Innovate UK

Results of Competition: Smart Round 1 2015-16 - Proof of Concept
Competition Code: 1503_SmartRnd1_PoC

Total available funding for this competition was £7.8M from Innovate UK

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
Oralign Supplies Ltd	Live Video Streaming of Orthodontic Assessments through an Integrated Patient Platform	£155,907	£93,544

Project description - provided by applicants

The starting point for any orthodontic treatment is the visit to a General Dental Practitioner(GDP), who will refer the patient's records to a specialist orthodontist for assessment. It isessential that the records contain the most accurate depiction of the patient's teeth andcommunication between the GDP and orthodontist is quick, secure and reliable. However theapproach to deliver these requirements has shown to have deficiencies in record transmissionand imaging. Oralign proposes to overcome these challenges by using a secure, integratedpatient platform that enables GDPs immediate access to specialist orthodontists, the ability tovirtually upload records instantaneously and the capacity to live video stream orthodonticassessments.

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
Guidance Marine Ltd	SafeSurround Marine Hazard Detection System	£236,670	£100,000

Project description - provided by applicants

This project aims to bring collision avoidance technology to the marine market. Like a vehicleparking sensor, the SafeSurround concept aims to provide audio and visual alarms to warnships' officers of collision hazards. However, the technical challenges to achieve this aremuch greater than for a vehicle parking sensor, when the vehicle is a 90m-long vessel beingbuffeted by waves.The need for a hazard detection system has been raised by the Marine Safety Forum as aresult of an increasing number of vessel collisions with offshore oil installations. This is partlybecause increased size and power of support vessels increases their capability to causedamage, and also because inexperienced crews are failing to adhere to safety procedures andguidance. In 2005 a support vessel collided with the Mumbai High North processing platform,causing a fire that resulted in 22 deaths, the destruction of the platform and $195m in lostrevenue and clean-up costs.Guidance Marine Ltd (GML) is the leading developer and supplier of local position referencesensors for Dynamic Positioning (DP) and other vessel control systems. GML's laser andradar sensors can be integrated by all major DP manufacturers and are used on a daily basisby most Offshore and Platform Supply Vessel operators. GML's products accurately measurethe relative position of the target in relation to the sensor to enable the vessel to hold positionand operate safely in close proximity to an installation.SafeSurround is envisaged as the final piece of the DP jigsaw, giving close-range (<300m)relative position information for hazard detection to work alongside laser and microwave DPsensors. The ultimate goal is to integrate SafeSurround into DP systems, but first the conceptmust be proven as a stand-alone system. The project will test the positioning and configurationof sensors required to protect a vessel from collisions, in a range of environments fromharbours to oil rigs to the open sea.

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
2iC Ltd	Innovative Digital Interoperability Proof-of-Concept for Operational Policing	£166,521	£99,913

Project description - provided by applicants

2iC is an innovative UK company that develops novel software solutions to integrate diversesystems that are usually unattended, man-worn or vehicle-borne. 2iC's software enablesflexible, secure coordination across both old and new digital systems.2iC has previously invented and delivered an innovative approach for secure interoperabilityto the UK Ministry of Defence, winning a prestigious global defence innovation award inrecognition of the inventiveness and utility of its work.2iC is now seeking to expand its product portfolio outside of the defence market. Usingvalidated operational scenarios developed in conjunction with prospective users this projectaims to prove the feasibility of improving the interoperability and data integration of lowpowereddevices used by the UK Police Forces, to reduce costs, increase capabilities, whilstimproving public services and the welfare of its officers.It's anticipated that, by 2019, every UK police officer will be wearing low-powered,microcontroller-based monitoring and communication devices that will need to be tightlyintegrated with Command systems via secure mobile data solutions.This project aims to develop a Proof-of-Concept (PoC) system, demonstrating open andflexible integration of microcontrollers (chips usually costing less than £1 - ubiquitous insmall devices) with a secure Services Orientated Architecture (SOA). The outcome isintended to be open and flexible integration from very low-powered microcontrollers, throughdeployed platforms, up to enterprise-class systems, with none requiring intimate knowledge ofany other, yet all working together.The proposed approach will not only facilitate adoption of the Home Office's Digital PolicingVision but also has a potentially wider application across multiple markets including otheremergency services, telehealth, military, energy, transport and consumer (Internet of Things)sectors.

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
Blackstar Amplification Ltd	Kennet - Digital Acoustic Reproduction	£154,354	£92,612

Project description - provided by applicants

Through Proof of Concept grant funding, we aim to develop the technology to accuratelyanalyse and reproduce the dynamics of an acoustic instrument to provide a true representationof that sound at higher volumes. We will do this through Digital Signal Processing (DSP)within the amp and by calibrating and utilising the benefits of digital amp technology.Through development of'Kennet' technology, we look to enter the acoustic amp market anddevelop further applications for the DSP solution. In the short term (3-5years) we aim tocreate a range of innovative acoustic guitar amplifiers. In the longer term (5+years), we willdevelop a range of spin-off products such as guitar pedals, rack processors and Virtual StudioTechnology Plug-ins. This project will build upon the success of Blackstar's ID:Series &ID:Core range of digital amps for electric guitars. Developed on the back of TSB grantfunding, they have become the 2nd best selling guitar amplifiers in North America, in front ofwell-known brands Marshall and Peavey. With two further patents, Blackstar have gained aninternational reputation for innovation and engineering quality. In the last 12-months, sales ofour digital amps have grown to 50% of our total revenue. With the acoustic guitaramplification market set to increase, Blackstar will benefit from funding at this stage todevelop Kennet technology to meet the needs of acoustic guitarists & capitalise on thisgrowing market whilst significantly expanding its business potential. In turn, we believe wecan deliver new abilities for musicians to hear the true sound of an acoustic instrument andbroadcast it to the widest possible audience. As musicians ourselves, we see this as thegreatest value.

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
Smart Sail Systems Ltd	Smart Sail	£125,257	£75,154
Project description - provided by applicants			
Yachts often have many different, expensive sails ranging from £1k to >£100k, which aremoved about regularly from storage to yacht and back, all managed manually. Accurateinventory is a priority for individual owners, fleet owners, racers and maintainers. In additionit is difficult to accurately measure the sails exposure to use ' particularly damaging floggingand UV which breaks down the material structure. Smart Sail Systems Ltd has identified twogaps in the yachting market for the introduction of an innovative new product. Our sensorswill be able to both store static (birth certificate/passport) type data and also monitor thedegradation and store data reflecting sail usage enabling users to accurately record sailcondition for the first time.			

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
Pragmatic Printing Ltd	FastNCMOS	£166,841	£100,000
Project description - provided by applicants			
The project will open-up a business opportunity based on a new circuit design concept(FastNCMOS) and integrated production process for flexible integrated circuits (ICs) toenable low-cost, fully compliant near-field communication (NFC) tags. There is a growingecosystem and infrastructure for NFC including new applications, business models andproducts. NFC allows consumers to intuitively communicate with everyday items such asproduct packaging. Food labels could be updated remotely to change with demand/usagedates,bottles could sense when they are empty and need to be replaced/refilled, or pharmapackaging could indicate when it is time for the next dose of medication or prevent overdose(e.g. insulin). All of these uses and more represent a first step towards the 'internet-of-things'(IoT). Existing approaches use silicon-based solutions which have the benefit of maturetechnology and integration processes. A printed electronics (PE) approach offers a muchlower cost potential and more attractive (flexible, ultra-thin) form factor. Key advantages ofPragmatIC's technology is that it is flexible and can be produced exceptionally cheaply inhuge quantities. However, to meet all NFC specifications is a significant challenge to currentflexible IC technologies due to the complexity but, more critically, the need for highfrequency(speed) performance. FastNCMOS will demonstrate a new circuit design conceptwhich overcomes limitations of current NMOS technology without requiring anyimprovement in materials performance or reduction in critical feature-size. This will allow thetags to be read with any NFC-enabled smartphone without any change to firmware/software ora dedicated 'app', and is a critical requirement to maximise the commercial exploitation offlexible IC tags.			

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
Change of Paradigm Ltd	Change of Paradigm	£166,467	£99,880
Project description - provided by applicants			
This project aims to investigate the feasibility of developing a hardware/software solutioncapable of faithful acquisition and reproduction of the appearance of textiles. Our proposedapproach works through the design, implementation and characterisation of a novelacquisition setup that captures an unprecedented'complete set' of visual characteristics oftextiles. In contrast to current approaches that use photographs or simple 3-D models, ourproposed new approach to appearance acquisition leads to 'relightable' ie lighting adjustable3D models, greatly improving the realism at which an object's appearance can be developedand viewed within a digital workflow and virtual environments. The application of this ishighly relevant for the advancement of high quality simulation of clothing for animatedcharacters in Fashion, Film and Games, as well as textile simulation for the Interiors,Automotive and Cultural Heritage sectors. We intend to develop a prototype proof ofconcept, testing technology to show a capability to simulate to a high quality the complex,transmissive, light-scattering properties of a wide range of fabrics suitable for realistic virtualand 3D textile and clothing applications. The project team is uniquely positioned to drive thisopportunity as recognised experts in current state of the art research in the field of appearanceacquisition and industry expertise in the application of 3D simulation for Fashion eCommerce			

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Innovate UK

Results of Competition: **Smart Round 1 2015-16 - Proof of Concept**
Competition Code: **1503_SmartRnd1_PoC**

Total available funding for this competition was £7.8M from Innovate UK

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
IMA Ltd	A novel contamination sensor to make multi-species, multi-drop, lossless measurements for complete characterisation of natural gas in high pressure pipelines - LineGas	£163,972	£98,383

Project description - provided by applicants
Pipelines have formed an integral part of our natural gas transportation infrastructure fordecades and their importance is growing, as resources are depleted and demand increases.Contamination in pipelines is a serious issue commercially, for safety, and reliability ofsupply. Early detection of contamination is key and will result in the issue being dealt withbefore it becomes a commercial problem and most importantly an urgent safety issue.Commercially available technology capable of identifying contaminants is expensive, difficultto maintain and calibrate, and slow to operateOur idea is to introduce a novel Raman spectrometer and measurement cell at existing tappingpoints in pipelines in order to rapidly determine the gas composition. This will enablemonitoring of various safety related chemical species, such as O2 or H2S, so that the correctcourse of action can be decided upon before it becomes a serious issue. In addition, otherstandard gas parameters can be monitored, including Wobbe index, which relate to the energycontent of the gas and forms a part of the supply specification.Our goal is to establish a clear 'proof of concept' for a novel spectrometry system, includinga novel measurement cell and state of the art Raman spectrometer with unprecedentedsensitivity. The safety, economic and social benefits are numerous and the system would beretro-fitted onto existing pipelines in the global supply network. This technology will bedesigned to be compatible with other novel contamination sensors to make multi-species, lossless measurements for complete characterisation of natural gas in highpressure pipelines.At a time of change in the global energy industry in terms of changing sources of gas andsecurity of energy supply, this innovative technology will provide the UK with a competitiveadvantage in the global energy supply market. Oil and gas multinationals have already showngreat interest in the concept

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
ROLI Ltd	ROLI Ltd. - ShellPOC (Shell Proof of Concept)	£148,601	£89,159
Project description - provided by applicants			
This project will seek to prove the technical feasibility and design concepts of the'Shell'interface platform for mobile computing devices (MCDs). Through the Seaboard GRAND,ROLI has proved a market need for high resolution, high bandwidth human computerinterfaces that make use of our industry-leading design approach and technology. MCDs haveincreased in processing speed and efficiency with every release, but their touch inputinterfaces have not matched this pace of innovation, which is significant because the interfacedefines our lived interaction experience with them. As MCDs now make up an increasinglylarge percentage of our computing time, the potential benefits of a breakthrough in this areaare growing larger and becoming more important. However, innovation has stifled since thematuration of capacitive touch screens. Although an unprecedented challenge of engineeringand design, increasing the affordance of MCDs can make users' lives more comfortable,productive and expressive, and this is what ROLI wants to achieve with the Shell platform.We seek to further push the boundaries of our SEA Interface technology and adapt it forMCDs, which will require a number of innovations to be successful, in order to satisfy theformal constraints and cost requirements of mobile computing. The results of this work couldhave a profound impact on this UK company, but also the mobile computing industryglobally.			

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TextThing Ltd	TextThing Limited Proof of Concept	£163,034	£97,820
Project description - provided by applicants			
TextThing is an online service that radically simplifies the creation and management of text inorganisations. It abandons the pervasive mental model of the printed document. It replacesexisting tools for handling text - word processing software, email and document managementsystems - with a simple, fast and flexible online service that will change the way organisationsand the people in them work with text. The idea is genuinely revolutionary and the businesspotentially huge.TextThing. Text. Rethought			

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
Nemein Ltd	Development of a Novel ThermoElectric Generator for Powering Downhole Processes in the Oil and Gas Sector (TEG)	£165,892	£99,535
Project description - provided by applicants			
The Oil and Gas sector globally is worth $3 trillion and provides 440,000 UK jobs. Industrieswithin O&G includes exploration, equipping wells and other activities to the point ofshipment. A key part in O&G exploration and extraction involves essential downholeprocesses such as measurements-while-drilling (MWD) and logging-while-drilling (LWD) forborehole surveying and formation evaluation. They are currently powered by lithiumbatteries, and using power cables from the surface is not practical. The O&G sector has thusadopted the use of batteries as there is no viable alternative. There are however severalconcerns with these batteries such as fire, explosion, venting, susceptibility to shock andvibration, logistical issues with transportation. The Oil and Gas sector is therefore seeking analternative that is both safe and reliable. Nemein, has a potentially promising battery-lesspower generation technology that needs further development and could meet this industryneed, it is based on energy harvesting.			

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
Scanimal Trackers Ltd	Scanimal	£217,518	£100,000
Project description - provided by applicants			
Fraud in both the human food chain and the buying, selling and welfare of pleasure horses is rife. Horses and ponies are principally identified by a paper based'passport' and sometimes with micro-chips or branding. Passports are hand written and prone to error, falsification and fraud. Passports are often forged or illegally'recycled' from dead animals, meaning horses are slaughtered and wrongly enter the food chain, containing dangerous substances such as'bute'. Horses can be stolen and resold easily ' duplicate passports are easy to come by andthe law is not enforced. Purchasers of horses for food or leisure purposes have no certain way of knowing that the horse they're looking at is the one in the passport.Microchips, once seen as the complete answer to this problem, are also susceptible to fraudulent actions: they can be removed or destroyed externally, cloned or more than one can be inserted.We are developing a new equine identification method for end users such as vets, Defra and other animal welfare agencies to enable them to reduce fraud both in the food chain and for leisure horse owners. Scanimal uses a unique 3D image capture and recognition system which, via smartphone apps, can provide unique identification of horses by recording their individual markings. The innovation is in our visual solution (patent applied for) to search images of equines so that one can be identified without the need for documentation or a microchip scanner.			

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Navtech Radar Ltd	Radar Sensor for Airport applications	£166,038	£99,622
Project description - provided by applicants			
Navtech Radar is a world-leading innovator and multi-award winning designer and manufacturer of commercially deployed radar detection solutions. Our ground-breaking technology is utilised by clients across many industry sectors, from Security Surveillance and Industrial Automation to Traffic Incident Detection. Navtech has harnessed the power of thelatest technology for commercial applications at a fraction of the cost, and to the most exacting quality and standards.Renowned for investing heavily in innovation and R&D, Navtech Radar has earned an unrivalled reputation for products that are high performance, robust and extremely reliable.Our systems are often used in mission-critical applications where safety and security are vital.This project aims to develop yet an another innovative solution to increase safety in airports worldwide.			

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Byotrol PLC	Natural Antimicrobial Compounds from Seaweed	£157,457	£94,474
Project description - provided by applicants			
Biocides deter or exert a controlling effect on harmful organisms, bacteria and fungi. The useof biocides, in disinfectants and antiseptics, is a key component for many effectiveprogrammes in the prevention and control of healthcare-associated infections. Howeverserious concerns about the resistance of bacterial pathogens to biocides has been growing fora number of years. Hence there is an increasing demand for different biocides to be found.This is rather difficult due to the majority of current biocides (99.5%) being chemicallyderived and containing halogen, metallic and phenolic compounds. As a result, the biocidesindustry has been severely challenged on the lack of sustainability and levels of toxicity.Byotrol proposes to overcome these growing concerns and limitations by extracting andformulating biocides from the alternative, renewable and natural resource of seaweed.			

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
The Sustainable Home Survey Company CIC	Sustainable Home Survey (Ufloor - Underfloor insulation for suspended timber floors)	£161,264	£96,758

Project description - provided by applicants

The Sustainable Home Survey Company (SHS) is a leading community-focused energymanagement assessment company and social incubator. To date, SHS's management team hasdelivered over 15 low carbon ventures and actively supports team members in identifying andgrowing spin-out companies.SHS have developed a prototype design for a low cost under floor insulation system (Ufloor)that eliminates the need to remove and replace floorboards ' speeding up the process andreducing costs. It achieves this by using a proprietary telescopic applicator (with an integratedcamera for guiding movement) that can access the subfloor void through existing or newlyinstalled airbricks.The U.K. has made a commitment to reduce greenhouse gas emissions by at least 80% by2050. Fabric insulation represents the lowest cost/highest impact method for delivering homeenergy efficiency improvements. Despite significant traction made in the easy-to-installinsulation market (e.g. roof and cavity wall insulation), floor insulation accounts for only 2%of the 964,401 insulation methods delivered under ECO, due to various technical andcommercial barriers.A TSB SMART 'Proof of Market' study confirmed potential demand for a low cost/highimpact solution to unlock the potential in the floor insulation market.The experienced management and advisory team together with established contractors, suchas the Green Building Store and Ecologistics Ltd will develop a "Beta" device tested andverified with suitable insulation material, de-risk the business and deliver the Projectobjectives within the £161,264 budget in 15 months.

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Tidal Harness Ltd	Tidal Power Generation	£166,401	£99,839
Project description - provided by applicants			
Carbon Trust (UK) identified that as the marine energy industry is moving towardcommercialisation stage (~2020), there is a need to lower cost of generation by improvingreliability of tidal energy devices, achieving lower installation, operation and maintenancecosts and lower manufacturing costs. Offshore wind turbines require on average 2 servicingvisits per year even though wind power is a mature technology. Given that access tomaintenance and retrieval of a tidal turbine is an order of magnitude more difficult than that ofan offshore wind turbine, it is therefore preferable to have a simpler but effective technologyin the former. Tidal Harness Ltd's design philosophy is simplicity and with simplicity comesgreater reliability and lower CAPEX & OPEX. This project addresses an effective andscalable tidal turbine with a direct-drive generator. This project aims to demonstrate theeffectiveness of such a tidal turbine in converting kinetic energy to electrical energy.			

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
Magnomatics Ltd	Advanced Pseudo Direct Drive Motor	£166,653	£99,990

Project description - provided by applicants

This project is concerned with the development of a novel rotor system for a magneticallygeared motor (Pseudo Direct Drive or PDD) to demonstrate low noise and vibration with aclear route to manufacture. The technology is aimed at providing next generation compact,lightweight, efficient and low noise and vibration electric motor technology to address thegrowing urban and suburban rail markets. These markets include light rail, very light rail,monorail, Airport People Movers (APMs) and Diesel Multiple Unit (DMUs). Against abackdrop of rapidly increasing city populations (Mumbai current growth rate is 63%[1]) androad transport, and more stringent CO2 emissions regulations across the world, modern urbanrail solutions provide an economical and environmentally sound transportation alternative,and optimisation and rationalisation of the drivetrain is already a major focus point forrealising the attendant benefits. The advantages of the PDD have already been demonstratedin two TSB funded projects under the LCV IDP programme with Volvo Powertrain and aconsortium including Dennis-Eagle and MIRA in which the motor demonstrated significantefficiency and packaging advantages over existing state-of-the-art technology.During dynamometer tests, the noise and vibration performance was found to be in need ofimprovement. So far, the motors produced by Magnomatics have been in prototype quantity,and the sub-assemblies manufactured using largely first generation designs. This project looksto develop rotor concepts to simultaneously address the issue of noise and vibration whilstenhancing the thermal management and production techniques through investigation ofdifferent manufacturing approaches. The benefits are increased TRL and MRL and lowermanufacturing costs which will open up growing markets by displacing incumbent technologysuch as expensive and relatively high loss gearboxes and direct drive through diesel-electric orelectric traction.

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
Surgical Synergy Ltd	SSL - Proof of Concept for Medusascope	£195,430	£100,000

Project description - provided by applicants

This Proof of Concept project will take the designs for a new endoscopic surgery instrument(Medusascope) developed by Surgical Synergy Limited over the last 2 years and turn theminto a basic working prototype. The project has been defined to confirm, through physicalmodelling and prototype development, that the detailed designs can be manufactured costeffectively and will deliver the anticipated benefits.This will enable a robust and informeddecision to be made on developing this prototype into a workable instrument capable ofclinical testing, then proceeding to accreditation for use in live surgery.Endoscopic surgery has increased in scale and scope every year for the last 25 years,becoming the preferred intervention for many conditions such as those treated in prostate andgall bladder surgery and is now increasingly accepted and advocated in joint surgery,neurosurgery and spinal surgery. Many of the instruments used for endoscopic interventionsremain similar to those used 200 years ago by surgeons, excepting only their smaller size.The constraints imposed by these instruments have directly led, through discussions withsurgeons from a number of disciplines, to a detailed set of requirements and statement ofimprovement needed. This is the design brief that underpins the product definitions to betested through this project. This instrument, especially its 2nd generation flexible version,will allow more types of operation to be undertaken endoscopically to the significant benefitof patients: quicker operations, less scarring and pain, less collateral damage and infections - resulting in faster recovery and return to normal.The Medusascope represents a radical new disposable approach, uses a range of modernsynthetic materials, adopts a modular design and a multifunctional purpose. It will be usableacross all surgical disciplines to complement existing high tec

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Innovate UK

Results of Competition: **Smart Round 1 2015-16 - Proof of Concept**
Competition Code: **1503_SmartRnd1_PoC**

Total available funding for this competition was £7.8M from Innovate UK

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
Spontly Ltd	Piebuy: a proof of concept of m-commerce for food and drink pre-ordering at sporting and cultural events (revised). Application by Spontly Ltd	£133,064	£79,838

Project description - provided by applicants
Food and drink ordering at sports stadia and live venues is often inefficient with long queuesand unpredictable waiting times. This limits fan usage of event catering services and makesthe live event experience less satisfactory.Mobile commerce (mCommerce) offers great potential to improve event catering. Food orderscould be placed in advance via a mobile phone and paid for via online credit card payment.Food could then be dispensed without the need for cash or card handling. This would allowfaster throughput at point of sale (because cash/card handling is slow) and allow pre-orderingeven hours in advance. This would mean shorter queues; more predictable waiting times;more revenue for outlets and venues; less food waste and happier, more loyal fans. Therewould be societal benefits too: sports and other live events are an important part of nationallife which bring footfall to town centres and maintain a sense of community. More fans andhappier fans multiplies those benefits.With many UK sports clubs and venues facing financial pressures, extra revenues andincreased fan loyalty from mCommerce food and drink would be compelling. But there arebig barriers to using existing mCommerce solutions in sports stadia and venues in the UK. Inparticular (a) mobile data capacity is inadequate so connectivity on site is a problem for fans,and (b) point-of-sale infrastructure at food concessions is lacking.This project proposes a solution ' PieBuy ' that will provide an mCommerce service for foodand drink sales in stadia and venues without requiring major capital investment by the venueand which is robust against limited connectivity. Total UK revenues will be £30M by 2020.This proof of concept project will create a basic prototype of the PieBuy system anddemonstrate via limited live trials that (a) fans will adopt it (b) it is compatible with real worldconnectivity conditions and point of sale infrastructure (c) revenue and efficiency uplifts canbe achieved.

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
N W Brown T/A BC Environmental	Testing of innovations to simplify the scale up of Microbial Fuel Cells	£147,604	£88,562

Project description - provided by applicants

Two of the key challenges facing us as a global community in the 21st century are climatechange & access to clean water. Population growth and increasing usage of water has resultedin ever larger volumes of wastewater. Heightened public awareness & concerns over longterm environmental & health effects have resulted in increasingly tight discharge standards.These twin drivers fuel the rise in energy required for treatmentOne of the most energy intensive aspects of wastewater treatment is aeration for the aerobicoxidation of organic compounds. Typically half the energy is used for aeration and a key byproductis a large amount of excess sludge. Treatment &disposal of this sludge is both costlyand generates further environmental concerns. The treatment of water is currently the 4thlargest sector for energy usage in the UK & global warming concerns mean that the industryis under pressure to achieve higher water quality whilst reducing its carbon footprintThe generation of electricity from the organics in wastewater has been acknowledged fact formany years and the potential benefits have been recognised by the EC (Future Brief 2013)'Globally billions of Euros are spent treating trillions of litres of wastewater every year,consuming substantial amounts of energy However, this wastewater could act as a renewableresource, saving significant quantities of energy and money, as it contains organic pollutantswhich can be used to produce electricity'Devices that can convert organic compounds directly to electricity are known as microbialfuel cells (MFCs) and combine biological & electrochemical processes. Whilst significantresearch has been undertaken into the potential of MFCs as a source of renewable energy, nolarge scale plants have been installed & the research is limited to the laboratory. Existingdesigns are complex and costly, so this project aims to investigate innovations that willsimplify the design to allow low cost scale up of these device

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
Tissuemed Ltd	A rapidly degradable tissue adhesive polymer for implantable medical devices	£196,480	£100,000

Project description - provided by applicants

Tissuemed is a Leeds based medical device company, the principal activity of which is thedesign, development and manufacture of innovative adhesive medical devices for use ininternal surgical procedures. The devices are based on the company's proprietaryTissuebond bioadhesive technology and its family of CE marked TissuePatch productsare designed to improve clinical outcomes and provide cost benefits to hospitals.TissuePatch is an implantable device, akin to an internal sticking plaster and is used duringsurgery to provide a sealing effect that prevents intra and post-operative leaks of air, bloodand CSF fluid.To open the adhesive polymer technology to new markets, there is a requirement for a novelsecond generation tissue adhesive polymer with well-defined and controllable/tuneableproperties to suit the different applications and product requirements of sealant films,sprayable liquid glues, coated meshes, scaffolds and other medical devices.The development of a new polymer and implantable medical device is a lengthy process. Thegoal of this project is to undertake proof-of-concept synthetic and analytical chemistryinvestigations into a novel tissue adhesive. Specifically, this involves the incorporation ofcertain chemical functionalities into the polymer structure to enable fine-tuning ofperformance and resorption characteristics whilst retaining the superior efficacy properties ofthe existing Tissuebond polymer and without compromising safety and biocompatibility.

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
Platelet Solutions Ltd	A novel testing service to rapidly identify stroke patients not responding to Clopidogrel antithrombotic therapy, and switch them to alternative effective medication. (Platelet Solutions-RPFT).	£117,946	£70,767

Project description - provided by applicants
PLATELET SOLUTIONS LTD (PS Ltd.) is a micro-SME founded on extensive research andexperience in Cardiovascular Medicine at Nottingham University. A stroke occurs whenblood flow in the brain is interrupted; either due to blood clots, ischaemic stroke (IS), or anartery bursts (haemorrhagic stroke). One occurs every 3 mins 27 s in the UK striking peopleof all ages - each year in the UK there are 90.1k ISs, and 46k transient ischaemic attacks(TIAs or mini-strokes, where symptoms resolve in 24 hrs). In 2009 the total annual costs ofstroke care were estimated at £9b - 5% of total UK NHS costs - direct care of £4.5b, informalcare £2.4b, and indirect costs of £2.1b. Within 5 years of the first stroke there is a ca. 25% riskof recurrence of a more debilitating event. To reduce the risk of another stroke all patientsafter IS and TIA receive antiplatelet treatment with clopidogrel for life. However, not allpatients respond to the drug therapy and no testing is performed to identify them placing thissub-group at higher risk of another stroke. We have developed a commercially and technologyinnovative testing service to identify patients who are not benefiting from clopidogrel drugtherapy and for whom widely available alternative therapy (aspirin with dipyridamole) wouldbe beneficial. We project that full uptake of the service could save the NHS up to £38.5m p.a.in direct medical costs, and the UK economy £79.1m p.a. in informal care and productivityloses. Success of the project will transform Platelet Solutions Ltd. to a SME.

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
Sense Innovation Ltd	ALERT- Adaptive Learning Eyeware & Remote Tracking	£166,704	£100,000

Project description - provided by applicants

Fatigue causes reduced mental or physical performance. It can be caused by sleep loss,extended wakefulness, 'body clock' mismatch (jetlag) or excessive workload. It can lead toerrors, sometimes with grave consequences. Workers operating in safety-criticalenvironments, such as pilots and surgeons, have strictly enforced rules governing workinghours. Surgeons should not work longer than 48 hours per week. However, there are exampleswhere legislation to avoid fatigue does not exist. Private motorists and light vehicle driversrepresent a far greater number of the total UK population and fatigue for these people too canhave serious consequences. Analysis suggests that driver fatigue contributes to ~20% of roadtraffic collisions (RTCs) that result in death or serious injury (KSI). 50-70% of those affectedare aged 15-35 years old and require expensive long-term care. Through KSIs, fatigue couldcost the UK economy up to £1.4Bn per year.Current methods of measuring fatigue are either highly subjective, self-reports by driversthemselves, or using technology to measure bodily changes. This includes cameras that trackdrivers' blinking and head position. However, these methods are inaccurate in poor light anddo not allow the use of sunglasses, limiting wider adoption.This project offers an alternative to these limited ways of measuring fatigue. ALERT is afatigue monitoring device incorporated into one of the oldest examples of wearabletechnology, a pair of glasses. ALERT will measure additional indices of fatigue, includingblink parameters as well as heart rate, facial muscle tone, head posture and temperature.ALERT will enable the first individualised, objective assessment of fatigue. This will allow usto attract partners for a second project to commercialise ALERT. These partners could beinsurance firms or large fleet operators, who increasingly realise that they have a legal duty ofcare to protect staff and the public from fatigued drivers.

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
Glass Manufacturing Services Ltd	3D LOP	£165,849	£99,509
Project description - provided by applicants			
GMS will develop an innovative machining process for the manufacture of 3D shaped Laserand Optical Parts (3D LOP), to achieve'inside-out' machining of a glass block to producecomponents with complex geometrical shapes, to a high precision with minimal waste and ata fraction of the cost of current cutting technologies (which cut from the'outside-in'). Thetechnology will address an industry need for a low-cost, flexible manufacturing capability ofglass components with complex, customised 3D shapes to high precision in short time-frameswith reduced labour and energy input. The 18 month project will demonstrate the 3D LOPprocess in the lab at a TRL=5, developing a laser system demonstrator that can processvarious components with complex 3D geometrical shapes from a range of materials.			

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Brightbook Ltd	OpenINSIGHT	£203,581	£100,000
Project description - provided by applicants			
Micro, small and medium-sized businesses (SMEs) make up 99.8% of all enterprises outsideof financial services in Europe (European Commission, 2014). SMEs use a wide range ofenterprise management software (such as accounting, CRM and project managementpackages) which they need to be very simple to use and low cost. There are, for example,numerous cloud-based accountancy packages some of which are very simple and cheap (evenfree) and aimed at micro companies with no dedicated accounting personnel and some ofwhich are geared to larger SMEs who may typically have a Finance Director or CFO.Current solutions, however, only concern themselves with recording & reporting on the user'sown business. They do not provide a wider insight into how your business is operating incomparison to other, similar businesses (e.g. performance benchmarking of pricing, inputcosts or overheads) in order to deliver actionable insight.By their very nature, a Software as a Service offering ' like our own Brightbook cloud-basedaccounting platform ' captures and stores an enormous amount of data from it's user base. Inparallel the provision of open data from external public and private sources has been shown toenable the basis for innovative applications and initiatives that have delivered economic,social and environmental benefits. An example is opencorporates.com which has informationon over 84million companies in 102 territories and is rapidly becoming the'go to' destinationfor anyone needing information about companies globally.This R&D proof of concept project will investigate the technical feasibility of and commercialpotential for technology that utilises aggregated user base data and external open data withinan enterprise management SaaS platform to deliver valuable actionable insight to managers ofsmall businesses.			

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