Technology Strategy Board
Driving Innovation

# Results of competition: Smart - Round 5 - Proof of concept

**Total available funding for this competition was £9.4m 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 |
|---|---|---|---|
| **Alphabond Adhesives** | Development of a high tack, high fibre tear adhesive (Resubmission) | £155,610 | £93,366 |
| **Project description - provided by applicants** | | | |
| Alphabond Adhesives currently purchase and redistribute standard aqueous and hot melt adhesives to the food and beverage industry. Alphabond currently work with some large suppliers who currently perform all of their own R&D.<br><br>The company have identified some very specialist and specific client requirements which would increase the performance of adhesives used within the beverage industry, to our existing and a wider consumer base. | | | |

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| Participant organisation names | Project title | Proposed project costs | Proposed project grant |
|---|---|---|---|
| **Aqua Enviro Limited** | Flow Protein Analytics Device | £166,520 | £99,912 |

**Project description - provided by applicants**

Anaerobic Digestion (AD) is a biological process which degrades organic material to generate biogas and a stabilised, nutrient rich residue. The UK Government recognises the importance of AD in meeting its environmental and renewable energy targets and has introduced incentives to support and develop the industry.

The rate limiting step in AD is the bacterial hydrolysis (solubilisation) of the feedstock which is very slow compared to the subsequent conversion to methane. Readily biodegradable materials (i.e. food waste) hydrolyse rapidly, giving a good conversion to methane. However many substrates such as crop residues, silages and manures contain slowly hydrolysable material (i.e. cellulose, ligno-cellulose) resulting in reduced methane yields.

It is therefore highly desirable to enhance the hydrolysis step to boost biogas yields, improve performance and increase revenue. Aqua Enviro identified that a novel pressurised microwave hydrolysis process developed by York Biorenewables Development Centre (BDC) to breakdown energy crops for fermentation to bio fuels, could be used to pre-treat complex AD feedstock in order to boost process efficiency. BDC and Aqua Enviro carried out initial self-funded tests demonstrating dramatic increases in biogas yield of up to 340% when pre-treating maize silage. Such increases would revolutionise the AD sector by; accessing new feedstocks, making AD viable at smaller scale and improving AD economics.

Aqua Enviro wishes to develop and introduce this technology into the market. This Proof of Concept project aims to produce a robust scientific appraisal and full business case for this technology to enable funding/industrial partners to be secured for its widespread commercialisation. This will comprise MW pre-treatment of a range of feedstock types under varying conditions and AD process assessment via laboratory scale bench trials. The outputs of this project will justify the investment to move up to full-scale demonstration trials.

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| Participant organisation names | Project title | Proposed project costs | Proposed project grant |
|---|---|---|---|
| **Artic Shores Limited** | TripleP | £200,532 | £100,000 |

**Project description - provided by applicants**

The TripleP project will explore the technical feasibility and commercial potential for creating accurate cognitive profiles of job seekers through the innovative approach of business gaming and then matching these profiles to suitable job roles. Professional profiling (e.g. for recruitment and career development) is potentially hugely valuable to organisations of all sizes, but traditional methods of conducting profiling are burdened with significant challenges which this project sets out to address. This project will explore and develop methodologies and approaches to matching data gathered from a user's game play activities to validated cognitive behaviour profiles.

Cognitive profiles have been used widely for leadership assessment, succession planning, selection and development, as well as personal and team development. Cognitive profiling looks at the way people process information, their dynamic ability to reason (fluid reasoning) rather than their educated and experienced based reasoning (crystallised intelligence). An individual's thinking and learning capacity determines the kind of complexity they can handle best and the kinds of tasks to which they are best and least suited.

If successful, this new approach to professional profiling will lead to significant improvements in the effectiveness of career/course selection, recruitment and ongoing career development; generating considerable benefits for individuals and organisations that will apply it. Arctic Shores is setting out to cause significant disruption in the use and application of professional profiling. In securing Technology Strategy Board support we will unlock circa £75,000 of private matched funding directly to match-fund this project. Our goal is to build an innovative business based around new intellectual property that can be exploited in (and bring significant benefits to) a wide range of private and public sector organisations, in multiple industry sectors, globally.

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| Participant organisation names | Project title | Proposed project costs | Proposed project grant |
|---|---|---|---|
| **Bio Nano Centre Limited** | Bio Nano Consulting: Drink Safe - A low-cost disposable test for arsenic contamination of drinking water | £178,752 | £100,000 |

**Project description - provided by applicants**

It is estimated by the World Health Organisation (WHO) that 130 million people globally drink water containing arsenic above safe levels. Because current tests for measuring arsenic contamination in drinking water are semi quantitative, time-consuming and require trained personnel, there is a need for a portable, rapid, inexpensive, accurate and easy-to-use new environmental sensor for use in both developed and developing countries. Arsenic is a toxic naturally-occurring contaminant that enters aquifers from the dissolution of arsenic-containing minerals in bedrock and also from human activity such as industrial manufacturing and mining. Arsenic is toxic even at extremely low levels - WHO recommended levels are 10 parts per billion (ppb) - with short term exposure causing skin lesions, skin cancer and harm to the nervous system, while long term exposure leads to fatal internal cancers among 10% of those exposed. Because arsenic is tasteless, odourless and gives no acute symptoms such as fever or pain until after prolonged exposure, arsenic poisoning has been justifiably coined the 'silent killer', causing a public health crisis.

Water testing is key to arsenic mitigation and management, where the adage 'what you cannot measure you cannot manage' is pertinent. Current arsenic tests suffer from cost, accuracy, precision, and usability issues which limit the effectiveness and scope of mitigation programs. In fact, 'field test' is a misnomer for many products that more closely resemble field laboratories requiring trained personal to perform delicate chemical reactions in the field. Using a unique proprietary enzyme, this project innovatively modifies the technology contained in familiar glucose home tests manufactured in the billions each year, to create a step-change improvement in arsenic testing by solving customer usability, cost and accuracy needs. Millions of users have demonstrated the ease-of-use of glucose tests; now similar technology can be used to transform arsenic testing.

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| Participant organisation names | Project title | Proposed project costs | Proposed project grant |
|---|---|---|---|
| **Cambimune Ltd** | Applied research of a novel, cost effective virus like particle rabies vaccine | £166,567 | £99,940 |

**Project description - provided by applicants**

Rabies is an acute, lethal disease caused by a virus infection of the central nervous system. The rabies virus is most often spread by a bite and saliva from an infected (rabid) animal eg dogs, bats and raccoons (disease vector). Virtually 100% of those infected with rabies who do not receive post exposure vaccination will die. This application is for a Proof of Concept (PoC) grant to test the use our novel virus- like particle (VLP) vaccine technology platform to produce low cost, highly effective yet safe rabies vaccines. The application will build on previous research to see if the rabies antigen can be produced on the surface of immunogenic VLPs at yields orders of magnitude greater than is possible with currently marketed conventional vaccines.

Furthermore, unlike conventional vaccines produced from live rabies virus grown in cell culture and inactivated, our VLPs, lacking functional rabies genetic material, will carry no risk of infecting production plant workers or environmental escape and therefore require lower containment facilities. The high cost of rabies post-exposure vaccination puts it beyond the reach of large population segments in the world's worst affected enzootic regions (China, India & Africa) where c50,000 lives are lost to the disease each year. Affordable vaccines should allow more widespread vector and post-exposure vaccination in these markets. This would save thousands of lives and in so doing also expand and take a significant market share of the rabies vaccine market. Opportunities also exist in markets such as UK, Europe (mainly travel vaccination) and North America (vector control, post exposure vaccination and travel vaccination.) We believe our technology has the potential to cross over to other important global diseases and open up the opportunity for export to international markets from UK manufacturers.

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| Participant organisation names | Project title | Proposed project costs | Proposed project grant |
|---|---|---|---|
| **DBD Limited** | DBD LIMITED: DEMONSTRATION OF PROOF OF CONCEPT OF A NOVEL ENGINEERED TRITIUM BARRIER TO REDUCE WASTE MANAGEMENT CHALLENGES IN DIVERSE NUCLEAR FUSION PROCESSING OPERATIONS. | £251,481 | £100,000 |

**Project description - provided by applicants**

It is beyond dispute that the world must find new, economical, sustainable ways to supply its inhabitants' ever-increasing demand for energy. Global energy consumption is set to triple by the end of the 21st century. The world still relies on fossil fuels for up to 90% of its energy needs (Worldwatch.org 2013), however there will be slow decline in their supply for power generation from 2015 and there are, as yet, very few safe and environmentally friendly alternatives which can replace it, despite the on-going development of renewable replacements.

Power generation from nuclear fusion could offer the prospect of an almost inexhaustible source of energy for future generations and, as a power generation method, it is inherently safe, clean and potentially cheap, using two forms of hydrogen as its raw materials - deuterium which is in abundant supply and tritium, which can be recycled from the fusion process. However, tritium is a small light gaseous molecule that can permeate through metal pipes and so escape.

There is a need to find a way to prevent its loss. DBD, a specialist engineering, technical and advisory company based in north-west England, has invented an elegant and innovative barrier method to control and manage tritium permeation. It has potential to prevent loss of tritium from the nuclear fusion process, with the impact that it removes the potential economic and environmental issues of tritium loss. The award of a grant from the Technology Strategy Board's SMART competition enables DBD to complete an 18 months long project to demonstrate the technology and to recruit new staff to undertake the work required and to access specialist resources to assist. The technology will be ready for commercial use within two years of the project end.

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| Participant organisation names | Project title | Proposed project costs | Proposed project grant |
|---|---|---|---|
| **Des19ncor Limited** | MTBox | £148,108 | £88,864 |

**Project description - provided by applicants**

Water companies have an increasing problem with water usage that for a number of reasons cannot be charged for by the water company. This water usage is non-revenue water (NRW), which is water that has been produced and is "lost" before it reaches the customer. Losses can be real losses (through leaks, sometimes also referred to as physical losses) or apparent losses (for example through theft or metering inaccuracies). High levels of NRW are detrimental to the financial viability of water utilities, as well to the quality of water services itself.

Our Project, MTBox (MTB), will develop a proof of concept prototype ultrasonic 'listening' device for the measurement and detection of water flow and leaks in pipes. The device is attached to the outside of the pipe and will monitor water movement within those pipes and send SMS messages back to the water company. The device can be used on both internal and external pipework to detect changes in water flow, which enables a more accurate understanding of activity across individual parts of the water network.

The objectives and main technical challenges of this project are to develop a proof of concept prototype ultrasonic listening sensor which uses differing frequencies to understand the movement of water in the pipe. We will use low cost electronics and sensor to keep the component costs as cheap as possible, with complex algorithms to interpret the data patterns and issue alerts wirelessly to a remote monitoring system. The solution has the capability to be retro fitted, thus dealing with the current property base but also will have the capability for the 'listening element' to be specified as a requirement for new build properties thus providing a protected network in the future and widening the appeal of the product. MTBox could offer water companies an effective and cost effective mechanism for tackling all of the above issues.

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| Participant organisation names | Project title | Proposed project costs | Proposed project grant |
|---|---|---|---|
| **Eozone Solutions Limited** | A novel ozonated soft mist applicator to improve the shelf life of cut ornamentals through bacterial and ethylene reduction | £148,540 | £89,124 |

**Project description - provided by applicants**

In the UK, we consume around £2 billion of cut flowers each year; these often have to travel by complex routes to get to the retailer, be it a florist, mail order house or supermarket. During their travels, the still-living flowers experience bacterial and fungal infective loads, ethylene gas is given off which causes them to age prematurely, and their cool chain is sometimes not capable of preventing losses and devaluation occurs as a result.

Flowers rejected as waste, plus those that have lost some of their “vase life”, can cost the suppliers and customers up to £100million per year. We have identified an opportunity to introduce a hygienic treatment using ozone, which can kill microbes and also destroy the ethylene that causes senescence. We believe we can develop a hand-held mobile sanitization unit that can directly disinfect the flowers, and can be used at various points along the supply chain to maintain hygiene and vase life. Our project is to prove the feasibility of this concept, and to calibrate the dosage that would be required for different flower varieties and different handling regimes.

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|---|---|---|---|
| **Fluidic Analytics Limited** | Proof of Concept for Disruptive Laminar | £209,156 | £100,000 |

**Project description - provided by applicants**

James Watson, co-discoverer of the structure of DNA, described the role that proteins play in biological systems by stating that “DNA is the script and proteins are the actors.” From the behaviour of cells through the activity of drugs to the onset of disease, proteins play a critical role in nearly every biological system. Despite this crucial role, the techniques currently available for analysing proteins have not changed for several decades; this technology lag has led to tools that are imprecise, time-consuming, costly or all three of the above. There is thus a pressing need for new analytical tools for protein characterisation.

Fluidic Analytics is developing a line of products for characterising proteins. Based on a disruptive technology that exploits the physical properties of mixtures under laminar flow, these products constitute a fundamentally new way of characterising size, confirmation, concentration and other properties of proteins. By offering combinations of sensitivity, reproducibility, throughput, ease of use and scalability that alternative technologies are fundamentally unable to offer, these products are seeking to play a key enabling role in fundamental science, drug discovery and disease diagnosis.

This project aims to establish commercial proof of concept for Fluidic Analytic’s flagship product, the Flow Mk1. The Flow Mk1 enables the high-sensitivity measurement of concentration and size of proteins in their natural state. A preliminary prototype already performs measurements in solution in a matter of seconds, without the need for pre-analysis concentration or other preparatory steps that may alter the state of proteins. SMART funding will enable this preliminary prototype to be translated into commercial proof of concept by evaluating its performance when combined with commercial materials and manufacturing processes. Successful completion of this project will lead to the subsequent production of a working prototype of the Flow Mk-1.

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| Participant organisation names | Project title | Proposed project costs | Proposed project grant |
|---|---|---|---|
| **Futurenova Limited** | Smart Card Reader for the FlipPad | £95,000 | £57,000 |

**Project description - provided by applicants**

Design of a Radio-Frequency Identification Smart Card Reader (RFID Reader) to fit into the FlipPad. The reader will be powered by an external battery that will communicate with the iPad via the USB/Charging connector. The FlipPad is a rugged iPad case made from medical grade, FDA approved, plastic suitable for use in a healthcare infection control environment. It can be sprayed with harsh infection control sprays and uses an antimicrobial glass screen. The RFID reader will, for the first time, allow clinicians to have integrated access from an iPad direct to Electronic Patient Records (EPR) systems.

Predominantly this is a hardware project to solve an existing problem. Healthcare Chief Information Officers (CIO) need to leverage of their existing investment in smart cards by opening up RFID access on Apple iPad tablets. In the UK 800,000 NHS Smart Cards have been issued and they are converting to RFID. Hospitals in the USA and Europe are following a similar path. Our project is to fit a RFID card reader inside the back case of the FlipPad and make it programmable. This will make it attractive to healthcare sites using different smart card standards, such as in France and the USA. The RFID reader software will be updated via the Trust Appstore, an enterprise level platform that will be customised for each hospital. The Trust Appstore will also manage medical Apps on each iPad authorised for use within the hospital. The programmable software on the RFID reader will be tested at our Pilot Site, Bartshealth NHS Trust.

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| Participant organisation names | Project title | Proposed project costs | Proposed project grant |
|---|---|---|---|
| **Glass Resort Limited** | Ultrasonic Glass Container Inspection Technology | £187,144 | £100,000 |

**Project description - provided by applicants**

Glass bottles are subject to a multitude of physical defects during production. Presently, container inspection is performed through a combination of manual and 'non-contact' optical systems whereby light reflected by a defect is picked up by a sensor; defective containers are then rejected and conveyed for resorting at significant cost. This method is limited in effectiveness as defect type, size and relative positioning can fluctuate; the array of bottle shapes and sizes further complicates the issue. The company wish to apply ultrasonic methods to inspect glass containers through a 'noncontact' approach. It is envisaged that ultrasonic pulses will induce an acoustic signature of frequency relative to the imperfection type, size and relative position on the bottle.

Computational analysis of these structural fingerprints could elucidate far superior methods for glass bottle inspection with considerably reduced energy usage and rejection rates; possibly eliminating or substantially reducing expensive manual resorting. The proposed technology will aim to function without the aid of any couplant or 'contact' fluid as done in conventional non-destructive direct-contact evaluation methods.

Globally there are 27 sizable container glass manufacturers (excluding Russia, China and most of India) and 1924 production lines. Most manufacturers have a minimum of two different optical inspection machines per line and cost around £200,000 per unit. On the basis of a similar capital investment for the proposed technology, we estimate a total addressable market worth £785 million. Our strategy is to secure 0.3%, 0.8% and 3% of the market by 2017 (year 1 - 12 machines), 2018 (year 2 – 30 machines) and 2021 (year 5 – 115 machines), generating £2.4 million, £6 million and £23 million respectively.

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|---|---|---|---|
| **Harvesting Limited** | Development of an industrial standard self-generating electric powered harvesting and pruning knife for tall palms and trees | £50,905 | £30,543 |

**Project description - provided by applicants**

Harvesting Ltd, an agricultural engineering company is developing an electric powered mechanical harvesting knife for the palm oil industry. Palm oil is by far the highest-yielding oil crop, producing between seven and ten times more than its nearest rivals (soybean, rapeseed and sunflower). Oil palm takes ten times less land to produce the same volume of oil as soybean. However, a farmer can manage 200 hectares of soybean on his own, whereas he will not be able to handle more than eight hectares of oil palm, as it is difficult to harvest mechanically. Harvesting is a very labour intensive task, as the fruit bunches mostly weighing around 25kg have to be manually cut by a harvester wielding a blade attached to a long pole that can be up to 25ft in length.

This pole is heavy and the cutting action difficult to control along such a length. In recent years a petrol mechanical knife has been available but is only suitable for palms no higher than 15 feet or equivalent to seven to eight years in growth. With the majority of palms producing fruit for more than twenty years, only around 30% of the available harvesting stock can be serviced with this particular mechanical knife. This general difficulty and reliance on pure human effort for harvesting the majority of the crop leads to losses of around 15% in crop yield and numerous back and neck injuries among the labour force.

Harvesting Ltd's new implement, with its weight efficient design and long length will contribute significantly towards reducing the amount of human effort needed to harvest the fruit bunches and simultaneously reduce the significant crop loss incurred in current harvesting. Overall, these positive results all contribute towards the spread and evolution of a more sustainable and responsible palm oil industry. Once development completed, manufacturing of this new implement will occur from a facility located on the Isle of Wight for export to all palm oil producing countries in South America, Africa and SE Asia.

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| Participant organisation names | Project title | Proposed project costs | Proposed project grant |
|---|---|---|---|
| **Infinity Health Technology Limited** | Medical Caseload Management and Information Handover System | £162,712 | £97,627 |

**Project description - provided by applicants**

Infinity Health Technology will focus on a radical transformation of caseload management and patient information handover within hospitals. Critically, the company will build a software suite designed by clinicians, for clinicians. Current healthcare software systems take an administrative approach to data management in hospitals. Patient Admission Systems and Health Records tend to be highly centralised and do not provide on-the-ward solutions in the hands of doctors and nurses. On wards, shared documents - often still on paper - are the focus of patient management. Infinity Health Technology will build software optimised on desktop and mobile devices to track admitted patients under clinical review.

The Infinity system provides a single point of data entry for caseload information, including patient details, physical location, admission dates, clinical picture and active tasks. Infinity Health Technology will work with the Royal National Orthopaedic Hospital (RNOH), a national centre of excellence in orthopaedic care, to pilot the project. A feasibility study has been undertaken at RNOH that shows the pitfalls in the current paper-based protocols, including up to six points of data duplication alone.

The Infinity system will enable doctors, nurses and therapists to seamlessly exchange high quality information between individuals, departments, on-call teams during shifts and at points of shift-change. No current software provides this functionality. Moreover, our system will transmit rich auto-alerts and notifications and provide digital tracking and auto-prioritization of tasks to ensure action is taken and clinically important jobs are not missed. The Infinity System will be powerful “behind the scenes”, accessing data from other systems, interrogating results, alerting clinicians and improving team communication.

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|---|---|---|---|
| **Inova Design Solutions Ltd** | Inova Design Solutions Ltd: Non-Invasive Continuous Core Temperature Monitor ("NCCTM") | £209,945 | £100,000 |

**Project description - provided by applicants**

This proof of concept (PoC) project is the next phase of development of a recently awarded feasibility study from the Technology Strategy Board (project 131336). The proof of principle prototype of the NCCTM successfully demonstrates basic functionality of the technology and initial tests show desired results. The technology is designed to prevent heat illness, particularly heat exhaustion and death. Individuals may suffer heat illness as a result of physical exertion in harsh environments or the inability to control their environment. There is a major unmet need for non-invasive monitoring during activity and inactivity.

The available UK market is an estimated £95m, and European market £474m (1-4*). The innovation presented is a portable, medically accurate, non-invasive device to continuously and automatically monitor the core body temperature (“c.b.t.”) of individuals in real-time so that heat illness can be avoided and physiological functions operate at a safe and optimal level. There are no existing methods of measuring core body temperature that provide this combined functionality and the resultant products will significantly improve current patient care and enable many new ambulatory applications of physiology monitoring to vastly increase the number of individuals who can benefit from temperature monitoring, in global markets from healthcare to defence.

The key objectives of this PoC project are to (A) design and build an engineering prototype, (B) carry out validation testing of the prototype, and (C) generate new IP. With successful validation the technology would be ready for pre-production development and exploitation via licensing and direct sales. *(1) Frost & Sullivan, Fitness Vital Signs Monitoring: The Race Has Just Begun!, 2008 (2) Frost and Sullivan, European markets for ALT, 2010 (3) European Defence Agency, Defence Data of EDA participating Member States, 2011 (4) Frost & Sullivan, European Temperature Monitoring Devices Market, 2006.

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|---|---|---|---|
| **iPhase Limited** | Development of Image Based Multiphase Flowmeter | £192,060 | £100,000 |
| **Project description - provided by applicants** | | | |
| iPhase is a small, specialised, company with extensive innovation expertise in the oil and gas industry. iPhase plans to develop a novel multiphase flowmeter for the oilfield with substantial technical and marketing advantages over the current offerings. This document describes the technical background and outlines the plan as far as proof of concept. There are many applications of multiphase flowmeters in the oil industry for flows of gas, oil, water and solids: downhole, wellhead, platform, subsea, wet gas, heavy oil, gas lift, tar sands etc. The further upstream in the process, the more complex and demanding the conditions, so subsea and downhole are the most difficult, but in compensation the accuracy requirements may be less demanding. This project seeks to develop a multiphase flowmeter capable of the following: (i) non-invasive process (ii) accurate assessment of the various flow phases (water, oil, gas & sand/mud ) (iii) integrating various technologies to provide cross-referencing (iv) fully electrical (no nuclear sources) (v) detailed imaging of flows across a pipe section. | | | |

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|---|---|---|---|
| **ITRI Limited** | Tinnic (A new electrodeposited tin-nickel alloy) - ITRI Ltd | £177,758 | £100,000 |

**Project description - provided by applicants**

The objective of this project is to develop an alloy depositing system that will deliver a low stress alloy deposit suitable for many applications currently held by chromium, but it will also demonstrate new market opportunities and uses other than those held by chromium. Co-electrodeposited tin-nickel can produce alloy compositions that are not possible by pyro-metallurgical processes. These alloys have been shown to have excellent corrosion and oil retention capabilities that make them an ideal candidate for replacing chromium electrocoatings.

This project will demonstrate that tin-nickel can be used as a substitute for chromium coatings and thereby eliminate the use of hazardous and carcinogenic compounds. The project will also combine new chemistries and advances in electrodeposition processes with some already known technologies to develop a new alloy electrodepositing process. The elimination of hazardous chromium compounds will help comply with the REACH Directive and other health and safety legislation, as well as provide a safer working environment and reduced operating costs.

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| Participant organisation names | Project title | Proposed project costs | Proposed project grant |
|---|---|---|---|
| **iTS Designs Limited** | Smart Pants | £145,062 | £87,037 |

**Project description - provided by applicants**

Urinary incontinence (UI) is estimated to affect 2-3m individuals in the UK and is higher in women than men and furthermore, an overactive bladder has a prevalence of >5m in the UK population. This condition is distressing and leads to a significant loss of quality of life for the sufferer. In many cases sufferers with UI are unaware of leakage during the day and also at night (nocturnal enuresis) and even though they wear pads with waterproof pants these can saturate and leak, leading to the wetting of clothes during the day or bedding at night.

Alert-It has conceived a solution to these problems and the Smart Pants technology will alert carers when the incontinence pants are about to leak. The Alert-It detector is wirelessly linked to the care home alarm system and the time at which the detector is triggered is logged enabling care home staff to monitor patterns of NE and implement the appropriate care.

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| Participant organisation names | Project title | Proposed project costs | Proposed project grant |
|---|---|---|---|
| **Kanichi Research Services Limited** | The development of a hand held, point of care, device by Kanichi Research Services Ltd to measure ammonia in breath as a new approach for the immediate diagnosis, treatment and monitoring of Helicobacter Pylori infection - facilitating mass population screen | £154,167 | £92,500 |

## Project description - provided by applicants

There has been a considerable research into chemicals in breath linking their presence, or excess, with disease or disorders. There are over 30 diseases where research has made this link. Current diagnosis is often dependent on the analysis of blood, saliva, urine and stools. It can be invasive or unpleasant for the individual, and there can be significant laboratory delays in obtaining results. A point of care hand held device, capturing breath for speedy diagnosis and management of disease, has high potential for use by medical professionals and for home monitoring.

Kanichi plans to develop a platform technology, measuring chemicals in breath, using electrochemical sensors housed within a portable breath collection device. Our first target is ammonia. This is because our initial market research showed that elevated levels of ammonia have been associated with nine different medical conditions and as such a device could have multiple applications. The two most attractive indications were determined to be the point of care measurement of the effectiveness of dialysis in end stage renal disease, and in the diagnosis of Helicobacter Pylori infection.

These two indications were extensively researched in 2013 through a TSM POM project. The outcome was that a need was not established for the dialysis application but that strong support was received from Medical consultants and researchers for a better method for Helicobacter Pylori diagnosis and immediate treatment. Kanichi has developed patented electrochemical sensors which measure at the required 100's ppb level. We have also designed a concept for collection of the ammonia in breath for presentation to the sensor. The purpose of this project is to prove this concept and develop a basic working prototype in collaboration with an industrial partners specialising in gas sensing and medical device development and marketing. We will also refine our knowledge of the market space and determine our entry strategy.

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| Participant organisation names | Project title | Proposed project costs | Proposed project grant |
|---|---|---|---|
| **Leading Edge Turbines Limited** | Development of novel hydro-generator for sailing yachts | £98,031 | £58,818.60 |

**Project description - provided by applicants**

While at sea, sailing boats require auxiliary power for a range of on-board equipment. Power requirements are in the region of 500W. Currently, rechargeable batteries are used to power such equipment. However, batteries will provide sufficient energy for no more than a day at best. An in-board diesel engine is usually available to generate electrical power and recharge battery banks. However, running the engine without engaging the propeller drive shaft while sailing, is known to be detrimental to the condition of the engine and noisy for the passengers on board.

Specialist stand-alone diesel generators have become popular for boat owners seeking to address the increasing demand for more power on their vessels. Specialist diesel generators have many drawbacks: costly; unreliable in rolling seas; require regular maintenance; noisy; produce harmful environmental emissions; and have high running costs - especially since the removal of an EU tax exemption on fuel. A range of alternative power solutions also exist, but these are ineffective. Micro-wind turbines become redundant when sailing due to down wind conditions, while solar panels are inoperable during periods of darkness and require large amounts of boat deck surface area. Hydro-generator technology is a promising emerging area for the given application, but the leading products in this sector currently lack the power output needed at typical cruising yacht speeds. They are also prone to reliability issues and are considerably costly (£3500). This project proposes the development of a novel hydro “Power Pod” capable of generating the required 500W at cruising knots (6kt) and with a retail price of £1500. Higher power output will be achieved through a specially developed generator and superior reliability will be realised using a novel water isolated motor design.

# Results of competition: Smart - Round 5 - Proof of concept

**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 |
|---|---|---|---|
| **Leeds Galvanising & Powder Coating** | De_Zinc - Molten Salt Electrolysis | £165,539 | £99,323 |

**Project description - provided by applicants**

Leeds Galvanising & Powder Coating Ltd (LGL) is a medium sized company whose expertise lies in hot dip galvanising of steel components and powder coating metals. This project will aim to prove the concept of a technically challenging process development for the removal of zinc coating from galvanised components. The project will assess the feasibility of producing a one stage, cost effective and efficient process, directly removing zinc from full sized industrial components & eliminating the need for pre-processing such metals i.e. shredding and bailing the scrap materials. Successful tests have been conducted at laboratory scale with Leeds University on removing zinc directly from galvanised steel without the use of volatilisation, acid, caustic soda solutions or requiring the need for shredding and bailing.

If the concept can be proven on an industrial scale, numerous valuable business opportunities would be unveiled for LGL. The project will require LGL to up-scale the preliminary experiments to representative level for industry needs e.g. de-zincing a 2.5m Armco barrier used in abundance on the UK road network, in order to show the process is technically and commercially viable. The solution, if successful will enable novel processes such as refurbishing full sized scrap galvanised components to ‘new’ by re-galvanising or powder coating them, allow LGL to reuse reclaimed zinc in their current business processes and provide large potential income streams through the resale of clean separated steel and zinc.

# Results of competition: Smart - Round 5 - Proof of concept

**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 |
|---|---|---|---|
| **LighTex Limited** | Fast Drying Technology | £166,625 | £99,975 |

**Project description - provided by applicants**

This project will develop a ground breaking technology that reduces the drying time of cotton. Cotton is a highly desirable fabric. However, due to its high water absorbent properties and slow drying time, cotton takes a significant amount of time to dry in tumble dryers, costing consumers energy and money. The majority of clothing used in sportswear is made from synthetic fibres as they dry 50% faster than cotton. Even though many people do prefer to wear cotton, it is not ideal in circumstances where the user produces excess sweat. Its slow drying time makes the fabrics heavy, uncomfortable & saturated, subsequently reducing the ability for the skin to cool.

This fast-drying technology will take two forms. The first is a chemical finish, applied to cotton fabrics in one process, which speeds up the drying time by 30-40% and is durable for 30-50 washes. It will be cheap, ecologically friendly, and easy to apply on all cotton products including clothing, bedding and towelling. We will also develop a fabric conditioner, for home washing machines, that reduces the drying time of cotton before entering the tumble dryer. We will license the technology to major brands, manufacturers and distributors in both sectors.

# Results of competition: Smart - Round 5 - Proof of concept

**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 |
|---|---|---|---|
| **MarchantCain Design Limited** | Fire Fighting: New Technology and Equipment | £125,543 | £75,325 |

**Project description - provided by applicants**

This proposal is intended to change the way fires are fought. Currently fire fighters, in the main, extinguish fires by applying large amounts of water. This has limitations in the amount available at all fire situations and by the amount of potentially polluting runoff water generated. Any new fire fighting technology must address the fact that Fire and Rescue services worldwide have to cut costs by reducing numbers of personnel and equipment, reducing capital expenditure and yet maintaining safe working practices. The availability of water globally is also a factor driving change. Fire fighting methods have not changed much since Roman times.

This concept will bring a new means to extinguish fires, at less cost and still retain safe practice. By propelling ice with sand particles to the seat of the fire two sides of the "fire triangle" are simultaneously attacked. The transition of ice to water to steam will reduce heat and energy much more quickly than by the usual application of water or mist. The application of sand will also assist in smothering the fuel of the fire and reduce the available oxygen, another element of the fire triangle. This is turn will reduce the chain reaction and so extinguish the fire. It is anticipated that this technology will eventually be available in a modular form which can be adapted and modified to make it available across a much wider range of vehicles than current equipment.

# Results of competition: Smart - Round 5 - Proof of concept

**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 |
|---|---|---|---|
| MICROPPLY LIMITED | MICROPPLY LIMITED - A flameless device for installing thermoplastics in hazardous and confined areas | £168,788 | £100,000 |

**Project description - provided by applicants**

Surface markings are a versatile and essential addition to asphalt or concrete surfaces. They play one of the most important safety functions on pavements and roads, as well as giving facilities owners the ability to construct education, leisure, and advertising in prime locations on the ground. This has led to a wealth of global opportunities in playgrounds, theme parks, car parks, stadia and other forecourts; in addition to road markings. The global markings industry is estimated at $50bn and employees over 250,000 people. There are over 178 UK companies operating in this market.

There are currently four main typologies of surface marking materials (paint, thermoplastic, resin, and tape), each differ in terms of cost, performance, durability, speed of application, and suitability. There is a growing trend towards using thermoplastics because of their zero solvent/VOC (Volatile Organic Content) level, safety, high retro reflectivity, variable thickness, bright colours, and ability to easily re-apply over old markings. However, there are commercial and technical issues with current installation processes that have prevented the use of thermoplastic markings in lucrative hazardous area industries e.g. Oil and Gas, PetroChem, Underground networks - not least the requirement to install with a naked flame (which is banned in hazardous areas). Further, current methods are expensive, labour intensive, slow and give inconsistent results.

This project addresses these problems. Following two successfully funded Technology Strategy Board grants (Proof of Market, and to validate novel High Value Manufacturing Business Models - Technology Strategy Board file references 700255 and 221214 respectively), we address the problems by developing flameless device that can simultaneously apply heat, measure temperature, and apply the correct volume of antislip aggregate over the thermoplastic surface evenly, deploying it at the correct time to give optimised visual/retro reflective qualities, and without the use of a naked flame.

# Results of competition: Smart - Round 5 - Proof of concept

**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 |
|---|---|---|---|
| **Natural Fluid Transport Systems** | Natural Fluid Transport Systems Limited: A novel “Microcomb” heat exchange module comprising a matrix of microtube air passageways designed to dramatically increase primary heat rejection surface area efficiency, and as a consequence provide significant | £162,171 | £97,300 |
| **Project description - provided by applicants** | | | |
| This project is intended to prove the technical and commercial feasibility of the “Microcomb” heat exchanger, which utilises small air passageways to improve heat rejection efficiency in vehicle applications over conventional fin and tube designs. In particular, the main objectives of the project are: To benchmark, teardown and test the closest available technologies; to develop analytical design tools for accurate comparison; to design an optimised Microcomb module; to produce a detailed CFD model for Microcomb; to produce prototype Microcomb modules; to extensively test prototype Microcomb modules - to evaluate the commercial potential for the product - to file patent applications for inventive features; and - to complete a detailed final report. The ultimate aim of the project is to develop a heat exchange module which is capable of application in a wide range of different vehicle types, and which can be readily sized to directly replace traditional radiators and intercoolers to provide package, emissions, fuel economy and weight benefits. | | | |

# Results of competition: Smart - Round 5 - Proof of concept

**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 |
|---|---|---|---|
| **ngenics Global** | Enabling the Next Generation of Electronics | £166,537 | £99,922 |

**Project description - provided by applicants**

The semiconductor industry has underpinned dramatic changes in the way we live, from healthcare to travel and recreation. This pervasive effect has been driven by continuous improvements in drivers such as speed, power and memory capacity. The scale and sophistication of modern devices means that the only practical way in which large devices can be designed is by breaking the design down into 'building blocks' known as standard cells, and to then connect these blocks together to make a complete device.

However, as the transistors that make up these building blocks consist of only a few atoms, the placement of individual atoms can have an unpredictable effect on device characteristics (a problem known as intrinsic variability), and current design approaches cannot manage this variability as devices get smaller. The problem is even more widespread when dealing with memory cells (such as SRAM cells) where failure rates are higher worldwide, no company offers a tool capable of addressing transistor variability during design. Coping with intrinsic variability has been identified as one of the major challenges facing the industry; semiconductor companies acknowledge a major problem with transistor variability at the 22nm node and beyond.

ngenics has developed the MOTIVATED technology, which can address these issues, and would therefore revolutionise the semiconductor industry. It now needs to move from a successful feasibility study to a proof of concept technology through the production of one or more industrial standard demonstrators The aim of this project is to develop an automated cell design process that incorporates variability for selected test cases using a 14nm finFET state-of-the-art process. The development of test case designs, optimised for variability, would demonstrate the impact of ngenics' offering and provide a crucial proof of concept. This will allow ngenics to develop credibility and expand the offering to address other pertinent challenges.

# Results of competition: Smart - Round 5 - Proof of concept

**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 |
|---|---|---|---|
| **Pre Chasm Research Limited** | PRE CHASM RESEARCH LTD - MyTyreManager - a Mass Market Smart Phone Tyre Tread Technology Using Novel Active Machine Learning | £166,000 | £99,600 |

**Project description - provided by applicants**

This project aims to allow machines instead of people to make complex decisions about tyre wear, building on a successfully completed Technology Strategy Board ICT technical feasibility project (File Ref 131363). That feasibility study stated that current 3D scanners are expensive (>£1000) and not fit for use by law enforcers, or consumers (car owner/drivers). We showed that manual methods are open to misinterpretation and are often ignored. We demonstrated that it was possible to embed intelligent machine learning and novel algorithms into a smart phone for tyre wear image analysis, allowing for the first time, a smart phone-based 'machine' to make complex decisions about the road-worthiness of tyres on vehicles. This project seeks to progress that technology to Proof of Concept stage, targeting the development of a consumer “app'” and platform architecture to enable car owners to manage their tyre wear, and condition, on an on-going basis using their smart phone.

This will enable users to alter their driving style to optimise tyre longevity, and maximise safety. Other interested parties (like insurers) could analyse that data. Challenges to address include, optimisation of feature vector algorithms across a range of smart-phones, characterise tyre differences and impact on machine vision, learning and accuracy, real-time cloud integration, influence of weather, and optimisation of acquisition speed. Significance: 2011-2020 is the United Nations Decade of Action for Road Safety (UN). Worldwide road accidents kill 1.3million; increasing 30%/yr, with 45% linked to tyre wear. According to TyreSafe in UK alone 4.4m cars have at least one illegal tyre. The problem is enormous. The serviceable market is equally large therefore. One measure could be tyres sold versus smart phone users worldwide, suggesting a serviceable market in excess of 500m users. This is an opportunity for wide adoption of patented machine learning at the consumer ‘app level and a chance to positively impact road safety.

# Results of competition: Smart - Round 5 - Proof of concept

**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 |
|---|---|---|---|
| **Promexus Limited** | Affimers: a novel biotherapeutic platform for the treatment of cancer | £165,983 | £99,589 |

**Project description - provided by applicants**

Promexus is a new biotechnology company that will be developing a novel human therapeutic protein (the Affimer) that will address some of the shortcomings of the current antibody based drugs. Antibodies have been very successful at treating a wide range of human disease such as asthma, arthritis and cancer, but they are expensive to produce and because of their large size can only be given via an injection.

Affimers should be cheaper to make and because they are smaller and stable, can be administered topically (for example to the skin as a cream or to the lungs using an inhaler). Our first drug will be for the treatment of cancer where there is a need for cheaper more effective drugs. Affimers have all the properties to potentially make the next generation of therapeutics to meet the demand of new medicines.

# Results of competition: Smart - Round 5 - Proof of concept

**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 |
|---|---|---|---|
| **Purchasing Index Limited** | NoETL: Next-generation Data Management System for Heterogeneous Big Data | £164,039 | £98,423 |
| **Project description - provided by applicants** | | | |
| NoETL: Next-generation Data Management System for Heterogeneous Big Data. This project seeks to improve big data management by introducing a new class of ETL tools that automates the integration of all data sources whilst preserving original content. | | | |

# Results of competition: Smart - Round 5 - Proof of concept

**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 |
|---|---|---|---|
| **Rinicom Limited** | VIDEO-MESH | £182,078 | £100,000 |

**Project description - provided by applicants**

Rinicom's VIDEO-MESH proposes to develop a novel surveillance system, integrating high definition (HD) dual optical-thermal cameras and a robust mesh communications system, to enable the distribution of multiple high-quality live video streams to authorised devices, real-time wireless broadband transmission and seamless access to video meta data and information exchange. VIDEO-MESH proof-of concept (PoC) will assess the technical feasibility of the new dualcam system, as it provides direct device-to-device broadband communications and adds the network access point functionality, resulting in the ability to rapidly and effectively extend the network reach without requiring additional investments or modifications to the existing physical infrastructure.

VIDEO-MESH PoC shall validate the system's network performance and scalability towards the dynamic connection of multiple information producers (e.g., dualcam systems, third-party camera systems, remotely operated systems) and consumers (e.g., mobile stations, unmanned vehicles). Rinicom's VIDEO-MESH Duplex PTZ will be the first ever HD optical and thermal camera supporting wireless mesh broadband networking, at a highly competitive price. It innovatively combines the added value of dual HD cameras in surveillance with Rinicom's proprietary mesh networking, COFDM robust waveform and smart routing technologies to create a truly game-changing surveillance asset, supporting a seamless network of (mesh-compatible) interconnected systems that sustain high-throughput data sharing exchange and communications relay to third systems. VIDEO-MESH cutting-edge innovation will impact the surveillance market, introducing a unique, high performing, adaptive, secure and cost-effective dual-cam mesh networking surveillance system that is beyond the current market state-of-the-art and delivers improved protection of citizens, critical infrastructures and (land and maritime) borders.

# Results of competition: Smart - Round 5 - Proof of concept

**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 |
|---|---|---|---|
| **SofMat Ltd** | Development of prototype to demonstrate the production options for the use of SofMat 3D technology in sequential marking within the pharmaceutical sector | £133,904 | £80,342 |

**Project description - provided by applicants**

The cost to the UK economy of counterfeit products has been estimated at £9billion per year (ICC Commercial Crime Services Ref CIB-9-0556 11-11-2009). All areas of the economy are affected by counterfeit goods, from branded clothing through critical goods such as pharmaceuticals and automotive & aerospace parts. No industry sector is immune from the effects of counterfeit products. The problem is seen as so great in the pharmaceutical sector that an annual conference (Anti Counterfeiting for Pharmaceuticals, May 2013) has been organised, devoted to securing the pharmaceutical supply chain to stop entry of counterfeit drugs and devices.

Much time has also been devoted to globalise the legislation dealing with anti-counterfeit pharmaceutical products but no simple point of use method of product authentification has been developed so far according to information from the World Health Organisation (www.who.int/impact). The SofMat project will be used to implement pharmaceutical sector suggestions to develop a sequential 3D marking system that will be used side by side with the existing batch process. The process can be used to sequentially mark drugs without adulterating the product ensuring that FDA legislations can be easily complied with. The process is unique in the marketplace and simple in execution, using a reader with smartphone technology which will be developed during this project. This product for the first time places the identification of counterfeit goods within the supply chain rather than in the hands of the producers or governmental agencies. This allows a wider scope for identification and removal of counterfeit goods by allowing easy identification throughout the supply chain. As a follow up to this Pharmaceutical project the company will determine whether the technology can be utilised in other sectors, eg: automotive and aerospace. These next markets have been selected using a market report that identified these as the next prime target sectors.

# Results of competition: Smart - Round 5 - Proof of concept

**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 |
|---|---|---|---|
| **Subsea Asset Location Technologies Limited** | STREAM – Sonar Technology for Remote Environmental Monitoring | £126,799 | £76,079 |

**Project description - provided by applicants**

Offshore oil production is increasingly moving to deeper water and to autonomous, surfaceless operation. About 30% of the 85.1 million barrels/day ($3.48 trillion) global oil production comes from offshore wells (2010). This increases the impact of oil leaks; deep-sea leaks usually go unnoticed until the oil reaches the surface, causing significant delays to mitigation and clean-up. There are clear indications that untended leaks are present at both active and abandoned wells (e.g. >2,800 and > 27,000 respectively - Gulf of Mexico), but little action is taken by either companies or governments. This is partly due to gaps in technical capabilities: current technologies take only infrequent “snapshot” measurements, are obscured by sand from the seabed or are too expensive for widespread use.

We propose to exploit our patented SonarBell® technology, developed in conjunction with DSTL, in an affordable system for continuous, autonomous and robust measurement of water composition, through its acoustic properties of seawater. This project will develop the model relating acoustic measurements to contaminant concentration and build a proof-of-concept prototype of our device. We will show that our technology can identify the presence of contaminants in a model system and identify operational needs such as improved accuracy, range, or selectivity. Successful completion of this project will be followed by development of a pre-commercial prototype, for which we intend to raise additional funding. We will commercialise STREAM in partnership with Subsea7, a major tier 1 service provider to the oil & gas industry; our projections show the product will generate a turnover of £15m by 2021. We expect to reinvest revenues from STREAM into the company, growing our technical and R&D capacity for further development projects. This project will generate jobs and revenues for the UK economy, while cementing the country’s reputation as a world-leader in sustainable development.

# Results of competition: Smart - Round 5 - Proof of concept

**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 |
|---|---|---|---|
| **Sustainable Venture Development Partners Limited** | Sustainable Venture Development Partners (MyCloudControl - Technical and Behavioural Field Trial) | £145,920 | £87,552 |

**Project description - provided by applicants**

Following a successful 'Proof of Market' study undertaken with support from the Technology Strategy Board's SMART Scheme, MyCloudControl is seeking to further develop its novel domestic heating control system. MyCloudControl is a robust, self-learning cloud based heating control platform that will monitor the micro and macro environment of homes by using sensor systems and a novel algorithm. The scheme will enable an improvement in heating efficiency and manage annual budgeting to meet the householder's need without compromising their thermal comfort. As additional features, MCC will offer non-intrusive monitoring of the vulnerable based on system engagement and track boiler CO emissions to predict servicing needs. Presently, no such integrated technology exists.

The 'Proof of Market' study highlighted potential demand for a low cost device by the end users and domestic boiler suppliers. The primary objectives of the project are: to demonstrate the technical and economic benefits of cloud based heating controls - in particular in the social and council housing sector; and validate the use of a range of domestic monitoring data combined with environmental data derived from internet sources to better predict and control heating systems. The experienced management and advisory team together with established contractors, such as the National Energy Foundation will develop a "Beta" prototype, a self-learning algorithm, de-risk the business and deliver the project objectives within the £145,920 budget in 12 months.

# Results of competition: Smart - Round 5 - Proof of concept

**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 |
|---|---|---|---|
| **The British Quinoa Company Limited** | The British Quinoa Company - Improving crop protection options for field quinoa production in the UK | £36,112 | £21,667 |

**Project description - provided by applicants**

Our project aims to undertake multiple UK field trials to establish the best practices of producing quinoa grains (Chenopodium quinoa) in the UK, with the aim of forming a reliable UK supply network. Quinoa grains are a food source which has gained much attention recently, due to its excellent nutritional profile and consumer consumption, has increased in multitudes over the past decade. Much of this grain is however imported from outside the UK, leading to a lack of traceability and an increase in food miles.

Research carried out by The British Quinoa Company over the past five years have shown that quinoa grain can be grown successfully in the UK and we intend to be the UK's first supply network of British grown quinoa grains. Our previous field trials have shown that improved weed control and harvest management are key steps that must be overcome for British grown quinoa crops to flourish. We aim to perform multiple field trials in the UK so that the best practice of quinoa production can be established.

# Results of competition: Smart - Round 5 - Proof of concept

**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 |
|---|---|---|---|
| **ThinkInnovate Limited** | GeoVote PoC | £144,127 | £86,476 |

**Project description - provided by applicants**

The GeoVote project is the development of a new platform that facilitates live user feedback in a novel location-aware way. The Geovote concept is a highly innovative events-based mobile application allowing a user to vote on and review a live event, such as a concert, performance, talk or sporting event when they are within the spatial boundary of the event and during the event time frame so communication is in real-time. The technology innovation identified, and subject to verification and interrogation during this Proof of Concept, intends to overcome a number of unresolved technology issues related to push and pull mass real–time data collection and communication in a tightly crowded area.

The proposed Geovote solution will provide a reliable, experience based, user feedback mechanism and valuable data and location based information to event owners/brands/organisations whilst creating a more engaging experience for the user. GeoVote will provide opportunities for consumers to share their experiences with an event owner/sponsor/artist etc and for business in turn to leverage market opportunities to a greater extent. In this way, GeoVote can offer a more personal, interactive communications channel and direct relationship between supplier and consumer, delivering substantial business opportunities.

Technology Strategy Board
Driving Innovation

# Results of competition: Smart - Round 5 - Proof of concept

**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 |
|---|---|---|---|
| **Zzish Limited** | Zzish Ltd - An open platform for social mobile learning | £208,500 | £100,000 |

**Project description - provided by applicants**

Many children are not motivated to learn as they find studying boring and see no direct result from the effort that they put in. On the other hand leading social mobile games use clever social game dynamics and rich data and analytics to motivate players to keep playing and improve. Adding such features to apps is difficult, time consuming and expensive and although platforms exist to make this easier for independent developers of mobile games, there are no platforms that fill the needs of developers of mobile educational apps specifically and serve that market well. The result is that the vast majority of educational apps are single person, client-only experiences, which are not very engaging for students and thus do not fully achieve their overall goal to improve the learning experience and learning success of students.

Zzish is developing an open social mobile education platform to enable any educational mobile app developer to add connected, social, analytics and personalised learning features to their apps in days that would otherwise take them many months to implement. The platform consists of an API and SDK (with five modules: content, user, gamification, personal learning; and analytics and monetisation), an end user interface, our Learning Centre, for students, teachers and parents to view their learning results and a reference app, Factzz, that illustrates use of the platform and delivers personalised, adaptive learning. Students of all ages will benefit from improved engagement and motivation and thus improved learning as a result of better education apps. Teachers and parents will benefit from being able to access richer analytics and personalised learning across many more apps. Existing educational app developers will be able to make their apps more engaging for students and more informative for teachers and parents and new app developers, big and small, will create innovative new educational apps as a result of lower costs to delivering such apps.