

Results of competition: Technology-inspired innovation - May 2014 - Electronics, sensors and photonics

Total available funding for this competition was £500k from the Technology Strategy Board.

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
Applied Nanodetectors Limited (lead) Centre For Process Innovation Limited	PLASENSE - Printed sensors for the diagnosis and management of diabetes	£149,996	£123,739
Project description - provided by applicants			
<p>We propose to investigate the feasibility of producing high resolution lithographic electrodes and printed active material gas sensors on polymer substrates using ink-jet and aerosol jet techniques for the detection of compounds (VOCs) in exhaled breath associated with the diagnosis and management of diabetes.</p> <p>Nanomaterial mixtures will be carefully formulated and deposited onto plastic substrates and subsequently modified to selectively detect VOCs. The printed gas sensors will be then excited using Applied Nanodetectors new patented innovative UV excitation technique and then exposed to test gases mixtures to optimize the sensor performance.</p> <p>The feasibility of making low cost gas sensors on plastic substrates for a diabetes breath test is novel and innovative. The main objectives are</p> <p>A) to design, fabricate and test a pre-industrial evaluation test sensor array on a range of plastic substrates to be used as a breath test for diabetes.</p> <p>B) explore the deposition of sensitised nanomaterial deposition system for active area coatings.</p> <p>C) Evaluate suitability for a range of gases for monitoring of diabetes (VOC's) and benchmark performance against existing Si based technology.</p>			

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Cadscan Limited (lead) Cosmonio Limited	A Precise, Real-Time 3D Imager	£149,720	£112,290
Project description - provided by applicants			
<p>3D imaging is used in applications that require physical measurements, including gesture recognition, obstacle avoidance and 3D recognition and reconstruction of objects. Global sales in the 3D imaging market are expected to grow from \$3.01 billion in 2013 to \$9.82 billion by 2018, an estimated compound annual growth rate of 26.7%. However, capturing precise 3D information is expensive and slow, while real-time systems lack accuracy.</p> <p>This project will assess the feasibility of a low-cost, precise, real-time 3D imager that uses a novel multi-illuminator structured-light system with image processing to extract 3D information from laterally-shifted, divergent waveforms. The technology is disruptive and will lead to a new family of 3D imaging systems that can be configured to optimise precision, speed and cost.</p> <p>Based on conventional electronics it uses only a camera, LED illumination and a reconfigurable LCD screen. Industries that can benefit include medical sciences, industrial systems, media, entertainment, defence, security, architecture.</p>			

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Cambridge Microelectronics Limited (lead) Microsemi Semiconductor Limited University of Cambridge	DepLaH - High Voltage (HV) Lateral Depletion MOSFET for Compact Energy Efficient Medical Applications	£149,238	£119,003
Project description - provided by applicants			
<p>Within the DepLaH project we will develop an advanced 1000V rated lateral depletion MOSFET (normally “on” device) and use it to build an application demonstrator for implantable medical device which will have significantly longer lifetime and lower energy consumption than existing solutions.</p> <p>For the first time we will design and fabricate 1000V rated depletion MOSFETs (depMOS), design a new application circuit based on depMOS approach and build an application demonstrator. The new circuit will consume less battery power thus increasing the product lifetime and reducing frequency of replacement surgery. The circuit optimised for depMOS will require fewer components compared to the existing solutions which use enhancement (normally “off”) MOSFETs which will improve medical product reliability and reduce its size making it more comfortable for patients.</p>			

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Drisq Ltd (lead)	Formal Executable object code VERification - FEVER	£131,462	£98,597
Project description - provided by applicants			
<p>This project seeks to explore the possibility of using automated formal techniques to verify Executable Object Code. If the feasibility study shows that it is, then D-RisQ and Lemma 1 will develop the technology for commercial release.</p> <p>This technology is attractive to the market because the cost of verification is rising dramatically as complexity increases and is particularly attractive to the Robotics and Autonomous Systems market because it will enable the demonstration that the software does only what is required and crucially, never does what is forbidden. The cost of providing such evidence to support a safety case is currently very high.</p> <p>With automated techniques, the cost basis will change substantially and will enable a more rapid, assured development of many types of software systems.</p>			

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TerOpta Ltd (lead) Bangor University	TEROPON - Transceivers for Elastic Reconfigurable OOFDM-based Passive Optical Networks	£121,124	£99,804
Project description - provided by applicants			
<p>The project explores the technique and market feasibility of producing cost-effective, software-reconfigurable, high-speed, novel optical transceivers based on Optical Orthogonal Frequency Division Multiplexing (OOFDM) techniques proposed and pioneered by Bangor University.</p> <p>The developed intelligent transceivers are key items for Software Defined Networking (SDN), one of today's hottest world-wide R&D topics, required in future elastic optical access networks to provide end-user-controlled flexible ultrawide bandwidth and dynamic traffic routing according to fluctuating traffic demands / network conditions.</p> <p>Bangor's world-leading research in core Digital Signal Processing (DSP) algorithms, optical modulation/transmission techniques and proof-of-concept experimental demonstrations, together with TerOpta's expertise in optical networks, embedded intelligent control systems and product development will allow us to specify a suitable architecture and produce a working transceiver demonstrator, which will then be rigorously evaluated in Bangor's real-time access network test-beds.</p>			