Innovate UK

Results of Competition: **Infrastructure Systems under 12 months and under £100k**
Competition Code: **1607_SC_Infra_R1**

Total available funding is up to £15m for Infrastructure Systems Round 1.

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
Viridian Consultants Ltd Sellafield Ltd	ViridiScreen: a novel alpha characterisation sensor	£99,946	£51,132
Project description - provided by applicants			
Levels of radioactivity in contaminated buildings on nuclear licensed sites are measured in a variety of ways including surface monitoring, but the only method of analysis for alpha-emitting radioactivity in situ is with the use of monitors which are easily contaminated and damaged by grit and dust, and cannot be used in inaccessible areas, such as pipes. The aim of this feasibility study is to produce 'ViridiScreen', a detector based on the measurement of UV light emitted by alpha particles interacting with air, and test whether it is sufficiently robust for operation in hostile, radioactive environments such as pipes, glove boxes and high activity cells. ViridiScreen will fill a gap in the company's suite of characterisation sensors: the remote sampling tool, ViridiScope®, and ultimately the more sophisticated in situ measuring tool 'ViridiScan'; making Viridian Consultants the 'Go To' company for surface characterisation in the nuclear decommissioning industry globally – a market estimated to be worth £600bn. This capability will speed up the characterisation process on nuclear sites and allow them to be decommissioned faster and more safely.			

Note: you can see all Innovate UK-funded projects here
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Participant organisation names	Project title	Proposed project costs	Proposed project grant
Geetec Ltd	Feasibility assessment of a novel low-cost and ultra-efficient flywheel technology, CamFly, for grid-connected energy storage applications	£98,503	£68,952

Project description - provided by applicants

There is a growing interest in Flywheel Energy Storage Systems (FESS) for various applications. The renewable sources can benefit from FESS to match the supply to demand on a power grid and hence reducing the reliance on gas/oil turbine peak power generation. Also large industrial uninterruptible power supplies (UPS) can benefit from FESS technologies instead of batteries to eliminate the need for containment and disposal of hazardous materials such as lead, toxic gases and electrolytes. The market growth will be further strengthen by efficiency and environmental legislation due to be implemented in 2020, which will require energy storage manufacturers to seek improvements in energy efficiency and more eco-friendly technologies. The CamFly technology is ideally placed to take advantage of this market realignment. However, the main barriers to the growth of FESS market are their relatively high capital and O&M costs.

More than a decade first-class research on Flywheel energy storage systems at Cambridge University and more recently at Geetec Ltd has developed a low-cost and reliable flywheel energy storage technology, CamFly, with attractive performance and promising exploitation prospects. The key aspects of CamFly innovation are its bearing-free and pump-free operation, as well as the low-cost Motor/Generator Drive and its associated fractional-size power converter.

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
GRID Smarter Cities Ltd Sunderland City Council	Skiptrac - Intelligent Waste Management Solution	£97,839	£73,676
Project description - provided by applicants			
SkipTrac is an intelligent 'end to end' waste management solution allowing local authorities to manage skip permits processing as an 'opt-in' cloud platform, efficiently integrating into an on-street enforcement regime via parking Civil Enforcement Officers (CEO). This shared service creates back-office efficiency savings for councils and skip operators alike, using one portal to manage, book and process the releant permits. SkipTrac will allow a more effective manage- ment of the highway and effective removal of illegally or incorrectly placed or non-permitted skips from the highway which create safety issues for other road users and environmental issues from the activities of illegal operators. The SkipTrac booking platform also allows the creation of variable tariffs ensuring maximum value is recovered from the kerbspace eg in high use traffic / loading / delivery areas and creates an improved revenue stream from a dynamic and flexible pricing structure and integrated, real-time enforcement provision. The integration of skip RFID tags and use of telematics by approved skip operators will ensure full visibility and transparency of waste movements across a city from kerbside to landfill, ensuring that the correct landfill tax rates are applied and guarding against fly-tipping by unscrupulous operators.			

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
Calipsa Ltd	Automated Traffic Surveillance	£94,561	£66,193
Project description - provided by applicants			
Calipsa is building state-of-the-art artificial intelligence algorithms to automate traffic monitoring, surveillance and data collection.			

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
Westfield Sportscars Ltd	LAVIS - Lake District Autonomous Vehicle and infrstructure Systems	£98,220	£68,754
Project description - provided by applicants			
The flow of tourist in and around the lake district, especially around lake windermere, is a major and growing problem in terms of increase number of vehicles using the small narrow roads and further being compounded by the volume of pedestrains using the roads where there limited or no pavements. The year-on-year increase in tourist and rise in staycation has placed tremendous strain of the transport network, and exposed the lack of connectivity between the various modes. The Westfield Pod will greatly alleviate the disconnect in the modes of transport currently available increasing mobility, reducing noise and pollution due to it being electrically powered and fully autonomous. The POD will connect Windermere train station to Bowness-on-Windermere terminating at Ferry Nab terminal spanning a distance of 3 miles and also support the increased utilisation of car parks that are slightly too far for peoples' convenience. The linked ferry carries up to 18 cars and over 100 passengers from Browness to Far Sawrey, transports people, vehicles, horses and cycles across the lake, reducing traffic on the surrounding narrow roads. The study will analyse the flow of people in and around the area through the modes of transport and look at the suitability of a fully autonomous vehicle passenger system to support the increase of public transport.			

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
Agile Impressions Ltd	Electric vehicle charge point with integrated battery storage ("EVstor")	£87,080	£60,956
Project description - provided by applicants			
From 3,500 electric vehicles ("EVs") sold in 2013, the UK market has surged to >76,000 sales by 2016 (Next Green Car). Expected to account for 60% of UK new car sales by 2030, mass electrification of mobility poses considerable changes for electricity networks, an extra 20GW of peak demand (EFES). In order to meet the market need for a synergised solution responsive to cross sector demand needs, e-mobility innovators Agile Impressions have designed a novel solution intended to meet the market need for EV electricity demand management - an electric vehicle charge point with integrated battery storage ("EVstor") . A proposed feasibility study will undertake a complimentary package of technical and commercial development research to refine an initial concept, validate feasibility and synergise the proposition with the emerging market need.			

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Innovate UK

Results of Competition: Infrastructure Systems under 12 months and under £100k
Competition Code: 1607_SC_Infra_R1

Total available funding is up to £15m for Infrastructure Systems Round 1.

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
Protrack Solutions Ltd	ProDrive - Enhanced Vehicle Security System	£99,823	£44,920
Project description - provided by applicants			
This project addresses the scope of urban infrastructure by providing an incremental improvement to a community service, which will lead to it being more resilient, secure and smarter through the use of modern sensors, and connected vehicles. Protrack have a commercially active tracking system with a strong customer base. This project seeks to develop and add new functionality to address a specific industry need among fleet operators. The system will make use of the existing infrastructure used by telematics systems in terms of the connectivity between vehicle and the management team at base. The product will support the one of the main benefits of telematics systems which is to combat the risk of theft. The solution proposed will use innovative techniques to achieve increased security and improve the efficiency and effectiveness of fleet operators. In addition there are important benefits for the community in terms of reducing environmental pollution. Overall the project will deliver and incremental benefit to the smart city.		

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Innovate UK

Results of Competition: **Infrastructure Systems under 12 months and under £100k**
Competition Code: **1607_SC_Infra_R1**

Total available funding is up to £15m for Infrastructure Systems Round 1.

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
JJ Bioenergy Ltd	A system to process and store waste heat in WWTPs and supply to heating networks	£62,992	£44,000
Project description - provided by applicants			
District heating, is being promoted by the UK government for its low carbon emission. In the UK, Waste Water Treatment Plants (WWTPs) generated 1412836 tonnes equivalent dry sewage sludge in 2010.["waste water treatment in the UK", 2012, Defra]. During sewage sludge treatment, there is a surfeit of waste heat produced which at present is discarded. It would be a good match to shift the waste heat from WWTPs to district heating networks. JJ Bioenergy and its two partners, water company United Utilities(UU) and infrastructure company Galliford Try(GT) propose to develop an energy system to accomplish this. The system involves capturing waste heat from hot water, sludge and flue gas in WWTPs, processing and storing heat in water and composite Phase Change Material(PCM), then supplying it to meet end user demand via Heating Networks(HN).			

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Innovate UK

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
Engas UK Ltd	Interconnected system for waste, energy, water and transport fuel with CO2 capture.	£99,966	£69,976
Project description - provided by applicants			
Engas UK, based in Horsham, West Sussex has developed a modular, light weight-PLASTIC-CO2 capturing system that will enable small scale anaerobic digestion (AD) plants to offer high value applications, e.g. Biomethane transport fuel, energy storage for matching the electricity demand with instant supply, and using the by-product CO2 into greenhouses and waste water treatment. This innovation will build capabilities in the UK to create close loop infrastructure of waste, water, energy, transport and CO2 capture. This will significantly improve the financial return from small scale AD plants without subsidies (FITs, RHI, ROCs) Engas UK's novel PLASTIC cylinders made at a fraction of the cost than of a metallic cylinder & their innovative CO2 capturing technology is the basis of this technology to produce 98% pure bio-CNG fuel & 95% pure Bio-CO2 at 70% lower cost & at 50% greater efficiency. Engas will build a 25Nm3/h modular unit under this project. This technology will be exported to India to convert the waste generated from over 50,000 fruit & vegetable markets into bio-CNG fuel as part of their significant drive and investment to create 100 smart cities by 2020. Engas has partnerships in the UK and in India with the help from UKTI for a first pilot plant in Calcutta-India.			

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
Corporate Risk Associates Ltd	Estimation of SMART Control & Instrumentation Reliability Via Structured Expert Judgement	£99,709	£69,796
Project description - provided by applicants			
SMART Control and Instrumentation (SC&I) are “intelligent” control devices that employ programmable electronic components to collect and process data to enhance performance. This project will develop a process to generate realistic reliability estimates of SC&I to support nuclear power plant (NPP) safety cases. Civil nuclear power generation, by nuclear fission, is a safety critical industry where failures of systems can lead to severe consequences. This project will help ensure that risk insights from safety cases are valid and resources are focussed efficiently to improve safety and operation of civil NPPs. This has the potential to reduce system failures that could cause an incident at a NPP, affecting the operators, the public and the environment. Improvements in the decision making process about equipment use translate to improvements in the safety, efficiency and availability of NPPs overall. Any slight improvements in these factors have a large economic benefit since the cost of accidents is high, as is the cost of unavailability of a power station. Added to the economic benefits are the health and environmental benefits of avoided accidents, and incremental improvement to the security of supply of the UK grid.			

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
Iknaia Ltd	Airscan	£54,748	£38,324
Project description - provided by applicants			
Iknaia wish to explore the effectiveness of adding additional environmental sensor technology to its journey time monitoring solution Airscan to provide live environmental data and air quality data feeds to online third parties information portals. Iknaia also intends to connect its Airscan units together using a LoRa network, with a view of driving down networking communication costs making Airscan a viable solution for highways maintenance companies, local councils and other third parties.			

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
Prospective Labs Ltd	Infrastructure Ahead	£99,890	£69,890
Project description - provided by applicants			
"Infrastructure Ahead" will revolutionise the way infrastructure providers, utility supplers and planning authorities forecast and respond to end-use demand. Our Decision Support System (DSS) will forecast end-use demand dynamics at unpresedented spatial and temporal resolutions. The system relies on a large number of very detailed datasets, fused into a comprehensive representation of the built environment, its regulatory framework and its development potential. The embeded forecasting capabilities are driven by seamless integration of microeconomic modelling and machine learning. The system will be able to estimate current and short- and medium-term end-use demands, at the building level, under variable macroeconomic, socio-demographic and infrastructure investment scenarios, and will facilitate inter-organisational decision making processes that (i) will enable stakeholders to continually optimise the delivery of services and their infrastructure development plans and (ii) will unlock the development potential of land constained by inadequate provision of infrastructure.			

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
Ingram Networks Ltd	High Speed Wayside - Train Railway Communications Infrastucture	£96,808	£67,766
Project description - provided by applicants			
This technical Feasibility Study is to investigate the possibility of implementing an entirely new means to communicate with rail (and potentially road) vehicles on the move. There is a very strong demand for reliable, robust, high speed internet connectivity for people on the move. This need is currently being very poorly met with current technology. This project focuses on the key technical component of such a solution.			

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
Energy Local Ltd NFPAS Ltd Megni Partnership The 10:10 Foundation	Brownie – the home and community energy little helper that 'lends a hand'	£92,223	£65,166
Project description - provided by applicants			
This collaborative industrial research project builds on the success of community-focussed tools demonstrated in the CEGADS project. Innovative algorithms enable households to benefit from demand-side management on a community basis, balancing and maximising local value from community generation, without the perceived threat of 'central control'. The project addresses the need for a platform which enables and reports changes in electricity consumption patterns at the community level, revolving around local generation. This is quite distinct from the focus on the individual householder. Embracing a wider range of motivations, including community cohesion, social equality, and enhanced use of local renewables, the approach simultaneously addresses security of supply, affordable energy and carbon reduction. The project collaboration will demonstrate a Brownie system: combination of a cloud server with a home unit that 'lends a hand' and an energy dashboard. The primary markets are community energy groups and social landlords. The approach opens up wider opportunities at scale, including monitoring the impact of energy efficiency measures, remote monitoring of the distribution network, and support for the vulnerable living independently.			

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
Green Running Ltd	Nonintrusive Fault Monitoring (NiFM)	£99,710	£69,797

Project description - provided by applicants

Each year the average UK household disposes of £800 worth of electrical and electronics items, 40% of which is repairable. 40% of this is made up of large household electricals such as washing machines. At present, the cost of repair too often exceeds the cost of replacement, meaning there is little incentive to improve the resource efficiency of appliances and increase product lifetimes - resulting in significant resource loss each year.

London based artificial intelligence experts, Green Running believe the application of novel machine learning algorithms can be used to modernise the process of appliance repair - and achieve cost savings in the process through improved operational efficiencies.
The NiFM project, transcending energy and information communications infrastructure, will undertake a complimentary programme of works to establish technical feasibility and devise a working prototype from which to engage potential clients and investors. To fully exploit the opportunity available Green Running will evaluate the potential to orchestrate business model innovation to increase SME revenues, job creation and bottom line profitability.

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
Intrepid Minds Ltd The Manufacturing Technology Centre Ltd	Advanced Infrastructure Monitoring System (AIMS)	£125,182	£96,267
Project description - provided by applicants			
It is difficult and expensive to detect potential defects within off-shore wind turbines. Failures, when they occur are catastrophic and expensive. Support vessels can cost £250K per day and other losses can extend costs of failure into £millions. The AIMS project will demonstrate the feasibility of a system of static and mobile sensors, to detect and mitigate the occurrence of faults within the structure and machinery of the wind turbine before a catastrophic failure occurs. Our proposal is first use of static sensors on a wind turbine to detect small deflections and vibrations to the structure to localise a potential failure. Our solution allows for these sensors to report this to nodes connected to client operations as well as launching a UAV to perform a visual check, safely and securely in a hostile environment. This project seeks to develop the backbone of a system which can initially mitigate the issue of failure on a wind turbine, however we foresee that the system may have other cross functional application in the energy, transport and construction industries which we will detail in a road map report at the end of the project.			

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