Capital for Great Technologies Call: Robotics and Autonomous Systems Panel

Panel Date: 19 June 2013	
Panel Members:	
Starr, Ms. Alison (Panel Chair)	GE Aviation
Blake, Professor Andrew	Microsoft
Roberts, Dr Malcolm	Guidance Ltd
Brook, Professor Richard	SIRA, E-Synergy Ltd
Rogers, Professor Eric	University of Southampton
Ward, Dr Roger	SCISYS Group
Aickelin, Professor Uwe	University of Nottingham
Virk, Professor G	CLAWAR Association
Susan Soulsby (Panel Convenor)	EPSRC

Click on a grant title for further information about that grant.

Rank	Title	Equipment Account Reference	Principal Investigator	Equipment Account Holder	Lead Research Organisation	Partner Research Organisation	Awarded
1	Micro-Engineering Facility for Medical Robotics	EP/J021199/1	Yang, Professor Guang-Zhong	Bradley, Professor DDC	Imperial College London	N/A	£3,995,358.00
2	Mobile Robotics: Enabling a Pervasive Technology of the Future	EP/J013501/1	Newman, Professor Paul	Walmsley, Professor IA	Oxford University	N/A	£2,992,000.00

Rank	Title	Equipment Account Reference	Principal Investigator	Equipment Account Holder	Lead Research Organisation	Partner Research Organisation	Awarded
3	Robotic Teleoperation for Multiple Scales: Enabling Exploration, Manipulation and Assembly Tasks in New Worlds Beyond Human Capabilities	EP/K005030/1	Srinivasan, Professor Srini	Price, Professor G	University College London	N/A	£2,391,540.03
4	Robotics and Autonomous Systems: The Smart and Connected Vehicle	EP/K011618/1	Bhattacharyya KB CBE, Professor Lord Kumar	Jones, Professor TS	University of Warwick	N/A	£3,148,000.00
5	Robotics and Autonomous Systems: Southampton University Capital Proposal	EP/K00509X/1	Scanlan, Professor James P	Nelson, Professor P	University of Southampton	N/A	£2,817,000.00
6	The Edinburgh Robotic and Autonomous Systems Interaction Research Facility	EP/J015040/1	Lane, Professor David	Miller, Professor A	Universities of Edinburgh and Heriot-Watt	N/A	£6,124,334.00
7	National Facility For Innovative Robotic Systems	EP/J021156/1	Richardson, Dr Robert C	Hogg, Professor D	University of Leeds	N/A	£2,571,071.00
8	Human-Machine Co-operation in Robotics and Autonomous Systems	EP/J013714/1	Prescott, Tony J	Jones, Professor R	University of Sheffield	University of Liverpool	£999,794.00
17 applications were unsuccessful							
Total value applied for:							£77,023,263.00
Total value funded							£25,039,097.03
Success Rates (No. of grants)							32.0%
Success Rates (% of grant value)							32.5%

Capital for Great Technologies Call: Robotics and Autonomous Systems

Imperial College London, Professor Guang-Zhong Yang					
EPSRC Equipment Account Reference:	EP/J021199/1				
Title:	Micro-Engineering Facility for Medical Robotics				
Principal Investigator:	Professor Guang-Zhong Yang				
Lead Research Organisation:	Imperial College London				
Partner Research Organisations	None				
Department:	The Hamlyn Centre				
Researcher Co-investigators:	Professor Chris Payne		Professor Henry Ip		
	Professor Jianzhong Shang		Professor Michael Hughes		
Other Investigators:	Dr Benny Lo		Professor Ara Darzi		
Project Partners:	None				
Call:	Capital for Great Technologies - Robotics and Autonomous Systems				
Starts:	1st Aug 2013	Ends:	31 March 2015	Value:	£3,995,358.00
EPSRC Research Topic Classifications:					
EPSRC Industrial Sector Classifications:					
Related Grants:	None				
Project URL:	www.imperial.ac.uk/hamlyn				

Grant Summary

Medical robots, whether to be used for minimally invasive surgery (MIS), targeted therapy, emergency response, prosthetics or home assistance, represent one of the fastest growing sectors in medical devices industry. Early development of medical robotics benefitted significantly from adaptation of industrial platforms, laying down the foundation for its initial clinical acceptance and future growth. With recent emphasis clinically on improved surveillance and earlier diagnosis, an increasing proportion of procedures performed will aim to target smaller lesions that are more suitable to minimally invasive procedures. This has called for the development of miniaturised robots for surgery, and targetedtherapy with micro-instruments and smart actuators with integrated sensing and imaging, supported by advances in materials, micro-fabrication and micro-machining, as well as rapid prototyping technologies. The purpose of this proposal is to establish dedicated micro-engineering facilities for medicalrobotics at Imperial, focusing on: 1) multi-material, precision 3D rapid prototyping with materials ranging from thermoplastics, photopolymers, to metals with direct metal laser sintering; 2)micro-

machining and fabrication equipment including micro-lathe, laser profiling and fabrication platforms; 3) micro-assembly platforms with associated microscopes and 3D imaging systems; 4) fibre-optics and ablationlaser required for robotically assisted in-vivo cellular-level optical imaging, tissue characterisation and ablation. It is expected to greatly enhance theresearch capacity of developing new generations of medical robotics and facilitate the interaction and initiation of new research programmes across a number of different disciplines, both within and outside of Imperial College, thus promoting the strategic growth of the research base in robotics

Organisation Website:	www.imperial.ac.uk/

University of Oxford, Professor Paul Newman					
EPSRC Equipment Account Reference:	EP/J013501/1				
Title:	Mobile Robotics: Enabling a Pervasive Technology of the Future				
Principal Investigator:	Professor Paul Newman				
Lead Research Organisation:	University of Oxford				
Partner Research Organisations	None				
Department:	Engineering Science				
Researcher Co-investigators:	None				
Other Investigators:	Dr Ingmar Posner				
Project Partners:	None				
Call:	Capital for Great Technologies - Robotics and Autonomous Systems				
Starts:	01 July 2013	Ends:	31 March 2015	Value:	£2,992,000.00
EPSRC Research Topic Classifications:					
EPSRC Industrial Sector Classifications:					
Related Grants:	None				

Grant Summary

This award will facilitate the establishment of a world leading position for the UK in mobile robot autonomy. It will enable us to accelerate the impact, innovation and intensity of mobile robotics research. It will allow us to develop and exploit techniques that will make an impact on multiple mass markets and we will use the capital award to equip a facility with resources to develop, test and refine our approaches.

The £2,992K capital spend will provide the vehicles, sensors, validation, calibration and supporting equipment needed to secure an international technical lead in mobile robotics for the UK. In addition we will acquire equipment specifically designed to facilitate the sharing and widespread use of this hardware. We shall measure success in both academic excellence and lasting meaningful industrial engagement and exploitation. The societal and industrial footprint of our ambition is vast. It covers at a minimum: personal transport, security and defence, inspection, warehouse and factory automation, space exploration, built infrastructure monitoring, construction, logistics, and agriculture.

We are determined to leverage and expand our core expertise in mobile robotics via a multi-faceted strategy which addresses core robotics research challenges of scale, duration, robustness and cost. with the right facilities and equipment they can be both understood and overcome by a strengthened and invigorated UK research community.

The award will allow us to weave together a strategic capital spend, an investment in academic,

managerial and technical staff by the University, with clear, committed industrial support. The result is a business plan for sustainable excellence in mobile robotics
We anticipate opening a new center early next year which will house this equipment (for example the Oxford Robotcar www.robotcar.org.uk) and will give ample opportunity for publicity

Organisation Website:	http://www.ox.ac.uk/

University College London, Professor Mandayam Srinivasan					
EPSRC Equipment Account Reference:	EP/K005030/1				
Title:	Robotic Teleoperation for Multiple Scales: Enabling Exploration, Manipulation and Assembly Tasks in New Worlds Beyond Human Capabilities				
Principal Investigator:	Professor Mandayam Srinivasan				
Lead Research Organisation:	University College London				
Partner Research Organisations	None				
Department:	Department of Computer Science				
Research Co-Investigators	None				
Other Investigators:	Prof Anthony Steed		Prof Stuart Robson		
	Prof Anthony Steed		Prof Bob Sheil		
	Dr Dan Stoyanov		Dr Vijay Pawar		
Project Partners:	None				
Call:	Capital for Great Technologies - Robotics and Autonomous Systems				
Starts:	01 July 2013	Ends:	30 September 2014	Value:	£2,391,540.00
EPSRC Research Topic Classifications:	Robotics & Autonomy		Human-Computer Interactions		
EPSRC Industrial Sector Classifications:	Healthcare		Manufacturing		
Related Grants:	None				

Grant Summary

To address the technology challenge of Robotics and Autonomous Systems (RAS), researchers at UCL propose to establish several state-of-the-art experimental platforms to develop technologies for manipulating and inspecting objects remotely. Here the challenge is to build a system of robotic and computer interfaces to let humans touch, explore and manipulate structures far above and below normal human spatial and temporal scales.
Drawing on a team from across UCL Computer Science, UCL Centre for Medical Image Computing, UCL Civil, Environmental and Geomatic Engineering and the UCL Bartlett School of Architecture, this grant will combine existing UCL expertise across the individual sciences of RAS to support frontier science for impact across a number of sectors. From molecules to the aircraft scale, these technologies for telemanipulation will find applications in many fields, including healthcare, synthetic biology, advanced manufacturing, and beyond. Collaborations with industrial partners will help transfer these discoveries into advantages for UK businesses and consumers, supporting the UK's industrial strategy.
At one end of the spectrum, the group will work on devices which allow operators to manipulate

At one end of the spectrum, the group will work on devices which allow operators to manipulate micro- and nano-scale objects as if they were holding and touching them in their hands, a technology which will be useful for a broad range of applications ranging from material science to microbiology and nanomedicine. For human scale interactions, the team will develop robotic healthcare tools, allowing medical interventions such as endoscopy, laparoscopy and ultrasound scans to be carried out remotely. On larger scales suitable for heavy industry and civil engineering, the team will develop new ways of controlling large robotic arms such as those needed for the remote inspection of difficult and hard to reach spaces.

Organisation Website:	www.ucl.ac.uk

University of Warwick, Professor Lord Kumar Bhattacharyya

EPSRC Equipment Account Reference:	EP/K011618/1				
Title:	Robotic Teleoperation for Multiple Scales: Enabling Exploration, Manipulation and Assembly Tasks in New Worlds Beyond Human Capabilities				
Principal Investigator:	Professor Lord Kumar Bhattacharyya				
Lead Research Organisation:	University of Warwick				
Partner Research Organisations	None				
Department:	Warwick Manufacturing Group (WMG)				
Research Co-Investigators	None				
Other Investigators:	Professor Darek Ceglarek		Professor Alan Chalmers		
	Professor Rob Harrison		Professor Paul Jennings		
	Professor Irene Ng		Professor Mark Williams		
Project Partners:	Jaguar Land Rover				
Call:	Capital for Great Technologies - Robotics and Autonomous Systems				
Starts:	01 July 2013	Ends:	30 September 2014	Value:	£3,148,000.00
EPSRC Research Topic Classifications:	Robotics and Autonomy				
EPSRC Industrial Sector Classifications:	Transport Systems and Vehicles		Manufacturing		
Related Grants:					

Grant Summary

To create an interactive drive in, driver-in-the-loop simulator, integrated with hardware-in-the-loop, infotainment and communication simulation, a multi-sensory virtual environment, real-world environment and modular autonomous systems workbench; supported by high performance computing and data storage. This scalable, configurable and compatible collaborative research platform will significantly advance the creation and usability of autonomous systems. It will provide a capacity for cutting-edge research in virtual whole system level design, validation, verification and test of second generation sensors, new technologies and systems .

Technology innovations from research within the simulation environment will enable the 'intelligent' vehicle with ever increasing levels of driver assistance and active safety, enabled by all-round sensing and electronic actuation. Vehicles will learn driver behaviour, optimise to the driver to reduce emissions and fuel consumption, assist monotonous tasks and react to hazards

driver to reduce emissions and fuel consumption, assist monotonous tasks and react to hazards, increasing vehicle safety. Second generation sensors with on-board processing will enable the vehicle to interact with customers in a smarter way; learning habits, being situationally aware and interacting in a 'human' fashion. Near field / remote communications will provide the platform for almost unlimited features and applications. The ability to 'download' to the car will dramatically change customer relationships and enable new business models.
The facility will enable research to address a key national challenge, 'The Smart and Connected Vehicle', where development and implementation is severely inhibited by the lack of a world-leading simulation environment. The creation of this will address: technology optimisation to real people (driver-in-loop capability); effective systems integration (hardware-in-loop, HPC, communications etc.); in-context evaluation (virtual environment); multi-vehicle functionality (drive-in capability) and the cost of technology development (virtual prototyping). Our approach will apply component based methods to enable modularity, re-use, subsystem functionality, self-configuration and self-correction. Internet-based systems will enable the reconfiguration and evolution of vehicle systems throughout the product lifecycle, including condition based maintenance. The simulator will enable driver-in-the-loop , vehicle to vehicle, vehicle to infrastructure and vehicle in society research. New business models research around the 'incomplete car' will enable personalisation of the vehicle though digital interfaces and technologies, connecting the car to the wider 'lived life' ecosystem. 3D augmented reality systems will enable visualisation from innovative systems, to virtual driving environments, to sign-off without physical prototypes, to in-vehicle feedback , to training and servicing .

Organisation Website:	http://www.warwick.ac.uk

University of Southampton, Professor James Scanlan

EPSRC Equipment Account Reference:	EP/K00509X/1				
Title:	Robotics and Autonomous Systems: Southampton University Capital Proposal				
Principal Investigator:	Scanlan, Professor James P				
Lead Research Organisation:	University of Southampton				
Partner Research Organisations	None				
Department:	Faculty of Engineering and the Environment				
Research Co-Investigators	None				
Other Investigators:	Peter Wilson	Damon Teagle			
Project Partners:	None				
Call:	Capital for Great Technologies - Robotics and Autonomous Systems				
Starts:	01 August 2013	Ends:	01 August 2014	Value:	£2,817,000.00
EPSRC Research Topic Classifications:					
EPSRC Industrial Sector Classifications:					
Related Grants:	None				

Grant Summary

This will fund three large pieces of research equipment which will be used to develop novel technologies for unmanned systems. The principal goal of this work is to develop highly reliable, lightweight, low cost integrated sensors and structures using rapid manufacturing processes. The overall goal of this capital project is to enable a quantum leap in technology for autonomous systems. The project will enable the development of structronics (integrated structures and electronics) for autonomous system with example integrated wireless sensors that would be fabricated at the same time as the structure using additive manufacturing techniques.
The proposed capital expenditure aims to substantially reduce the cost of autonomous systems whilst at the same time addressing the issue of systems reliability.

Organisation Website:	http://www.southampton.ac.uk/

Universities of Edinburgh and Heriot-Watt, Professor David Lane					
EPSRC Equipment Account Reference:	EP/J015040/1				
Title:	Robotarium: The Edinburgh Robotic and Autonomous Systems Interaction Research Facility				
Principal Investigator:	Professors David Lane (Heriot-Watt University)				
Lead Research Organisation:	Universities of Edinburgh and Heriot-Watt				
Partner Research Organisations	None				
Department:	Heriot-Watt University: School of Engineering & Physical Sciences; Sensors,Signals & Sytems. University of Edinburgh: School of Informatics				
Research Co-Investigators	Sethu Vijayakumar	Maurice Fallon			
Other Investigators:					
Project Partners:	SeaRobotics	Massachusetts Institute of Technology (			
Call:	Capital for Great Technologies - Robotics and Autonomous Systems				
Starts:	01 July 2013	Ends:	30 September 2014	Value:	£6,124,334.00
EPSRC Research Topic Classifications:					
EPSRC Industrial Sector Classifications:					
Related Grants:					
Project URL	www.edu-ras.org				

Grant Summary

The ROBOTARIUM-East smart space will have three zones investigating different aspects of physical interaction. Zone A will house a high mobility, agile test facility for investigating full body contact dynamics and control for work with the Atlas DRC robot, with focus on autonomous sensing, planning and navigation in clutter. This zone will also be used for testing bio-inspired designs of soft robots, with compact actuation and sensorisation. Zone B will be a laboratory work space that mimics a constrained and dynamic environment such as a makeshift repair unit, aspects of an EAA (European Accessibility Act) compliant flat or a crowded emergency room. PR2 and Baxter co-worker humanoid robots will operate in this space, along with a team of KUKA YouBot mobile robots to carry around parts or tooling – investigating collaborative decision making. Many aspects of the sensing (Ethernet cameras, 3D High Fidelity and RGB-D cameras) and physical infrastructure can be reused, while allowing for the scenario specific issues to be addressed through reconfiguring. Zone C will house a dedicated suite of marker based and inertial sensing, along with a split treadmill and state-of-the-art prototype articulating prosthetic hands that will facilitate controlled experiments for human augmentation and prosthetics, for e.g., gait analysis and grasp dexterity studies for upper limb prosthetics.

ROBOTARIUM-West is a complementary smart space to focus on HRI and design issues with

ROBOTARIUM-West is a complementary smart-space to focus on HRI and design issues with heterogeneous but overlapping field robot platforms and unique two-way communication channels that allow for tele-presence, tele-haptics, natural interactions and remote operations right across the ROBOTARIUM systems. Equipped with interactive and expressive humanoids field robots (*Flash body plus EMYS head*), multimodal interaction systems (*multitouch screens, video wall, microphones, spherical digital camera, touch table, vision cameras, desk and head mounted eye trackers, glass and EEG sensors*) and pervasive sensor networks (*RFID, pressure mats, wifi/bluetooth sniffers*) the space can be configured to a variety of applications (domestic home, hospital emergency room, oilfield control centre, search & rescue HQ) and can be the nerve centre for various field robot experiments, including those in Robotarium-East.
Augmenting the humanoid and mobile robots above are further **Field Robots** comprising a suite of systems for beyond-the-state-of-the-art collaborative autonomous marine observation and intervention research. This includes acoustic, RF and GPRS network communications to enable research into real-time remote human, agent (or even robot) interaction across a range of offshore energy, ocean observatory, homeland security, maritime archaeology and search/rescue applications. This test-bed will comprise underwater-networked vehicles at different scales (*ANGUS4 intervention* AUV with manipulation, coordinating with *REMUS mapping AUV*, *VideoRay* mini inspection UUVs deployable from *SeaRobotics unmanned surface vehicle* (USV) and *ClearPath Kingfisher small USVs* acting as GPS-fixed moving long-baseline navigation
stations) and *Quest Aqua UAV* for over the horizon communications relay, surveillance, optical mapping and mosaicing. Aided by a *networked array of acoustic modems* for communication and navigation, and *advanced sonar and video imaging sensors t*he field testbed creates a unique facility in the world for studying networked scientific mapping and observation challenges, and for monitoring and interacting remotely.

To study advanced mobile situation awareness in the field, a sensorized Land Rover **MOBOTARIUM** - equipped with a comprehensive suite of electro-optical sensors (*LiDAR, Polarimeter, IR and visual-band camera)* and interaction devices *(eye trackers, in-vehicle and high resolution displays, medium-format digital camera, high-resolution displays)* and on-board advanced signal processing algorithms will provide 360-degree, day/night coverage of an outdoor scene in all weathers. It will be networked with the field robots above to realise a full above-and-below surface interactive mapping, observation and surveillance research system. Research on interactive driver assistance (eg prediction of intent, time to collision) and

Organisation Website:	University of Edinburgh: http://www.ed.ac.uk/home
	Heriot-Watt University: http://www.ed.ac.uk/home

University of Leeds, Dr Robert Richardson

EPSRC Equipment Account Reference:	EP/J021156/1				
Title:	National Facility For Innovative Robotic Systems				
Principal Investigator:	Richardson, Dr Robert C				
Lead Research Organisation:	University of Leeds				
Partner Research Organisations	None				
Department:	Schools of: Mechanical Engineering, Electronic and Electrical Engineering, Computing, Process, Environmental and Materials Engineering, Medicine				
Research Co-Investigators	None				
Other Investigators:	Dr Abbas Dehghani (1)	Dr Steven Freear (2)			
	Prof Anne Neville (1)	Prof Netta Cohen (3)			
	Prof Martin Levesley (1)	Prof Anthony Cohn (3)			
	Dr Peter Culmer (1)	Prof Andrew Bell (4)			
	Dr Jordan Boyle (1)	Dr Tim Stevenson (4)			
	Prof Ian Robertson (2)	Prof David Jayne (5)			
Project Partners:	Mechatec Ltd	Lambert Engineering Ltd			
	National Instruments	Blatchford Ltd			
	RSL Steeper	Haemocap Ltd			
	BAE Systems	The Shadow Company			
	WIRA Instrumentations	Surgical Innovations			
	Balfour Beatty Utility Solutions				
Call:	Capital for Great Technologies - Robotics and Autonomous Systems				
Starts:	01 July 2013	Ends:	30 September 2014	Value:	£2,571,071.00
EPSRC Research Topic Classifications:					
EPSRC Industrial Sector Classifications:					
Related Grants:	None				
Project URL:	www.leeds.ac.uk/robotics/				

Grant Summary

The National Facility for Innovative Robotic Systems at the University of Leeds is set to become the UK hub for world-leading research into the development of novel robotic systems at small to medium scale. This multi-faculty endeavour capitalises on the University's expertise in the fields of Mechanical, Electronic & Electrical and Materials Engineering as well as Computer Science and Medicine.

At the heart of the facility will be a complementary suite of state-of-the-art manufacturing equipment including ultra-high-precision milling and turning capabilities and the most advanced multi-material 3D printer in existence. The new equipment, combined with the extensive existing facilities at the University of Leeds, will provide a unique platform supporting diverse research strands associated with the development (design and manufacture) of next-generation physical robots that are more flexible, adaptive and capable than existing systems. One particular focus will be on exploring new methodologies for robot design and construction that exploit the revolutionary capabilities of the equipment.
The facility will be externally facing, implementing a straightforward financial model that will allow easy access to the equipment for academic and industrial robotics researchers across the UK.
In the first instance the facility will secure deliverables for three strategically important high priority application sectors as follows:
Surgical technologies for health and well-being - Lengthening life by facilitating safer and less invasive surgical procedures that improve recovery time and reduce post-operative complications.
Rehabilitation and prosthetics for health and wellbeing - Improving quality of life through restorative and assistive devices. Focus on small scale subsystems of larger devices.
Exploration robotics for safety and security - Protecting life by developing robots that allow humans to stay out of harm's way. Includes urban search &rescue, surveillance for military and counter-terrorism applications and repair / inspection in industrial contexts.

The National Facility for Innovative Robotic Systems will enable the development of revolutionary methodologies including:
Automatically-Assembled Robotic Systems –Designed in such a way that they require no assembly of their mechanical parts post-manufacture. Includes robotic systems made through 'pop-up' techniques and fabricated with in-situ joints and integrated electromechanical systems.
Soft-bodied Robots – Robotic systems incorporating inherently compliant elements. Implemented through multi-material rapid prototyping or compliant material moulding techniques.
Fully Integrated Robotic Systems – Fabricating mechanical with integrated electronics, actuators and sensors, all embedded directly into structural material through functional inserts during production.
Enhanced sensing, actuation and communication – Including miniaturized sensors, microwave and RF communications, novel piezo-electric materials and configurations.
Robotic systems for targeted applications – Pioneering robot designs and implementations linked to specific application requirements.

Organisation Website:	www.engineering.leeds.ac.uk/

Universities of Sheffield and Liverpool, Professor Tony Prescott

EPSRC Equipment Account Reference:	EP/J013714/1				
Title:	Human-Machine Co-operation in Robotics and Autonomous Systems				
Principal Investigator:	Prescott, Tony J				
Lead Research Organisation:	University of Sheffield				
Partner Research Organisations	University of Liverpool				
Department:	Sheffield Centre for Robotics, University of Sheffield				
Research Co-Investigators	Sean Anderson	Jim Heley			
	Daniel Coca	Michael Jump (Liverpool)			
	Tony Dodd	Claudia Mazza			
	Michael Fisher (Liverpool)	Roger Moore			
	Roderich Gross	Sandor Veres			
	Mark Hawley	Stuart Wilson			
Other Investigators	Nathan Lepora (Co-author, Research Associate)				
Project Partners:	Sheffield Advanced Manufacturing	High Performance Computing Centre			
	Centre for Assistive Technology	Liverpool Virtual Engineering Centre			
	DSTL	National Nuclear Labs			
	National Centre for Precision Farmi	National Instruments			
	South Yorkshire Fire and Rescue	Rolls Royce			
	TWI Ltd	Costain			
	Shell	Italian Institute of Technology (IIT)			
	MIE Medical	Tracksys			
	Igloo	Vicon			
	Sebastian Conran Associates	Barnsley Hospital			
	Gctronic	K-team			
	KUKA	Nvidia			
	Sheffield Hallam				
Call:	Capital for Great Technologies - Robotics and Autonomous Systems				
Starts:	01 July 2013	Ends:	30 September 2014	Value:	£999,794.00
EPSRC Research Topic Classifications:	Robotics				
EPSRC Industrial Sector Classifications:					
Related Grants:	None				
Project URL:	www.scentro.ac.uk				

Grant Summary

Human-Machine Co-operation in Robotics and Autonomous Systems
The Sheffield/Liverpool capital bid will provide funds to enhance and strengthen activities in a number of key areas of Robotics and Autonomous Systems research united by the theme of human-machine co-operation. First, it will support research in autonomous systems that will

lead directly to improvements in core technologies important to the UK economy. Specifically, we have identified the areas of ground and air autonomous vehicles and systems biology as important technologies that are applicable to a multiple industry sectors and where our research can bring about major advances that will make these systems easier-to-use, boost productivity and national competitiveness. Second, the bid will support research in service robotics, particularly in the area of assistive technologies and systems. A key focus here is on societal needs arising from the demographic shift towards a substantially higher proportion of older people in the UK population. Key underlying technologies for both areas, supported by this bid, include co-operation, flexible adaptive manipulation, and sensorimotor and social intelligence.

Organisation Website:	www.shef.ac.uk	www.scentro.ac.uk	www.liverpool.ac.uk