

**Technology Strategy Board**

Driving Innovation



# A Smart Care Distributed Environment

**JULY 2008 COMPETITION FOR FUNDING**

**ASSISTED LIVING  
INNOVATION PLATFORM**

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Driving Innovation

Among the biggest challenges facing all developed countries in the early 21st century is that of maintaining wellbeing, delivering care to those with chronic conditions, particularly the elderly, and supporting the more vulnerable members of society. Any 21st century health and social care service will have to make greater use of technology, deliver care closer to and sometimes in the home, and make increasing use of a person's capacity to self care by supporting them appropriately. This is called assisted living.

The Assisted Living Innovation Platform aims to significantly advance technology to meet the demand for independent living from those suffering from long term adverse health conditions. The technology needs to have greater capability, be easier to use and cheaper. Current care models are unsustainable, and major changes will be needed.

# A Smart Care Distributed Environment

## JULY 2008 COMPETITION FOR FUNDING

The Assisted Living Innovation Platform was launched at "Innovate07" in London (8 November 2007). It is funded by the Department of Health (DH), the Technology Strategy Board, the Engineering and Physical Sciences Research Council (EPSRC) and the Economic and Social Research Council (ESRC). The Platform enables industry, academia and health and care professionals to collaborate in order to significantly advance the technology to meet the needs in this area.

A variety of activities are being supported. The first collaborative R&D activity looked at improving how sensor data is collected in the home and used by the service centre, and also research in user centred design. A number of successful proposals will be announced soon. The second activity is looking at the business and economic models for assisted living.

This third activity is looking at the digital communications (telecommunications and broadcast) aspects. It will complement the first competition, and will complete the first shorter term R&D priorities identified in our activity plan and the platform technology road map.

### This Competition

The competition has been called the Smart Care Distributed Environment to emphasise the need to look at communications technologies within the context of a large population of users with multiple devices, and within a personalised health and care system. It aims to bring together different disciplines and industries to work together systematically to address issues like provision of remote care and avoiding patient isolation.

Our vision for Smart Care is to support projects which deliver highly innovative research and development, innovation and technology projects, and also user oriented research. We aim to support projects that bring together the best UK expertise in industry, the health and care professions, and academia. This initiative is aimed at bringing benefit to all three of these players. In particular we expect significant benefits to the development of UK-based companies seeking to position themselves in what is a potentially large global market opportunity.

To fulfil our aims the sponsors will support projects that:

- Develop technology-based innovative solutions to address long term conditions;
- Stimulate and/or accelerate industry investment in innovation;
- Show clear pathways to exploitation;
- Engage with users and beneficiaries of the project outputs
- Adopt a clear multidisciplinary approach;
- Show promise of high quality research outputs.

This document outlines the process and timetable for this competition. It covers the identification and development of the research and innovation issues involved and opportunities for collaboration and formation. An indicative £5M has been allocated to this activity which would support between five and ten projects.

**Key dates that interested parties may wish to keep free are also described.**

### Scope of the Smart Care Distributed Environment

Existing assisted living technology (telecare, and telehealth) is based on practical, but low technology solutions with fairly basic communications requirements and capability.

The technology road mapping and priority setting exercises of the Assisted Living Innovation Platform (ALIP) concluded that care should be available anytime and anywhere. There was a need to address isolation, and increase interactions between individuals and systems.

The road map concluded: "in the near term the opportunities are around integration and interoperability of components which will lead to the greater exploitation of current capacity. In the longer term the opportunities are for the development of entirely new services in which health and care follow the individual and are delivered wherever and whenever needed."

The roadmap envisages a future care environment which provides support for people wherever and whenever they need it. This support covers the provision of information, safety and security monitoring, physiological monitoring and provides links to assistive technology. Any response service to the alerts is provided by the statutory, private or third sector. Telecommunications provides the backbone of these integrated assisted living services.

It is anomalous in the age of mobile phone roaming (being able to call and bill between different mobile networks and network technologies such as 2G and 3G, and Wi-Fi or Wireless LANS using technologies like Skype), and integration of mobile phones with satellite tracking (GPS), that devices for assisted living, such as falls monitors, cease to function outside the home. It is even more so that

a device installed in one location e.g. at home, will not work in another home. This may be one of the reasons why many devices distributed are not actually in use.

At the same time communications technology (both telecommunications and broadcast) is becoming inherently more complex, and we are moving to a world of heterogeneous IP (Internet Protocol) networks. Many of the sensors that will be required in these support services are available now and the challenge is to combine these with advanced telecommunications technologies to address the care and support needs of the 21st century. Proposers are encouraged to involve the care sector in consortia to develop truly innovative approaches to meet future care and support opportunities.

In order to deliver such services a transformation of the connectivity of devices, applications and personalised care is required. A digital communications Smart Care Distributed Environment is proposed to achieve this.

## Research and Development Funding

The focus of this competition is short term R&D, but basic longer term research may also be supported if it meets the appropriate criteria for scientific excellence. It is intended that the Technology Strategy Board will largely support industrial collaborators, the Department of Health National Institute for Health Research will support user involvement particularly from NHS Trusts, and the EPSRC and ESRC will support academia where appropriate. It is expected that industry will also contribute significant resources.

Short term R&D projects will receive 50% funding. Basic research projects may receive funding at up to 75%, but it is anticipated that the balance of funding will be allocated to the former.

## Expression of interest, consortia building and full proposals

Project development will be through a three stage process.

1. Individuals must submit an expression of interest describing their expertise, area of interest, and if they wish to do so, broad project idea description. These will then be independently evaluated and successful applicants will then be invited to a workshop.
2. A project and consortia building workshop.
3. Consortia may then submit full proposals, normally with an industry lead partner.

The expressions of interest (EoI) stage is to enable potential participants to describe the area in which they are interested in working. The EoIs will not be detailed but should demonstrate a commitment to be involved, an indication of the level of resource available, e.g. more than one project, number of man years of effort, and the main areas of interest. The EoI application forms will be prioritised against the technology priorities by an independent panel and those whose profile and expertise fit well with the priorities will be advised that a proposal would be welcome. Successful bidders at this stage must be represented at the consortium building workshop.

The project and consortia event will provide in depth presentations of the technology priorities with a view to maximise the potential of proposals. The event will provide the opportunity to network with other interested players. No formal commitment will be required prior to attendance, but participants should have appropriate endorsement by the relevant budget holder. Industrial participants will not be expected to reveal commercially sensitive information about their capability and future plans.



By the end of the event (which will comprise an afternoon workshop, a networking dinner, and a morning project building session) potential applicants will have a clear idea of the proposal they will wish to submit, potential partners, how the project will be exploited, and criteria for support. Additional partners can be added after the workshop if relevant expertise was not available e.g. a need for user organisation involvement.

The closing dates for the two deadlines and other key dates are detailed on page 6.

## Technology priorities in the Smart Care Distributed Environment

Leading edge research in digital communications, and location technologies, is not presently being transferred into Assisted Living technology. Interoperability was raised as a concern for assisted living and existing telecare applications at a platform priority setting workshop. The proliferation of different communications standards could exacerbate this concern, and yet because communications is a strongly standardised environment, the communications aspects of the Smart Care Distributed Environment could help to resolve interoperability concerns. The specific technology areas of short term R&D and basic research to be considered are described at the end of this document.

Projects funded under this initiative must:

**1.** Bring together leading-edge expertise in telecommunications with assisted living, telecare and telehealth, combining an end to end systems approach in communications with an end to end systems approach in assisted living, from referral and assessment through user-centred service design to response.

They must clearly demonstrate how the project responds to user needs and challenges in the area of smart care distributed environments.

**2.** Take forward existing and recently completed digital communications research nearer to implementation, bearing in mind that technology based projects will not be supported without an exploitation pathway in assisted living. Projects derived from a smart assisted living housing background should seek to link numbers of existing smart installations, and undertake experimentation on large numbers of parameters. Projects can lead to demonstrations of new technology, that are sustainable and upgradeable, but technology demonstrators (or smart housing projects) on their own will not be supported.

**3.** Identify the barriers to use of multiple networks to deliver assisted living services. Barriers covering technology and commercial business implementation need to be resolved. Technology barriers solved will require implementation through to the standards bodies to ensure global exploitation and interoperability. Modelling at the technology level and business level required through to a validated proof of concept test bed. This could be combined with other commercial services facing the same barriers.

Specifically, the technology areas for the Smart Care Distributed Environment are:

### 1. Short term R&D

i) The application of emerging wireless and fixed network technologies to assisted living technology; e.g. comparisons of various short range wireless communications standards, and transmission of data over different fixed and mobile networks. Electromagnetic compatibility.

- ii) Implementation of more efficient, smaller IP based devices communicating over BT21CN type networks. Studies of network resilience in complex IP based environments. Use of the IMS platform.
- iii) Deployment of novel location services, alongside existing location technologies e.g. use of indoor positioning, together with improved positioning using mobile phone propagation and satellite, wherever and whichever is the most appropriate.
- iv) Novel applications of new broadcast technologies including mobile TV, IP TV etc for provision of interactive health and care services.
- v) From smart housing to smart care environments. Existing smart house projects need to be linked together, and need to be extended so that they represent a community and not just a geographically limited experiment.
- vi) User and behavioural studies. Use of new telecommunications and broadcast technologies may bring about the introduction of changes in the service models. These changes may affect users, carers and the clinical community.

### 2. Basic research

- i) Modelling of complex communications systems alongside the health and care system.
- ii) Application of novel wireless techniques, cognitive radio, ad hoc mesh and reconfigurable networking, using assisted living as an application.



## More Information

For more information about this and other events and details on how to register and apply visit <http://www.technologyprogramme.org.uk>

Helpline: 01355 272155

## Key Dates

Competition launch	27 June 2008
Expression of Interest to be received	1st September 2008 Midday 12.00
Inform successful applicants	6 October 2008
Compulsory consortia building workshop	30 October 2008
Compulsory form filling workshop	16 January 2009
Full proposal submission	30 January 2009 Midday 12.00
Selection/notification of success	13 March 2009

The Technology Strategy Board  
B1 North Star House  
North Star Avenue  
Swindon  
SN2 1JF

Telephone: 01793 442700

[www.innovateuk.org](http://www.innovateuk.org)