns about Climate Change and local environmental impacts of transportation are growing. Project Damascus (Data-driven & Accessible Micro-logistics Authenticated with Smart Contracts Using Satellites) researches the feasibility of a micro-logistics platform for last-mile delivery consolidation operations. It focuses on the fusion of Galileo and blockchain technology, combining the baked-in cryptography of both systems to provide consumers, retailers, carriers and couriers with state-of-the-art cybersecurity. Increased real-time visibility and transparency of contractual arrangements and parcel tracking data will enable greater efficiency in managing deliveries and minimise the overall transport costs and carbon footprint of last-mile delivery operations. The Galileo program is Europe's initiative for a state-of-the-art global satellite navigation system (GNSS), providing a highly accurate, guaranteed global positioning service under civilian control and the first to offer authenticated navigation messages to all civilian users in the world, free of charge; i.e. open-source. This project will examine new capabilities arising from fusion of satellite based authenticated timing and positioning with blockchain technology, combining the baked-in cryptography of both systems to provide a secure and efficient micro-logistics solution. Blockchain technology and its Smart Contract capabilities is already well-established as a promising solution for governments and the supply-chain; to enable shared business processes that require high levels of trust, transparency and accountability. The London Freight Consolidation Feasibility Study (February 2019) assesses a range of consolidation models. The recommendations rule out a network of UCCs to serve the city core, while advocating further consideration of enforced participation and a strong case for Micro Consolidation Centres (MCCs) for last mile deliveries of parcels, where the main barrier identified was availability/cost of premises. Working in consortium between TravelSpirit Foundation, Peera and Warwick Manufacturing Group, Iconic Blockchain's study will quantify public policy impacts of the MCC and connected last mile delivery services. A future operating model and user needs framework will identify critical customer pain-points and added value propositions to drive adoption of our platform. Our research focuses on opportunities for c. 300 settlements of population between 25,000 - 75,000; where 20% of the UK population live. There is follow-up research applicability to c.100 settlements of population 75,000 - 250,000, where another 20% of the population live. Our two test-bed locations are Stratford-upon-Avon (30,000 population) and Canterbury (65,000 population).

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
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Participant organisation names	Project title	Proposed project costs	Proposed project grant
RICARDO UK LIMITED	Optimising Geo-fencing	£72,703	£72,703

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
Use the Competition Code given above to search for this competition's results

Project description - provided by applicants
This project will optimise emissions geo-fencing to be more flexible than current systems allowing them to enhance new vehicles performance by improving the emissions of new bus fleets, plug-in hybrid vehicles and existing vehicles in circulation today. The location of a vehicle can be used to change its behaviour. This technology can be used to reduce emissions in specific locations, for example city centres, and is often known as geo-fencing. The use of geo-fencing requires accurate location of the vehicle, a method to change the vehicle behaviour and rules to define the location where the geo-fence is operational. Current systems have been recently been applied to the operation of buses as they often operate in regions of poor air quality in city centres. Geo-fencing has also recently been introduced in some PHEVs to encourage their usage of electric only operation to improve air quality. To increase the uptake of geo-fencing and thus improve the air quality across the UK, this project proposes a study to identify more flexible geo-fencing architectures. On the one hand, making the rules that define the geo-fence more flexible - for example by allowing the local authority to vary the extent of the zone to improve overall air quality. And on the other hand by considering ways to influence the behaviour of private vehicles, delivery vans and other vehicles to respond to geo-fenced, low emission zones and in particular, ways to ensure the increasing fleet of plug in vehicles (PHEVs) are used effectively.

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
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Participant organisation names	Project title	Proposed project costs	Proposed project grant
CGA SIMULATION LIMITED	SimLiminal	£74,983	£74,983

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
Use the Competition Code given above to search for this competition's results

Project description - provided by applicants
Public description Around 75 million inhalers are prescribed every year in the UK for the treatment of respiratory diseases like asthma, of which 70% are pressurised metered-dose inhalers (pMDIs) made with single use plastic (polypropylene) 'actuators'. Research shows most used inhalers are disposed of at home, ending up in landfill or low-temperature incineration, despite initiatives to encourage recycling. We are seeking to fundamentally re-design these life-saving devices so that the use of plastic is minimised or eliminated. Our vision is to inspire other industry-led initiatives to design out persistent plastic wastes in the healthcare sector through re-imagining how healthcare equipment can be designed for reuse and valued by users. Human-centred design can be used to support a more sustainable NHS, while generating jobs in the UK green economy.

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
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Competition Code: 2009_GO_SBRI_MMM_COGC

Total available funding is 2,000,000

Note: These proposals have succeeded in the assessment stage of this competition. All are subject to grant offer and conditions being met.

Participant organisation names	Project title	Proposed project costs	Proposed project grant
PELATION LTD	Pelation REBO: Developing a machine learning approach to automatically identify cycling near misses and root causes from dashcam footage	£73,916	£73,916

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
Use the Competition Code given above to search for this competition's results

Project description - provided by applicants

Public description
Pelation is a cycle technology company that aims to eliminate sustainable mobility barriers through innovative design and engineering. Focused on the elimination of dangerous near misses and close passes, Pelation's current product REBO, is an internet connected bike light, dashcam and GPS-enabled bookmark button that allows cyclists to capture previously unavailable near miss footage and information with a click of a button.

Current cycling road data on the market give an overview of problem areas but require leap-of-faith inference and assumption on specific incidents. It is difficult to gain confidence in incident root causes without the incident context - our video footage captures this missing information which enables the determination of how near misses develop.

The next stage of the technology roadmap is to develop capabilities to automatically identify and analyse cycling near misses using our device's video footage and data. This aims to produce, for these near misses, actionable insights to determine their root causes and potential fixes. This will allow local authorities to easily understand, prioritise, and implement action plans faster and with more impact and value for money.

To achieve this, Phase One of Pelation's project is a feasibility study that sets out to research key near miss contributing factors, develop the machine learning approach, and identify additional sensor specifications required to automate the near miss determination and root cause identification process from our devices' footage and sensors. Pelation will be working closely with Oxfordshire County Council on this project - identifying their needs and requirements and verifying current challenge areas.

Our novel approach using machine learning to automatically identify near misses from cyclists submitted footage will enable drastically reduced time and cost spent analysing these existing data sets and provide an objective overview of near miss root causes that provide immediately usable and actionable information. This project develops an innovative machine learning model to identify categories and key factors for near misses from cycle footage, and develops a pattern matching algorithm that matches key incident factors to geospatial/kinematic sensors data.

Phase Two of the project will be to develop a scalable near miss identification and root cause determination software that will be built into our devices and cloud analysis platform. This will be followed by a large scale road trial (with a variety of people, places, and time) in collaboration with a local authority to demonstrate the usefulness of the technology in real life operating conditions.