

Innovate UK

Results of Competition: Emerging and Enabling Technologies Round 1 - Stream 2 - 25-36 months

Competition Code: 1610_LO_EMEN_R1

Total available funding is up to £10m for Stream 2

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
ESI UK Ltd	WindTwin - Digital Twin of Wind Turbines for real time continuous monitoring and inspection	£998,618	£499,309
Agility3 Ltd		£186,973	£130,881
Dashboard Ltd		£297,149	£208,004
TWI Ltd		£313,001	£313,001
Brunel University London		£202,623	£202,623
Project description - provided by applicants			
<p>WindTwin project aims to revolutionise the monitoring and maintenance of wind turbines both onshore and offshore by developing an innovative digital platform that will virtualise with a digital twin the wind turbine behaviour and operation. These virtual models or twins will combine the mathematical models describing the physics of the turbine's operation, with sensor data collected and processed from real assets during real world operations. For example, condition monitoring on gearbox will be applied and sensors will be placed on the real wind turbine asset; the data being collected will be processed and transferred to the digital twin, continuously resulting in a close to real digital twin of the wind turbine showing real time performance. These virtual models will allow wind farm operators to predict failure and plan maintenance thus reducing both maintenance costs and downtime. The application of WindTwin platform will include (1) design using data and knowledge based tools and simulated testing of wind turbines before manufacturing, (2) continuous predictive and preventive maintenance and condition monitoring of wind turbine asset (3) different power setting operation scenerios analysis, and associated wear and tear at different power outputs.</p>			

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Crown Packaging Manufacturing UK Ltd	High Performance Thin Film Barrier Coatings for Metal Packaging	£156,946	£78,473
AkzoNobel Packaging Coatings Ltd		£143,960	£71,980
Thomas Swan & Co Ltd		£286,491	£171,895
Centre for Process Innovation Ltd		£238,974	£238,974
Project description - provided by applicants			
Generally, metal packaging is protected with an organic coating on the internal side of the substrate to safeguard against contamination of the product by the metal and degradation of the metal by the product. Additionally, the external surface is often printed for decorative purposes. Epoxy based coatings are the most important protective technology used for metal packaging. They are used due to their outstanding chemical resistance to a wide range of food products and chemicals and possess excellent adhesion to all kinds of substrates. This project will seek to formulate a new set of thin film coatings with improved barrier properties, lowering manufacturing costs and increasing productivity.			

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Kaiam Europe Ltd	SUPER 8: A scalable 200G Super-thermal, 8 channel CWDM architecture	£215,448	£107,724
Compound Semiconductor Technologies Global		£454,342	£318,039
The Compound Semiconductor Centre Ltd		£445,127	£267,076
Project description - provided by applicants			
<p>The global datacentre equipment market is projected to be worth US\$72B by 2020 with double digit growth fueled by exponential demand for services such as cloud computing, mobile internet usage and emerging IoT. Datacentre operators have to disrupt the supply chain as they seek more aggressive technology roadmaps to support a host of new services. They are building larger and larger datacentres that require more interconnection bandwidth. The cost and availability of the high capacity optical server interconnects has become a bottleneck to continue datacentre growth. As a result, this market has seen an unprecedented upgrade cycle with a transition from 10 Gbps to 40Gbps occurring in 2014, followed by another to transition from 40G to 100G in 2016. The industry is currently expecting 400G to ramp starting in 2018/2019 but it is struggling to find a satisfactory solution >100G. Our project aims to deliver a disruptive, scalable architecture which will deliver solutions > 100G based based on a technology which is proven in the 40G and 100G market. The consortium assembled can address the full component to transceiver development supply chain in the UK, and service volume manufacturing from existing facilities in Scotland and Wales.</p>			

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ARM Ltd	PlasticARMPit: Accelerating the Development of Flexible Integrated Smart Systems	£742,037	£333,917
Pragmatic Printing Ltd		£515,815	£361,071
Unilever UK Central Resources Ltd		£129,284	£64,642
University of Manchester		£580,052	£580,052
Project description - provided by applicants			
Future flexible electronic devices will be highly integrated, diversified, and interact with the ambient environment by performing intelligent activities such as fingerprint, vein and odour recognition. These devices will require a flexible high-performance, energy-efficient processor, and it is becoming clear that flexible microcontrollers, which are still in research labs, will not meet the computational demands of future smart applications. Hence, there is an immediate need for a flexible high-performance energy-efficient processing engine to deliver these devices. We propose 'plastic Neural Networks (NNs)' as the digital processing engine to accelerate the development of flexible integrated smart systems. The NNs are customised for a specific application, capable of operating in extremely parallel fashion to achieve high performance, and consume low power. The project is the first proposal to pioneer digital hardware NNs as de-facto processing engine of the printed electronics world. It will demonstrate this disruptive concept with a prototype consisting of flexible e-nose sensor array coupled with a plastic NN that can be worn under the armpit to recognise the malodour composition.			

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Croda Europe Ltd	Development of smart Functional ANtimicrobial Coating (FANCy)	£409,396	£84,698
Scanwel Ltd		£81,795	£57,257
University of Liverpool		£208,224	£208,224
Project description - provided by applicants			
The aim of this project is to develop advanced antimicrobial coatings to control and prevent biofilm formation, which costs the UK economy tens of billion pounds per annum in damage. The project is led by the global market leader in speciality chemicals, Croda, in collaboration with SME, Scanwel, and the University of Liverpool who provide advanced characterisation tools to help optimise the technology and enable its translation to a number of market sectors.			

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Fluvial Bounty C.I.C.	Prospecting for Micro Hydropower Sites On African Rivers From	£259,818	£181,873
University of Leicester	Satellite	£92,327	£92,327
Project description - provided by applicants			
<p>It is possible to identify, from satellite, the gradient of a river and its flow rate at any individual point, then to make calculations, based on the operating parameters of any pre-selected hydropower kit, about the cost of installation and pay-back periods for hydropower generation at that site. By surveying whole river valleys from satellite, and identifying large numbers of sites suitable for that pre-selected kit, we aim to disrupt the current industry model which results in the bespoke design of one-off run-of-river hydropower installations, and to bring economies of scale, in manufacturing and financing, that have been so successful with other renewable energy technologies, but which have proven so elusive to the hydropower industry. This technology will be useful in the UK and other developed countries, but its real potential for "mushroom-shaped" growth, is in the developing world. As a test-bed of the potential for UK exports across the developing world, this project focuses on Uganda, where the population's access to electricity, especially in remote areas, is less than 10%. Global investment players, both public and private, are very active in driving access to electricity. This is a growth market on a global scale and one which can uniquely be accessed from space.</p>			

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Deos Consultancy Ltd	Worlds First Fully Digitally Integrated Mobile Medical Screening Programme	£322,000	£144,900
W.H. Bence (Coachworks) Ltd		£288,000	£100,800
Project description - provided by applicants			
Our project aims to disrupt the logistics of mobile medical screening programmes and remove barriers to taking screening and care out into the communities that need it. To do this we will create the worlds first fully integrated digital screening programme with the National Breast Screening Service in England. We will use satellite and 3G 4G to transform old isolated screening vans into connected internet devices. We will create a new control desk to harvest and analyse data from the vans to make a step change in their flexibility and efficiency. In turn we will increase throughput and reduce costs whilst improving data security and turnaround times for the people being screened. At the end of the project we will have created a showcase service that will demonstrate the benefits of integrated screening and disrupt the metrics of costs and effectiveness in a way that will open new potential markets in the UK and abroad. We will also develop our own infrastructure so that we are able to deliver and support complete integrated screening solutions to these new markets thereby bringing growth to our company and the UK economy.			

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