Technology Strategy Board
Driving Innovation

Results of competition:
Technology-inspired innovation - January 2014 - ICT - Feasibility study

Total available funding for this competition was £2m 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
Barnard Microsystems Limited	ENSA = Enhanced Situational Awareness for robotic vehicle control	£32,762	£24,572

Project description - provided by applicants

We are developing Remotely Piloted Aircraft for use in commercial applications.

In this Feasibility Study we plan to demonstrate a new user experience to better enable a remote pilot on the ground to manually control the landing of the RPA. The manual option is often used in an emergency situation. We urgently need to improve the situational awareness of the remote pilot on the ground. The technical challenge involves the demonstration of a new software user experience involving the use by the remote pilot on the ground of head-up display type glasses in which graphics and text can be superimposed on the view of the pilot, together with headphones in which computer-generated speech can be superimposed on surrounding sounds.

The overall aim is to demonstrate the augmentation of the surrounding visual and aural reality by superimposing computer-generated symbols and sounds to increase situational awareness.

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
Cool Game Arcade Limited	A Virtual Simulation system for Autonomous Environmental Exploration	£33,300	£25,000
Project description - provided by applicants			
There is a very real need for robotics that can explore environments; there are a number of hazardous locations within which one would like to deploy robots there are practical applications of field robots in the Nuclear, Military and Agricultural sectors. Even when a human controls a robot it is best practice is to have the robot as aware of its environment as possible. Our objective is to create a virtual environment that allows for the development and testing of autonomous agents. Having good simulators allows for quicker and cheaper iterations in the testing of machine learning and robotic artificial intelligence. This opens up a range of training options including training deep learning systems through continual interaction.			

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
Digital MR (lead) Nutricentre Limited	Concerted Real-time Social Media and Marketing Monitoring System	£33,300	£25,000
Project description - provided by applicants			
DigitalMR proposes to develop a real-time social media marketing monitoring system. It will combine data from corporate systems and millions of blogs, boards, videos and news from different social media sites to present complex information quickly and clearly. Such systems are increasingly in demand by senior marketing executives who look for ways to sift through fast changing data across geographies, languages and time zones. This feasibility study will utilise market -leading, multilingual technology owned by DigitalMR, namely eListen. It focuses on usability and knowing our user markets, tests solutions for real non-ICT specialist users. It combines data currently sitting in silos improving efficiencies that can enable scalable visualisation which will be market leading.			

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
Eddy Labs Limited	Domestic Audio Analytics Platform	£32,667	£24,500
Project description - provided by applicants			
With the rise of consumer sensor technology, we are seeing an explosion of sensors in the domestic space, specifically focusing on security, automation and metrics. Current systems dedicate a single sensing method (like a magnetic switch) to a single sensing event (like opening a door). We propose a system of indoor sensing that detects and analyses a wide range events and communicate with users about their space all from a single in-home device. This innovative approach to sensing could pave the way for a field of methods that are adaptable to the conditions of any domestic environment.			

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
Embecosm Limited	Low Cost Force Feedback Technology to Enable Access to Computers for Users with Special Educational Needs	£32,966	£24,725
Project description - provided by applicants			
Haptic (touch feedback) technology provides an intuitive way to interact with computers. Although in its infancy, haptic technology will play a key role in future HCI. One area, currently not exploited, but with great potential is simplifying HCI experience for disabled users, particularly the visually impaired. Generic Robotics will design a software API which will allow us to test the feasibility of using our low cost haptic device to interface with a common DTP package to feel the shape of graphs and other commonly used visual presentation elements			

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
Experto Crede	Simplifying the user experience of emotion sensing via mobile phones	£32,835	£24,626
Project description - provided by applicants			
Simplifying the user experience of emotion sensing via mobile phones.			

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
Gamebench Limited	Analyzer	£33,000	£24,750
Project description - provided by applicants			
This project regards the development of a pioneering mobile games performance benchmarking software. This software will collect performance data on a variety of aspects without interrupting the operation of the mobile device, leading to high accuracy. Developers will be provided with a tool to compare collected metrics and get their product's scores ahead of market entry, giving them a competitive advantage in a booming industry that is expected to be valued at $24B by 2016.			

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
Generic Robotics Limited	Low Cost Force Feedback Technology to Enable Access to Computers for Users with Special Educational Needs	£24,750	£18,563
Project description - provided by applicants			
Haptic (touch feedback) technology provides an intuitive way to interact with computers. Although in its infancy, haptic technology will play a key role in future HCI. One area, currently not exploited, but with great potential is simplifying HCI experience for disabled users, particularly the visually impaired. Generic Robotics will design a software API which will allow us to test the feasibility of using our low cost haptic device to interface with a common DTP package to feel the shape of graphs and other commonly used visual presentation elements			

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
Generic Robotics Limited	Haptically Enabled Simulation to Train Non-Surgical Cosmetic Treatments	£33,000	£24,750
Project description - provided by applicants			
Developing and evaluating a prototype haptically enabled computer simulator system for facial injection training, focussing on the procedures related to Botox injection and dermal fillers.			

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
Hodos Media	Driving Data - Exploration and Insight (DD-EI)	£33,300	£25,000
Project description - provided by applicants			
The Driving Data - Exploration and Insight (DD-EI) study will investigate the provision to insurers and fleet operators of actionable insights from data. It will span: • The psychology of driver behaviour • Acquisition of large amounts of data • Hardware • Analysis of the data • Visualisation			

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
I3D Robotics Limited	Thermo-PanCam : Secured site identification of intruders by merging data from active RFID validation and thermal imaging	£33,000	£24,750
Project description - provided by applicants			
Thermo-PanCam will investigate the feasibility of linking stereo-thermal cameras with Radio-frequency identification (RFID) tags/badges. We expect the system to distinguish between authorised persons and intruders in restricted locations by comparing RFID locational data with 3D heat signatures. Systems detecting intruders breaching boundary fences is well tried and tested. These systems tend to be continuous monitoring systems utilising infrared technology with the problem that they consume high-levels of power and bandwidth and have a high false alarm rate. They do not track the route of the intruder or threat. Our ultimate target is to protect secure sites, including Ports, Nuclear locations and Railway assets, using low-energy autonomously controlled systems that identify & track the threat and send appropriate alerts to the police or security personal			

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
iProov	PULSAR - novel biometrics using facial video and pulse recognition	£32,800	£24,600
Project description - provided by applicants			
iProov Is an innovative company in the field of easy-to-use, highly secure user authentication on mobile devices. It uses face verification, combined with various methods to prevent impersonation. As the cost of 3D printing falls, iProov perceives a growing risk from attempts to use 3D printed heads to mount impersonation attacks on its service. It has conceived a new and ambitious approach to the detection and prevention of such attempts, which however is technically demanding and speculative, yet dramatic in its implications if successful. This Feasibility Study explores and assesses this new approach, preparing it for commercial application.			

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
Please Cycle Ltd	Visualisation of travel data for non-expert user to support efficient infrastructure planning	£33,300	£25,000
Project description - provided by applicants			
This feasibility study will investigate the aggregation of multiple GPS data sources from consumer health and fitness mobile applications, so as to infer traffic flow information for Local Authorities (LAs). This will enable LAs to invest in infrastructure in a more informed manner, relying on accurate and rich data presented through modern technology - user-driven data visualisation - as opposed to the traditional anecdotal and scant survey data. This will result in better-informed infrastructure planning, thus reducing congestion, improving air quality and reduced cycling fatalities.			

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
Pre Chasm Research Limited	MyPressureManager - a Mass Market SmartPhone Tyre Pressure Technology Using Novel Active Machine Learning and co-operating devices for enhanced user experience.	£33,000	£24,750
Project description - provided by applicants			
In 2013 we successfully built a machine system for tyre-wear analysis, allowing, machines to make complex decisions about tyre road-worthiness. To complement it, this project investigates a further machine system for determining tyre pressure. This system will be developed for mobile platforms, and used to inform drivers about safety, economic, and environmental benefits of correct tyre pressure. Data will stream to cooperating devices wireless for enhanced user experience/historical analysis. Key challenges are, feature vector algorithm, machine learning, influence of environment, and software performance. A demo system will show operation in a range of scenarios. To reinforce market potential, 1bn car tyres sold in 2011 (1.5bn by 2030, OECD). Incorrect tyre pressure negatively affects proper tyre wear and road user safety. 4.4m UK cars have at least 1 illegally worn tyre (TyreSafe). 1bn smartphone users. 50% in the West.			

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
Renuda UK Ltd	Collaborative, web-enabled remote visualisation and analysis of in-situ, large HPC data	£32,600	£24,450
Project description - provided by applicants			
An investigation of current 3D graphics technologies, data handling algorithms and rendering infrastructure is proposed, to enable remote visualisation of very large datasets from supercomputers.			

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
Snap Out Limited	Automated User Interface Augmentation for Multidisciplinary Participation in Software Development Projects	£32,550	£24,412
Project description - provided by applicants			
This project aims to determine the feasibility of a tool that will augment user interfaces to enable efficient and effective communication between software development project stakeholders of varying background and technical skill level. The project deliverables include a prototype and feasibility report.			

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
Soil Essentials Limited	AGRI-AP: Applied Graphics and Rendering Innovation for Agricultural Precision	£32,000	£24,000
Project description - provided by applicants			
This project will develop a radically new software technology by exploiting cutting-edge computation for complex data analyses, for application in precision agriculture. Soil Essentials, a precision farming SME, will produce an integrated software solution to present high-resolution field data to growers and agronomists to inform early decision making. This will directly address the clear identifiable need for new ICT innovation to tackle the current and future agricultural data explosion. This will transform in-field crop monitoring to improve efficiency & profitability of the farming industry, thereby enabling the provision of healthier, more affordable food for future generations. The core software platform is sector-cross cutting and can equally be applied to other spatial data-rich industries such as environmental monitoring and homeland security.			

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
Things3D Limited	Anti-Counterfeiting 3D Printed Products - Machine-based authentication Smartphone app	£32,525	£24,393

Project description - provided by applicants

3D printed products can be printed easily as more consumer 3D printers become affordable and easily accessible. Anti-counterfeiting measures in traditional manufacturing environment do not apply well in a distributed 3D printed environment.

This project investigates the use of intelligent machine learning on a smartphone device for unique marking analysis, aiming to allow machines instead of people to make complex decisions about the provenance verification of licensed 3D printed products. This low-cost system will be developed for mobile platforms, enabling purchasers of high valued 3d printed products to validate genuine products.

Key challenges ahead are, the feature vector scanning algorithm, the machine learning algorithm, impact of 3D printing materials and geometries, and performance of software. A demonstrator system will be built showing operation in a range of covert & overt marking and 3D printed materials and geometry scenarios.

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Uxlabs Limited (lead) Flax Limited	A visual framework for search query formulation	£27,888	£20,917
Project description - provided by applicants			
Information professionals and researchers often rely on Boolean search queries to express complex information needs. Yet they, along with most non-professional searchers, find the formulation of such queries cumbersome and inefficient. Given the ubiquitous nature of this problem and the increasing importance of search as an enabler for effective data exploration, there has to be a better way. The aim of this proposal is to develop a radical alternative to traditional query formulation. We propose a novel, visual framework which allows users to express themselves using the interaction patterns and metaphors of consumer touchscreen devices. Moreover, it facilitates the expression of complex queries via a simple but powerful visual syntax. The outcome is a new approach to query formulation that moves beyond mouse, keyboard and screen to deliver a more immersive, visual user experience.			

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
WIDE IO Consulting Limited (lead) Semblent Limited	DARWIN : Data Analytics Reactive Web-framework for Inference and Networks	£30,360	£22,770
Project description - provided by applicants			
WIDE IO CONSULTING LTD helps innovative companies to create products based on WIDE IO, a cloud marketplace that provides access to the best data-analytics algorithms. Our development team regularly has to deal with the visualisation of large datasets related with social medias, and it has created a middleware to allow faster shared interaction with data. In this feasibility study, we want to use the latest browser technologies to extend the possibility of the framework to even more interactive visualisations of large data. The outcome of this project will be tested in the specific case of financial compliance analytics, before being progressively generalised and improved for other applications.			