

Innovate UK

Results of Competition: Emerging and Enabling Technologies Round 2 - 12 to 24 Months

Competition Code: 1703_EE_R2_24M

Total available funding is up to £15M

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
Braintree Limited	Graph Analytics-based Modular Machine learning and Artificial intelligence (GAMMA)	£502,388	£351,671
University College London		£205,297	£164,237
Project description - provided by applicants			
<p>Companies are generating and managing an exponentially increasing amount of data and desperately need tools to analyse and act upon the data. AI tools can be used to improve efficiency and productivity, however, many companies cannot leverage AI because: 1) Developing AI requires expensive specialist expertise. 2) AI algorithms are currently developed to solve specific problems and must be redeveloped for each new application, which is inefficient and expensive. 3) Data is increasingly stored in graph data structures, which existing AI algorithms cannot natively process. Graph data must currently be translated into text before processing, which is extremely slow, inefficient and is infeasible with massive datasets. In the GAMMA project Braintree Limited and UCL will prototype a unique modular graph-based AI platform which: 1) Integrates AI into graph database structures, enabling deep complex AI analysis of massive datasets in real-time. 2) Allows anyone to implement a complex AI solution with minimal expertise. 3) Incorporates an AI module marketplace, enabling AI developers to sell compatible modules and academics to exploit their AI research commercially. Graph-native AI is a step change in capability and offers Braintree a major competitive advantage</p>			

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Industrial Light and Magic (UK) Ltd	CLiP - Connected Live Production	£428,628	£214,314
Vicon Motion Systems Limited		£450,337	£270,202
Project description - provided by applicants			
The project will develop two major connected strands of innovation: firstly, a real-time system for accurately tracking the profile curves of the lips and eyes of an actor, advancing the state of the art in real-time digital characters, and offering new creative options to filmmakers and entertainment experiences for audiences; and secondly, a ground-breaking process and device control hub, enabling visual effects engineers, researchers and producers to use the optimal equipment for their studies and experiments when creating visual effects shots - the use of such a system will lead to massive time and cost savings in the use of motion capture in life science research, virtual reality, engineering and visual effects markets in both the public and private sectors.			

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IS-Instruments Limited	Raman Analysis of Gas for the nuclear sector using Micro structured fibres (RagnusMOF)	£210,742	£147,519
Amec Foster Wheeler Nuclear UK Limited		£208,128	£104,064
University of Southampton		£166,248	£166,248
Project description - provided by applicants			
The detection, monitoring and control of gaseous species within the energy sector and specifically the nuclear industry is critical for safety, environmental control and efficiency savings. Hazardous materials and systems require gases to be sampled, identified and quantified regularly to allow plant process to continue safely and efficiently. Often the measurements must be made in real time and taken in challenging environments with limits of detection in the sub ppm levels. This project seeks to develop a new disruptive instrument, based on Raman analysis but with significantly improved sensitivity. This will allow the instrument to benefit from the inherent flexibility offered by Raman measurement, while dramatically improving the sensitivity such that its competitive with existing techniques such as IR absorption or Gas Chromatographs (GC).			

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Evidential Ltd	Virtual Incident Training Simulation Platform	£711,418	£497,993
University of Salford		£301,036	£301,036
Project description - provided by applicants			
<p>With the ever increasing threat of dissident terrorist action, Emergency Services are needing to adapt their current training practices for such seemingly unpredictable events. Unfortunately recreating scenarios causes huge amounts of planning, large costs and significant disruption to these services and public life. The emergence of immersive technology such as Augmented and Virtual Reality and its use in the entertainment industry is to be transferred as a tool for readying Emergency Services for all eventualities as a viable and cost effective training solution. With current digital training applications limited in their outcomes, Evidential and the University of Salford aim to create a fully immersive and adaptable training platform which gives the User the power to create their own scenarios and introduces artificial intelligence which creates unique experiences each time. This will create a platform for collaborative training amongst Emergency Services across the world and have significant societal impact in creating a safer environment for people to live in.</p>			

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Rapid Powders Limited	GENESIS GraphenENovEI Selectlve Sinter	£52,864	£37,005
Euriscus Limited		£54,405	£38,084
2-DTech Limited		£57,772	£34,663
Ultra Electronics Limited		£35,015	£17,508
IMIRP Rapid Prototyping Ltd		£20,508	£14,356
University of Manchester		£24,869	£24,869
Project description - provided by applicants			
<p>When polymer powders are selectively laser sintered (SLS), they have a microstructure that contains a significant amount of porosity conferring inferior mechanical properties particularly elongation and toughness compared to conventionally processed materials such as injection mouldings or extrusions. We have shown that for conventional Nylon PA12 SLS powders, Rapid Powders' novel compounding process can improve the elongation and toughness of PA12 significantly and we propose to develop ranges of other materials. The consortium consists of Rapid Powders who compound the powders, 2-dTech who are a graphene manufacturer, Euriscus and IMI Rapid Prototyping who manufacture SLS components and Ultra Electronics who is a potential end user. If this project is successful it will generate additional business and improve their collective productivity and competitiveness considerably.</p>			

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Spirent Communications PLC	ELWAG-Enhanced Assured Location Simulator Leveraging WiFi and GNSS Sensor Fusion	£454,364	£227,182
Chronos Technology Limited		£32,658	£22,861
University of Warwick		£206,787	£206,787
Project description - provided by applicants			
<p>The need for smart devices to have a highly accurate self-awareness of their own location, and the location of other smart devices around is becoming increasingly important. Many devices rely on a singular location technology (typically GPS), which is one type of the wider eco system of Global Navigation Satellite Systems (GNSS). These systems, whilst becoming more capable, still suffer at times from the deployment environment, typically in urban areas where buildings and other cityscape features interfere with the signal. This is also though, where most of us need to know our location to the highest level of accuracy due to increasing population or device density. WiFi signals though exist almost universally within these situations or dense urban areas and so there is a possibility of *fusing* these signals with the GNSS signals to identify one's location very accurately. However, for the concept of a hybrid WiFi and GNSS system to be developed, manufacturers need to be able to test such technology in a cost effective, repeatable and safe environment. This project aims to produce a representative and assured WiFi simulator that can be used for lab based testing and evaluation of a devices performance and operational capabilities.</p>			

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Unilever UK Central Resources Limited	Lactam based biofilm-ready surfaces with cross-industry application	£308,402	£154,201
BluTest Laboratories Limited		£116,100	£81,270
University of Leeds		£64,494	£64,494
University of Nottingham		£66,601	£66,601
University of Glasgow		£49,809	£49,809
Project description - provided by applicants			
<p>Hygiene in homecare, paper and marine industries is increasingly challenging. Home, industrial, hospital and marine surfaces are constantly challenged by microbial contamination. Current anti-microbials such as metals and quats present environmental and toxicological risks, are of limited efficacy on biofilms, whilst presenting a risk of increasing microbial resistance. Bioderived lactams disrupt quorum sensing during biofilm growth and development apparently without driving resistance. Recent feasibility work demonstrated the potential of lactams as anti-biofilm coatings on textiles (TSB132177). To date, their efficacy as active ingredients in liquid products is limited due to bioavailability and formulation hurdles. Using diverse application techniques during manufacture and finishing, lead analogues will be localised on wipes, paper, marine, and other industrial surfaces. The project will build a business case and recommend efficient incorporation chemistry and process route for cross-industry surface biofilm disruption based on cost, efficacy and robustness. Successful demonstration of application will fast track lactam commercialisation allowing market share and revenue gains for industrial partners and IP and publication monetisation for ROs.</p>			

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DataSat Communications Limited	QuadraFlex NG (New Generation)	£1,379,482	£961,857
IntelSat Global Sales & Marketing Ltd		£593,749	£296,875
Project description - provided by applicants			
<p>This project is focussed on development of a differentiated smart edge appliance for the nascent high value Commercial & Industrial IOT cross-sector opportunity. The product will be an evolution of a proven industrial grade WiFi AP/Level 3 Router (the Datasat Quadraflex 200). The evolved product will combine Linux Server-class computing with 10 Gbps Level 3 IP router capabilities as well as support for the diversity of required Northbound & Southbound wired & wireless data communications methods on a mix & match basis using feature cards. The product will be presented as a compact one box, rugged, IP67 compliant, passively cooled, future proof appliance that can be deployed in fixed indoor/outdoor & mobile situations to meet a diversity of Use Cases. Distribution will be via globally positioned full-stack Solutions Providers operating in each of many key market verticals. The appliance will conform to emerging industry consortium frameworks that promote interoperability & broad adoption, & will be engineered to meet cross-industry & global certification requirements. The product will consolidate functions that currently need several appliances that tend to be engineered for indoor use only</p>			

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Iceotope Technologies Limited	Ultra-Efficient Liquid Cooled Power Supplies	£488,777	£342,144
Supply Design Limited		£642,784	£449,949
Project description - provided by applicants			
<p>Data centers consume over 400TWh a year and data requirements are expected to grow by over 23% per year. Key aspects for the design of electronics for data centers are energy efficiency and energy consumed by cooling. At the same time, Smart Cities and Edge Computing require smaller, denser, more autonomous and more robust systems as computing requirements grow on the edge of the network. A mission critical component of all data centres is Power Supply Units (PSU). Supply Design Ltd and Iceotope have world leading technologies that individually address efficiency, density and cooling efficiency, however by working together they believe they will be able to make a high efficiency offering that is greater than the sum of the parts. This project combines the expertise in Iceotope and Supply Design to produce a demonstrator of Ultra-High Efficiency, Large Capacity, High Density AC/DC Power Supply Unit (PSU) capable of heat capture and reuse and ruggedised for hostile environments.</p> <p>Keywords: Power Conversion; Liquid Cooling; Data Centers</p>			

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CareWhere Limited	NANO TAG	£355,413	£248,789
Nottingham Scientific Limited		£246,799	£172,759
Project description - provided by applicants			
<p>NANO-TAG is a follow-on project to the Micro Tag Innovate project, and involves two partners from the original project. We will further develop and exploit the innovative outcomes of this project, combining GNSS and sensor data for applications within and beyond the Justice system. We will create an even smaller and more sensitive system that is modular by design, making it suitable for a wider range of markets and applications. We will look to enhance the use of an innovative GNSS systems alongside a wide array of sensors and systems, including standard GNSS, motion sensors, light sensors, altimeters and tamper detection systems, combined with secondary location and transmission systems such as bluetooth, RFID, iBeacon and WiFi. This combination of technologies will be supported by a robust GNSS engine to ensure that reported positioning data is safe, reliable, authenticated and secure against operational threats. We have identified new, unique and global market applications for this technology.</p>			

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Trameto Limited	Multi-source power management to enable autonomous micro energy harvesting systems.	£444,371	£311,060
University of Exeter		£149,985	£149,985
Project description - provided by applicants			
Trameto plans to develop a proof-of-concept of innovative power management circuits for autonomous micro energy-harvesting systems (AMES). Such a system will scavenge μW to mW of ambient energy from multiple and distinct sources such as indoor light, thermal gradients and vibration to eliminate batteries from wireless sensor nodes in the IoT. Each energy source has widely different electrical characteristics. This will require innovative multi-source power management to enable effective AMES operation across varying operating conditions. In order to achieve best in class performance, Trameto will collaborate with the University of Exeter who will develop novel control systems to optimise AMES performance.			

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