



Assisted Living Technologies

Innovation Awards for Collaborative R&D

Summary

Assisted Living technologies can assist older people, disabled people and those with long term conditions to remain independent in the community.

The University of Sheffield is launching an exciting initiative in this area. Up to 10 Innovation Awards of £5k will be made available to initiate Collaborative R&D projects and give SMEs the opportunity to access research expertise and facilities. Projects will be business-led and should aim to develop innovative products, processes or technology under the 'Assisted Living Technologies' theme.

This scheme aims to tackle some of the demanding challenges facing the medical technologies industry as it addresses this growing area. It is hoped that the initiation of projects will allow businesses to find innovative solutions to the challenges of developing products that facilitate independence and also encourage people to want to use them. The scheme is also intended to provide companies with an opportunity to develop or reinforce their networks in the area of 'Assisted Living Technologies' through an associated project launch and showcase events.

The University of Sheffield has secured funding from its EPSRC Knowledge Transfer Account (KTA) to promote interaction with industry and better exploit its research outputs, i.e. to turn research into benefit for the UK's citizens and economy. UK based SMEs who have not worked with the University of Sheffield previously are invited to submit applications for an Innovation Award of £5k. The funding is aimed to support collaborative R&D by providing access to academic research expertise and facilities that cannot be sourced commercially. This could include feasibility studies, technology demonstration and other development activities, but not clinical trials, routine testing or analysis that could be carried out elsewhere.

Assisted Living Technologies Theme

We will fund projects that respond to some of the key industry challenges in the area of 'Assisted Living Technologies', where the university has the appropriate expertise and facilities to deliver. Some of the key issues facing the industry are shown below, although applications are not restricted to these.

Some Key Issues

Examples of University of Sheffield Expertise

Understanding needs and benefits

- understanding the benefits (patient/economic)
- understanding their integration and control
- real-life data on costs, impacts and savings
- interoperability of devices
- design, in terms of aesthetics and usability
- barriers to adoption
- lack of awareness of technologies available amongst the carers and health professionals
- lack of desire to try new technologies by carers and health professionals

- Understanding healthcare and engineering.
- E-Health.
- Impact of telecare and telehealth services on older people living in the community.
- User requirements.
- Mixed Method Evaluation of Health and Social Care Services.
- Health Economics
- Older Peoples' Services (esp. mental health).
- Health Care Interactions and Relationships.
- Development of telecare/telehealth enabled services for the benefit of user and provider.
- Evidence-based building appraisal tools and guides for design and care practitioners.
- Extra care housing.

Design, Control & Monitoring

- reliability and robustness
- universal and ubiquitous infrastructure
- standards and interoperability
- integration of smart home services, including smart meters
- connectivity
- infrastructure
- smart meters and monitoring
- use for data collection to prove claimed benefits (patient/economic)
- how to meet new standards and code requirements
- sustainable design
- sustainable and integrated materials, components and systems
- designing new, improved solutions

- New Technology for Old Age.
- Assistive and telecare technologies for delivering treatment, care, support, reassurance, information and 'quality of life' enhancement to vulnerable older people.
- Technology evaluation.
- Data Modelling.
- Machine Learning.
- Computer Vision.
- Healthcare engineering.
- Remote Health Monitoring for chronic conditions
- Video and image coding.
- Smart meters.
- RFID and Wireless friendly buildings.
- Control systems, analysis and design.
- Applications of content-based approaches for search and retrieval, security, surveillance and remote sensing.
- Smart homes.
- Computational modelling of auditory and speech perception in humans and machines.
- Robustness in speech recognition.
- Large vocabulary speech recognition systems and their applications.
- Advanced Lifestyle Monitoring System.
- Speech-in/Speech-out Communication Aid.
- Designing of living environments for older people, particularly people with dementia.

Assisted Living Technology research at the University of Sheffield

An interdisciplinary research team at the University of Sheffield, comprising of nurses, social scientists, psychologists, information specialists, medical engineers, clinical scientists and allied health professionals, is developing and testing a number of assisted living technologies to meet the challenges faced by the UK's ageing population.

The University of Sheffield has a wide range of expertise and facilities that may be of benefit to companies interested in undertaking research or development activities under the 'Assisted Living Technologies' theme. Examples of current collaborative activities are shown below:

Example 1 – School of Health and Related Research (SchARR).

The SMART (Self Management Supported by Assistive, Rehabilitation and Telecare Technologies) system is being developed to enable people with long term conditions to self manage at home with minimal support from health practitioners.

The system is comprised of a number of integrated technologies including a touch screen computer and a re-engineered mobile phone. The system is able to record the user's activity and respond, depending on the users own assessment of their progress.

The prototype is being developed to meet the needs of people with three long term conditions at present; stroke, chronic heart failure and chronic pain with the ultimate aim of creating a system that can meet the needs of people with a range of long term conditions.

<http://www.shef.ac.uk/scharr/sections/hsr/rrg>

Example 2 – Dept. of Computer Sciences, Dept. of Human Communication Sciences (HCS) and SchARR

VIVOCA - A device which combines speech recognition and synthesis technologies to recognise disordered speech, before speaking out an equivalent clear message. The device acts as a personal translator allowing people with no speech or limited speech to form basic conversations. The Voice Input Voice Output Communication Aid was developed jointly by Barnsley Hospital and researchers in the Department of Computer Science, HCS and SchARR.

The aid allows people with severe dysarthria (imperfect speech cause by damage to the nervous system) to communicate using a speech synthesiser in a range of male and female voices with regional dialects. The Barnsley poet Ian McMillan and the Yorkshire BBC newsreader Christa Ackroyd have supplied voices for the device For further information visit

<http://www.shef.ac.uk/cast/projects/vivoca>

Further information about the University of Sheffield's expertise and facilities can be found from the following websites:

- School of Health and Related Studies, <http://www.sheffield.ac.uk/scharr>
 - o Rehabilitation and Assistive Technology Group, <http://www.shef.ac.uk/scharr/sections/hsr/rrg/welcome.html>
 - o Sheffield Institute for Studies on Ageing, <http://www.shef.ac.uk/sisa/>
 - o Clinical Applications of Speech Technology, <http://www.shef.ac.uk/cast/about.html>

- General Engineering, including Materials Science, Civil, and Electrical/Electronic: Sheffield Engineering Gateway, <http://seg.sheffield.ac.uk/Home.aspx>
 - o Department of Computer Sciences, <http://www.dcs.shef.ac.uk/spandh/>
 - o Department of Electrical Electronic Engineering, Communications Research Group, <http://www.shef.ac.uk/eee/research/cr>
 - o Department of Electrical Electronic Engineering, Vision and Information Engineering, <http://www.shef.ac.uk/eee/research/vie/index.html>

- School of Architecture, <http://www.shef.ac.uk/architecture/index.html>

Application Criteria

The Innovation Award scheme is open to UK based SMEs who have not worked with the University of Sheffield previously. Applications must fit within the general theme of 'Assisted Living Technologies', as detailed in the scope above, and should relate to the development of innovative products, processes or technology for the company. Applications will be assessed against the following selection criteria:

- The project must fit within the scope of the 'Assisted Living Technologies' theme
- The expertise required must be clearly defined and justified.
- The University of Sheffield must have the appropriate academic expertise and/or facilities to deliver the project.
- The project must have the potential to lead to the development of innovative new products or processes (for the company)
- It must be possible to achieve realistic value, benefit and deliverables within the duration of the 3 month project.
- The project should have a potential to provide a platform for future collaborations, e.g., leveraging further funding from RCUK, NIHR, TSB or EU initiatives.

Process

The call for applications will open on 18th February 2011 and closes on 31st March 2011. Applications will accepted at any time during this period. Application forms will be available from <http://www.sheffield.ac.uk/ris/kta>.

The applications will be assessed by a panel, chaired by a member of the KTA Industry Advisory Board. Ten selected projects will continue to the next stage of the process. These applicants will be contacted during April and invited to develop a more detailed project plan with an academic partner. Only projects which successfully complete this process will be funded. All projects are expected to start in May 2011 and be a maximum of 3 months in duration. All projects should be completed by 31st August 2011.

During the early stages of the projects, all participants will be invited to attend an informal event with their academic partners. They will be invited to present a non-confidential summary of their project and have the opportunity to build their networks with other companies and academics involved in the scheme. A showcase event will also be held to present the results of the scheme to a wider audience.

Key Dates

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| Call opens | 18 th February 2011 |
| Call closes | 31 st March 2011 |
| Review and selection of applications to take to next stage | April 2011 |
| Development of project plans with ten companies and academic partners Sign contracts | April 2011 |
| Decision to all applicants | April 2011 |
| Projects start | May 2011 |
| Informal launch and networking event for participants | End May 2011 |
| All projects completed | End August 2011 |
| Showcase and networking event | End September 2011 |

Further Information

We anticipate that these initial projects will involve companies bringing their products and ideas for development. To avoid unnecessary administration, these Collaborative R&D projects will be subject to a standard University of Sheffield contract whereby:

- Background IP resides with the original owner(s)
- Foreground IP from the project resides with the company

Contract terms for any future work resulting from this first collaboration would be subject to further agreement.

After the completion of the projects a short final report must be produced by the academic partner, including details of all expenditure. Awards will be made subject to the University of Sheffield being able to use allow non-confidential information about their projects, and their outcomes, at the showcase event and in press releases or short case studies for publicity purposes.

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