

# Innovate UK

**Results of Competition: Innovation Loans: Infrastructure Systems**

**Competition Code: 1711\_LOAN\_INFRA\_FOAK**

**Total lending commitments are £6,602,530**

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<b>Participant organisation names</b>	<b>Project title</b>	<b>Proposed project costs</b>	<b>Proposed project grant</b>
<b>Ashwoods Lightfoot Limited</b>	Lightfoot - Development of Realtime Integrated Vehicle Ecosystem (DRIVE)	£2,339,174	£1,000,000
<b>Project description - provided by applicants</b>			
<p>Proven in the fleet sector to reduce fuel consumption by over 10% and accidents by over 40%, Lightfoot is a unique in-cab technology that helps drivers find their 'sweet spot'. The project will develop and pilot an in-vehicle technology and surrounding proposition that is desirable to consumers and rewards them for good driving.</p> <p>Elite Drivers will be eligible every week for prizes like supercar track days to a year's supply of pies! They will also receive cheaper insurance, breakdown cover and even free coffees.</p> <p>Anonymised live data from the devices will be shared with connected transport and smart infrastructure systems so that they device is a 'beacon' providing useful data for more efficient operations of a range of services including emergency services, autonomous vehicles, smart cities and other connected transport systems.</p> <p>Lightfoot aims for this project to transform them from a UK-focused fleet technology provider to the 'Fitbit for cars' with a truly global marketplace.</p>			

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<b>Citi Logik Limited</b>	Citi Logik: Development of CitiWatch Professional for Connected Transport	£3,011,161	£1,000,000

### **Project description - provided by applicants**

Citi Logik is seeking loan funding from Innovate UK to scale up and full develop 'Analytics as a Service' for the Connected Transport markets. The support from Innovate UK will support an SME which is developing market leadership in the analysis of movement by vehicle, on foot and by public transport for public good, using the existing 3/4/5G networks. Citi Logik is a UK based SME, which is also building on the Government's Industrial Strategy vision for Connected Transport: capacity assessment; prediction of congestion; end-to-end journey analysis by mode. Citi Logik has already worked extensively with leading engineering consultancies to replace existing roadside surveys and sub optimal transport models with statistically valid high quality LSOA, census level data. The loan monies will help transition and broaden late stage R&D to a higher (TRL 9) capability, as an integrated package of multi modal analytics for the UK and International markets. Citi Logik Limited was established in 2011, with a Technology Strategy Board £25k loan in 2011. In April 2017, Citi Logik secured 'First of a Kind' funding to deploy CitiWatch in real-life test conditions, now successfully operating at a high Technology Readiness. In June 2017, Citi Logik secured further funding to develop RailWatch and is now developing new capabilities for connected cities, sea and airports. With the support of the Department of Innovate UK funding and International Trade support, the company has been able to win 40 UK based projects and to secure 3 new international pilots this FY in the Greater Copenhagen, Island of Ireland and Middle East.

The scale up and full development of Citi Watch supports the ambitions of the recently published Industrial Strategy 2017. The Citi Logik founders recognised that the future of mobility will operate differently to the transport systems of today and that data analytics will be a key enabler for the more efficient operation of current and future transport systems. Citi Logik is rapidly proving that 'Analytics as a Service' is better, faster and cheaper than traditional roadside surveys.

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<b>Alert Technology Ltd</b>	ALERT Real-Time Airborne Asbestos Detection	£744,583	£600,000
<b>Project description - provided by applicants</b>			
<p>Alert Technology Ltd have developed 'ALERT' the world's first real-time warning device for airborne asbestos fibres. Despite its ban by half the world, extensive use of asbestos for generations and inclusion in over 3,500 products has resulted in an asbestos legacy problem for many countries including the UK. Buildings constructed prior to 2000 are likely to contain it, inc. residential, commercial and public properties - 83% of UK schools containing it along with hospitals, public housing &amp; offices. When encapsulated and undamaged asbestos is not dangerous, it becomes a major health risk when degraded over time or friable by removal, DIY, remedial work or demolition and it's toxic fibres are released into the air and inhaled. Asbestos related diseases take decades to develop, are responsible for 1 in every 3 occupational cancers &amp; claim 107,000 lives/ yr globally (5,000/ yr in UK). Referred to as the 'Hidden Killer', exposure is often unknown as the asbestos may be unidentified. ALERT offers a vital early warning when asbestos fibres have been disturbed and released into the air so safety precautions can be taken and risk of exposure reduced. Currently at working prototype stage ALERT sample units are now engaged in commercial field trials with potential future customers - an Innovate UK loan will bridge our funding gap prior to market launch enabling us to incorporate feedback received from the trials - enhancing software, end user interface &amp; ergonomics. It will also accelerate plans to develop an enhanced model with wireless remote communications &amp; a more simplistic "Yes/ No" model variant at a lower price point for tradespeople.</p>			

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<b>Alcove Limited</b>	AiCOVE	£399,151	£399,151
<b>Project description - provided by applicants</b>			
<p>Self learning Artificial Intelligence (A.I.) will be crucial in creating the products of the future to serve citizens and allow new of using intelligence to drive social good.</p> <p>The future of how older adults will be supported by their networks, communities and government bodies is in crisis.</p> <p>Unlocking more value by combining data sets &amp; using machine learning/AI to learn to take preventative interventions using the power of voice interface via Amazon's wildly popular Alexa to proactively prompt and protect those citizens and the buildings they live in, whilst keeping them at the heart of interactions will FUNDAMENTALLY disrupt these challenged sectors, and provide the next evolution of care tech pioneer Alcove's IoT platform.</p> <p>Welcome to Ai-COVE.</p> <p>Prevention, Intelligence, Empowerment.</p>			

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<b>Utonomy Ltd</b>	Smart gas grid control to increase biomethane injection capacity	£488,100	£488,100
<b>Project description - provided by applicants</b>			
<p>To move to a more sustainable energy mix and decarbonise heat an increasing proportion of gas used in homes will need to come from renewable sources. A major contribution could come from AD (anaerobic digestion) plants that produce bio-methane from waste and inject directly into the gas network. However, these plants need to be connected into the lower tiers of the network. At times of low demand, the networks can have insufficient injection capacity to take all the gas that could be produced. This leads to AD plants reducing output or having to flare surplus gas. Furthermore, applications to connect new AD plants can be turned down due to a lack of injection capacity on that part of the network. A solution to this problem is to use the network as storage increasing the pressure at times of surplus production to store excess biomethane and dropping the pressure when demand once more exceeds production of biomethane. However, this requires a retrofittable smart control solution because the governors feeding the networks are currently all manually adjusted.</p> <p>Utonomy has already developed an innovative retrofittable pressure management solution to control LP (low pressure) networks. This new project aims to modify the actuator design and develop the software to control the MP (medium pressure) networks to which AD plants are connected. Trials will be carried out on a part of the UK network fed by a biomethane plant and measure the increase in output of the plant over a 12 month period.</p>			

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<b>G-volution Ltd</b>	Low Carbon Static Power Generation	£530,684	£500,000
<b>Project description - provided by applicants</b>			
<p>This project will allow G-volution will deliver its first commercial dual fuel demonstrator for the genset market (initially USA) with EPA emissions approval.</p> <p>The commercial and enviromental offering will deliver significant emissions reduction in this sector combined with an operational cost reduction and payback model making this dual fuel natural gas solution very attractive to operators. Suitable for retro fit the benefits are immediate as existing assets can be utilised.</p> <p>Expansion to further geographies (e.g. UK, India, China, Europe etc) further incentivises this opportunity. Our ongoing work on methane catalysis, to meet Euro 6 standards, will open access to the UK and European markets, once fully developed.</p> <p>This project will improve air quality by reducing harmful emissions, create jobs and worldwide export potential for UK Plc</p>			

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3-Sci Ltd	Cuitest first full scale deployments	£307,978	£307,978
<b>Project description - provided by applicants</b>			
<p>Mitigating the effects of Corrosion Under Insulation (CUI) has been identified as a significant issue for improving efficiencies in the chemical and processing industries. CUI is a £ multi-billion worldwide cost and recent studies have confirmed that there are no products available to asset managers that can provide 'easy-fit', automatic and large-area monitoring of a plant. 3-Sci's new 'CUItest' is a novel electromagnetic measurement technology which is capable of achieving those objectives. The aim is to develop a CUItest product that will, for the first time, provide asset managers with a cost effective, 'always on', health monitoring system to aid the management of Corrosion Under Insulation (CUI). In order to achieve the aim, an Experimental Demonstration phase will be carried out in collaboration with end users through deployments in 'real-world' plant. The project will include securing the necessary (ATEX) certifications of the CUItest system (which is a prerequisite for deployment in many assets), installation into at least two operational facilities and collection of a sufficient body of experimental, operational and market evidence to underpin product launch.</p>			



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<b>C Enterprise (UK) Limited</b>	CEL-UK Integration and Expansion of Additive Manufacturing	£879,700	£200,000
<b>Project description - provided by applicants</b>			
<p>CEL developed our first 3D printer, Robox, in 2014 in response to a need within this new market for a machine which is easy to use and reliable with wide range of uses suitable for professional and home users. Our aim to create a machine which can produce high quality items without prior knowledge of 3D printing was rewarded consecutively in 2016 and 2017 by the huge user base of 3D hubs with title "Best of Plug'n'Print". Robox has been complimented with upgrades and accessories over the past few years which have easily kept it ahead of competitor feature-sets. Key to this is a patented material flow control system which is unique to Robox. This system is being included in a new product which will expand the maximum possible build size and therefore the potential market for Robox machines.</p> <p>Funding from an innovation loan will help CEL to grow with a market which has huge potential as a technology export for the UK. In addition to an expanding range of products CEL has secured funding which will enable us to use our knowledge of additive manufacturing systems and techniques to create new methods of utilising these tools. This new innovation in industrial additive manufacturing will further boost UK technology output.</p>			

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<b>Catagen Limited</b>	Next Generation Emissions Testing System	£1,914,633	£1,000,000
<b>Project description - provided by applicants</b>			
<p>Over the past few years, technological and societal changes have accelerated with huge impact on the automotive industry. Concerns over air quality, congestion, and energy security continue to elevate. There is demanding emphasis on the development of sustainable, reliable low-emissions vehicles. The general public is much more aware of the environmental impact of transport vehicles and the need for a roadmap to zero emissions. With this background, both government and industry are changing the approach to specifying and controlling the 'real' emissions from vehicles during actual on-road driving, specification through the introduction of Real Driving Emission Legislation. Catagen has developed specialised testing and analytical tools to accelerate new development and deliver new low emission cars to the industry faster and more cost effectively. The proposed project will accelerate company growth so that Catagen can match its capability and clean air vision with improved testing techniques to satisfy the increased demands of the rapidly changing emissions legislation imposed on the automotive industry. The new system will offer a significant increase in testing capability and flexibility. This will be complemented with new modelling and analytical techniques to allow full drive-cycle simulation without the need for an engine or a vehicle. This will bridge the large gap between after-treatment performance on the road when compared with system performance under idealised laboratory conditions.</p>			

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<b>Loowatt Ltd</b>	HIT-G: Human Waste System Integration Technology - Growth	£458,301	£458,301

### **Project description - provided by applicants**

- \*Need- UK utilities need sanitation technology that is more cost-effective through water-savings and more resilient in floods, hence requiring non-sewered solutions. Global utilities need non-sewered toilets due to growing water scarcity.
- \*Project content - HIT-G will conduct a commercial pilot of Loowatt waterless sanitation and infrastructure with key UK stakeholders - toilet servicers and utility providers - in four UK regions.
- \*Objectives- HIT-G will enable Loowatt to generate crucial sales traction and scale up our business, by demon-strating our infrastructure's unique value propositions to key customers.
- \*Market opportunity - UK addressable PT toilet market is worth £1.0bn in 2017, proj. growth of 7.6% CAGR to £1.6bn by 2023; EU PT market worth £7.1bn in 2017, 6.4% CAGR to £10.3bn by 2023; Global PT market worth £30.3bn in 2017, 7.8% CAGR to £47.6bn by 2023.
- \*Approach - HIT-G Loan to focus on experimental development and commercial pilot. Agile, systematic approach, user-centred development with PT servicers and WWT partners; engage customers, leading to hard-ware sales after loan period.
- \*Innovation - Commercial - new business model based on waste-to-value sanitation treatment increases profits for all stakeholders. Technological-Toilet Pods for widespread application of patented Loowatt waterless toilets, mIBS for processing waste into UK infrastructure, IOT platform.
- \*Outcomes Whole system value proposition proven with pilot fleet hardware.
- \*Impact on competitiveness and productivity - Prove competitive advantages of HIT-G system, enabling Loowatt to leverage proven demand and grow sales.

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<b>Nuron Limited</b>	First of a Kind Implementation of a Nervous System for the Sewers	£855,034	£649,000
<b>Project description - provided by applicants</b>			
<p>Climate change and population growth are increasing pressure on sewerage, drainage and flood defence networks. Faced with this challenge, and increasing regulatory and public pressures to reduce environmental impacts and internal sewer flooding, a step change is needed in sewer flow monitoring and management technology.</p> <p>This is a key priority for UK Water and Sewage Companies (WaSC). In their current business plans, several specifically highlight that 'smart networks and increased remote automation' will be a key driver in reducing such incidents. nuron is delivering just such a transformation. Our continuous optical fibre monitoring system delivers network wide flow, depth, temperature, and structural measurements. These enable real time control techniques such as in-system storage, better use of capacity and deferral of capacity upgrade capex.</p> <p>By 2018, with the support of this Innovate UK loan, our system will be field proven with a UK water company to: reduce sewer flooding and environmental pollution; improve sewer asset management; lower the cost of high speed broadband; and provide a low cost fibre grid to enable SMART cities.</p>			