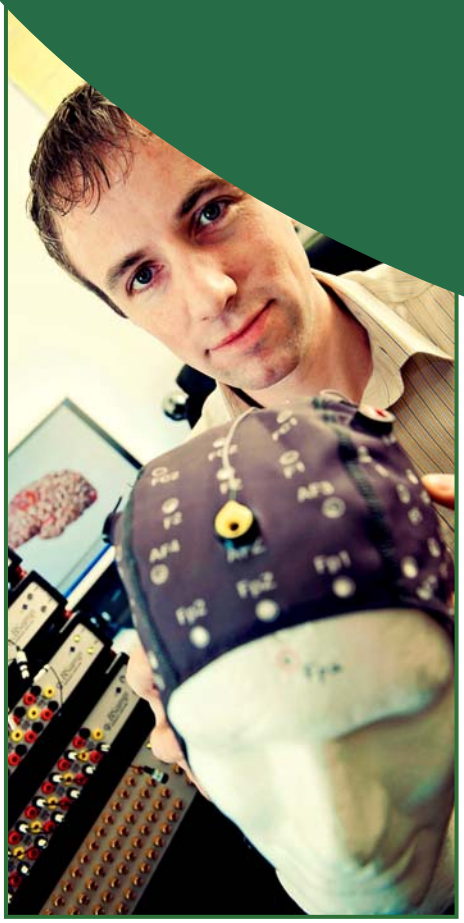
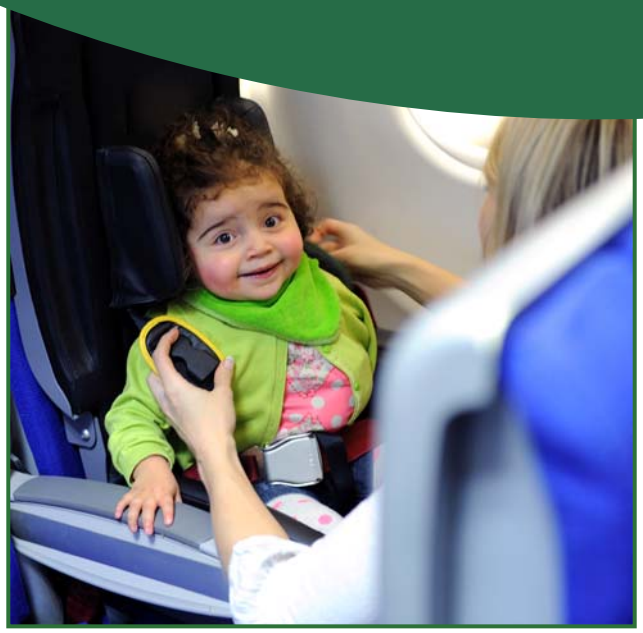
Research and development work relating to assistive technology

2011-12





Research and development work relating to assistive technology

2011-12

Presented to Parliament pursuant to Section 22 of the Chronically Sick and Disabled Persons Act 1970

Front cover images:

- Intelligent Pre- and Post-Processing Algorithms for Autonomous Multiclass Brain-Computer Interfaces, University of Ulster, © Dr D Coyle;
- TravelChair, MERU, © Andy Newbold Photography;
- CompanionAble - Integrated Cognitive Assistive & Domotic Companion Robotic Systems for Ability & Security, University of Reading, © Prof A Badii CompanionAble project.

First published July 2012
Published to Department of Health website, in electronic PDF format only.
http://www.dh.gov.uk/publications

Contents

Introduction

About this report

Section 22 of the Chronically Sick and Disabled Persons Act 1970 requires a report to be laid before Parliament each year describing the research activity the government has funded to improve equipment for disabled and older people, known as Assistive Technology.

The definition for assistive technology is one that was developed by the Foundation for Assistive Technology (FAST) in 2001 working with the sector and is as follows: “Assistive Technology is any product or service designed to enable independence for disabled and older people.” This broad definition means that a wide range of products and services are eligible for inclusion in the report, both high and low tech. Technological advances mean that the breadth of work covered is constantly expanding. The research covers not only specific products, but also systems, combinations of technologies, and interfaces to mainstream technology, for example the internet.

For the purposes of this report, products and systems are further classified as assistive technology if their adoption and use is under some measure of control by the disabled and older end-user and there is a level of meaningful interaction by the end user with the product or system. This therefore excludes telemedicine services such as videoconferencing between a GP and a hospital consultant, using equipment in the hospital and GP surgery, as these technologies are primarily used by, and operated under the control of, the healthcare provider. Neither does the report feature research on implanted technologies over which the user has no control or interaction, such as hip replacements. However this classification would lead to the inclusion in the report of research into the use of semi-implanted devices, such as gastrostomy feeding tubes, which are used, cleaned and maintained by the individual at home, though implanted in hospital.

The report aims to reflect research and development activity in relation to a wide range of impairments and health conditions and also to reflect the range of government funding programmes across health, social care, education, housing and employment. The report covers any aspect of research and development work in assistive technology, including service provision, research on motivation, cost or patterns of use, as well as technological development.

Methods used for gathering information

The information provided in this report is gathered by desk research, including regular review of online information provided by research organisations, user representative and funding organisations, as well as information from sector journals, and information solicited directly from the research teams. In the year from April 2011-March 2012 FAST recorded 228 projects

carrying out research and development activity in assistive technology over the year, of which 82 concluded during the year, a similar level of activity to that recorded in last year's report.

FAST is grateful for the support of the research and development community in providing the information included in this report. While all attempts are made to ensure that the information provided is comprehensive, there may be projects which have not been identified and we would be grateful for notification of any such projects.

Report format

All the research into assistive technology included in the report is being carried out in the UK during the period April 2011-March 2012 and is being funded by the UK government or is funded by the European Union (EU) with participation from a UK organisation. The feature section of the report highlights many of the projects that have concluded during the past year, have findings of interest to the sector and are illustrative of the potential benefits of investment in research and development into assistive technology. Whenever the information is available, the outcome of the project, including the dissemination and publication of research articles, and the next steps planned by the research team for exploitation of the research activity is highlighted.

The report includes, in Annex A, a full listing of government and EU funded research into assistive technology in the UK that has started, finished or was carried out during the year. The listing provides hyperlinks to enable readers to find further information on the FAST website, www.fastuk.org, including participant contact details and project progress. This information is freely available to the public, is regularly updated and provides the online format for this report. Further information on research and development in assistive technology funded by non-government organisations, on events, and service improvement activity can also be found on the FAST website.

Who is the report for?

This report is of interest to a broad audience including:

- members of Parliament, government decision makers and research funding organisations who can assess the impact of the investment made in research and development in this area and identify areas that may require future funding;
- the research community and industry who can identify useful activity in their area of interest and who may wish to use the links to the FAST website to make contact with partner organisations and avoid duplication of effort;
- service providers and people who use assistive technology or support others to use assistive technology and who wish to understand how advances in technology can directly benefit disabled and older people living actively in the community.

The policy context

This year has seen considerable debate both inside and outside government about how best to deliver public services at a time of continued budgetary constraint. While there are differences in the approaches advocated, there is widespread agreement that closer integration of health and social care will deliver more efficient, cost effective services that are fit to meet the increasing demands of an ageing population. High profile media coverage of instances where vulnerable disabled and older people have not been treated with dignity has added to concern about how regulators and the public can ensure consistently high quality residential and domiciliary care services.

The challenge for the government has been to propose ways to extend provision of health and social care services at the same time as improving their quality and reducing costs. Large scale randomised controlled trials of telecare and telehealth have recently demonstrated that these technologies can support quality and efficiency improvements if they are implemented as part of a considered redesign of services. The research featured in this report highlights how a broad range of assistive technology can support the integration of health, social care and other community services, providing a means to connect informal and formal care networks and extend the period that disabled and older people can remain living independently at home.

The main focus of government policy over the past year has been on reform of health and social care services and of welfare support. There has consequently been less opportunity than in previous years for Parliamentary consideration of policy in areas such as housing, transport, education and culture. The policy debate on the shape of future healthcare services is already influencing assistive technology research activity. An increasing number of research projects are reporting this year with fully developed exploitation plans that assume products and services will be accessed by consumers as well as those receiving care from statutory services, and that these services will be delivered by a broader range of qualified service providers from statutory, voluntary and private sectors.

Re-thinking health and social care services

The Health and Social Care Bill,[1] which gained Royal Assent to become the Health and Social Care Act (2012) in March 2012, constitutes a radical restructuring of the way in which health services are delivered. The legislation includes measures to reduce bureaucracy through the abolition of Primary Care Trusts and Strategic Health Authorities, which it is estimated could save £4.5 billion over the lifetime of this Parliament, and to give local Clinical Commissioning Groups power over approximately £65 billion of NHS funding and the freedom to design and tailor local health services for their patients. There was significant discussion about the proposed reforms as the bill went through Parliament and concern was voiced that there had been insufficient time to allow the public and healthcare practitioners to comment on the

[1] The Health and Social Care bill on the Department of Health website: http://healthandcare.dh.gov.uk/category/health-and-social-care-bill/

proposals. In response to these concerns an independent body, the NHS Future Forum, was tasked to canvas public views and undertook a two-month 'listening exercise'. The recommendations in the Forum's report, which was published in June 2011,[2] emphasised the importance of integration and co-ordination of health and social care services, as well as including representatives of a broad range of practitioner groups in addition to GPs on Clinical Commissioning Groups. These recommendations were reflected in amendments to the bill.

Integration through partnership commissioning

The Act establishes an independent national level NHS Commissioning Board to authorise Clinical Commissioning Groups, allocate resources and provide commissioning guidance. In January 2012 the Department of Health announced plans to provide up to £100 million in additional funding to Clinical Commissioning Groups to improve local services and prevent unnecessary admissions to hospital.[3] Amongst the options for Clinical Commissioning Groups to consider is the commissioning of 'any service which supports patients in the community and in their homes to help avoid unnecessary visits to hospital', which would include assistive technology. At a local level the Act will lead to the setting up of Health and Wellbeing Boards, giving responsibility for local public health services to local authorities to integrate services delivered by the NHS and social care, and to coordinate activity with local housing, environmental health, education, leisure and transport services. They will undertake a Joint Strategic Needs Assessment for their population and develop a strategy for how these needs can be best addressed. By April 2012, Health and Wellbeing Boards will need to be able to operate effectively in shadow form, taking on their statutory functions from April 2013.

Despite policy direction, guidance and funding provided to local services over the past few years, there appear to be significant barriers to integration between health and social care at a local level. In December 2011 the Audit Commission published 'Joining Up Health and Social Care - Improving Value for Money Across the Interface'[4] which identified significant differences in the types of care received by people aged 65 and over across the country. The findings suggest that the NHS and local councils have made patchy progress in improving joint working across health and social care, which the Commission said was vital to create opportunities for efficiencies and improvements to services.

Shifting control of budgets and widening choice of provider

Some commentators raised concerns that the proposals under the Health and Social Care Act will create a healthcare 'marketplace' which has the potential to undermine services delivered by the NHS. The role of the proposed regulatory body in providing service provider oversight has also been the focus of much debate. The amendments to the Bill made in response to

2 NHS Future Forum information on the Department of Health website: http://healthandcare.dh.gov.uk/future-forum-report/

3 NHS to get £100m cash injection to improve services, press release, Department of Health website: http://mediacentre.dh.gov.uk/2012/01/16/nhs-to-get-100m-cash-injection-to-improve-services/

4 'Joining Up Health and Social Care - Improving Value for Money Across the Interface' report on the Audit Commission website: http://www.audit-commission.gov.uk/nationalstudies/localgov/Pages/joininguphealthandsocialcare.aspx

these concerns aim to make the NHS more accountable to patients and the public by establishing Healthwatch England and local Healthwatch, new independent bodies that can look into complaints and scrutinise the performance of health providers. Underpinning the principle of providing choice, the Act includes measures to ensure patients will have greater information on how the NHS is performing and the range of providers they can choose for their healthcare.

Following the NHS Future Forum listening exercise, the Department of Health published guidance on the phased roll-out of the Any Qualified Provider (AQP) programme.[5] All healthcare providers, including NHS and private sector organisations, charities and social enterprises, which meet national qualification requirements, are now eligible to deliver NHS services at NHS prices. AQP is being tested with selected community and mental health services which include assistive technology services provided by continence and children's wheelchair services. Further services that will be open to AQP from 2013/14 could include speech and language therapy, long term conditions self management support, and wheelchair services for adults, all of which deliver services underpinned by assistive technology.

The benefits of social care service users controlling the services they receive have been demonstrated and it is government policy that local authorities in England should support all adults eligible for social care support to move to personal budgets by 2013.[6] In October 2011 the Secretary of State for Health announced that subject to the evaluation of personal health budgets, by April 2014 everyone in receipt of NHS Continuing Healthcare will have a right to ask for a personal health budget, including a direct payment. In February 2012 the Department of Health published a discussion paper which explores the use of personal health budgets in the NHS in England, based on current work to pilot personal health budgets involving over 2,700 participants across 20 sites.[7] Under legislation issued by the Scottish government in March 2012 service users will have the right to a personal budget but will also have an option to leave their care management in the hands of their local authority. The Social Care (Self-Directed Support) (Scotland) Bill would make Scotland the first UK country to enshrine personalisation in law at the heart of the care system.[8] There is an assumption by many service providers that people in control of a personal health budget would have the option to purchase assistive technology as part of their support package.

In March 2012 the Department for Education's published a Green Paper[9] which set out for consultation the plans for reforming the current system for identifying, assessing and

5 Any Qualified Provider information on the Department of Health website: http://healthandcare.dh.gov.uk/any-qualified-provider-2/

6 Personal budgets for all, press release, Department of Health website: http://www.dh.gov.uk/en/MediaCentre/Pressreleases/DH_121690

7 Personal health budgets and NHS Continuing Healthcare information on Department of Health website: http://www.dh.gov.uk/health/2012/02/personal-health-budgets-and-nhs-continuing-healthcare/

8 Social Care (Self-Directed Support) (Scotland) Bill, Scottish Parliament website: http://www.scottish.parliament.uk/parliamentarybusiness/Bills/48001.aspx

9 Department for Education, Support and aspiration: A new approach to special educational needs and disability, available from: http://www.education.gov.uk/childrenandyoungpeople/sen/a0075339/sengreenpaper

supporting children and young people who are disabled or have special educational needs (SEN) and their families. In May the Department published their response to the consultation, setting out the next steps in taking forward the Green Paper reforms, including through legislation. Key proposals are: that resources are focused on those children and young people with more complex needs; to ensure staff are appropriately trained; that parents understand the support that is available; that they are able to access early intervention, integrated assessment and to have joined up service support; and that parents in England are given control over their children's SEN budgets. Providing parents with control over their child's SEN budget is proposed as a necessary step to allowing them choice of service provider rather than local authorities being the sole provider.

A review by the National Audit Office published in September 2011[10] found that personal budgets for social care improves people's lives but said 'shortcomings' over user support and market oversight need to be tackled before they are rolled out widely. The report said many people find the process of buying care difficult, with only 50-58% of users describing it as 'easy' or 'very easy' to get service information.

Relevant to the debate about the adoption of assistive technology by individuals who have control of their own health, education or social care budgets are the findings of a market survey published in October 2011 by the Office of Fair Trading (OFT).[11] The OFT noted significant concerns about the lack of information for purchasers of mobility aids, overcharging and the difficulties they face in making price comparisons. The survey found that older and disabled consumers who are subject to high pressure sales techniques from doorstep traders can pay excessively high prices for equipment. It also highlighted the stress and inconvenience caused when consumers are misled into making an inappropriate and expensive purchase.

Local control and democratic involvement

Vital to the reshaping and reform of services is success in securing views and comments from the people currently and potentially using health and social care services. In addition to measures to provide more information to the public about health service providers and a stronger voice through Healthwatch organisations, the Health and Social Care Act includes measures to strengthen local democratic involvement. The aim is that power to shape local services will shift from Whitehall to town hall, with at least one locally elected councillor and a representative of Healthwatch on every Health and Wellbeing Board, to influence and challenge commissioning decisions and promote integrated health and care.

A major public concern resulting from a number of instances of poor quality care provided in residential care homes is the dignity provided to older people and the safety of vulnerable disabled people. In July 2011 the NHS Confederation, the Local Government Group and Age

10 'Oversight of user choice and provider competition in care markets' report on National Audit Office website: http://www.nao.org.uk/publications/1012/oversight_of_care_market.aspx

11 Office of Fair Trading press release on mobility aids sector survey: http://www.oft.gov.uk/news-and-updates/press/2011/105-11

UK established a commission[12] to take evidence on how senior citizens are treated in the health and social care system. The commission's aim was to understand the aspirations of older people and their families for dignity and care, to establish what really works to improve care and to identify good practice examples from across health and social care. Its draft report, 'Delivering Dignity' was published in February 2012 and recommended 'fundamental changes to culture, leadership, management, staff development, clinical practice and service delivery.'[13]

In December 2011, the Office for Disability Issues (ODI) invited disabled people and their organisations throughout the UK to contribute directly to the next cross-government disability strategy.[14] The ODI says the strategy needs to tackle barriers to realising aspirations and individual control, as well as change attitudes and behaviour towards disabled people, and has published a discussion document 'Fulfilling Potential' which outlines key issues. A discussion exercise which ran until March 2012 received over 500 responses. Amongst the emerging themes identified was the need to 'promote disabled people's right to live in communities, and have services such as transport, and buildings and communications that are accessible and inclusive'. The Disability Strategy is to be published later in 2012.[15].

Opening up the market and delivering at scale

The 'Plan for Growth'[16] which accompanied the 2011 Budget included a commitment to improve the take up of assisted living technology, which was identified as crucial in supporting service transformation. To support this commitment the Technology Strategy Board (TSB) and the National Institute for Health Research (NIHR) launched a competition in June 2011 to transform the lives of older adults and explore ways of using innovative products, systems and services to create more independent lifestyles. The competition resulted in total government funding of £25 million from the TSB (£19 million), and NIHR (£1 million) and a further £5 million contribution from the Scottish Government, Highlands and Islands Enterprise and Scottish Enterprise.

As a result of the competition, the national *dallas* (delivering assisted living lifestyles at scale) programme[17] aims to involve nearly 170,000 people by summer 2015. In May 2012 it was announced that four consortia have been chosen to run projects with communities across the UK. These include: i-Focus, a nationwide Warm Neighbourhoods scheme that aims to use on-line and mobile technologies to support informal care networks; Year Zero, an online application which enables individuals to actively manage their health information from cradle to

12 Commission announced to improve essential care, press release, AgeUK website: http://www.ageuk.org.uk/latest-news/archive/commission-announced-to-improve-essential-care/

13 Independent Commission issues 'call to arms', press release, NHS Confederation website: http://www.nhsconfed.org/PressReleases/Pages/dignity-call-to-arms.aspx

14 Office for Disability Issues press release, Department for Work and Pensions website: http://www.dwp.gov.uk/newsroom/press-releases/2011/dec-2011/dwp137-11.shtml

15 Office for Disability Issues statement on website: http://odi.dwp.gov.uk/odi-projects/fulfilling-potential.php/

16 Growth Review information, HM Treasury website: http://www.hm-treasury.gov.uk/ukecon_growth_index.htm

17 Technology Strategy Board press release, *dallas* programme: http://www.innovateuk.org/_assets/live%20from%20proofing%20300311/press%20release%20dallas%203 1mar11%20final.pdf

grave; Feel Good Factory, life enhancing technologies to help people living in Liverpool better manage their health and social care needs; and Living It Up, innovative solutions to enable people in communities across Scotland to have choice and better control over their health and wellbeing. Additional contributions from consortia members bring the total investment in *dallas* to £37.3 million.

Evidence of the potential for telehealth to deliver service and cost efficiencies was strengthened by the publication in December 2011 of the initial findings from the Department of Health's Whole Systems Demonstrator (WSD) programme.[18] Believed to be the largest randomised controlled trial of this technology in the world, the WSD programme involved 6,191 patients and 238 GP practices across three sites in Newham, Kent and Cornwall. The first set of findings relate to the 3,030 participating telehealth patients and findings are that, if used correctly, telehealth can deliver a 15% reduction in A&E visits, a 20% reduction in emergency admissions, a 14% reduction in elective admissions, a 14% reduction in bed days and an 8% reduction in tariff costs, along with a 45% reduction in mortality rates. More detailed analysis of the data, including the evidence on telecare, is expected to be published during the course of 2012. Following publication of these results, in December 2011 the Department of Health announced plans to accelerate the use of telehealth and telecare technologies over the next five years as one of a package of measures outlined in the government's Strategy for UK Life Sciences.[19] Speaking at the launch of the strategy, the Prime Minister said he wanted the NHS to be 'the fastest adopter of new ideas in the world', adding 'Just look at our approach to telehealth - getting new technology into patients' homes so they can be monitored remotely. We've trialled it, it's been a huge success, and now we're on a drive to roll this out nationwide.'[20]

In January 2012 the Department of Health launched its '3 million lives' campaign[21] that aims to identify at least three million people with long term conditions and social care needs who could benefit from using telehealth and telecare. The Department will be providing national leadership, strategic direction, and advice to NHS and social care organisations, with support from the industry sector that will be responsible for creating the market and working with local organisations to deliver the change. The Minister of State for Care Services, published a Concordat[22] with the sector's four trade associations to deliver this initiative, which aims to raise public awareness and provide 'an enabling framework'.

---

18 Whole system demonstrator programme: Headline findings, Department of Health website: http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_131684

19 Strategy for UK Life Sciences, report: http://www.bis.gov.uk/assets/biscore/innovation/docs/s/11-1429-strategy-for-uk-life-sciences

20 News report in Independent newspaper: http://www.independent.co.uk/news/uk/politics/cameron-plans-early-access-to-new-drugs-for-patients-6272620.html

21 Roll-out of telecare and telehealth to benefit 3 million lives, press release Department of Health website: http://www.dh.gov.uk/health/2012/01/roll-out-of-telehealth-and-telecare-to-benefit-three-million-lives

22 3Million lives Concordat, Department of Health report: http://www.3millionlives.co.uk/pdf/Concordat%20-%20FINAL.pdf

Extending quality of living in the community

Improving care for people with dementia is a key government priority. In August 2011 the Care Services Minister launched a resource[23] to help health and local authority commissioners to design and purchase high quality dementia services, saying: 'With imaginative use of assistive technology, well-designed extra care housing, carer support, specialist teams and flexible domiciliary care, much can be done to delay or avoid the necessity of care home admissions in many cases'. In March 2012 the Prime Minister announced[24] a doubling of the funding for dementia research, to £66 million by 2015. This sum includes investment to make local community services more 'dementia friendly' and to fund improvements to the way social care is delivered, so that 'hospital should be a last resort'.

Research published in September 2011 by the International Longevity Centre[25] found that, for people aged over 80, compared to those receiving home care in the community, those in extra care housing are half as likely to enter hospital or residential care homes within five years. In December 2011 the Housing Learning and Improvement Network published a study[26] carried out with the Personal Social Services Research Unit, University of Kent, which evaluated the Department of Health's £227 million Extra Care Housing Fund. The research found that extra care housing delivers better outcomes at less cost than residential care for people with the same needs, can improve older people's health and well-being and offer them improved choice and independence.

Whilst fewer new homes are currently being built than in previous years, in November 2011 the Communities and Local Government department published a strategy document: 'Laying the Foundations: a housing strategy for England'.[27] This document sets out the government's ambition for developing 170,000 new affordable homes, creating opportunities to build a further 100,000 through the release of public sector land. In December 2011 the Housing Learning and Improvement Network and the Association of Directors of Adult Social Services published a resource pack: 'Strategic Housing for Older People: planning, designing and delivering housing older people want'.[28] This is a practical guide for local authorities who are commissioning housing and social care to help them create supported housing strategies that cover a range of options, including aids and adaptations in an existing home and moving to a 'home for life' where care and support can be adjusted as the individual's needs change. In

23 New support for commissioning dementia services information, Department of Health website: http://www.dh.gov.uk/en/MediaCentre/Pressreleases/DH_128611

24 Transcript: Prime Minister's speech to the Dementia 2012 conference, Number 10 website: http://www.number10.gov.uk/news/transcript-prime-ministers-speech-to-the-dementia-2012-conference/

25 Establishing the Extra in extra care, Perspective from three Extra Care Housing Providers report, ILC website: http://www.ilcuk.org.uk/index.php/publications/publication_details/establishing_the_extra_in_extra_care_perspectives_from_three_extra_care_hou

26 Evaluation of the extra care housing initiative report, Housing LIN website: http://www.housinglin.org.uk/Topics/type/resource/?cid=8398

27 Housing strategy announcement, Communities and Local Government website: http://www.communities.gov.uk/publications/housing/housingstrategy2011

28 Guide launched to help local authorities improve housing for older people, Department of Health website: http://ahp.dh.gov.uk/2011/12/13/guide-launched-to-help-local-authorities-improve-housing-for-older-people/

order that architects and commissioners design homes to support the delivery of telehealth and telecare services, a research team led by FAST published a discussion paper[29] in July 2011 on the options for installing data, power and communications infrastructure.

Many people recovering from ill health require an intensive period of reablement support to learn or re-learn the skills necessary for daily living. In January 2012 the Department of Health announced[30] an additional £150 million for reablement services, The Minister of State for Care Services said the reablement money 'will help cut the delays in getting the equipment and adaptations that people can need to enable them to live independently at home – saving them from an unnecessary stay in hospital or going into residential care'. The Minister also announced £20 million extra investment in the disabled facilities grant which provides assistive technology and adaptations, such as stair lifts, ramps and rails, that enable older and disabled people to continue living in their own home.

The department for Communities and Local Government commissioned the University of York to undertaken an independent evaluation of their Handyperson Programme. The final report into the evaluation was published in February 2012.[31] This showed that handyperson services, which provide assistance with small repairs and minor adaptations, are enabling large numbers of older, disabled and vulnerable people to live independently in their own homes for longer in greater levels of comfort and security. The report noted that these services offer an important safety net for older people, and enhance the effectiveness of health and social care provision through the delivery of often simple and low cost interventions including adaptations and telecare.

Support for active living

The Welfare Reform Act, which became law in March 2012, was described by the Department for Work and Pensions as ‘the biggest shake up of the system for 60 years’.[32] The Act aims to replace the existing system of benefits and credits with a simplified approach of a universal credit, with disability living allowance (DLA) being replaced by a personal independence payment (PIP) for working age people aged 16 to 64. This will be implemented from 2013/14 and will for the first time include regular reassessments. A ‘more objective assessment of need’ has been developed with the help of disability organisations and disabled people, with the government stating ‘it is right and fair for the assessment to take some account of the successful use of aids and adaptations where they help individuals carry out activities’ in a way that is ‘proportionate and appropriate’.

29 Lifetime Digital Homes – New Homes, FAST website: http://www.fastuk.org/pagedocuments/file/Lifetime%20Digital%20Homes.pdf

30 Extra money to help people leaving hospital, press release, Department of Health website: http://mediacentre.dh.gov.uk/2012/01/03/extra-money-to-help-people-leaving-hospital/

31 National Evaluation of the Handyperson Programme report: http://www.communities.gov.uk/publications/housing/evaluationhandypersonprog

32 Welfare Reform Act 2012, Department for Work and Pensions website: http://www.dwp.gov.uk/policy/welfare-reform/legislation-and-key-documents/welfare-reform-bill-2011/index.shtml

In September 2011, Lord Low carried out a 12-week independent review into how the personal mobility needs of the 78,000 people living in state-funded residential care were to be met following the switch from DLA to PIP. As a result, the government announced that the DLA mobility component for people in care homes would be retained until March 2013 while the government reviews the support given by DLA as against the responsibilities of care homes.[33] Lord Low said that his review found evidence of 'how fundamental mobility is in securing other key rights. It enables people to participate in their community, gain an education, and maintain a family life or work'.

The Blue Badge Improvement Service[34] came into force at the beginning of the year. All local councils have signed up to the new service, which is designed to improve customer service for disabled people and to tackle rising levels of badge fraud and abuse which is estimated to cost £46 million a year. Administration of the scheme is to be shared between authorities resulting in estimated operational efficiency savings of up to £20 million a year. In addition a facility for online applications and enquiries using Directgov will be provided, as well as access to a national helpline number. There is to be wider use of mobility assessments to determine eligibility for the badge, with local authorities given control of NHS spend on Blue Badge assessments. The scheme is being extended to include families of disabled children less than three years of age and severely disabled Armed Forces personnel and veterans. The Department for Transport is currently investing £370 million in the Access for All programme[35] which will deliver an accessible, step-free route at 148 key railway stations. As part of this programme in January 2012 the government announced a doubling of the original £17 million budget to £37.5 million for mid-level projects requiring up to £1 million. Upgrades to the stations will include new lifts, ramps and raised 'easy access humps' on platforms as well as new accessible toilets. All work at the stations will be completed by March 2014.

In March 2012 the Department for Transport published[36] the results of a consultation into possible reforms of the use on the highway of mobility scooters and powered wheelchairs. This recommended that age restrictions on their use and the authorised maximum speed should remain unchanged. The report recommended increases in the maximum unladen weight of Class 2 powered wheelchairs (these are wheelchairs with a maximum speed limit of 4 mph suitable for use on a footpath or pavement) and advised consideration of mandatory eyesight testing for users of Class 3 scooters (which have a maximum speed limit of 8 mph and can be used on the road). The department has also been looking into the carriage of mobility scooters on public transport and plans to work with transport operators and industry to develop a kite marking scheme. This would enable a disabled person to have more confidence that they can

33 'Disability Living Allowance Reform: equality impact assessment' http://www.dwp.gov.uk/docs/eia-dla-reform-wr2011.pdf

34 Blue Badge Improvement Service information, Department of Transport website: http://www.dft.gov.uk/news/statements/baker-20120110/

35 Passengers to benefit from access improvements at stations information, Department of Transport website: http://www.dft.gov.uk/news/press-releases/dft-press-20111206d

36 Mobility scooters and powered wheelchairs statement, Department of Transport website: http://www.dft.gov.uk/news/statements/baker-20120301/

travel with their mobility scooter by providing information about arrangements for loading and storing scooters on buses and trains.

Specialist commissioning changes

Current NHS guidance[37] indicates that the following assistive technology services should be commissioned regionally using the Specialised Services National Definition No. 5: prosthetics and complex orthotics, specialised wheelchair and seating, communication aids, environmental controls and specialised telecare. The arrangements for commissioning these services[38] is in flux with the NHS Commissioning Board operating in shadow form from October 2011, only taking over its full responsibilities in April 2013. In this transitional phase specialised regional commissioning is being carried out through four clusters of strategic health authorities. In the meantime a number of sector-led and patient-representative groups have made recommendations for how these services should be delivered under the new arrangements.

During 2011 Dr Andrew Murrison MP carried out a review into the prosthetic services offered to military veterans. His findings,[39] published in June 2011, offered twelve recommendations suggesting a way forward that will meet the needs of the armed forces and benefit the wider amputee community. These included 'national commissioning of specialist prosthetic and rehabilitation services for amputee veterans through a small number of multi-disciplinary centres in England'. In October 2011 the government announced investment of up to £15 million to support these recommendations. The Department of Health is to introduce a number of national specialist prosthetic and rehabilitation centres for amputee veterans across the country and will take steps to ensure the experience and feedback from developing these centres is applied to the wider NHS.

In September 2011 the Communication Trust, a coalition of over 40 leading voluntary sector organisations representing users of augmentative and alternative communication (AAC) and the Communication Champion, Jean Gross, published a Quality Standard for Commissioners of specialised AAC services.[40] The Standard provides clear measures and sets out for the first time a clinical pathway for AAC provision, including criteria for referring patients and a strategy for coordinating the multidisciplinary team. Publication of the Standard was followed in November 2011 by a report from the Communication Champion, 'Specialised AAC provision: Commissioning National Services'[41] which proposes a model of care for specialised AAC hub services working in partnership with local spoke services.

---

37 SSNDS Definition No.5 Assessment and Provision of Equipment for People with Complex Physical Disabilities (all ages) (3rd edition) Department of Health, 2010. Available from: http://www.specialisedservices.nhs.uk/doc/assessment-provision-equipment-people-with-complex-physical-disability-all-ages

38 Developing the NHS Commissioning Board, DH, 2011: http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_128118

39 'A better deal for military amputees' report: http://www.limbless-association.org/wp-content/uploads/2011/10/Dr-Andrew-Murrison-A-Better-Deal-for-Military-Amputees.pdf

40 Augmentative and Alternative Communication Services: Quality Standard for Commissioners report: http://www.fastuk.org/pagedocuments/file/aac_quality_standard_for_commissioners_sept_2011.pdf

41 Specialised AAC provision: Commissioning national services report: http://www.fastuk.org/pagedocuments/file/AAC%20Report%20Final.pdf

In December 2011 the Communication Champion published her final report, 'Two Years On',[42] which highlights the need for a standardised approach to commissioning of integrated AAC services. Her investigations found that joint commissioning was still not happening in 70% of local areas. Although she recorded examples of good practice in the provision of speech and language therapy for children with high levels of need, Gross also pointed to examples of failure, including 'areas with no available budget to provide children and young people with the electronic communication aids which would enable them to talk to others'. In the words of one teacher: 'Through social care we can get an adapted bed for a child, but not funding to purchase a communication aid that would allow that child to say if they are tired. We can get a special cup, but not the means for the child to say they are thirsty. We can get a new wheelchair, but not the means for the child to tell us whether it is comfortable'.
The Communication Champion concludes her report with recommendations, including that the NHS National Commissioning Board procure regional or supra-regional 'hub' centres to assess the needs of children and young people who can benefit from AAC and provides them with appropriate communication aids and services, in partnership with locally commissioned AAC 'spoke' services.

[42] Two Years On: final report of the Communication Champion for children report: http://www.communicationmatters.org.uk/sites/default/files/downloads/news/2011_final_report_of_communication_champion.pdf

Working together through stroke

An estimated 150,000 people have a stroke each year, and stroke is the third leading cause of death in the UK. It is also the single largest cause of adult disability in England and there are currently over 300,000 people living with moderate to severe disabilities as a result of stroke.

Getting help quickly when someone has a stroke is essential to ensure the best possible outcome, as the high profile Act FAST[43] campaign has emphasised. While swift action is critical, stroke has a greater disability impact than any other chronic condition. Many people who have had a stroke experience difficulties with their mobility or arm function, they may have problems with their vision or speech, or some level of cognitive impairment. Successful recovery of some level of function often requires people to undertake rehabilitation exercises and this can be a lengthy process.

The Stroke Association has an extensive programme of user involvement in a wide range of research activities and **Dr Peter Coleman,** the Association's deputy director of research notes that 'Lots of stroke survivors are interested in anything which will help them improve their performance in activities of daily living. In particular, they want to increase their independence and so increase their quality of life. Many people experience depression or anxiety post stroke, and being able to do things like get dressed by themselves can have a significant effect on their mood.'

Rehabilitation will start in hospital for many people who have had a stroke but to be effective will need to be carried on at home, where people are typically asked to undertake specific exercises, for example to practice extending their arm or picking up small objects and transferring them. To have an impact such exercises need to be carried out regularly, in the right way, and for substantial periods of time.

Research projects featured in this year's report and previous reports indicate the wide range of assistive technology (AT) which can be used in stroke rehabilitation. For example, researchers are developing home-based computer training programmes for people with a restricted field of vision to support them to learn to use their remaining eyesight more effectively, so they are able to read text.

Robotic systems linked to a computer offer a way for people to exercise their arm regularly and record progress, while functional electrical stimulation (FES) can help people with muscle weakness regain mobility and constraint-induced movement therapy can assist people in overcoming hand weakness.

[43] Act FAST information: http://www.nhs.uk/actfast/Pages/stroke.aspx

Dr Sara Demain, a member of the rehabilitation and health technologies group at Southampton University, has been surveying the use of different types of AT for upper limb rehabilitation following stroke. 'Rehabilitation exercises are about building new plasticity in the brain and repetition is very important, particularly as stroke recovery can go on into the long term. However, many traditional home exercises can be boring. AT offers an opportunity to provide interventions which can be undertaken intensively and which can also be motivating' she explained. 'Lots of exercises for stroke are effective over a long period of time, and people may well be making improvements, but they don't realise this so they stop doing them, or don't do them as frequently. But if the exercise is linked to a computer game, for instance, then people can see the scores improve and will be prepared to invest the time.'

As well as developing evidence for the use of a range of assistive technologies, Demain notes that work is required to develop a systems-based model for implementing AT more consistently in the community. 'We need to examine a range of issues, such as the cost of maintaining and running devices, how therapists prescribe AT interventions, infection control, and people's perception of AT. How often do people use it and what stops them doing so?'

Another key issue is ensuring that AT does not add to the treatment burden by requiring people with stroke and their carers to undertake complex interventions which are difficult to manage. 'People are very concerned about how easy it is to use a particular technology or device and whether the benefits are worth the effort,' Demain said. Coleman agrees, saying: 'Getting users involved is very important in AT research and development for two reasons. Firstly, by listening to what stroke survivors need to ensure that AT does what they want, and secondly getting feedback on how a particular technology works or not.'

With early FES systems, for example, people were struggling to find the right place for the electrodes and could be spending a lot of time getting the equipment to work. Working closely with stroke survivors has pushed researchers and designers to develop equipment that is smaller and easier to put on. Researchers now recognise that computer-based systems need simple interfaces for people who may not be familiar with the technology or who may have a cognitive impairment. Current research projects often feature off the shelf technologies, such as the iPad, the Wii and the Xbox Kinect, as all offer easy to use interfaces which can be adapted for use in stroke rehabilitation.

The challenge for researchers appears to be the successful translation of AT interventions from the realms of research into real life implementation. Some AT services which have featured as research projects in past reports are now part of mainstream practice. There is current guidance from the National Institute for Health and Clinical Excellence (NICE) on the use of FES for foot drop (the inability to lift the foot and toes when walking) which results from neurological problems including stroke.[44] As a result of this national

[44] NICE guidance on FES for foot drop: http://publications.nice.org.uk/functional-electrical-stimulation-for-drop-foot-of-central-neurological-origin-ipg278

guidance there are now a number of specialist centres offering FES for stroke rehabilitation.

Professor Bipin Bhakta of the rehabilitation medicine group at Leeds Teaching Hospitals NHS Trust works with people who have experienced moderate to severe stroke. He also undertakes research at the University of Leeds into the use of robotics for stroke rehabilitation and agrees that user involvement in a multidisciplinary environment is critical to ensuring the success of any new AT: 'People can be very vocal if something is not right and can provide effective contributions to AT design by identifying something you have not thought about.'

'People will be able to relate to a technology if you have built it with them. What then stops them using it may be linked to the effectiveness and usability of the technology, and how they are able to access it, and involving patients in the design will hopefully address these issues' he said. AT can help people even with very severe stroke become more independent, Bhakta notes. Telecare for example can help maintain their safety when they do go home by monitoring their activity and their environment.

While they are still in hospital, AT can help stroke survivors who may have trouble in communicating because of impairments such as aphasia: 'They may have problems articulating their wishes to clinicians because of their communication difficulties. A suite of AT devices, including switching systems and other communication aids for use within an acute hospital setting would facilitate communication between healthcare staff and patients, including those requiring assisted ventilation in critical care, so as to ensure people are not left out of the decision making process.'

Bhakta would like to see the way in which AT interventions are delivered tied in more closely with the clinical pathway for someone who has had a stroke. Currently there can be instances where someone uses communication or rehabilitation exercise technology in hospital but does not have the same access in the community. Conversely, the person might have access to AT such as an environmental control system at home which is not available to them in hospital. The aim, notes Bhakta, is to create a seamless approach, with the appropriate AT available wherever the stroke survivor needs it for their rehabilitation, safety and independence.

Bhakta concludes that 'Restorative rehabilitation technologies such as robotics are not likely to replace clinicians' assessment and skilled therapy for the foreseeable future, but are a very important adjunct, particularly in the way they offer a "bigger bang for the buck" by providing a means for people to undertake more rehabilitation within constrained healthcare resources. And if an intervention works for people with stroke, who have complex impairments, then it is very likely to be effective for other neurological and musculoskeletal conditions'.

Maximising sound and vision

Hearing aids and glasses are probably the most familiar examples of assistive technology for many people and amongst the most commonly used. Researchers are now taking advantage of significant advances in technology, which include the kinds of sensor systems used in commercially available games consoles, to design these products to be smaller, lighter and to have greater capabilities. As well as refining the design of glasses and hearing aids, two research teams report this year on work to ensure people with hearing loss have equal access to services.

A biologically-inspired hearing aid

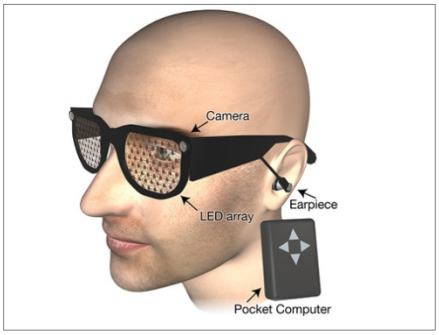
A common problem associated with hearing impairment is difficulty in understanding speech in noisy backgrounds, for example at work and in pubs, restaurants and parties. Conventional hearing aids restore levels of hearing to normal thresholds by amplifying sounds, but they do not separate out the different sounds. As a result, people with certain types of hearing loss find that their hearing aids are making everything too loud and that they cannot make out what someone is saying to them because the aid is not able to filter out the sounds they want to hear from the background noise.

In a programme of research funded by the Engineering and Physical Sciences Research Council (EPSRC) researchers at the University of Essex have been tackling this problem in three ways. Initially they developed computer models, called ‘hearing dummies’, which are used to gauge a person’s particular pattern of hearing loss so that their hearing aid can be programmed to suit their needs. The team then designed new types of hearing test which are quicker and easier to use. Current tests focus on ‘threshold testing’ to identify how quiet a sound can be while remaining audible, whereas the new tests concentrate on the higher sound levels more typical of everyday life.

In the third phase of the work, which started in August 2010 and ended in February 2012, researchers have developed a hearing aid that simulates how a normal ear works and which takes into account each person’s individual hearing characteristics. For example, two people may have hearing which is weak at the same frequency but one may experience ‘linear’ loss, which means that perceived loudness grows rapidly, so there is a risk that an aid will amplify sound above the threshold which they can tolerate. To address this issue, the research team developed a technique they call ‘instantaneous compression’ whereby the frequency spectrum is split into a number of narrow bands, which are then compressed and delivered at a constant amplitude tailored to suit a person’s particular needs. Researchers report that they have also been able to develop techniques to tackle the distortion which commonly occurs when sound is compressed in this way. The work was undertaken with hearing aid manufacturer Phonak and a lab-scale version of the device was tested with participants. The team is now looking at ways to fine tune the software and then to miniaturise the technology so that the device can be reduced to conventional hearing aid scale and made available commercially.

A low-cost non-invasive visual prosthetic for blindness

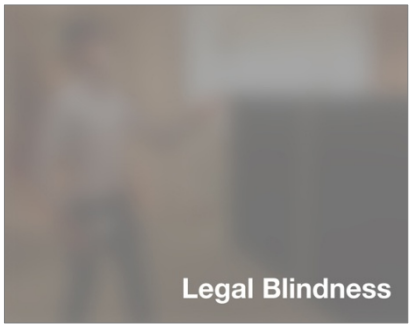
Many people with sight loss severe enough to be considered blind, such as older people who develop age-related macular degeneration (AMD), retain some residual vision. They may, for example, be able to see some light, or have limited vision at the periphery. However, this reduced level of vision means individuals may have significant difficulty navigating obstacles in a complex environment, such as a shopping centre, which limits their independence. Researchers at the University of Oxford, funded by the National Institute for Health Research (NIHR) i4i programme, have been working on the development of a low-cost non-invasive prosthetic device which is worn like a pair of glasses and which uses sophisticated software to understand what is in front of the wearer. The project began in February 2011 and concluded in March 2012.

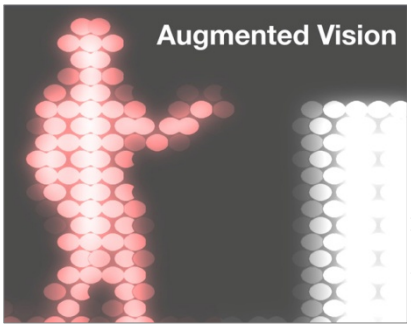


© Stephen Hicks

Researchers built prototypes of the glasses, using commercially available games console technology (Microsoft's Xbox Kinect) and ran experiments to see how to use light levels to indicate the presence of an object. The prototype consisted of a minute camera mounted on the frames of the glasses and connected to a small computer. The camera is stereoscopic, that is it records two images and compares their differences in order to define what is in view, which is the same mechanism as with normal, binocular vision. Researchers say the camera is not bulky, so it does not add significantly to the weight of the glasses and is transparent, so that people can see into the wearer's eyes. Around 60 tiny light-emitting diodes (LEDs) were embedded in the glass lens and were designed to light up to represent objects and movement in the wearer's visual field. Using the camera, the software was able to recognise objects of interest and the LEDs then displayed them in a way that was sufficiently simple and sufficiently bright to enable a person with limited sight to distinguish nearby objects.

The research team tested the prototypes with people with severe visual impairments. All those tested were able to use the displays to identify the location of simple objects in the environment and several reported being able to see people at a distance of up to four metres away and to recognise them walking and waving.





© Stephen Hicks

In future research the team plans to evaluate the best way to alert users to what is ahead of them, using a combination of colour changes and flashing lights, for example, static objects which are nearby may be shown as brighter the closer the wearer gets to them, while a person

might be shown as a red colour. The team is also looking at how Optical Character Recognition (OCR) technology could be used to read information such as bus numbers. The technology used in constructing the prototype is relatively low cost and researchers are currently seeking an industry partner with the aim of making the glasses commercially available in 2014.

TeleSynth: Computer-generated voices for telecare messages

Phone-based interactive voice response (IVR) systems are widely used in telecare and telehealth applications. Generating IVR messages by computer not only makes it easier to change and personalise messages, but also greatly reduces the cost of creating them. Extensive evaluations have shown that state-of-the-art computer-generated speech is highly natural and easy to understand for people with normal hearing in quiet surroundings. However, this technology has not been sufficiently tested with people who may have hearing problems, such as older people, who are a group likely to benefit from telehealth applications.

The TeleSynth project assessed whether state-of-the-art computer-generated speech is easy to understand over the phone, even for people with mild to moderate hearing loss and under adverse conditions such as when there is background noise. Researchers also aimed to validate a set of guidelines for ensuring that such messages were intelligible for everyone. Funded by the Chief Scientist Office, researchers at the University of Edinburgh recruited 58 participants over the age of fifty from the community through four GP practices. After assessing participants' hearing and memory, researchers played them a series of medication reminders. Before recalling each reminder, participants heard another sentence, which they then had to write down. Reminders and sentences were played in two different levels of background noise over two simulated telephone lines. Participants heard three different voices, one of which was human and two of which were computer-generated. Researchers asked participants to rate the naturalness of the three voices and gathered their views about computer voices and automated medication reminders in general.

The study, which took place between January 2011 and August 2011, found that most people could remember one medication fairly well, but only if they already knew it. Medication reminders about which medicine to take and when, were more difficult to remember when there was a lot of background noise, but researchers found no difference in participant's reactions to the three different voices in this setting. When hearing four medication names, people mostly only remembered the one or two they knew. Overall, the study found the human voice had a slight advantage over the computer-generated voices. Medication names were remembered a little better when they were explained, and remembered best when the names were repeated. The researchers say the study has shown that it is feasible to give people spoken reminders over the telephone even if they have mild hearing problems, but that these reminders need to be about something they already know, and they should be reinforced by other measures such as special pill dispenser boxes. Finally, since people prefer to receive reminders in different ways, reminder services should be available using different channels, e.g. texting and phoning.

Usable brain-computer interfaces

Technology enables disabled people to use breath, body, head, eye and foot movements to operate switches and to control computers. However there are a number of disabled people who have extremely limited, or no movement, and for whom it is not possible to use breath or eye gaze as a control mechanism. As a result they risk being excluded from using the growing range of online services, from grocery shopping to banking and booking holidays, as well as being denied access to online learning, entertainment and information. Over the past decade researchers have been looking at ways to create usable Brain Computer Interfaces (BCI) and these are getting nearer to a commercial reality. These interfaces enable the intentions of computer users to be interpreted from their brainwaves and for this information to be used by disabled people to control a computer.

Analogue Evolutionary Brain Computer Interfaces

To date, most research on BCIs has been based on the concept of observing electro-encephalogram (EEG) signals looking for specific features or waves, and then developing mathematical calculations, or algorithms, which enable a software system to learn by itself how to draw conclusions about what those brainwaves mean. Most of these systems operate through deciding to link a particular brainwave pattern with a particular action, such as a movement up/ down/ left/ right, etc. A team at Essex University, with funding from the EPSRC, worked on a different approach which omits the decision step and allows brain waves to directly control the computer.

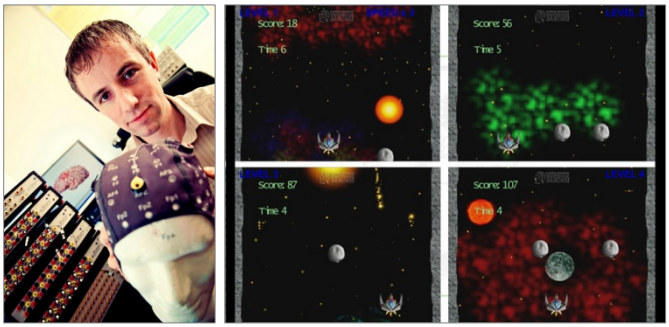
During the course of the project, which started in June 2008 and concluded in May 2011, researchers developed a prototype BCI mouse capable of full 2D motion control, which can be used by anyone, without prior training. The mouse is moved incrementally in response to measurements of the amplitude of particular electrical waves, known as P300s, produced by the brain. These waves only occur if users see particular patterns appear on the computer screen and if their attention is fully devoted to these stimuli. Part of the work of the project was to establish how the shape and amplitude of P300 waves varies according to what the person is looking at on the screen and how long they hold their gaze at that point.

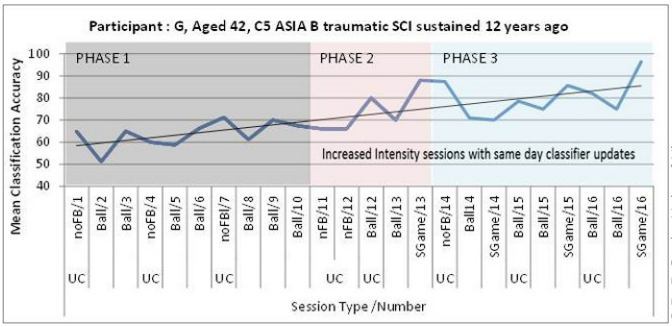
Researchers developed improvements to the methods for recording and averaging P300 waves, along with an innovative approach to using this information to control a computer mouse. This approach used ‘evolutionary’ algorithms; that is algorithms which mimic the natural selection process and which took into account the effects of the user blinking their eyes or swallowing. People who tested out the system were able to use the mouse with good accuracy only minutes after wearing the electrode cap and with no previous training, in both laboratory conditions and in a standard Windows simulated environment. While further research is needed to make the BCI mouse fast enough for able-bodied people to want to use it regularly, researchers say its performance and reliability are now sufficient for it to be useful for people with severe physical impairments.

Intelligent Pre- and Post-Processing Algorithms for Autonomous Multiclass Brain-Computer Interfaces

The aim of this project was to produce an accurate and fast BCI system which could be easily configured using advanced signal processing tools, which aim to improve the accuracy and reliability of digital communication, and to make the technology usable and accessible to the disabled individuals who will benefit most. The work took place between October 2009 and March 2012 with funding from the EPSRC.

Researchers at the University of Ulster initially conducted trials with 30 able-bodied individuals to test a range of different BCI innovations. They then went on to conduct further trials with some of these participants to test a range of new applications (mainly gaming applications aimed at improving subject performance and motivation). These applications were trialled with disabled people at both the National Rehabilitation Hospital and in their own homes. Participants included people with spinal cord injuries, two people with locked-in syndrome (a condition in which an individual is aware and awake but cannot move or speak due to complete paralysis of nearly all voluntary muscles in the body except for the eyes) and an individual with a diagnosis of disorder of consciousness. The researchers reported user feedback following these trials as positive, with participants saying that the technology was exciting and made them feel motivated.





© Dr D Coyle, Univ. of Ulster

One person with spinal cord injury which had resulted in paralysis from the neck down 35 years previously was enabled to play a computer game for the first time, while the family of the individual who had been diagnosed as minimally conscious reported that the BCI trial had provided the first indication that their son had some level of awareness because of his responses to the technology. Follow up trials are now being conducted with a number of individuals. The researchers are disseminating these findings and have published over 25 peer reviewed papers in research journals and books as well as presenting the findings at a number of academic conferences.

BRAIN - BCIs with Rapid Automated Interfaces for Nonexperts

The aim of this project was to improve the reliability, flexibility and accessibility of BCIs, and to reduce an individual's dependence on outside help when using them. The goal was to develop lightweight, inexpensive sensors which did not require the significant preparation or cleanup times associated with traditional electrodes, and which did not need exposed wires or cables, expert assistance or laboratory conditions in order to work. The project, which took place

between September 2008 and December 2011, was funded under the European Commission FP7 programme and the UK partners were the University of Ulster and The Cedar Foundation, a charity which supports disabled children and adults throughout Northern Ireland.

The project developed a number of new hardware and software components. These included water-based electrodes as an alternative to the usual gel-based electrodes, and a head wrap holding eight electrodes, which could be readily put on by a non-expert in a couple of minutes. Researchers say these were popular with users as they were less messy and more comfortable than the gel electrodes, which typically cause skin abrasions during preparation for their use. In addition, the work produced a small, high performance amplifier to improve the strength of signals when the person using BCI applications is mobile. Other outputs from the project were the software tools needed to customise a BCI to match each user's preferences, and an intuitive interface for controlling applications such as environmental control devices (for any powered device that can be controlled by a power switch, such as a light or curtain), communication (using symbols) and entertainment applications (a media player for playing movies, songs or television via the internet). There was also work undertaken on signal processing software to improve the ways in which brainwaves were interpreted by the BCI system, using two methods. One approach looked at identifying the kinds of brainwaves produced when a user looked at a specific visual stimulus; the other focused on identifying the brainwave patterns which occurred when the user was attempting to imagine a particular movement which they wanted to make.

Researchers tested the system by asking users to perform tasks such as switching on/ off lights in the environment or navigating through a menu system in order to select and play a movie. The software developed within BRAIN has been made available under the Open Source agreement which allows for free distribution and download from the project website.[45]

[45] BRAIN project website http://www.brain-project.org/

Transitions in telecare and telehealth

The population demographics in the UK, and other countries in Europe, are changing as growing numbers of people are living into old age with increasing levels of disability and health problems. Currently, there are around 15 million people in England living with at least one long term condition.[46] Technologies are needed that will be responsive to meet this demand, focusing on earlier detection and better prevention to improve health outcomes and to provide more cost effective care. The initial findings of the Department of Health's Whole System Demonstrator project has provided evidence of significant benefits from using telecare and telehealth and the Department of Health's 3million lives campaign, announced in December 2011, aims to significantly increase the adoption of these technology services. Against this background, the current research focus is on exploiting previous technology development programmes and moving towards a point where interoperable telecare and telehealth services can be scaled up to benefit millions rather than thousands of people.

PEACE - PErsonAl Care Environments delivering support for vulnerable people

The aim of this project was to find ways to combine a range of telecare and telehealth functions into a single, easy to use system which can provide access to a wide variety of services, including information and entertainment options designed to address social isolation. Funding for the project included support from the Technology Strategy Board's (TSB's) Assisted Living Innovation Platform (ALIP).

Work on the project started in September 2008 and ended in November 2011 and was led by Docobo, with partners from the third sector, local health authorities and other commercial suppliers. The Peace team have developed a handheld terminal, called the CarePortal, which presents information on a multi-media colour touch screen. A key facet of the project was an extensive user engagement programme in which the proposed design features were evaluated by focus groups in four different locations involving a wide cross section of users with different levels of computer skills. The device has a simple interface with just a few buttons to press to access services. People with long term conditions such as Chronic Obstructive Pulmonary Disease (COPD) and Chronic Heart Disease (CHD) can use the CarePortal's telehealth function to record physiological readings in response to a set of questions which appear on screen. The questions are tailored by their clinician to each individual's particular health condition and can be activated at a time convenient for that person. By answering these questions regularly the user builds up data on their health status. The answers to the questions and the readings create a Patient Record which is then transmitted to the clinician. The clinician can identify trends in the data, which may signal deterioration in the individual's health condition, and can use the information to determine treatment plans.

[46] Department of Health website, long term conditions information: http://www.dh.gov.uk/health/category/policy-areas/nhs/long-term-conditions/

The CarePortal can be used to access community care services and can link to telecare community alarm systems. The research team have undertaken work to ensure information about the individual's need for support is in a format that means it can be shared between different agencies. Additional telecare and telehealth services can be provided to the individual at home and controlled using the CarePortal, without the need to replace the interface device, which offers cost savings and means individuals are using familiar technology. The research team say the device is also designed to support a 'virtual community', putting older and disabled people in touch, via Skype or online forums, with local volunteers and peer groups.

© Docobo Ltd

This work is being carried forward in a follow on project called PEACEanywhere - PErsonAl Care Environments anywhere at any time, again with support from TSB ALIP. Researchers are looking at adding services to the CarePortal, including the ability for users to access local support services such as booking transport, as well as other online third party services such as home meal deliveries or handyman services. The team are also developing a wrist-worn device, called the Fall Watch, which knows the position of the user and can check both for falls and for changes in behaviour patterns, such as a reduction in movement through the rooms in the house indicating the possible onset of a mobility problem. Docobo is investigating the ways in which both these products can be made available to the public, either via statutory services or through private purchase.

West Midlands Automated Pill Dispenser Pilot

People who need to take a number of medications regularly and who fail to take prescribed drugs at the right time and right dosage risk jeopardising their health and independence. They may also end up being re-admitted to hospital or going into residential care for their own safety, which may impact their quality of life and result in increased costs for the NHS and social services. Research suggests that 3-4% of UK hospital admissions are the result of avoidable medicine-related incidents. This project was funded by Improvement and Efficiency West Midlands (IEWM) and NHS Innovations West Midlands to look at using the PivoTell automated pill dispenser for people who were at high risk of failing to take medicine correctly. The device can be programmed to dispense pills up to 28 times a day. At the pre-programmed times, which are input by the dispensing pharmacist, the internal pill cassette rotates, a visible and audible alarm sounds and the correct dosage is released.

A number of local authorities worked on the trial which gave pill dispensers to older people living with long term conditions at home. The study collected data on their levels of GP visits, hospital admissions and quality of life before and after using the device. The research examined the issues around adoption of the technology and also looked at the costs involved.

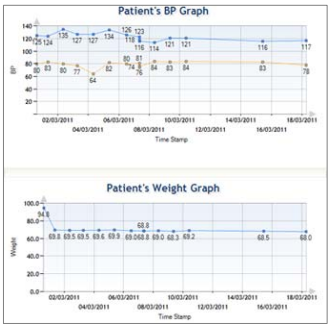
There were six pilot sites across the West Midlands region, and around 400 devices were provided to users during the period July 2009 to March 2012, with over 200 pharmacies trained to dispense into the devices. The age profile of the participants resulted in a number leaving the trial early because of death or deterioration in their condition which necessitated a move to hospital or a residential setting.

Research focused on the 250 people who completed the twelve month trial, all of whom were aged over 75, with a third aged 85 or over. Findings from the pilot have shown savings of £1,700 per person over a six month period, split equally between social care and health budgets. Researchers say the analysis suggests most of the savings (64%) came from two developments: a reduction in hospital admissions due to over or under dosing, and a reduction in the number of domiciliary visits needed to prompt people to take their medication.

Project Hydra

Governments across the world have set targets for the roll-out of smart meters to monitor consumption of utilities such as electricity and water supplies. This move means a new communications infrastructure is being put into people's homes to create a 'smart grid' which has the potential to be used to support other monitoring applications such as telecare and telehealth. In the UK Project Hydra, with funding from TSB ALIP, looked at how this smart meter communications infrastructure can be used to transmit telecare and telehealth data out of the home in a cost-effective and secure manner. The project started in September 2009 and finished in May 2012. It was led by Acute Technology and involved partners from the utilities industry, academia and IT suppliers.

The team undertook small scale trials where participants' data on their weight and daily blood pressure readings was sent from a home monitor via a Zigbee wireless connection to the smart meter in their house and then out of the home to a central server. Researchers propose that practice nurses would be able to use such a system to spot those individuals whose data suggested they might need further intervention.



A primary focus of the work in the Hydra project was the privacy and security required for collection and transmission of health data and the team made use of encryption techniques which are commonly employed in the credit card and mobile phone sectors. The technology that was developed was based on the Continua Alliance (IEEE 11073) standard, which covers interoperability between telecare and telehealth systems, and the system is close to being certified as Continua compliant. Researchers say that this trial has shown that it is possible to use smart metering systems for healthcare applications and that this work could be extended to manage other kinds of data, as well as being used to support environmental control systems.

CommonWell: Common platform services for ageing Well in Europe

This project, which had funding from the European Commission Competitiveness and Innovation Framework (CIP) programme, involved ten European partners in five different countries with a UK-based company, Tunstall, as the technology leader. Work began in October 2008 and ended in January 2012. The aim of the project was to support independent living for older people and those living with long term conditions by integrating and evaluating healthcare and social care services. In the initial trials a total of 400 users across four locations in Europe received integrated services for at least twelve months. Milton Keynes Council and Milton Keynes Community Health Services worked together to develop effective ways of helping people in the community who were living with COPD. The goal was to reduce unnecessary admissions to hospital by monitoring changes in people's vital signs more closely and to facilitate early supported discharge from hospital for anyone who had been admitted following an exacerbation of their condition.

The Milton Keynes pilot involved around 100 older people living with COPD who had services from the NHS, social care and community nursing teams. Participants were already users of local telecare services and were given telehealth monitors that they used to record daily readings of their oxygen levels, heart rate and other vital signs. The upper and lower limits for these readings were set by the community matron in discussion with each person and each

day's readings were transmitted from the home to a monitoring centre for review by trained operators. If the data indicated an individual's symptoms were outside of the parameters set for them, the operator would contact them to ask them to re-take their readings and, if these were still a cause for concern, they would contact the relevant clinician who could take appropriate action. The technology used for the pilot study allowed the telehealth operators to have access to information in the telecare system. This gave the operators more information about the individual, including notes on recent events that might have a bearing on their health condition. Anyone who started to feel unwell could contact their telecare service to raise an alert and request help. The service provided early detection of any exacerbation in the participants' conditions, enabling early intervention and a reduction in hospital admissions. The integrated system also made it possible for people who were not at home for a few days to notify the telecare contact centre who would in turn notify the telehealth team so an alert was not raised on the system when readings were not received during that period.

The Netherlands-based trial of integrated services focused on CHF, while the Spanish and German pilots focused on improving services for independent living for older people. All four pilots were evaluated at the end of the project, with an assessment of the organisational impact of this way of working on health and social care providers; the legal and regulatory issues involved; the types of service models which were used; and the economic and quality of life benefits. The results of these evaluations are due out in mid 2012.

Design for Ageing Well: Improving the quality of life for the ageing population using a technology enabled garment system

Researchers at the Universities of Wales, Brighton, Salford, Ulster and Westminster have worked on a cross-disciplinary, collaborative project which aimed to combine smart textiles and wearable technologies to provide clothing which would support older people who want to stay active, by monitoring information on their health when they were out of the home and taking exercise. This work was funded by the UK Research Councils' New Dynamics of Ageing (NDA) programme, and took place between January 2009 and December 2011.

The team conducted interviews and questionnaires with older people, to build up a picture of their views on such clothing. This co-design process resulted in a resource for designers which holds details of the silhouette and fit which older people preferred in sports garments. For example, some people expressed a preference for looser sleeves because of restricted arm movements. Researchers worked closely with commercial suppliers to develop innovative new materials and developed the idea of a layering system which combined moisture control, insulation and protection in one garment. They also looked at embedding sensors in bras, tops and other items of clothing so that, when older people were out walking, the sensors would measure their vital signs and provide feedback on performance via a wireless message to a mobile phone. Researchers are working with commercial partners from the project to take the work further.

Technology enabling care at home

Older people are at greater risk of developing dementia as they age and current estimates suggest that the number of people living with dementia is likely to increase significantly over the next decade. This will place increased demands on health and social care services, and on family members who often act as carers. Assistive technology can help people with dementia, or other types of cognitive impairment, to remain living at home safely for as long as they wish, rather than having to move into residential care. Typically this will involve using telecare and activity monitoring systems to detect unusual events and to raise an alert. The other main area of research focus is to use assistive technology to expand learning or leisure opportunities for people with cognitive impairments in order to encourage greater social inclusion.

NOCTURNAL - Night Optimised Care Technology for UserRs Needing Assisted Lifestyles

A team of researchers at the University of Ulster worked on a project funded by TSB ALIP together with the EPSRC. The primary objective of the work, which began in September 2008 and concluded in August 2011, was to address a common symptom of dementia which is for people to get out of bed many times during the night, becoming confused or disoriented as a result. This increases the risk of an accident, such as falling while trying to locate the bed in darkness, while lack of sleep is known to have an impact on overall health. The researchers looked at different ways in which technology might be able to help reduce anxiety and improve the quality of life for the individual and their carer.

During the research, sensors were placed on the bed, on doors and in corridors. The team developed new algorithms which enabled them to use the data provided by the sensors to map someone’s movements and analyse their behaviour, for example, whether they were becoming agitated and moving around a lot in bed. As part of the project, researchers trialled a 'bedside assistant' which is a computer-based system which aims to provide support such as guiding people to the toilet by managing the lighting in the room, or providing soft interventions, such as music or familiar images, in order to encourage people with dementia back to sleep.

The University of Ulster is now looking to take this work further in partnership with Fold Housing Association. Researchers are also considering using the same technology to develop a memory game which could be made available commercially. The device would display

images on screen and ask users questions, as a means of stimulation or entertainment for people with dementia. The questions would be devised in such a way that it is not possible to fail to provide an answer, in order to ensure users were not deterred from trying out the game.

ALADDIN - A technology pLatform for the Assisted living of Dementia elDerly INdividuals and their carers

This project, which was funded under the European Commission's Ambient Assisted Living Joint Programme, looked at the ways in which technology can be used to delay the moment at which people with dementia need to go into residential care and also relieve the stress felt by carers. Researchers developed a system integrating several components to remotely support people with dementia and their carers who are living at home. The system provides early warning of any deterioration in symptoms and offers a means for self-management of chronic conditions. The project ran from October 2009 to December 2011 and the UK partner was the Institute of Neurology, University College London. Six month long pilot studies of the system started in the UK, Spain and Greece in May 2011. Sixty people with dementia took part, and participants were randomly allocated either to the intervention group or to a control group. Detailed assessment of participants' cognitive function, mood, behaviour and quality of life were carried out at baseline, three and six months, along with assessment of their carers' mood and perception of care burden.

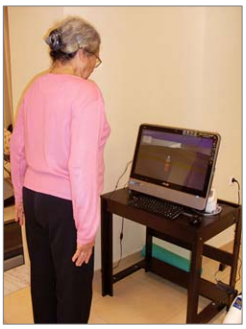
The participants in the intervention group were trained and given a computer with software to access the ALADDIN system, which has four main features: Aladdin TV, Social Network, My Tasks and Contact Us. ALADDIN TV provides information and educational material about the different symptoms of dementia, along with relaxation and exercise techniques, musical entertainment, and cognitive stimulation games for improving attention and memory. The social networking function provides a forum where carers who are using the system can interact with each other to share their experiences and to exchange information and practical tips. My Tasks is the monitoring feature of the system, where the clinical team set tasks or questionnaires for completion by the carer, to allow for the detection of change by looking at the data over time. Blood pressure monitors, weighing scales and activity monitors were also provided to the study participants. All the data from these devices was collected and transmitted to the server on a weekly basis where it was analysed to see if there were any trends indicating that the health of the person with dementia was deteriorating. The Contact Us feature could be used to send an alert to the clinical team or to generate a request for contact.

Despite the random allocation, participants in the intervention group were found to have higher neuropsychiatric problems at baseline compared to the control group, and these were associated with greater levels of carer distress and feelings of burden. The project findings reported by researchers show that over the course of the study carer stress was reduced in the

intervention group, with the result that by the end of the project at the six month assessment, there were no reported differences between the feelings of the carers in both the intervention and control groups. Researchers propose this indicates that the ALADDIN platform proved effective in reducing carer burden. Additional evaluation of user acceptance and satisfaction revealed that both the carers and clinicians involved in using the system found the software and the home management concept of ALADDIN useful. The carers reported the system alleviated feelings of isolation and made them more confident in their responses to their relative. The clinicians noted that the system allowed them to monitor people with dementia more closely and frequently, and complemented their face to face clinical consultations.

LLM - Long Lasting Memories

Conventional thinking suggests that cognitive decline is an inevitable consequence of ageing, but recent research has indicated that older people who continue to perform activities which stimulate their thinking and who also take part in physical exercise will experience improvements in their overall mental health and quality of life. This project, which had funding from the European Commission's ICT Policy Support Programme, aimed to combine environment and health monitoring systems, state-of-the-art cognitive exercises and physical activity in an integrated technology platform. This consists of a network of wireless sensors distributed around the home connected to a central monitoring system, called the e-Home central unit. It includes features such as intelligent learning of normal and exceptional patterns of behaviour which may be indicators of dangerous situations or indicators for emerging health or social problems. The system can raise alarms and has an option for controlling the elements of a smart-home environment.

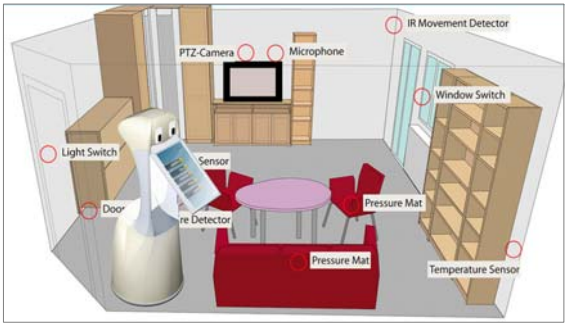


Integration of the various components which make up the system took place in the first phases of the project starting in June 2009, with a series of five iterative pilot trials in Austria, Cyprus, Greece and Spain. The pilots, each eight weeks long, reached more than 1,000 people by the conclusion of the project in March 2012. The UK partner, Global Security Intelligence Ltd (GSI) was responsible for the overall planning, management and analysis of the pilot work. Researchers say that preliminary results showed overall improvement in users' condition as measured by several physical and cognitive indicators. The usability surveys, performed at the conclusion of each round of pilot trials, showed high levels of user satisfaction with the LLM system, as well as an interest in continuing to use it after the study concluded.

CompanionAble - Integrated Cognitive Assistive & Domotic Companion Robotic Systems for Ability & Security

Older people who remain living independently at home are recognised as needing mental stimulation to ward off depression and to prevent or delay any decline in cognitive function. If they are frail or have physical or cognitive impairments they may also benefit from a home monitoring system which can raise an alert if their safety is at risk, for example as a result of a fall. This project, which was funded by the European Commission FP7 programme, used robotics and sensors placed around the room to create an assistive environment to enable care givers to provide cognitive stimulation and therapy to the individual. The University of Reading led a consortium of 19 partners on work that took place between January 2008 and December 2011.

Information about the activity of the person with dementia was gathered through a range of sensors: movement sensors were placed around the home which could detect activity and safety sensors were fitted to equipment such as taps to detect if they had been left running. Researchers also developed body worn sensors which were designed to be discreet, so the sensor case was made to look like brooches or buttons. These sensors could monitor information on a person's temperature, pulse, gait, and movement and the sensor case contained a camera to record what was happening as the person moved around their home. The camera only transmitted images to the control centre when this had been approved by the user, and each person was able to state the circumstances in which they wanted the camera to be used.



© CompanionAble, Prof Badii, Reading Univ.

In addition to developing a smart home environment the research team designed Hector, the mobile companion robot. Hector is able to present information to the user on a screen positioned at a convenient angle for reading. This might be details of who would be visiting that day, or interactive games designed to encourage cognitive stimulation. Hector provides support, such as reminding someone of their shopping list as they leave the house, locating keys and mobile phone, and storing these safely. As well as diary management and reminders, such as prompts to take medicine, Hector is able to set up video-conferencing sessions between the person at home and relatives living elsewhere.

© CompanionAble, Prof Badii Univ. Reading

The system has been designed to support someone with dementia in emergency situations. If they have a fall at home, for example, Hector can help assess how serious the fall is and what kind of emergency help may be needed. The controllers at the emergency contact centre can view the person through the robot's screen, to assess their condition. If they suspected a stroke or serious accident has occurred, they can instruct Hector to say something to the person to see if they are conscious or if their speech is slurred.

Researchers say that initial pilot trials demonstrated the potential for this technology to offer a responsive, affordable way to provide social care, either on a continuing basis or for specific periods of convalescence or respite. Using a robot as a companion was well received by the participants, who provided feedback on its design. The CompanionAble Project was selected as one of only two initiatives from amongst 50 'star innovation projects' to be shown at the European Innovation Convention in Brussels in December 2011. Following the conclusion of the project, the potential of the system has been tested further in a six month trial with older people in the Netherlands, Belgium and Spain, which concludes in July 2012.

The road to recovery

An estimated 150,000 people have a stroke in the UK each year, and there are currently at least 450,000 people severely disabled as a result of stroke in England. People who have had a stroke frequently experience difficulties with speaking, seeing, using their arms and with mobility. These symptoms require intensive rehabilitation if people are to regain the functionality which will allow them to live independently. Having survived a stroke, many people have to change their lifestyle in order to minimise the risk of further deterioration of their condition or of experiencing another stroke. Researchers are looking at how assistive technology can help in the recovery process in two ways: by providing additional opportunity to practice rehabilitation at home, and by offering a way for people living with a long term condition to manage their health, by monitoring any changes in their health status.

Development of a Home Based Visual Exploration Training for patients with Hemianopia

More than 20,000 people each year have a stroke which results in them experiencing visual problems. People who suffer from a stroke to the left side of the brain may develop visual field loss to the right side of their field of vision and vice versa. The extent of field loss can vary but commonly people can only see with either the right or left half of each eye, a condition called hemianopia. Some people with hemianopia are aware of the loss to their visual field and can be taught scanning techniques (eye movement patterns) in the direction of the visual field loss in order to compensate.

Researchers at the University of Durham received funding from the NIHR Research for Patient Benefit (RfPB) programme in order to develop a low-cost, computerised training programme which can be administered by people with hemianopia themselves in their own home. The project, which started in May 2009 and ended in October 2011, looked at the impact of training on people's ability to carry out activities of daily living.

The project participants were randomly assigned to two groups: an intervention group who received the real training program and a control group who received placebo training. People in the intervention group undertook a series of visual search tasks. In a task called 'visuo-motor object search' participants were asked to locate objects on a crowded shelf. Researchers measured how long it took them to find and grasp the objects and compared their average search speed at baseline with that recorded after training. They were also shown a string of words grouped in the centre of a computer screen and asked to indicate by pressing a button when they read a letter combination which did not spell a real word. In the placebo training people had to detect specific targets or remember or discriminate between various pictures presented on the computer screen, but all the images were presented more closely together so they did not need to make the same kind of eye movement. Each training session lasted

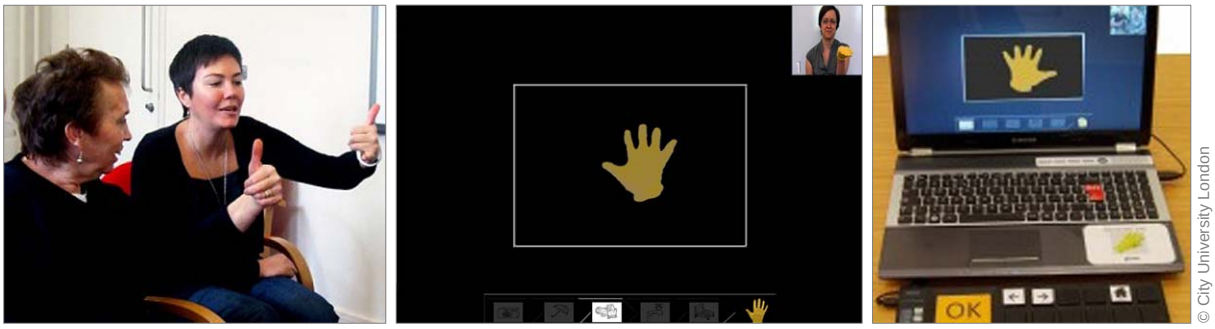

© Durham University

approximately one hour and both the real and the placebo training were carried out for a total of five weeks. The eye movements of all participants were measured with a video-based gaze tracker. The project team worked with a group of 52 people (28 in the intervention group and 24 in the control group) to test out the training.

The results revealed that the intervention group was significantly faster than the control group in detecting relevant visual targets amongst distracters, in navigating safely through obstacles and they also showed significantly higher ability to sustain attention. In addition, only the intervention group was able to read a significantly higher number of words per minute after the training relative to their performance before they undertook the training sessions. No improvement was observed for the control group in any of the assessment measures. Researchers reported that participants in the intervention group whose progress was monitored regularly and who had a supportive care network did best in terms of improvement. Overall this kind of home-based training was shown to help people with hemianopia, at minimal cost, use their eyes effectively to cope with some everyday activities.

GREAT: Gesture REcognition in Aphasia Therapy

Aphasia is a communication disorder resulting from damage to the areas of the brain that are responsible for language, usually caused by stroke. There are about 250,000 people living with aphasia in the UK with approximately 45,000 new cases each year. People with aphasia have difficulty with all aspects of communication: speaking, reading, writing and understanding language. Therapists may advocate using gestures to communicate, but this poses challenges as the ability to produce and understand gestures can also be impaired due to neurological trauma. Researchers at City University worked on a project which ran from August 2010 to March 2012 which sought to address this problem by investigating an innovative approach to delivering gesture therapy at home via a computer-based tool. Working in collaboration with people who have aphasia, the project team refined existing gesture recognition technology, of the sort used in commercial gaming applications such as the Wii, incorporating it within therapy software. The work was funded by the Research Council's UK Digital Economy programme (RCUK) with the Stroke Association as partners.



Researchers ran a series of participatory design workshops with people with aphasia to explore the issues around the design of the tool: it needed to recognise a substantial set of gestures that were relevant to the user and in which they could be trained by the therapist; it could not be over-sensitive, as gesture production by people with aphasia caused by stroke is

likely to be variable and inaccurate due to related impairment from the stroke; and it needed to incorporate interaction, navigation and feedback approaches which were appropriate for people with aphasia. Following this, the project designed and developed a prototype gesture therapy tool, known as GeST. GeST offers users a 3D world which provides an engaging and motivational interactive experience. It works by demonstrating communicative gestures (such as phone, umbrella or glasses) to the user, detecting their attempts to produce the gestures and providing motivational feedback.

The tool incorporates 30 gestures and three levels for gesture practice. The three levels use different methods of presenting the gestures, one of which uses a 3D virtual world where an on-screen virtual character takes part in different scenarios and the user performs gestures at various points in order for the action to progress. Findings from the eight month pilot study of GeST demonstrate that participants were able to learn up to 60 individual gestures and that the subjective response to GeST of participants and their family members was overwhelmingly positive. Data on the therapeutic efficacy of GeST will be reported in late 2012. Researchers will report their assessment of how the tool helps in learning gestures, whether the knowledge is retained after the tool is withdrawn and whether this therapy intervention results in improved speech.

CACTUS – Cost effectiveness of computer aphasia treatment versus usual stimulation

People with aphasia rarely receive treatment from NHS speech and language therapists for more than three months, although it has been established that they can continue to improve their communication with prolonged treatment (beyond 12 months). Surveys indicate that people with aphasia and their families often feel abandoned when therapy is discontinued and want to continue to make efforts to improve. Researchers at the University of Sheffield looked at ways in which technology could be used to provide additional opportunities for rehabilitation. The project ran between June 2009 and May 2012, with funding from the NIHR RfPB programme and the South Yorkshire Collaboration for Leadership in Applied Health Research and Care (CLAHRC).

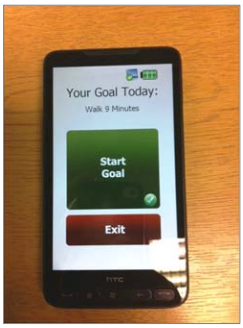
The work focused on the use of Step-by-Step, which is a computer programme designed to help people to practise exercises to improve their ability to find the correct words when they are talking. The study evaluated the feasibility of carrying out a large study to compare computer therapy against the standard level of stimulation provided for people with aphasia in stroke clubs or at home, to see if using the computer software with assistance from a carer or volunteer can improve the ability of people with aphasia to talk. In the first phase, people were interviewed to find out how they felt about working with computers. Nearly all (89%) of those eligible for the intervention expressed interest in self-managed training to improve word finding on a computer, suggesting a high level of acceptance of the concept. A small scale study to

test the software was then undertaken with 16 participants. 10 participants completed the training according to the agreed schedule, which was to undertake 20 minute sessions three times per week for five months. In comparison with a control group, who attended group support sessions but had no other specific treatment, those who used the computer programme showed significant improvements in the percentage of words they were able to name correctly and researchers assessed that they experienced an improved quality of life. As well as the benefits to the participants themselves, researchers note that the small scale study gives an indication that this approach may be cost effective for the NHS. They now want to carry out a larger trial which would enable researchers to carry out a more detailed assessment of the cost benefit of this approach.

SMART 2: Self Management supported by Assistive, Rehabilitation and Telecare Technologies

This project looked at how assistive technologies can be used to help individuals and their families manage the consequences of long term conditions and maintain quality of life, supported by professionals. The work was carried out by Sheffield Hallam University and the Universities of Sheffield, Bath, and Ulster, and focused on three health conditions: CHF, chronic pain and stroke. It was funded by the EPSRC and took place between January 2008 and June 2012.

The technology resulting from this project is called a ‘Personalised Self Management System’ (PSMS). This is an integrated platform consisting of a touch screen home hub and a touch screen mobile device with additional functions for people living with these three health conditions. For example, the system for people with CHF includes weighing scales and a blood pressure monitor, so that individuals can record their weight and blood pressure readings . These measurements can be remotely monitored by clinicians.



The technology has been designed for use both at home and out in the community. The PSMS assists the individual to identify realistic lifestyle goals which can then be achieved through graded physical activity. For example, if the individual decided they needed to walk a certain distance in order to exercise, then a reminder of this would appear on the screen each day. The system also includes therapeutic rehabilitation exercises, providing guidance that is

specific to the particular long term condition and the user's progress. The system displays easy to understand charts showing people's progress in terms of whether they had achieved their target level of exercise for the day and how that day compared with the rest of the week. It also provides access to information and advice about ways to manage long term conditions, such as mindfulness therapy, and exercises for people to work through online designed to improve motivation. The aim is to help people independently manage the consequences of their long term condition and retain or improve their quality of life. The content of the system has been informed by recommended best practice in self management and self rehabilitation for each condition.

Researchers report that they have tested the prototype with people with CHF and people with chronic pain, leaving the prototype device with them to use in their daily lives for a period of time. The initial results appear to be promising and further work by the research team has led to smart insole technology being incorporated into the prototype system for people with stroke. This insole is placed in the individual's shoe to record how far they have walked and the characteristics of their gait, or walking style. Researchers are evaluating the insole to determine the value of the feedback it provides for improving balance and gait.

The South Yorkshire CLAHRC is funding additional work to be undertaken during the second half of 2012, which will extend the application of the PSMS to meet the needs of people with COPD. Researchers report that this SMART 3 project is also providing an opportunity to redesign the PSMS so it can be personalised more easily to meet the needs of each individual.

Active, older and included

In recent years, there has been a growing awareness that housing, transport, consumer products and services all need to be designed to take account of the needs of older people and disabled people of all ages. Designers are using inclusive design techniques to find out what older and disabled people find difficult when using current products and services and to incorporate those findings into the ways in which they design mainstream services. Research this year has looked at how assistive technology can make the environment both inside and outside the home more accessible, looking at improvements in kitchens, digital services and neighbourhood spaces. Design work is also continuing on the challenge of supporting older people with urinary continence problems which impact significantly on their confidence to get out and about and to retain an active social life.

TiKL - Transitions in Kitchen Living

For people of all ages, the kitchen can be the central hub of their home and play an important part in their health and well being. Researchers at the Open University and Loughborough University, with funding from the NDA programme, investigated the role, function and design of the kitchen as it affects the lives of older people (aged 61-91 years) living in their own homes and in supported housing, in both urban and rural locations. The project began by interviewing older people and collecting kitchen 'life stories' to create a resource, which could provide an understanding of user requirements for inclusive kitchen design or adaptation, to be drawn on by occupational therapists and kitchen designers.

Between September 2009 and November 2011 researchers carried out two rounds of interviews in the home with each participant. The first interview gathered information about the participant's previous kitchens and any changes in the use or function of past kitchens, as well as information about the current kitchen and its attributes or drawbacks. The second interview focused exclusively on the person's current kitchen, learning more about their physical abilities and kitchen routines. These second interviews also provided an opportunity for the researcher to measure and sketch the kitchen, to examine the lighting and take photographs of anything the participant drew attention to. A smaller group of people were asked their opinions about the use of assistive technology in the kitchen, and the results showed that the most popular options were sensors which would shut off electrical equipment like the iron if it was left on too long, or which would automatically light up dark corners when people approached. Based on the findings from the interviews, the project developed the concept of 'democratic' kitchens that are sensitive to people's changing needs as they grow older. The team have developed a website to provide details of the project outcomes, which they also aim to disseminate in partnership with the charity Ricability.[47]

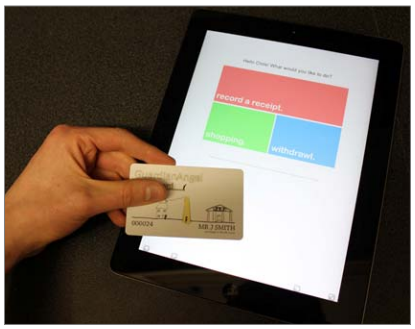
[47] TiKL project website: http://www.lifelongkitchens.org

New approaches to banking for the older old

Many people aged over eighty have not had to use bank accounts until much later in their lives, and those who have used an account for many years tend to rely on cheques as a way of paying people. They are also less likely to use computers and so have little familiarity with techniques for interacting with digital technology. However, recent developments in the financial industry mean that paper cheques are likely to be phased out, while the majority of payment systems at banks or post offices require the ability to remember a PIN code and/ or a complex password, something which many older people find hard.

Researchers from the University of Newcastle, Northumbria University and the Centre for Usable Home Technology at the University of York collaborated on a project which sought to understand these problems from the older person's point of view and to use their input to design a range of innovative solutions. The work took place between May 2010 and January 2012 with funding from the RCUK Digital Economy programme. Researchers began by talking at length with people aged over eighty about their experiences of money and banking throughout their lives. From this information three key issues were identified: difficulties with current PIN and password systems; the need for other people to be able to withdraw or spend money on behalf of older people; and a desire to have a physical record of payments made.

The research team then worked with other groups of people aged over-80 to develop concepts that would address these issues. These included the Secure PIN Reminder, which is a multi-biometric device that uses fingerprint readers, gyroscopes and accelerometers (which measure hand gestures and body sway) to give the owner access to personal security information. Firstly, it uses an accelerometer to monitor the 'gait' movement of its owner. Over time, the device forms patterns based upon its owner's movements and is able to sense when it is being used by its owner or by another person. If the system 'trusts' that it is being held by its owner, it will offer a limited reminder of their PIN or password when required. If the owner wants a little more information in their reminder, they can use a pattern of clockwise and anti-clockwise twists which are detected by the gyroscope and will result in the device showing some of the digits of the password. If they wish to have a full reminder, then they can swipe their finger over the fingerprint reader on the rear of the device.



© Digital Interaction, Newcastle Univ.

Researchers also worked with older people to trial a method whereby they could ask a trusted friend or family member to make payments or get cash for them, using a second debit card which was linked to their bank account. The Guardian Angel Card uses technology similar to

that found on pre-pay cards and is designed to work by allowing an account holder to determine at what time a carer can withdraw money or make a payment for them. For example, the account holder could state that the carer only has access at specific ATMs, or at shops within a certain distance from their home. The carer would have their own card linked to the Guardian Angel service, and therefore would not need to share the older person's personal security information. An important feature of this service is feedback from the service provider (such as a shop) and the account provider (the bank) to ensure that the carer completes the transaction as requested.

Finally, the research team trialled a digital cheque book designed to mimic the appearance of paper cheques but which makes electronic payments. The digital cheques look identical to traditional ones, save for the grey background on each one, which is actually billions of tiny printed dots laid out in a specific pattern. The account holder writes out the cheque as normal, but uses a digital pen which 'reads' the cheque as it is written via a tiny camera located in the pen. The camera records any strokes made in relation to the dots printed on the surface, enabling handwriting to be translated into digital information. Once completed the individual ticks a box, the only difference to how they would fill out a normal cheque, and fills in the stub so they can keep track of what is spent. If they wish, they can hand the cheque to the payee as a record of payment (for example, if they want to give birthday money to a grandchild). The information from the pen is transmitted wirelessly and the payment is made automatically without the need for the cheque to be presented at a bank. The pen, its charging dock, and the cheque book were packaged into a self-contained felt case which looked like a traditional wallet.

Researchers reported that older people's reactions to the various devices were overwhelmingly positive, even from participants who had initially been sceptical about what the technology could deliver, and researchers say the project has demonstrated to banks and other financial institutions how barriers to older people using their services could be overcome.

I'DGO TOO - Inclusive Design for Getting Outdoors 2

This project was funded by the EPSRC to find out if current 'best practice' in the planning and design of the outdoor environment impacts positively on older people's health, wellbeing and quality of life. The project involved over 3,580 people aged 65+ across the UK and brought together researchers from three leading research centres: OPENspace at the University of Edinburgh; SURFACE Inclusive Design Research Centre at the University of Salford; and WISE (Wellbeing in Sustainable Environments) at the University of Warwick. Between February 2007 and November 2011 the team looked at three issues of key importance to older people who want to get out and about in their community. These were: the relationship between tactile paving and older adults' mobility and risk of falling; the implications of high-density urban housing for age-friendly residential outdoor space; and the effect of pedestrian-friendly 'shared space' neighbourhoods on older people's activity patterns and time spent outdoors.

The team took a multi-method approach to the work, combining literature reviews, focus groups and workshops, questionnaire surveys and interviews, behavioural observations and mapping and audit exercises. Innovative approaches including inviting 32 older people to take part in tests at a gait laboratory, asking them to walk on different paving surfaces at different speeds to see the effect of each on their walking style and risk of falling. Researchers objectively and subjectively measured participants' outdoor activity patterns, asking participants to use diaries to record trips out and accelerometers to assess their pace and gait. They also held in-depth interviews with older people, combined with a physical audit of their street and neighbourhood, in order to consider which attributes of the detailed design were likely to influence aspects of older people's quality of life.

The findings indicated that minor changes, designed to make outdoor environments more people-friendly, could have the opposite effect on older people if they created places that looked or felt unfamiliar or posed a real or perceived risk of falling. The project reported their results in a launch event at the Houses of Parliament in April 2012, in celebration of the European Year for Active Ageing. Dissemination events were also held in the devolved parliaments of Scotland, Wales and Northern Ireland during May 2012, addressed by leading politicians in each location.

TACT3: Tackling Ageing Continence through Theory Tools and Technology

Older people may experience problems with continence, or may find that they need to visit the toilet more frequently. Such difficulties can make older people reluctant to travel or take part in social activities and can lead to increased isolation and even depression.

A group of researchers led by Brunel University have been working on an NDA-funded project which has looked at incontinence issues in a number of different ways. Partners included the

Sheffield Institute for Studies on Ageing, the BioMed Healthcare Technology Cooperative, University of West of England, Sheffield Hallam University, University of Manchester and the Helen Hamlyn Centre for Design and the Royal College of Art. Research was carried out between November 2008 and April 2012 with toilet users of all ages from parents of newborn children to people aged over 90, and with 20 providers of toilet facilities, from local authorities to shopping centres and train stations. The research has led to the publication of an inclusive design guide for publically accessible toilets

along with a website called the 'Great British Public Toilet Map' that aims to encourage local authorities to improve the information they provide about toilets.

Another element of the work was to investigate the quality of continence services. 126 participants were recruited from three different settings in South Yorkshire. Preliminary findings from this stream of work suggest participants are mostly satisfied with the continence services they receive, irrespective of the provider, and most felt that the cause of their bladder problem and their treatment had been explained to their satisfaction.

The technology development work stream was based on a programme of consultation with people with continence difficulties. The team developed two assistive technology devices for people who use continence pads. The first technology is ‘smart’ underwear that alerts the wearer to a pad leak before wetness spreads to outer clothing. The underwear has an in-built section of washable sensor fabric which detects a leak of urine from the pad. When these sensor threads are wetted a vibrating alert discreetly lets the wearer know a pad leak has occurred. The second technology is a key ring containing a sensor which changes the colour of the key ring in response to low levels of ammonia and which alerts the wearer to any developing odour before it becomes obvious to other people. The research team is currently investigating ways to commercialise the smart underwear.

Communicating confidence and the freedom to fly

For children growing up in the 21st century, the use of computers, mobile phones and other digital devices is commonplace both at home and at school. Researchers have for some time been looking at how these technologies can support learning disabled children and young people to communicate more confidently in social situations. For those children with severely limited speech, assistive technology in the form of augmentative and alternative communication (AAC) provides one of the few ways to communicate confidently. Researchers are addressing the limitations inherent in using AAC and seeking to maximise the child's ability to recount the events of the day in a way that is more natural and free. Researchers also report on assistive technology that enables disabled children who need significant postural support to travel by plane and access the same life experiences as their non-disabled peers.

UMSIC - Usability of Music for Social Inclusion of Children

Children with learning disabilities such as attention deficit hyperactivity disorder (ADHD) may find it hard to socialise at school because they have difficulty understanding how to interact with their peers, and so they risk becoming isolated. Previous research has indicated that music therapy can help children develop self-esteem, is linked to improvements in their academic progress and the way in which they interact socially. A project funded by the European Commission FP7 programme between September 2008 and August 2011 looked at how to build on these findings. The project provided children with a means of pursuing musical creativity and resulted in the development of a music product called JamMo. This offers sound synthesis, sampling, sequencing and touch-screen virtual musical instruments for learning disabled children in different age groups. The UK partners on the project were the Institute of Education, University of London and the University of Central Lancashire. Over the life of the project, more than 1,400 children aged 3-11 from the UK, Finland and Germany, many of whom had learning disabilities, participated in the design and use of JamMo.


© UMSIC project

Two software packages were developed: one for children aged 3-6 and one for children aged 7-12. The software allows children to compose music using pre-prepared 'audio loops'. These are short recordings of music and other sounds which can be inserted and repeated on a timeline to create a piece of music. The package includes a mentor function which guides the child in how to put the audio loops together. JamMo 3-6 consists of a karaoke-style singing game where children are encouraged to sing along with a recorded song of their choice and then listen back to a recording of their own singing. Songs can be heard in different languages or with instrumental

accompaniment alone. There is also a composition game which allows the user to select from three themes (city, animal world, and fantasy) to make music. Within each theme there are different types of sound fragments, and the user builds up a composition by adding them by dragging and dropping to a simple sequencer, which also has a backing track. JamMo 7-12 provides a sequencer, a more complex choice of games, virtual instruments such as a keyboard and drum kit, and a community function which includes a discussion forum.

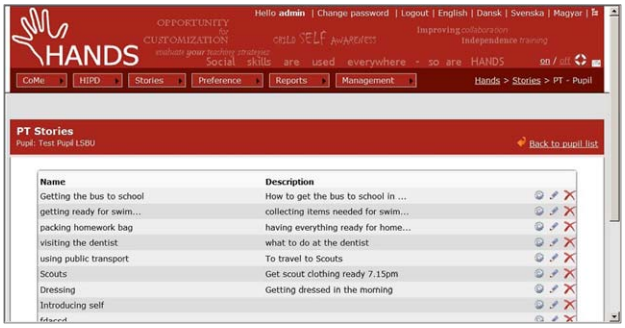
Both versions allow children to create music together by sharing their compositions and sound samples, and both offer attractive, brightly coloured screens and displays which feature cartoon drawings and child-friendly icons such as teddy bears or birds as a way of encouraging use, all of which were designed in consultation with children. According to the researchers, findings from trials at schools in the UK and Finland indicated that teachers felt the software encouraged creativity and learning, while children who used it showed higher levels of motivation. The Jammo software is available for download free from the project website[48] as an Open Source package which can be used on computers and laptops and also on Nokia mobile phones.

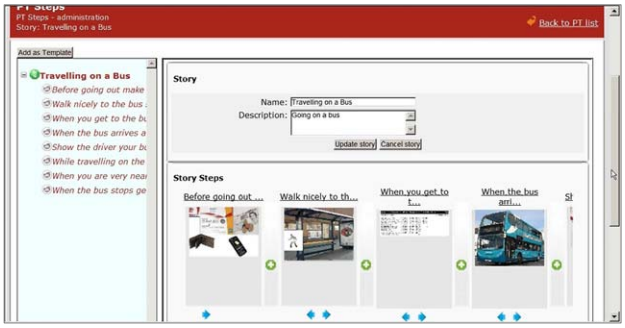
HANDS - Helping Autism diagnosed young people Navigate and Develop Socially

This project, which was funded by the European Commission FP7 programme, looked at how technology could support teenagers with Autism Spectrum Disorder (ASD) to improve their social and life skills while they were at school. The UK partner was London South Bank University, and the research started in June 2008 and ended in October 2011.

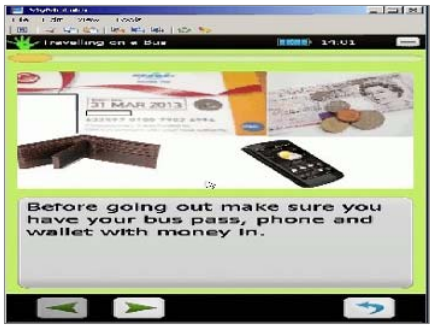
Researchers developed a system based on smartphones which were used to display reminders, appointments, a personal trainer function, and ‘social stories’. The reminders could be information such as what the teenager needed to pack for school that day, while the appointments could show lesson times or when homework was due. The personal trainer function provided multi media step-by-step instructions for tasks such as taking turns to talk during a conversation or making a cup of tea. The social stories covered situations which the teenager might find difficult, such as what would happen on a school history trip, or how to hail a bus to get to school and what to say to the driver.

[48] UMSIC project website: www.umsic.org/jammo





Teachers could upload information such as appointment times or personal trainer suggestions to a web-based application on a server, which then transmitted the information to the students' smartphones. A log on the website allowed teachers and researchers to review how effective the various interventions were in assisting students. The information could be customised for each student and a key element of the system was the way in which it offered motivation by providing positive feedback when a student had done well, for example by completing an assignment by a deadline.



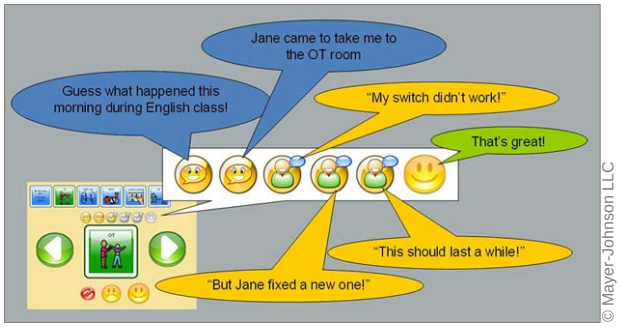
The UK research team tested out a first prototype of the smartphone software at four special schools for pupils with ASD and at a number of mainstream schools. This highlighted the importance of flexible screen layouts, with some children preferring text-based layouts while others had a preference for images. This led to the development in the second HANDS prototype of a flexible layout design tool that allowed for variation in the balance between text and images on any of the screen designs.

The tests also showed that, as well as becoming competent with the technology, teachers and schools needed to develop a strategy covering the use of this kind of assistive technology. For example, some schools did not routinely allow pupils to have mobile phones or smartphones in class, there were issues around the content which students could access via the phone and challenges with keeping the phone safe and charged up for use. Overall, the findings from the research indicate that this kind of technology support is helpful for some teenagers with ASD and researchers reported evidence of progress in students' ability to handle short term tasks. The IOS Press, a Dutch publishing house, is to publish a book about the experiences and outcomes from the HANDS project at the end of 2012 and members of the consortium have launched an organisation called 'HANDS Open' with the aim of expanding this work.

How was School Today...? in the Wild

Physically disabled children who have a limited ability to speak are encouraged to use a variety of AAC methods, ranging from low tech options such as indicating an image from a list, to high tech computer-based systems which produce synthesised speech. However, most voice-output communication aids are currently limited to pre-stored words and utterances or require the user to type text which can be output, word for word, via a speech synthesiser. The time taken to do this, coupled with restrictions in vocabulary, can be frustrating and make it hard to have a spontaneous social conversation. As a result, children with complex communication impairment miss out on opportunities to tell family and friends about what they have been doing and where they have been.

Researchers at Dundee and Aberdeen Universities initially undertook a feasibility study in which they constructed a proof-of-concept system for helping children with communication disabilities to construct and tell stories about their day at school. This research used sensors to track the children's location, activities, and interactions. The data collected was used to generate a draft story using a system to generate natural language text. The researchers also built tools which allowed the children to edit and interactively narrate the stories. Evaluation with two disabled children showed that the system allowed them to experience more natural conversation. Further funding from the RCUK Digital Economy Programme, for work which was carried out between January 2010 and June 2011, has allowed the researchers to address several issues identified in the feasibility study. These include the need for the system to support children with diverse capabilities and impairments, to be tailored to fit into the school environment and curriculum and to appeal to teachers as well as students. In order to study the long term impact the aim was to build a system that would be able to run ‘in the wild’, without the need for the constant technical support from the research team.



In this follow-on project, researchers developed a system made up of several modules. A mobile phone and dictaphone were used to gather images and voice recordings relating to what happened during the course of a school day. Radio frequency identification (RFID) and quick response (QR) barcode sensors were placed on items which the child used or at specific locations in order to capture additional data. All the information from these devices were sent to a remote server and then run through the narrative tool. This software developed the initial story which was made available to the child via either a computer or their communication device. Using an accessible touchscreen interface, the child was able to made changes or add to the story which was generated in this way.

The trial of the system was run in a special school over a six month period with two participants. Feedback was gathered from participants, parents and school staff who reported that the children using the system became more motivated to interact with those around them. The researchers are now further developing this system in another Digital Economy project which is looking at providing access to life stories for adults with communication and language impairment living in residential care homes.

TravelChair

Children with physical disabilities which reduce their mobility, such as cerebral palsy, often require a postural support system if they are to sit comfortably for any length of time and to avoid experiencing painful muscle spasms. This poses problems for parents who wish to take disabled children on trips by air since standard airline seats do not provide adequate support. As a result, some families are unable to travel.

Designer Graham Race, in conjunction with the children's charity MERU, undertook a project to develop a 'TravelChair' which could offer firm postural support for disabled children aged 3 to 11 travelling by air and be stored onboard the aircraft. The design was based on an earlier version of the seat which was heavy and did not fit into overhead lockers. The designer worked with several airlines, parents with disabled children and took advice from the European Aviation Safety Agency and the Civil Aviation Authority to ensure all requirements were met. The result is a lightweight, attractive TravelChair which can be stowed in an overhead locker onboard for use when needed and which fits into a standard airline seat. It weighs less than 6Kg and the standard airline seat belt fits easily. The seat design is able to accommodate feeding tubes where used by the child and its features include movable headrests to accommodate different ages, waist, hip and leg support, a removable pommel strap, a foot support, and space to attach toys. No parts of the TravelChair can be removed or lost as everything is kept safely inside the self contained package.

The new chair was launched to the airline industry in May 2012 and has already been ordered by Virgin Airlines for use in summer 2012. Parents simply advise the airline of their need for the TravelChair at the time of booking and the airline can ensure it is onboard for both outbound and return flights. Cabin crew do not need additional seating training because the familiar features are there for parents to take the lead in setting up the chair and seating their child. The development work on the project took place between January 2011 and January 2012 and was funded by the Devices for Dignity Healthcare Technology Co-operative.

Research and development work relating to assistive technology

2011-12 – Annex A

Presented to Parliament pursuant to section 22 of the Chronically Sick and Disabled Persons Act 1970

Annex A: Complete listing of AT research and development activity 2011-12

Project listing in alphabetical order by project title.

Glossary of acronyms for funding organisations:

AAL	Ambient Assisted Living Joint Programme
Artemis JU	Artemis Joint Undertaking
CARA	Council for Assisting Refugee Academics
CSO	Chief Scientist Office
D4D HTC	Devices for Dignity Healthcare Technology Cooperative
EPSRC	Engineering and Physical Sciences Research Council
ESRC	Economic and Social Research Council
European Commission CIP	Competitiveness and Innovation Framework Programme
European Commission FP6	Framework Programme 6
European Commission FP7	Framework Programme 7
European Commission ISMD	Information Society and Media Directorate
European Commission LLP	Lifelong Learning Programme
European Commission ICT PSP	ICT Policy Support Programme
HEFCE	Higher Education Funding Council
ICE-T (SEHTA)	International Centre of Excellence in Telecare (South East Health Technologies Alliance)
IEWM	Improvement and Efficiency West Midlands
INSPIRE	INtegrated SPInal REhabilitation - Salisbury District Hospital
INTERREG IVC	Innovation and environment regions of Europe sharing solutions – financed by European Regional Development Fund
JISC	Joint Information Systems Committee
KTN iCASE	Knowledge Transfer Network Industrial CASE award
LLHW	Lifelong Health and Wellbeing. A collaboration between Arts and Humanities Research Council (AHRC), Biotechnology and Biological Sciences Research Council (BBSRC), Engineering and Physical Sciences Research Council (EPSRC), Economic and Social Research Council (ESRC), Medical Research Council (MRC). UK Health Department partners are: Chief Scientist Office of the Scottish Government Health Directorates, Department of Health/ National Institute for Health Research England, Health and Social Care Research & Development Office, Northern Ireland, Wales Office of Research and Development for Health and Social Care, Welsh Assembly Government.
MRC	Medical Research Council
NDA	New Dynamics of Ageing programme. A collaboration between 5 UK

	Research Councils: ESRC, EPSRC, BBSRC (Biotechnology and Biological Sciences Research Council), MRC (Medical Research Council) and AHRC (Arts and Humanities Research Council)
NIHR	National Institute for Health Research
NIHR CLAHRC	Collaboration for Leadership in Applied Health Research and Care
NIHR EME	Efficacy and Mechanism Evaluation programme
NIHR HTA	Health Technology Assessment programme
NIHR HTD	Health Technology Devices programme
NIHR i4i	Invention for Innovation programme
NIHR PGAR	Programme Grants for Applied Research
NIHR RfPB	Research for Patient Benefit
RCUK	Research Councils UK Digital Economy Programme
SEEDA	South East England Development Agency
SFC	Scottish Funding Council
TLRP	Teaching and Learning Research Programme
TSB	Technology Strategy Board
TSB ALIP	Assisted Living Innovation Platform
TSB SBRI	Small Business Research Initiative
Welsh Government A4B	Academic Expertise for Business

Project title Organisation(s) Contacts Funding	Project summary	Start and finish dates
A biologically-inspired hearing aid **Research team:** Dept of Psychology, University of Essex **Contact:** 01206 873802 **Funder:** EPSRC **Amount:** £134,420	The project team has filed a patent for a new type of hearing aid which compensates automatically for the user's particular type of hearing loss. It uses special compression techniques to identify speech sounds from background noise and relay them to the user at the appropriate sound level. Link to more information on FAST website	09/10/2010 08/02/2012
A cluster randomised controlled trial of an occupational therapy intervention for residents with stroke living in UK care-homes **Research team:** Primary Care Clinical Sciences, University of Birmingham **Contact:** 0121 414 6764 **Funder:** NIHR HTA **Amount:** £1,930,486	Over 900 care home residents who have had a stroke have been recruited to this study which is assessing several aspects of occupational therapy intervention, including the use of assistive technology. A network of therapists has been formed. Training and good practice are shared amongst them. Link to more information on FAST website	01/09/2009 30/08/2014
A Large-Scale Predictive Musculoskeletal Model to Simulate Human Walking **Research team:** School of Mechanical, Aerospace and Civil Engineering, University of Manchester **Contact:** 0161 306 9200 **Other partners:** Orthotic Research and Locomotor Assessment Unit, Chas. A. Blatchford and Sons Ltd **Funder:** EPSRC **Amount:** £125,000	The study is developing a novel computer model to predict human walking which can be used to improve the design of prosthetics and other mobility equipment. Unlike previous studies which use measurements to describe what is happening, the software uses only information about walking speed and the distance travelled in a stride. Researchers will also conduct walking measurements on the same person used for the model's construction to validate its results. Link to more information on FAST website	01/10/2011 31/01/2013
A low-cost non-invasive visual prosthetic for blindness **Research team:** Nuffield Department of Clinical Neurosciences, University of Oxford **Contact:** 01865 231513 **Funder:** NIHR i4i **Amount:** £100,000	Researchers have developed a prosthetic device using a pair of glasses which incorporates a miniature camera and small lights linked to a computer. The device uses light levels to indicate objects in the environment to help people who have minimal sight navigate their way around. Early tests show that people with significant visual impairment were able to locate objects and recognise people more easily. Link to more information on FAST website	07/02/2011 19/03/2012

Project title Organisation(s) Contacts Funding	Project summary	Start and finish dates
A novel neurofeedback-based intervention to reduce neglect and improve function in stroke patients **Research team:** East Kent Hospitals University NHS Foundation Trust **Contact:** 01227 766877 **Funder:** NIHR RfPB **Amount:** £237,926	Around 20% of people experience 'neglect', or problems with spatial awareness following a stroke. In this condition the brain produces abnormal electrical waves which can be measured by electroencephalography (EEG). Using a technique called EEG Neurofeedback it is possible for people experiencing these spatial awareness problems to 'suppress' and encourage abnormal and normal electrical brainwaves using visual presentation of EEG waves on a computer screen. Researchers will assess whether this online feedback helps people experiencing 'neglect' to learn how to improve their spatial attention. Recruitment and training are ongoing. Link to more information on FAST website	15/06/2010 14/06/2013
A study into the effectiveness of a postural care education programme for parents and teachers who are responsible for the postural care needs of disabled children at home and school **Research team:** Dept of Allied Health Professions, Canterbury Christchurch University **Contact:** 01227 767700 **Other partners:** Chailey Heritage Clinical Services, University of Kent **Funder:** NIHR RfPB **Amount:** £241,930	Parents, teachers and teaching assistants will undertake a six-week programme in order to learn more about supporting the postural care needs of disabled children. This will include training and information about assistive technology such as posture support sleep systems. Link to more information on FAST website	01/09/2011 31/07/2013
A Universal PAN Architecture for Monitoring Multiple Chronic Conditions **Research team:** College of Engineering, Swansea University **Contact:** 01792 295514 **Funder:** EPSRC **Amount:** £179,286	This project developed a prototype for a mobile device used to monitor vital signs data from people with chronic health conditions. This device can support both Bluetooth and ZigBee wireless technologies. Until now Bluetooth and Zigbee devices have not been able to interoperate across the two networks, and a universal system which can accommodate both technologies is highly desirable. Two key technologies were created, one of which is designed to sense, recognise and clarify the signals in the wireless environment. The other is a distributed software download to update and upgrade the mobile device. Link to more information on FAST website	01/04/2008 30/04/2011

Project title Organisation(s) Contacts Funding	Project summary	Start and finish dates
AAC Self Assessment Tool-Kit **Research team:** Communication and Learning Enterprises Ltd **Contact:** 01229 585 173 **Funder:** Department for Education **Amount:** Not disclosed	The research team worked with five special schools in Cumbria to produce an augmentative and alternative communication (AAC) self assessment tool-kit for schools.The toolkit was launched in June 2011 at roadshows organised by the charity Communication Matters and is available online for download. Link to more information on FAST website	01/04/2010 01/04/2011
ACCOMPANY - Acceptable robotiCs COMPanions for AgeiNg Years **Research team:** School of Computer Science, University of Hertfordshire **Contact:** 01707 284000 **Other partners:** University of Birmingham, partners in Italy, France, Netherlands, Germany **Funder:** European Commission FP7 **Amount:** €4,830,000	The aim of this project is to develop a robotic companion as part of a 'smart home' environment, to provide a range of services that might support older people to live independently. Researchers report that the relationship of the robot with the user is that of a co-learner, with the intention that there will be mutual assistance rather than the user being dominated by the technology. Link to more information on FAST website	01/10/2011 30/09/2014
Adaptive Technologies for Enhancing the Accessibility of Digital TV **Research team:** School of Computing, University of Dundee **Contact:** 01382 385597 **Funder:** EPSRC, BBC Research **Amount:** £85,052	This project has evaluated assistive technologies to help make digital TV more accessible.These include speech synthesis to turn on-screen text into speech, speech recognition to allow users to control the TV through speech commands, gesture recognition to allow control through hand, eye or head gestures, and software agents that will find and recommend interesting content for the viewer. The results are currently being written up. Link to more information on FAST website	01/06/2009 31/12/2012

Project title Organisation(s) Contacts Funding	Project summary	Start and finish dates
ADD ME! - Activating Drivers for Digital eMpowerment in Europe **Research team:** Nottingham City Council **Contact:** 0115 915 5555 **Other partners:** Electronic Service Delivery Ltd, Kpeople Ltd, partners in Italy, Czech Republic, Spain, Portugal, France, Greece, Hungary, Norway **Funder:** European Commission ICT Policy Support Programme **Amount:** €430,000	The goal of this project was to create a pan-European network of organisations involved in improving digital access. Nottingham City Council reported on initiatives to train up digital information assistants to support people to use online services. The UK commercial partner ESD Ltd is disseminating a toolkit designed to help local councils work through the issues to consider when developing online services. Link to more information on FAST website	01/11/2009 31/10/2011
Advanced Algorithms for Neural Prosthetic Systems **Research team:** Dept of Engineering, University of Cambridge **Contact:** 01223 332600 **Funder:** EPSRC **Amount:** £407,739	For many people with severe paralysis, regaining arm and hand control is frequently cited as the top priority for improving their quality of life. Neural prosthetic systems can use brainwave information to control a prosthetic device such as a robotic arm or a computer cursor. This research programme will use advanced statistical and machine learning technologies to create algorithms that can decode neural activity with higher precision than previously seen. This should result in a much higher quality neural prosthetic device. Link to more information on FAST website	04/01/2010 03/07/2013
AEGIS - open Accessibility Everywhere: Groundwork, Infrastructure, Standards **Research team:** Interactive Systems Research Group, Nottingham Trent University **Contact**: 0115 848 6019 **Other partners:** University of Cambridge, AOL UK, 20 partners in Greece, Czech Republic, Spain, Belgium, Germany, Switzerland, Sweden, Canada **Funder:** European Commission FP7 **Amount:** €8,220,000	The project is developing software designed to make mainstream computers, applications, the internet and mobile devices more accessible. Two new products have been developed, called Odt2daisy and Odt2braille, and have been included in Create&Convert, a package of open-source programmes that can quickly translate electronic documents into an accessible alternative format. Link to more information on FAST website	01/09/2008 28/08/2012

Project title Organisation(s) Contacts Funding	Project summary	Start and finish dates
A-FOOTPRINT - Ankle and foot orthotic personalisation via rapid manufacturing **Research team:** Institute for Applied Health Research, Glasgow Caledonian University **Contact:** 0141 331 3457 **Other partners:** University of Newcastle, partners in Belgium, Netherlands, Denmark, Lithuania, Spain **Funder:** European Commission FP7 **Amount:** €5,310,000	The aim of this project is to develop foot and ankle orthoses which are tailored to an individual's shape and functional needs and which can be ready for use within 48 hours. Project funding has allowed Peacocks Medical Group to build a new Advanced Orthotic Design and Manufacture Centre which will serve as the project pilot factory. A first batch of prototype products developed by the consortium has been produced. Link to more information on FAST website	01/10/2009 30/09/2013
Ageing in place and the impact of emerging technologies on the lives of older people **Research team:** Institute of Health and Society, Newcastle University **Contact:** 0191 222 7045 **Funder:** EPSRC **Amount:** £83,114	The researcher is developing national and international links with a range of experts in order to explore how digital technology can assist older people to stay connected to their wider community and provide support to live independently at home. Link to more information on FAST website	01/09/2011 31/08/2012
AHEAD-EU - Advancing Higher Education Access for Disabled students in Europe **Research team:** International School for Communities, Rights & Inclusion, University of Central Lancashire **Contact:** 01772 892780 **Other partners:** Universities in Germany and Sweden **Funder:** European Commission Erasmus Mundus programme **Amount:** €242,988	This is a multidisciplinary review of the experiences of disabled students in European higher education to identify the types of disability, the barriers which prevent disabled students participating fully, and the steps being taken to encourage inclusion. The project website contains information about legislation, issues and initiatives across Europe, while a blog allows individual students to make their contribution to the debate. Link to more information on FAST website	01/06/2009 01/06/2012

Project title Organisation(s) Contacts Funding	Project summary	Start and finish dates
ALADDIN - A technology pLatform for the Assisted living of Dementia elDerly INdividuals and their carers **Research team:** Institute of Neurology, University College London **Contact:** 020 7837 3611 **Other partners**: Partners in Greece, Spain, Germany, Italy **Funder:** AAL **Amount:** €1,400,000	Researchers developed a system which offered people with dementia living at home and their carers, a way to record health details for transmission to clinicians. Participants could also access social networking and cognitive stimulation tools. Following pilot trials in the UK, Spain and Greece, carers reported reduced feelings of isolation and more confidence in caring, while clinicians said they were able to monitor people with dementia more closely and frequently. Link to more information on FAST website	01/10/2009 31/12/2011
ALISS - Access to Local Information to Support Self management **Research team:** Long Term Conditions Unit, Scottish Government **Contact:** 0131 556 8400 **Other partners:** NHS National Services Scotland, Mr Andy Hyde (consultant) **Funder:** Long Term Conditions Unit, Scottish Government **Amount:** £380,000	About 40% of the Scottish population, or around two million people, live with a long term health condition and the numbers are rising. The ALISS Engine is a Scottish information resource which manages an online index of links to information about self management of long term conditions. It provides one place to contribute and point to information, making it easier to find. A working model of the Engine is up and running and work continues with local communities to populate it with content. Link to more information on FAST website	01/04/2008 31/12/2011
AMPERE - Additional Modules for PAMELA to Enhance Research Efficiency **Research team:** Accessibility Research Group, University College London **Contact:** 020 7679 7009 **Funder:** EPSRC **Amount:** £2,140,430	AMPERE has increased the available capacity of the Pedestrian Accessibility and Movement Environment Laboratory (PAMELA) by 50%. This has extended the laboratory's research capabilities to include accessibility to buses and trains, ophthalmology interventions for macular degeneration, examination of shared space facilities and so on. Researchers are also increasing the range of instrumentation available in the laboratory. Link to more information on FAST website	01/10/2008 30/09/2013

Project title Organisation(s) Contacts Funding	Project summary	Start and finish dates
An advanced FES rehabilitation tool for upper limb therapy after stroke **Research team:** School of Computing, Science and Engineering, University of Salford **Contact:** 0161 295 5986 **Other partners:** National Clinical FES Centre, NHS Grampian Dept of Rehabilitation Medicine, University of Aberystwyth, University of Leeds **Funder:** NIHR i4i **Amount:** £470,553	The aim of the research is to create a muscle stimulation system (the Functional Electrical Stimulation (FES) Rehab Tool) for hand and arm therapy after stroke. Based on extensive user consultation, the project team has developed a prototype version of a tool to guide users in the setting up of upper limb FES system controllers. This tool is currently being trialled. Link to more information on FAST website	01/09/2009 30/08/2012
Analogue Evolutionary Brain Computer Interfaces **Research team:** School of Computer Science and Electronic Engineering, University of Essex **Contact:** 01206 872770 **Funder:** EPSRC **Amount:** £370,346	The project developed improvements to the methods for recording and averaging certain brain waves, and an innovative protocol for using this information to control a computer mouse. Researchers also developed algorithms to aid the design of a brain computer interface (BCI) mouse, which people were able to use with good accuracy with no previous training. Link to more information on FAST website	01/06/2008 31/05/2011
APSIS4all: Accessible Personalised Services In Public Digital Terminals for all **Research team:** John Gill Technology Ltd **Contact:** 07590 982 732 **Other partners:** AbilityNet, partners in Spain, Austria, France, Germany, Greece, Italy **Funder:** European Commission CIP **Amount:** €341,000	Disabled and older people can face substantial problems when trying to use public digital terminals, such as kiosks selling tickets, bank ATMs or information resources. The aim of this project is to personalise publicly sited digital terminals to meet users' specific needs. One approach is to provide users with a card that stores their access preferences so the terminal changes the settings to suit the user. Alternatively, users make selections online using their own computer and the system sends a reference code which can be input to the terminal to complete the transaction, such as retrieving money or printing tickets. Link to more information on FAST website	01/04/2011 31/03/2014

Project title Organisation(s) Contacts Funding	Project summary	Start and finish dates
Arm Intervention After Stroke (AIAS): a feasibility study **Research team:** Institute of Cardiovascular and Medical Sciences, University of Glasgow **Contact:** 0141 330 2020 **Funder:** CSO **Amount:** Not disclosed	Arm weakness and subsequent lack of movement is a common problem after stroke. Research evidence suggests high-intensity, repetitive, task-specific practice to be effective elements of arm rehabilitation. This randomised controlled trial investigated the feasibility and acceptability of the ArmeoSpring arm orthosis which is designed to provide high-intensity, repetitive, task-specific rehabilitation without being labour-intensive. Link to more information on FAST website	01/08/2009 01/04/2011
ASPIS - A Secure Platform for IPTV Systems **Research team:** Global Security Intelligence (GSI) Ltd **Contact:** 0207 993 4431 **Other partners:** Partners in Cyprus, Greece **Funder:** EUREKA's Eurostars Programme **Amount:** €1,006,604	The project developed a technical solution to allow users to share their personal details in an easy, controlled and secure manner on an internet enabled TV (IPTV). The aim was to offer older people access to web services which might otherwise be denied to them because they did not have internet access or were not comfortable using a computer. The new service was demonstrated via a YouTube video in September 2011 and is now available. GSI Ltd was responsible for security and privacy issues and for ensuring older people were involved in the design process. Link to more information on FAST website	01/07/2009 30/06/2011
Assisted Living Technologies for Older People at Home: creating a knowledge base for businesses and commissioners about falls and dementia patients **Research team:** Centre for International Research on Care, Labour and Equalities, University of Leeds **Contact:** 0113 343 4418 **Other partners:** Tunstall, Inventya, Oxford Institute of Population Ageing **Funder:** TSB ALIP **Amount:** £1,039,611	This project will investigate the uptake of assisted living technologies by older people diagnosed with dementia and/ or at risk of falling. Researchers have begun a literature review and interviews with key stakeholders. Tunstall is exploring new design possibilities for fall detectors, and Inventya is preparing a baseline map of the telecare market. Link to more information on FAST website	01/06/2011 31/05/2014

Project title Organisation(s) Contacts Funding	Project summary	Start and finish dates
ASTERICS - ASsistive TEchnology Rapid Integration and Construction Set **Research team:** Sensory Software **Contact:** info@sensorysoftware.co.uk **Other partners**: Partners in Poland, Czech Republic, Austria, Spain, France, Cyprus **Funder:** European Commission FP7 **Amount:** €3,380,000	The aim of this project is to provide a flexible and affordable toolkit which combines emerging sensor techniques like Brain Computer Interfaces with basic 'actuators', or switches, which will enable people to interact with standard computer and environmental control systems. All technical partners have agreed on the system architecture, the hardware specification and the software specification, and user recruitment is complete. Link to more information on FAST website	01/01/2010 31/12/2012
AST-Net: A Secure and Trusted Community Wireless Mesh Network **Research team:** Swanmesh Networks Ltd **Contact:** 0844 288 0215 **Funder:** TSB **Amount:** £72,075	In this project two approaches were adopted to assure the security of wireless networking for applications including the transmission of healthcare information. One is the application of asymmetrical keys to make sure unauthorised users cannot get into the network. Another is the development of a routing protocol which can detect any intrusion and exclude it once the network is attacked. The system was exhibited at the ID Assurance conference organised by the Cabinet Office and the TSB. Link to more information on FAST website	01/11/2010 31/10/2011
AT Guide **Research team:** Trent Dementia Services Development Centre **Contact:** 0116 257 5017 **Other partners:** Innovations in Dementia, Disabled Living Foundation **Funder:** Department of Health **Amount:** £242,693	The aim of this project was to develop an online assistive technology self-assessment guide for people with dementia and their carers. It consists of eight sections covering daily activities such as getting out and about, going to bed, washing, and mealtimes. It has been designed and tested with people with dementia to ensure that it is easy to find the information required. The guide was launched at a one day conference in May 2012. Link to more information on FAST website	01/04/2009 31/03/2012

Project title Organisation(s) Contacts Funding	Project summary	Start and finish dates
ATHENE: Assistive Technologies for Healthy living in Elders: Needs assessment by Ethnography **Research team:** Centre for Health Sciences, Barts and The London School of Medicine and Dentistry **Contact:** 020 7882 2515 **Other partners:** University of Manchester, Tynetec, Newham University NHS Trust, South East Health Technologies Alliance, Roke, Phillips, Graphnet, PRIAE **Funder:** TSB ALIP **Amount:** £574,571	Studies of the use of assisted living technology (ALT) services suggest that there may be differences in the ways in which people from different ethnic and cultural groups respond to the use or potential use of such technologies. The aim of the project is to bring together academics, NHS, IT industry, social care and third sector organisations to devise capacity building programmes for industry and service providers and to publish guidelines for planners and managers of ALT programmes. Link to more information on FAST website	01/04/2011 31/03/2013
ATIS4all: Assistive Technologies and Inclusive Solutions for All **Research team:** Full Measure **Contact:** info@fullmeasure.co.uk **Other partners:** Research In Motion, Employers Forum on Disability, AbilityNet, Work Research Centre, Central Remedial Clinic, partners in Spain, Denmark, Austria, Greece, Italy. **Funder:** European Commission **Amount:** €690,000	Disabled and older people in Europe continue to be confronted with a number of barriers to using everyday ICT products and services. ATIS4all is a network on the theme of assistive technology to access ICT, which aims to encourage the exchange of knowledge and expertise about assistive technology and inclusive solutions. It is sharing information among key players and end users via an open and collaborative web portal. Link to more information on FAST website	01/01/2011 31/12/2013

Project title Organisation(s) Contacts Funding	Project summary	Start and finish dates
ATRAS - Assistive Technologies for Rehabilitation of the Arm following Stroke **Research team:** National Clinical FES Centre **Contact:** 01722 425138 **Other partners:** Keele University, University of Southampton, Bournemouth University, University of Nottingham, Newcastle University, Royal Bournemouth and Christchurch Hospital NHS Foundation Trust, Salisbury NHS Foundation Trust; Stoke on Trent NHS Primary Care Trust, University of Twente (Netherlands) **Funder:** NIHR PGAR **Amount:** £803,231	Much current stroke rehabilitation is concentrated on improving walking to regain mobility. More recently greater emphasis has been placed on rehabilitation of the hand and arm and new types of assistive technology have been developed including robots to move the arm and electrical impulses to activate muscles. Researchers have developed a national survey of stroke clinicians to capture demographic information and details of frequently used treatments. A literature review is underway and researchers are assessing techniques for comparing combinations of seven assistive technologies used for rehabilitation: peripheral functional electrical stimulation (FES); central/ cortical stimulation; constraint-induced movement therapy; robotics; active orthotics; biofeedback; and virtual reality including Wii. Link to more information on FAST website	15/03/2009 15/03/2014
Biomechanical and sensory constraints of step and stair negotiation in old age **Research team:** Institute for Biomedical Research into Human Movement and Health, Manchester Metropolitan University **Contact:** 0161 247 5593/5581 **Other partners:** BRE **Funder:** NDA **Amount:** £376,000	Falls, and the fear of falling, are major factors affecting the mobility and quality of life for older people. Falls are more likely to occur when descending steps and stairs. Fifty older participants (65 years and above), including people with a history of falls, and 50 younger participants (under 40 years) underwent a series of tests on a staircase with adjustable steps to assess the design and to see if older people lack the strength to cope with high steps or have difficulty landing safely on narrow steps. The second strand of the study is to evaluate 'tailor made' training to build up older people's strength and skills at using stairs. Link to more information on FAST website	01/09/2009 30/08/2012

Project title Organisation(s) Contacts Funding	Project summary	Start and finish dates
BRAID - Bridging Research in Ageing and ICT Development **Research team:** Trilateral Research & Consulting LLP **Contact:** 0207 244 7284 **Other partners:** Dundalk Institute of Technology, Queen's University Belfast, Global Security Intelligence Ltd, partners in Australia, Portugal, Italy, Germany, Netherlands **Funder:** European Commission FP7 **Amount:** €1,200,000	The aim of this project is to develop a comprehensive roadmap for active ageing by consolidating existing roadmaps and by describing and launching a means of encouraging stakeholders to come together for consultations. The project has produced: a taxonomy and glossary covering the development and deployment of ICT for older people; stakeholder analysis and ways to co-ordinate European-wide research; and a report on the project's vision. A final project conference was held in Prague in May 2012. Link to more information on FAST website	01/03/2010 01/03/2012
BRAIN - BCIs with Rapid Automated Interfaces for Nonexperts **Research team:** Faculty of Computing and Engineering, University of Ulster **Contact:** 028 9036 6305 **Other partners:** Cedar Foundation, partners in Netherlands, Spain, Poland **Funder:** European Commission FP7 **Amount:** €4,000,000	The aim of this project was to improve the reliability, flexibility and accessibility of brain computer interfaces (BCIs), and to reduce the dependence on outside help when using them. The project developed a number of new hardware and software components. These included water-based electrodes as an alternative to the usual gel-based electrodes, which could be readily put on by a non-expert in a couple of minutes. Other outputs from the project were the software tools needed to customise a BCI to match each user's preferences, and an intuitive interface for controlling applications. Link to more information on FAST website	01/09/2008 31/12/2011
BRAINABLE: Autonomy and social inclusion through mixed reality Brain-Computer Interfaces: Connecting the disabled to their physical and social world **Research team:** AbilityNet **Contact:** 0870 240 4455 **Other partners**: Partners in Spain, Austria, Portugal **Funder:** European Commission FP7 **Amount**: €2,980,000	The aim of this project is to conceive, research, design, implement and validate a system which combines sensors with computing applications and virtual environments in order to provide support for older and disabled people. The first BrainAble prototype was selected to form part of the Innovation Convention 2011 exhibition in Brussels. In the UK the prototype has been tested in Liverpool through a partnership between AbilityNet and Liverpool John Moores University. The second prototype is expected to be ready in March 2012. Link to more information on FAST website	01/01/2010 31/12/2012

Project title Organisation(s) Contacts Funding	Project summary	Start and finish dates
Brain-Computer Interface for Monitoring and Inducing Affective States **Research team:** School of Systems Engineering, Reading University **Contact:** 0118 378 8617 **Other partners:** University of Plymouth **Funder:** EPSRC **Amount**: £876,103	The research will build innovative intelligent brain computer interface (BCI) systems that can monitor emotions, and make an attempt to modify them by using a computer-controlled music generation system. It is proposed that such systems could be used for treatment of emotional/ mood disorders such as depression, and so could be of direct benefit to society and the NHS. Link to more information on FAST website	01/03/2012 21/08/2016
Bravehealth: Patient centric approach for an integrated, adaptive, context aware remote diagnosis and management of cardiovascular diseases **Research team:** School of Electronics and Computer Science, University of Southampton **Contact:** 023 8059 5000 **Other partners:** University of Birmingham, University of Hull and 17 partners in Italy, Finland, Poland, Portugal, Belgium, China **Funder:** European Commission FP7 **Amount:** €10,400,000	People who have cardiovascular disease often require close monitoring to ensure that their condition does not worsen. The aim of this project is to develop a wearable miniaturised sensor to monitor vital signs data. The unit will run automatic scheduled analysis of particular measurements, and will also be able to screen specific vital signs on request. The system will also contact users in real time if anomalies are detected and make suggestions such as a change of drug or activity. The messages will be sent by mobile phone, and the system will also include location awareness information and provide a mobile virtual community for education and support. Link to more information on FAST website	01/03/2010 28/02/2014
BRIDGE - Building Relationships with the 'Invisible' in the Digital (Global) Economy **Research team:** University of Edinburgh Business School **Contact:** 0131 651 3198 **Other partners:** University of Leeds, University of Middlesex **Funder:** EPSRC **Amount:** £767,623	The project explored the needs of potential users of ICT systems who are excluded due to a combination of age, social and economic barriers. The project has developed an innovative methodology called BEACH (build-explore-apply-conceptualise-help) to understand the needs of end users. Using this toolkit a range of demonstrator products have been developed, and an analysis of the needs of older drivers has been completed. Link to more information on FAST website	01/05/2009 31/10/2011

Project title Organisation(s) Contacts Funding	Project summary	Start and finish dates
Bug-free prostheses: Reducing infection risk and improving reliability **Research team:** Dept of Civil Engineering, University of Strathclyde **Contact:** 0141 548 3277 **Funder:** EPSRC **Amount:** £202,308	In the UK there are approximately 62,000 amputees and conservative estimates suggest that there are more than 10 million people in the world who live with limb loss. This feasibility study collected data on the microbial populations present on a user's skin and within the liner of a prosthetic limb and created a catalogue of the bateria genes most commonly found. This data has been evaluated and is being used to influence the design of new liners. Link to more information on FAST website	01/11/2009 30/04/2011
CACTUS – Cost effectiveness of computer aphasia treatment versus usual stimulation **Research team:** School of Health and Related Research, University of Sheffield **Contact:** 0114 222 5454 **Funder:** NIHR RfPB, South Yorkshire Applied Research & Care Consortium CLAHRC **Amount:** £179,945	Aphasia is a communication disorder often caused by stroke which can affect the ability to understand what is said, the ability to produce correct words and the ability to read and write. This study evaluated computer therapy compared with the usual stimulation provided for people with aphasia to see if the software improved their use of language. The treatment group showed significant improvements in the percentage of words named correctly, along with improved quality of life scores. The approach was found to be cost effective and researchers now wish to carry out a larger trial to assess this further. Link to more information on FAST website	01/01/2010 31/05/2012
CARDIAC: Coordination action in R&D in accessible and assistive ICT **Research team:** John Gill Technology Ltd **Contact:** 07590 982 732 **Other partners:** Central Remedial Clinic, partners in Switzerland, Cyprus, Spain, Italy, Germany, Netherlands, Norway, Israel, Greece, Portugal, Australia **Funder:** European Commission FP7 **Amount:** €562,449	There have been a number of EU-funded projects around accessible and assistive ICT technologies, but there has been little emphasis so far on creating a platform to bring together the various stakeholders in this area. The aim of this project is to create a roadmap highlighting research priorities that will favour e-accessibility. The research team has published several guides, including a report on technology transfer for assistive and accessible ICT systems and an introduction to the key issues relating to accessible user interfaces. Link to more information on FAST website	01/03/2010 28/02/2013

Project title Organisation(s) Contacts Funding	Project summary	Start and finish dates
Care in Business **Research team:** Centre for Innovative Ageing, University of Swansea **Contact**: 01792 602186 **Other partners:** University of Bangor, Glyndwr University, Cardiff University **Funder:** Welsh Government A4B **Amount**: £145,000	The project is bringing together academia, business, care-organisations, carers and older people to create a vision of care and explore how new assisted living technologies and emerging trends in the ICT sector can be exploited innovatively to meet care needs. A number of product ideas are being developed through inter-sector and inter-disciplinary collaboration and the project is also developing a greater understanding of the gaps in research knowledge. Link to more information on FAST website	01/04/2011 30/09/2012
CCE - Connected Care for Elderly persons suffering from dementia **Research team:** BRE **Contact:** 01923 664000 **Other partners:** Hereward College, Centrihealth, Peverell, partners in Netherlands, Germany, Hungary **Funder:** AAL **Amount**: €2,200,000	Many older people develop long term conditions, including dementia, which impair their ability to continue to live independently. The aim of this project was to develop a European platform to deliver connected, mainstream ICT-based assisted living solutions for older people. The UK research team worked with Bournemouth Borough Council which was constructing a purpose built dementia extra care scheme consisting of 20 flats designed to support independent living for residents. Link to more information on FAST website	01/01/2009 31/12/2011
CHIRON - Cyclic and person-centric Health management: Integrated appRoach for hOme, mobile and clinical eNvironments **Research team:** School of Electronics and Computer Science, University of Southampton **Contact:** 023 8059 5000 **Other partners**: Cardionetics, Southampton University Hospitals NHS Trust, plus 26 partners in Spain, Greece, Netherlands, Hungary, Italy, Slovenia **Funder:** Artemis JU, TSB **Amount**: €18,000,000	With cardiovascular disease being the leading cause of death in Europe, there is a need to move away from traditional 'healthcare' approaches towards 'health management'. The project is investigating ways in which ICT can be used to create an overall, integrated system architecture providing a 'continuum of care' where the patient is at the centre of the whole approach. The Southampton University team is developing intelligent medical sensors with decision-making capability. During the final year of the project, the team will use the technology to test approximately 400 people from a high risk heart disease group, including 200 participants living in Southampton. Link to more information on FAST website	01/03/2010 01/02/2013

Project title Organisation(s) Contacts Funding	Project summary	Start and finish dates
CILMI: Computational Intelligence in Lifestyle Management Infrastructure **Research team:** School of Computing Science, Newcastle University **Contact:** 0191 2227972 **Other partners:** Partners in Italy, Brazil **Funder:** European Commission FP7 **Amount:** €205,200	The aim of this project is to examine three key factors in developing lifestyle management systems: data capture methodologies; data analysis requirements; and issues around trust and privacy for the individuals who use such systems. CILMI researchers are working on a proposed Personal Health and Lifestyle Engine, which will allow individuals not only to maintain their own personal health history, but also to obtain personalised, lifestyle-related advice to improve their health by changing their daily habits. The Newcastle University team is looking at issues around trust and security. Link to more information on FAST website	01/10/2010 31/01/2014
COBALT: Challenging Obstacles and Barriers to Assisted Living Technology **Research team:** School of Psychology, University of St Andrews **Contact:** 01334 462152 **Other partners:** University of Reading, University of Sheffield, AgeUK **Funder:** TSB ALIP **Amount:** £521,000	The project is working with two groups of end-users of assisted living technologies (ALTs), older adults and health and social care staff, to tackle the widespread barriers to adoption of ALTs. The knowledge and experience of these two groups of experts will be used to create information and materials to educate the ALT industry, service commissioners and policy makers about how to encourage maximum take-up and benefit. The research team has produced a literature review and has also recruited the first of 40 older people who will participate in a series of workshops exploring perceptions of ALTs. Link to more information on FAST website	01/09/2011 31/08/2013
COGWATCH: Cognitive rehabilitation of apraxia and action disorganisation syndrome **Research team:** BMT Group Ltd **Contact:** 020 8943 5544 **Other partners:** University of Birmingham, Headwise, Stroke Association, partners in Spain, Germany. **Funder:** European Commission FP7 **Amount:** €4,620,000	People who have had a stroke may experience neurological difficulties such as apraxia and action disorganisation syndrome (AADS). This can result in cognitive deficits which make it hard for the person to undertake every day tasks. The aim of this project is to develop a new Personal Healthcare System (PHS) using intelligent tools and objects, portable and wearable devices as well as ambient systems. The aim is that the system will be affordable, customisable and capable of delivering continuous cognitive rehabilitation at home. The project kick off meeting was held in December 2011. Link to more information on FAST website	01/11/2011 31/10/2014

Project title Organisation(s) Contacts Funding	Project summary	Start and finish dates
Combining transcranial direct current stimulation (tDCS) with robotic hand training for the severely impaired hand after stroke **Research team:** School of Health Sciences, University of Southampton **Contact**: 023 8059 7979 **Funder:** Wessex Medical Trust **Amount:** **£**19,223	The aim of this project is to assess whether a combination of two technologies can help people who have had a stroke regain movement in their hands. One technology is transcranial direct current stimulation (tDCS), a non-invasive method of stimulating the brain by passing electric currents through the skull, while the other is the use of robotics to exercise the hand.This project is now in the pilot stage. Link to more information on FAST website	01/05/2010 30/04/2013
CommonWell: Common platform services for ageing Well in Europe **Research team:** Tunstall Group Ltd **Contact:** 01977 661234 **Other partners:** Milton Keynes Council, Work Research Centre Ltd, Intersystems, partners in Germany, Netherlands, Spain **Funder:** European Commission CIP **Amount:** €2,680,000	The aim of this telecare project is to support independent living and improve quality of life for older people and those living with long-term conditions through better integration of health and social care. A range of telecare and telehealth systems have been developed with stakeholders and four project sites in Spain, Germany, the Netherlands and Milton Keynes in the UK are testing the systems. The results will provide evidence of the economic and quality of life benefits of the integration of telecare and telehealth systems. Link to more information on FAST website	01/10/2008 01/01/2012
CompanionAble - Integrated Cognitive Assistive & Domotic Companion Robotic Systems for Ability & Security **Research team:** School of Systems Engineering, Reading University **Contact:** 0118 378 8617 **Other partners:** Partners in Germany, France, Spain, Belgium, Austria **Funder:** European Commission FP7 **Amount:** €7,800,000	This project combined robotics with 'smart home' technology to create an assistive environment for people with dementia and their care givers. It was selected as number one of 50 'star innovation projects' shown at the European Innovation Convention in December 2011. Hector the companion robot provides care support, aide memoire services, detects and responds to falls and can contact carers and emergency services if needed. A further six month trial of the technology is taking place in the Netherlands, Spain and Belgium and will end in July 2012. Link to more information on FAST website	01/01/2008 31/12/2011

Project title Organisation(s) Contacts Funding	Project summary	Start and finish dates
CO-MODAL - Consumer Models for Assisted Living **Research team:** Health Design & Technology Institute, Coventry University **Contact:** 024 7615 8000 **Other partners:** AgeUK, Grandparents Plus **Funder:** TSB ALIP **Amount**: £742,399	This project aims to support the development of a consumer market for assisted living technologies (ALTs) for 'younger' older people, that is those who are approaching retirement and older age. Researchers have conducted literature and market reviews, developed interview protocols and undertaken semi-structured interviews with users and decision makers. Link to more information on FAST website	01/12/2011 31/12/2013
CORBYS - Cognitive Control Framework for Robotic Systems **Research team:** School of Computer Science, University of Hertfordshire **Contact:** 01707 284000 **Other partners:** Reading University, partners in Germany, Slovenia, Belgium, Norway, Spain **Funder:** European Commission FP7 **Amount:** €8,755,265	This project will focus on robotic systems that have a symbiotic relationship with humans and can support the process of rehabilitation. Such robotic systems have to cope with highly dynamic environments as humans are demanding, curious and often act unpredictably. The project is developing and implementing a robotic gait rehabilitation system. This will combine a mobile platform and a powered orthosis to encourage people to practice walking by anticipating their intentions and adapting to their capabilities. Link to more information on FAST website	01/02/2011 31/01/2015
COSPATIAL - COmmunication and Social PArticipation: collaborative Technologies for Interaction And Learning **Research team:** School of Computer Science and Information Technology, University of Nottingham **Contact:** 0115 951 4254 **Other partners:** University of Birmingham, partners in Italy, Israel. **Funder:** European Commission FP7 **Amount:** €1,650,000	Children with autism frequently have problems with social interaction. They may find it hard to learn how to behave in everyday situations or to complete tasks at home or school. Researchers looked at two types of technology to help children with autistic spectrum disorders learn appropriate social behaviours. These are virtual environments, or 3D simulations of everyday situations that can be accessed via a computer; and active surfaces which are shared systems similar to school whiteboards. Link to more information on FAST website	01/02/2009 31/01/2012

Project title Organisation(s) Contacts Funding	Project summary	Start and finish dates
Creating artificial sensation by tactile sensing and innervations through nerve endings **Research team:** School of Design, Engineering and Computing, Bournemouth University **Contact:** 01202 524111 **Other partners**: Royal Bournemouth NHS Foundation Trust, Poole Hospital NHS Foundation Trust, Salisbury NHS Foundation Trust **Funder:** Bournemouth University, Royal Bournemouth NHS Foundation Trust **Amount:** £40,200	People who have peripheral neuropathy as a result of disease such as diabetes or after chemotherapy for cancer have reduced sensations in their fingers and limbs. This sensory loss can result in numbness, tremor, and problems with normal gait. Researchers have developed a prototype device that can provide replacement sensation for people who have peripheral neuropathy. Currently the device looks like the insole of a shoe and has been tested on healthy people with encouraging results. Researchers have filed a preliminary patent application on the device, and are also seeking ethical approval for testing it with people who are experiencing sensation loss. Link to more information on FAST website	01/10/2009 30/09/2012
Crucible Centre **Research team:** Accessibility Research Group, University College London **Contact:** 020 7679 7009 **Funder:** LLHW **Amount:** £3,000,000	The Crucible Centre is designed to inspire researchers to integrate the search for longevity with the aspiration to improve levels of wellbeing. Current studentships and projects include work on developing robots to support social inclusion; 3D body surface scanning as a healthcare tool; applications to reduce the risk of falling; and developing an expert system for multi-dimensional analysis of risk assessment in older people. Link to more information on FAST website	01/10/2009 30/09/2014
CUPID - Closed-loop system for personalized and at-home rehabilitation of people with Parkinson's disease **Research team:** Oxford Computer Consultants **Contact:** 01865 305200 **Other partners:** Partners in Italy, Switzerland, Israel, Belgium, Spain **Funder:** European Commission FP7 **Amount:** €3,500,000	CuPiD aims to promote independence for people with Parkinson's by providing home-based rehabilitation training. The system will monitor and record each person's exercises and clinicians will be able to supervise their progress remotely, changing the training to fit an individual's needs. Researchers are investigating virtual reality, biofeedback technology and ways to address problems with freezing of movement while walking via cues provided by wearable devices. The second half of the project consists of a large-scale validation programme to allow accurate evaluation of the service in terms of its feasibility; integration with healthcare institutions; efficacy of intervention; and user satisfaction. Link to more information on FAST website	01/10/2011 30/09/2014

Project title Organisation(s) Contacts Funding	Project summary	Start and finish dates
Customisation of cosmetic covers for artificial limbs **Research team:** Design, Manufacture and Engineering Management Dept, University of Strathclyde **Contact:** 0141 548 2091 **Other partners:** Chas A Blatchford & Sons Ltd, PACE Rehabilitation **Funder:** EPSRC **Amount:** £189,616	Amputees cover their metal orthopaedic limb (i.e. artificial leg or arm.) with a specially designed 'cosmesis' made out of foam. The main problems with foam cosmeses are that the material often restricts the functionality of the underlying prosthetic components and over time degrades and ruptures. The foam also does not move like a human limb and its appearance does not resemble skin. The project has completed the first prototype of a cosmesis using new foam designs never used in this application before and has created a second prototype for trial. The final outcomes will be taken forward by the commercial partners. Link to more information on FAST website	20/09/2010 19/09/2012
DAP Connect - Toolkits for Assisted Living **Research team:** HoIP CIC **Contact:** 01794 500 145 **Other partners:** Microsoft, University of Westminster, BRE, Telecare Services Association, Docobo, LSEE, Carers UK, ADI, FAST **Funder:** TSB ALIP **Amount:** £1,752,098	Previous ALIP projects have developed exemplars showing how inexpensive, commodity-based services and devices can provide capabilities to support older people, those with long term conditions and their carers. The aim of this project is to create a toolbox of assisted living services which can be downloaded from an online store and used by a range of service organisations to provide new 'pick and mix' services to appeal to private consumers. Link to more information on FAST website	01/04/2011 30/09/2013
DECODER: Deployment of Brain-Computer Interfaces for the Detection of Consciousness in Non-Responsive Patients **Research team:** Medical Research Council Cognition and Brain Sciences Unit **Contact:** 01223 355294 **Other partners:** Partners in Italy, Austria, Netherlands, Belgium, Germany, France **Funder:** European Commission FP7 **Amount:** €2,799,921	Each year, a large number of people are diagnosed with a disorder of consciousness or a disorder leading to motor impairment. In some cases, the level of impairment can be severe, and people may display only a minimal level of consciousness. The project aims to adapt existing brain computer interface (BCI) systems and applications so that they can be operated via a single-switch by people who have extremely limited motor functions because they are in a non-responsive state. Researchers have developed a prototype which was demonstrated at the first Decoder conference in France in April 2012. Link to more information on FAST website	01/02/2010 01/02/2013

Project title Organisation(s) Contacts Funding	Project summary	Start and finish dates
Design for Ageing Well: Improving the quality of life for the ageing population using a technology enabled garment system **Research team:** Smart Clothes and Wearable Technology Research Group, University of Wales **Contact:** 01633 432432 **Other partners:** University of Ulster, University of Salford, University of the Arts London **Funder:** NDA **Amount:** £767,264	Recent technological advances have led to the development of 'smart textiles' which can detect changes in a user's physiological state via sensors contained in the material used for clothing. The aim of this project was to investigate the application of smart textiles in a clothing system which promotes self-monitoring of well-being amongst older people. Initial applications have addressed the needs of the 60-75 age group, with a focus on walking. The project has created integrated wearable technologies which send data about a person's well-being to clinicians via a customised smart phone interface. Link to more information on FAST website	01/01/2009 31/12/2011
Detection and Monitoring of Emotional States using Brain Computer Interfaces **Research team:** School of Engineering and Digital Arts, University of Kent **Contact:** 01227 823246 **Funder:** Ideas Factory, University of Kent **Amount:** £5,000	A number of research projects have investigated the use of brain waves as a means of controlling assistive technology equipment. The project assessed the capability of low cost consumer electroencephalography (EEG) devices in recognising emotions, for potential use in applications such as emotion-aware assistive technologies for people in neurorehabilitation units. Link to more information on FAST website	01/01/2011 12/07/2011
Developing educational software to assess if autistic children can benefit from access to open learner models and emotional feedback on learning **Research team:** Dept of Psychology, University of Bath **Contact:** 01225 383843 **Funder:** EPSRC **Amount:** £491,413	This project is looking at ways in which assistive technology can be used to help children with autism to learn. Researchers are assessing whether offering computerised feedback on how children learn improves their learning experience and achievements, and whether doing so via a computerised ‘persona’ which displays emotions is helpful. Link to more information on FAST website	01/07/2009 30/06/2012

Project title Organisation(s) Contacts Funding	Project summary	Start and finish dates
Development and pilot evaluation of a web-supported programme of Constraint Induced Therapy following stroke (LifeCIT) **Research team:** School of Health Sciences, University of Southampton **Contact:** 023 8059 7979 **Funder:** NIHR RfPB **Amount:** £249,634	Following a stroke a persom may lose their confidence, motivation and the ability to move one arm and hand. Constraint Induced Therapy (CIT) has been shown to overcome this habitual 'non-use'. CIT involves wearing a mitt on the unaffected hand for several hours a day to prevent it from being used. Use of the weak arm and hand is encouraged by intensive exercises. The aim of this study is to develop a web-based rehabilitation programme to support people who have had a stroke to carry out CIT at home with optional online therapist support. Link to more information on FAST website	01/03/2011 01/03/2014
Development of a Home Based Visual Exploration Training for patient with Hemianopia **Research team:** Cognitive Neuroscience Research Unit, University of Durham **Contact:** 0191 334 0013 **Funder:** NIHR RfPB **Amount:** £201,932	More than 20,000 people each year have a stroke leading to visual field defects on one side of their vision (hemianopia) resulting in partial blindness. This project developed and trialled a low-cost, computerised training package to be used at home by people with hemianopia to encourage improvement in eye movements. Preliminary anaysis suggests that the intervention group demonstrated significant improvements in their ability to use their eyes compared to a control group which did not use the computer software. Link to more information on FAST website	01/05/2009 31/10/2011
Development of a Multiparameter Assessment Tool for Upper Limb Motion in Neurorehabilitation - A Non-Interventional Study **Research team:** Dept of Medical Physics, East Kent Hospitals University NHS Foundation Trust **Contact:** 01227 766877 **Funder:** East Kent Hospitals University NHS Foundation Trust **Amount:** Not disclosed	People who are undergoing rehabilitation for neurological conditions, for example following a stroke, are often required to undertake specific exercises. In order to assess whether or not the exercises are being done effectively and are having an impact, clinicians need to be able to measure the range of movement in the person's limbs accurately and be able to record several different measures. This project is developing a system which will help clinicians measure and record upper limb function in people undergoing rehabilitation in a way which is non-invasive, accurate and repeatable. Researchers are investigating the use of low cost commercially available sensors for this purpose. Link to more information on FAST website	01/10/2009 30/09/2012

Project title Organisation(s) Contacts Funding	Project summary	Start and finish dates
DICTA-SIGN: Sign language recognition, generation and modelling with application in deaf communication **Research team:** School of Computing Sciences, University of East Anglia **Contact:** 01603 592847 **Other partners:** Partners in Greece, Germany, France **Funder:** European Commission FP7 **Amount:** €3,920,000	Online websites, forums, social media, blogs and wikis all require the use of written or spoken language and so are not accessible to deaf people who use sign language. This project developed technologies for sign recognition and synthesis of sign language to allow deaf people to post information on websites via an online human 'avatar' who signs their message. It also developed an online translation service, the Sign Look Up tool, which is now available in a choice of four languages. Link to more information on FAST website	01/02/2009 31/01/2012
Does home telemonitoring reduce healthcare use in recurrent hospital attenders with chronic obstructive pulmonary disease (COPD)? A pilot randomised trial **Research team:** School of Medicine, University of Swansea **Contact:** 01792 513400 **Other partners:** Hywel Dda Health Board **Funder:** Welsh Assembly **Amount:** £120,000	Researchers worked with 240 people who had more than two admissions to hospital in the last two years for healthcare issues associated with their chronic obstructive pulmonary disease (COPD). Participants were given telemonitors and recorded daily oxygen, temperature and pulse readings which were sent to clinicians for review, with the aim of facilitating early intervention if symptoms worsened. Results are currently being analysed. Link to more information on FAST website	04/01/2010 03/01/2012
Does repeated vestibular stimulation induce lasting recovery from hemi-spatial neglect? **Research team:** School of Psychology, University of Kent **Contact:** 01227 824775 **Other partners:** East Kent Hospitals University NHS Foundation Trust **Funder:** MRC **Amount:** £313,752	Hemi-spatial neglect is an attention disorder that commonly arises after someone has had a stroke and which means an individual behaves as if one half of their visual world is missing. Whilst not blind, people with this condition commonly have difficulty with everyday tasks as they may see only half of what is in front of them. The aim of this project is to evaluate the use of tiny electrical currents passed through the scalp as a means of improving attention levels in people who experience this problem. Researchers are assessing whether it is possible to develop a system that people could use themselves. Link to more information on FAST website	01/04/2011 31/03/2013

Project title Organisation(s) Contacts Funding	Project summary	Start and finish dates
Dynamic orthosis with virtual electrodes for the lower limb **Research team:** School of Health, Sport & Rehabilitation Sciences, University of Salford **Contact:** 0161 295 2275 **Other partners:** Sheffield Teaching Hospitals NHS Foundation Trust, Sheffield Hallam University, DM Orthotics **Funder:** NIHR HTD **Amount:** £852,000	Researchers have developed and CE marked a new wearable stimulator system which can be used to support people with weakness in their lower limbs. The system uses functional electrical stimulation (FES) to strengthen muscles and improve gait, and is easier to put on and use than previous systems. A trial of the stimulator, both as a stand-alone device and in combination with the orthotic garment is ongoing. The project team is now in discussions with a manufacturer about future developments. Link to more information on FAST website	01/05/2008 30/09/2011
eACCESS+ **Research team:** Human-Computer Interaction Research Group, University of York **Contact:** 01904 432722 **Other partners**: University of Dundee, IN2, 25 partners in France, Netherlands, Greece, Germany, Denmark, Norway, Spain, Italy, Ireland, Austria, Slovenia, Belgium **Funder:** European Commission CIP **Amount:** €740,000	A wide range of specialist and mainstream ICT and assistive technology has been shown to offer significant support for older and disabled people. However, there is a widening gap between the potential of such technologies and the implementation of eAccesibility. This network aims to raise awareness and provide support and guidance in three areas: web accessibility; accessible digital audio-visual systems; and self-service terminals. The project has helped launch the Vodafone Foundation Smart Accessibility Awards to promote the development of IT applications. Link to more information on FAST website	01/09/2010 31/08/2013
EAR: Eye-based Activity Recognition **Research team:** Computing Department, Lancaster University **Contact:** 01524 510311 **Funder:** EPSRC **Amount:** £147,233	Activity and health monitoring systems use a range of methods to establish information about an individual. In this project researchers have developed algorithms to detect three different types of eye movement patterns as a way of determining what someone is doing using these movements alone rather than by tracking the direction of gaze. Tests have shown that this approach can be used to successfully recognise a series of office tasks, and offers an alternative approach to monitoring people's activities at home as part of an independent living solution. Link to more information on FAST website	01/03/2009 28/09/2011

Project title Organisation(s) Contacts Funding	Project summary	Start and finish dates
eCAALYX - enhanced Complete Ambient Assisted Living Experiment **Research team:** Faculty of Health, Education and Society, University of Plymouth **Contact:** 01752 585858 **Other partners:** University of Limerick, TeleMedic Systems, partners in Spain, Germany, Portugal, Ireland **Funder:** AAL **Amount:** €4,000,000	The project is developing a system to monitor the health of older people with multiple chronic conditions, both at home and on the move, and to provide health education. The aim is to develop a solution that is commercially viable, reliable, scalable, and virtually maintenance-free. A system prototype was demonstrated at the AAL Forum in September 2011, and the team has also developed a smartphone app. Link to more information on FAST website	01/06/2009 01/05/2012
ECHOES II: Improving Children's Social Interaction through Exploratory Learning in a Multimodal Environment **Research team:** Human Communication Research Centre, University of Edinburgh **Contact:** 0131 650 4665 **Other partners:** University of Sussex, University of Birmingham, University of Strathclyde, University of Dundee, University of Wales Institute **Funder:** TLRP **Amount:** £1,500,000	The project investigated using a range of technologies to create a learning environmnent in which both typically developing children and children with Asperger Syndrome could explore and improve social interaction and collaboration skills.The first working prototype integrating a multi-touch screen, webcams and gaze and tracking software, was trialled in four primary schools. Results showed improvements in social interaction, behaviour and a willingness to experiment in some children, while teachers said they had a better idea of each child's potential. Link to more information on FAST website	17/11/2008 16/11/2011
Effect of functional electrical stimulation-assisted rowing on cardiorespiratory function in persons with spinal cord injury **Research team:** Centre for Sports Medicine and Human Performance, Brunel University **Contact:** 01895 266481 **Funder:** Inspire **Amount:** £25,332	This study looked at the impact of functional electrical stimulation (FES) rowing systems on cardiorespiratory fitness and quality of life for people with spinal cord injury (SCI). Such information may ultimately provide a basis for using FES-rowing training as an additional therapeutic measure in people with SCI. Five comparable participants in each of the three study groups (SCI FES trained; SCI untrained and non-disabled untrained) have taken part in a series of trials. The data is currently being analysed for a PhD study. Link to more information on FAST website	01/08/2010 01/08/2011

Project title Organisation(s) Contacts Funding	Project summary	Start and finish dates
Electric potential sensors for assisted living applications **Research team:** PassivSystems Ltd **Contact:** 0845 271 3535 **Funder:** ICE-T (SEHTA) **Amount:** £30,000	Many activity monitoring systems use Passive InfraRed (PIR) sensors to understand an individual's movement patterns around the home. However they require movement to detect a person's presence and cannot easily differentiate between multiple people in a room. In this project researchers developed and evaluated non-invasive sensors capable of identifying high quality electrical signals from the heart without the need for physical contact. The team has run real-life tests in a range of 'smart homes'. Link to more information on FAST website	01/04/2010 31/03/2012
ENACT: Exploiting social Networks to Augment Cognitive behavioural Therapy **Research team:** Lincoln Social Computing Research Centre **Contact:** 01522 882000 **Other partners:** University of Sussex, Loughborough University **Funder:** EPSRC **Amount:** £463,840	Many common mental health conditions, such as depression, anxiety and insomnia, can be treated successfully with cognitive behavioural therapy (CBT). This project is investigating the hypothesis that computerised cognitive behavioural therapy (CCBT) programmes which replicate the interactive structure of online social media are more appealing to users than CCBT programmes which replicate the structure of traditional one-to-one therapy sessions. The team is trialling the concept with people who experience insomnia. Link to more information on FAST website	01/10/2010 31/03/2013
Engineering for Life Research Network **Research team:** Material and Engineering Research Institute, Sheffield Hallam University **Contact:** 0114 225 3500 **Funder:** EPSRC **Amount:** £701,561	This network is encouraging cross disciplinary research within Sheffield Hallam university related to the three themes, one of which covers rehabilitation and assisted living. Projects within the network have looked at technology to encourage social engagement for people with autism; virtual reality as a way of encouraging social activity for older people; and reasons for the low take-up of assistive technologies. Link to more information on FAST website	02/09/2009 01/09/2012

Project title Organisation(s) Contacts Funding	Project summary	Start and finish dates
envisage: Promoting physical independence by involving users in rehabilitation through dynamic visualisations of movement data **Research team:** Health Qwest, University of Strathclyde **Contact:** 0141 548 3032 **Other partners:** Glasgow Caledonian University, University of Southampton, University of Glasgow **Funder:** LLHW **Amount:** £1,300,000	This project aims to optimise the benefits of rehabilitation by developing a new way of displaying biomechanical data. This will help people to learn to perform their rehabilitation exercises to the best of their ability, because they will be able to view the effect of exercise on their movement patterns. The method is currently being tested on the application of ankle foot orthoses after stroke and is to be extended to rehabilitation for reducing falls in older people and improving co-ordination and mobility after stroke. Link to more information on FAST website	05/01/2010 04/07/2013
ETNA: European Thematic Network on Assistive Information Technologies **Research team:** John Gill Technology Ltd **Contact:** 07590 982 732 **Other partners**: ACE Centre, Disabled Living Foundation, Nottingham Trent University, partners in Italy, Germany, Finland, Denmark, Slovakia, Austria, Spain, France, Belgium, Sweden, Greece **Funder:** European Commission CIP **Amount:** €690,000	ETNA is an EU-wide network involving 23 institutions in 13 Countries. It will work for three years to establish a web portal for ICT-based assistive technology products, accessibility solutions and related services. It is hoped that the portal will enable developers of assistive solutions and mainstream developers who wish to make their products accessible to easily access repositories of freeware, open source software products and accessibility tools. Link to more information on FAST website	01/01/2011 31/12/2013
Evaluation of interactive videos to enhance benefit for new hearing aid users **Research team:** National Biomedical Research Unit in Hearing, University of Nottingham **Contact:** 0115 823 2618 **Funder:** NIHR RfPB **Amount:** £235,269	Although hearing aids are the main treatment for people with hearing loss, of the two million people in the UK who have been prescribed hearing aids, about one-quarter (600,000) do not wear them. The reasons for this include difficulty inserting the aids in the ears, poor fit, and problems using the phone when wearing the aids. This project aims to develop easy-to-use multimedia video clips providing hints and tips for first-time hearing aid users. The clips will be on a DVD that can be played either through a TV or computer or accessed via the internet. Researchers have conducted a literature review and given a masterclass at the UCL Ear Institute. Link to more information on FAST website	10/01/2011 09/01/2013

Project title Organisation(s) Contacts Funding	Project summary	Start and finish dates
Evaluation of the Whole System Demonstrator (WSD) programme **Research team:** School of Life & Medical Sciences, University College London **Contact:** 020 7679 2000 **Other partners:** LSE, University of Oxford, University of Manchester, Imperial College Business School, Nuffield Trust, King's Fund **Funder:** Department of Health **Amount:** £3,700,000	The Whole System Demonstrator (WSD) programme was a substantial randomised controlled trial of telecare and telehealth conducted at three sites across the UK. The evaluation programme examined five themes: return on investment; clinical outcomes; costs and cost effectiveness; the experiences of participants; and organisational factors. Headline findings published in December 2011 showed that the use of telehealth can result in reductions in A&E visits, emergency and elective admissions, bed days and tariff costs, along with a 45% reduction in mortality rates. More detailed findings, including information about the impact of telecare, are due to be published later in 2012. Link to more information on FAST website	01/05/2008 31/05/2011
Exploring Human Hand Capabilities into Multifingered Robot Manipulation **Research team:** School of Creative Technologies, University of Portsmouth **Contact:** 023 9284 5461 **Other partners:** Bristol Robotics Laboratory, Shanghai Jiao Tong University, Tokyo Metropolitan University **Funder:** EPSRC **Amount:** £295,150	Service robots have the potential to improve people's quality of life by offering extra capability, for example by fetching items that a disabled or older person may not be able to reach for themselves. However, the manipulation systems of robotic hands are hardcoded to handle specific objects in specific ways, which significantly limits the use of robots in health and social care applications. This project is investigating artificial intelligence methodologies and technology solutions so that robotic hands can automatically adapt to human environments. This will allow robots to perform useful manipulation tasks required to support disabled and older people. Link to more information on FAST website	28/03/2010 14/09/2013
Exploring the barriers to technologies and the internet for people with aphasia **Research team:** North Tyneside Primary Care Trust **Contact:** 0191 217 2500 **Funder:** The North East Speech and Language Therapy Research Collaboration **Amount:** Not disclosed	Aphasia is an acquired communication disorder that impairs a person's ability to process language, and affects their ability to hold a conversation or read and write fluently. This project will provide an up to date review of relevant literature surrounding the experiences of people with aphasia when using computers and other forms of technology. Researchers have completed a questionnaire with fourteen people with aphasia comparing their use of the internet with that of the general public. Results were presented to the British Aphasiology Conference in September 2011. Link to more information on FAST website	01/01/2011 31/12/2012

Project title Organisation(s) Contacts Funding	Project summary	Start and finish dates
Facial Gestures for Accessing Assistive Technologies **Research team:** School of Engineering and Digital Arts, University of Kent **Contact:** 01227 823246 **Other partners:** East Kent Hospitals University NHS Foundation Trust **Funder:** East Kent Hospitals University NHS Foundation Trust, University of Kent **Amount:** £96,000	People who have sustained injury to the central nervous system, for example as a result of a brain injury, stroke or motor neuron disease, may have limited or no movement of their hands and arms. This can make operating assistive technology equipment, such as communication aids or environmental controls, difficult. This project is developing new pattern recognition and computer vision technologies to detect slight changes in gaze or movement on the part of people who have no speech and limited movement, so that they can be used as the means of controlling appropriate assistive technologies. Link to more information on FAST website	01/06/2011 01/06/2014
Facilitating Wider Uptake of Inclusive Design **Research team:** School of Engineering and Design, Brunel University **Contact:** 01895 265814 **Other partners:** Alloy Total Product Design, Rood Industrial Design Ltd, Easy Living Home, Wright Design, University of Cambridge, Pearson Matthews Design Partnership, Ricability, Granta Design Ltd, Factory Design, Sprout Design. **Funder:** EPSRC **Amount:** £242,839	One of the reasons given for the low take up of inclusive design principles is a lack of detailed data about the needs of older and disabled people for designers to draw on when developing products. This project developed support tools for designers to use to practice inclusive design. These included ErgoCES, a database providing body measurement information, age categories, design scenarios and case studies, and MHIRROR which supports the design of home use assistive technology. Link to more information on FAST website	01/09/2008 31/08/2011
Fall Detectors - What do users want? **Research team:** Faculty of Health and Life Sciences, Coventry University **Contact:** 024 7679 5959 **Other partners:** West Midlands Region Telehealthcare Network, Warwickshire Primary Care Trust **Funder:** NHS West Midlands Innovation Fund **Amount:** Not disclosed	Older people are known to be at a greater risk of falling and one third of older people who do have a fall lie undetected for at least one hour. This project conducted a literature review and looked at the experience of 20 older people issued with fall detectors as part of their existing care package. The findings are currently being analysed and will be used to inform policy on fall detector use in the West Midlands region. Link to more information on FAST website	01/01/2011 31/12/2011

Project title Organisation(s) Contacts Funding	Project summary	Start and finish dates
Feasibility study into use of the Powerwheel for rehabilitation within the NHS **Research team:** Royal National Orthopaedic Hospital **Contact:** 020 8954 2300 **Other partners:** University College London, Frazer Nash Consultancy, University of Alberta **Funder:** NIHR i4i **Amount:** £99,800	People who self-propel a wheelchair typically experience increased strain on their arms and shoulders which can lead to an increased risk of long-term injury. Most would benefit from rehabilitation exercises, but current methods of evaluating the load on a person's upper limbs when using a wheelchair and the effectiveness of any rehabilitation programme to compensate are cumbersome and invasive. This study used a device (the 'Powerwheel') fitted to wheelchair rims to provide remote access to data. This would allow researchers to evaluate a wheelchair user's performance and develop customised rehabilitation and training programmes. In a range of tests information about the forces being used by the wheelchair user was gathered and sent back wirelessly from the device to a laptop. The next step is to make the Powerwheel more robust, and to allow streaming of data to mobile phones. Link to more information on FAST website	01/05/2010 30/04/2011
FIRST - Flexible Interactive Reading Support Tool **Research team:** Research Group in Computational Linguistics, University of Wolverhampton **Contact:** 01902 321 630 **Other partners:** iWeb Technologies Ltd, Central and North West London NHS Foundation Trust, partners in Belgium, Bulgaria, Spain **Funder:** European Commission FP7 **Amount:** €2,000,000	People with autism spectrum disorders (ASD) can have problems when reading. These can include difficulty understanding complex instructions, problems interpreting metaphorical meanings, being confused by uncommon words, figures of speech, and being unsettled by the imprecision that arises naturally in communication. The aim of the project is to use language technology to simplify documents for people with ASD. The software will convert documents into personalised versions that are easier for people with ASD to read independently, without the need to rely on support workers. Link to more information on FAST website	01/10/2011 30/09/2014

Project title Organisation(s) Contacts Funding	Project summary	Start and finish dates
Free Traveller **Research team:** Loughborough Design School, Loughborough University **Contact:** 01509 222652 **Funder:** EPSRC **Amount:** £36,000	Disabled people often need to pre-plan their journeys by public transport. In recent years, there has been an explosion in the amount of travel-related information available online on sites such as Wikipedia and Trip Advisor. Much of this information is available in the form of maps which include 'mashups', or nuggets of information which appear as annotations on the map and which are often contributed by users themselves. This PhD research project is looking at how different forms of information affect the usability and accessibility of such 'mash ups'. Researchers have launched an online survey for wheelchair users seeking their views on three styles of map using this technology. Link to more information on FAST website	01/01/2010 31/12/2012
Future bathroom **Research team:** Art and Design Research Centre, Sheffield Hallam University **Contact:** 0114 225 2686 **Other partners:** Sheffield Elders, Sheffield 50+, University of the Third Age, Ideal Standard **Funder:** EPSRC **Amount:** £409,952	For older and disabled people the bathroom is the place in the house where accidents such as falls are most likely to occur. In this project, following extensive consultation with older people, the researchers developed prototypes of new fittings and furniture which were tested with users in a mock-up bathroom. State of the art monitoring technology was used to observe and capture older people's activities when using this bathroom. As a result, a range of design concepts and detailed designs have been developed and are now being considered by a commercial manufacturer. Link to more information on FAST website	01/04/2008 30/06/2011
Go-myLife **Research team:** The 451 Group **Contact:** 020 7299 7765 **Other partners:** IS Communications Ltd, partners in Spain, Austria, Greece, Poland **Funder:** AAL **Amount:** €1,458,089	Social media such as Facebook offer a way for older people to stay in touch with friends and family, but some may find these new technologies confusing. The aim of this project is to develop a simple interface customised to the needs of older people which can be used to access social media including Facebook and Twitter. The project has developed a prototype interface that is now being tested, both online as well as on mobile phones, and is setting up the business models for the product. Link to more information on FAST website	01/07/2010 31/12/2012

Project title Organisation(s) Contacts Funding	Project summary	Start and finish dates
GREAT: Gesture REcognition in Aphasia Therapy **Research team:** Centre for Human-Computer Interaction Design, City University **Contact:** 020 7040 8427 **Funder:** RCUK, Stroke Association **Amount:** £297,280	People with aphasia have difficulty with all aspects of communication: speaking, reading, writing and understanding language. Therapists may advocate using gestures to communicate, but this poses challenges as the ability to produce and understand gestures can also be impaired. This project designed and developed a prototype gesture therapy tool known as GeST, in consultation with people with aphasia. GeST incorporates a 3D world to provide an engaging and motivational interactive experience. An 8 month pilot study to investigate the therapeutic efficacy of GeST showed that participants were able to learn up to 60 individual gestures and could also retain the knowledge and use the gestures appropriately when interacting with other people. Link to more information on FAST website	01/08/2010 31/03/2012
GUIDE : Gentle User Interfaces for Disabled and Elderly Citizens **Research team:** Dept of Engineering, University of Cambridge **Contact:** 01223 332600 **Other partners:** Partners in Germany, Portugal, France **Funder:** European Commission FP7 **Amount:** €4,890,000	Many older people have mild visual, auditory, speech or motor impairments which can make it hard for them to use digital TV systems. The project has delivered the GUIDE user simulator to help designers in visualizing, understanding and measuring the effect of age and impairment on their designs. At present it simulates visual and mobility impairment only but is being developed further. Researchers have also published work on making digital TV more accessible to disabled people and on a methodology for categorising user impairment. Link to more information on FAST website	01/02/2010 31/01/2013

Project title Organisation(s) Contacts Funding	Project summary	Start and finish dates
GUIDE: Efficacy of an assistive technology for cognition to scaffold performance and learning of activities of daily living in people with acquired brain injury **Research team:** Dept of Psychology, University of Stirling **Contact:** 01786 467640 **Other partners:** Brain Injury Rehabilitation Trust, LSE **Funder:** CSO **Amount:** £198,623	Many people with brain injury, dementia or mental health difficulties are unable to do everyday tasks like getting dressed, not because of any physical disability, but because their cognitive impairments leave them unable to plan what they need to do and complete the necessary stages in the process. This project has produced a software tool to help people with cognitive impairment plan and carry out everyday tasks. Protocols for laundry and morning routine tasks have been developed, and researchers are now beginning a randomised controlled trial. To date they have recruited 6 participants and the aim is to recruit and test a total of 40 people by the end of summer 2013. Link to more information on FAST website	01/10/2010 31/10/2013
HANDS - Helping Autism diagnosed young people Navigate and Develop Socially **Research team:** Dept of Education, London South Bank University **Contact**: 020 7815 5740 **Other partners:** Helen Allison School, partners in Romania, Hungary, Norway, Denmark **Funder:** European Commission FP7 **Amount:** €2,580,000	This project has developed a software toolkit to provide customised support for teenagers with an autism diagnosis in situations which they might find difficult. These include shopping or travelling, and in managing their day at school. Two prototypes have been developed for smartphones. The UK research team tested the technology in four special schools and several mainstream schools, where it was shown to improve the ability of some young people with autism to manage social interactions. Link to more information on FAST website	01/06/2008 01/10/2011
HAPTIMAP - Haptic, Audio and Visual Interfaces for Maps and Location Based Services **Research team:** School of Electronics, Electrical Engineering and Computer Science, Queen's University Belfast **Contact:** 028 9097 4669 **Other partners:** University of Glasgow, BMT Group, partners in Sweden, Spain, Germany, France, Finland, Netherlands **Funder:** European Commission FP7 **Amount:** €6,670,000	The aim of this project is to make computerised maps and location based services more accessible to people with a vision impairment using non-visual interaction methods like touch and hearing. Researchers have carried out initial user studies, started design work, started building the toolkit architecture, and published the Hapti Map user study guidelines. Link to more information on FAST website	01/09/2008 30/08/2012

Project title Organisation(s) Contacts Funding	Project summary	Start and finish dates
Head Articulation Control System **Research team:** Bath Institute of Medical Engineering Ltd **Contact:** 01225 824103 **Other partners:** Royal National Hospital for Rheumatic Diseases, Helen Hamlyn Centre, University of West of England, Great Western Ambulance Service NHS Trust **Funder:** NIHR i4i **Amount:** £424,635	This project is developing a novel neck collar suitable for the emergency or long term rehabilitation markets for use with people who need to keep their head still because of injury or disability. The new design offers improved levels of immobilisation and the potential to significantly reduce the side-effects from wearing a collar. Link to more information on FAST website	01/01/2011 01/06/2013
Health hub: user-centred design, development and integration with the built environment **Research team:** BRE **Contact:** 01923 664000 Other partners: FAST, Hereward College, Microsoft, Medilink West Midlands i-Health, Willmott Dixon Construction Ltd, Cisco Systems, Sasie Ltd, Royal Institute of British Architects, 3DReid, Tunstall, Centrihealth, Wates Living Space, Telemedic Systems, BT **Funder:** TSB ALIP **Amount:** £1,646,127	The aim of this project was to develop a framework to advance the provision of assisted living facilities within the UK to the point where barriers of scale have been removed, and where user-centred design, legacy planning and future building needs have all been identified. The project has produced a DVD to demonstrate user requirements in different assisted living scenarios; prepared a design guide for new buildings; supported the development of new build extra care housing for people with dementia designed to include assisted living technologies; and worked on the development of national standards for assisted living solutions. Link to more information on FAST website	01/09/2008 07/07/2011
HEARTCYCLE - Compliance and effectiveness in HF and CHD closed-loop management **Research team:** Postgraduate Medical Institute, University of Hull **Contact:** 01482 346311 **Other partners:** One of the largest biomedical and healthcare research projects in the EU with partners in Greece, Finland, Switzerland, Germany, Portugal, Spain, Netherlands, Italy, Finland, China **Funder:** European Commission FP7 **Amount:** €2,199,000	This consortium is developing systems for monitoring people with heart conditions at home and supporting them to manage their condition.. This includes developing clinical algorithms embedded into telehealth equipment to support closed loop management, that is passing data from the patient to the clinician and providing a response back to the person at home. Pilot trials began in January 2012 to test out a sensing method based on a textile vest fitted with electrodes. The vest has been designed so it can be put on easily by older people with limited dexterity. Link to more information on FAST website	03/01/2008 29/08/2012

Project title Organisation(s) Contacts Funding	Project summary	Start and finish dates
HELP4MOOD - A Computational Distributed System to Support the Treatment of Patients with Major Depression **Research team:** School of Maths and Computer Science, Heriot-Watt University **Contact:** 0131 449 5111 **Other partners:** University of Edinburgh, OBS Medical, t+Medical Ltd, partners in Spain, Romania, Italy **Funder:** European Commission FP7 **Amount:** €3,200,000	The aim of this project is to develop a computerised cognitive behavioural therapy system for people with depression which they can use at home. The system will monitor their recovery and send key information to the therapist who is co-ordinating their treatment. Individuals will interact with the system through a 'virtual agent', or avatar, which is shown on the computer screen and which asks questions about their health and guides them through therapy exercises. Link to more information on FAST website	01/01/2011 31/12/2013
HOPES - Help and social interaction for elderly On a multimedia Platform with E-Social best practices **Research team:** Microsoft UK **Contact:** 0844 800 2400 **Other partners:** Partners in France, Germany, Italy, **Funder:** AAL **Amount:** €4,997,878	Across Europe there are increasing numbers of older people who wish to remain living at home. The aim of this project is to provide innovative ICT-based solutions aimed at helping people to be active, happy and socially connected in their community and society as they age. The French partner is disseminating the results of its large set of end-users interviews regarding needs and expectations. Link to more information on FAST website	01/09/2010 31/03/2013
Horizon: Digital Economy Hub at the University of Nottingham **Research team:** School of Computer Science and Information Technology, University of Nottingham **Contact:** 0115 951 4254 **Other partners**: Wide range of commercial companies from media, transport and technology sectors, plus local authorities **Funder:** RCUK **Amount:** £13,102,938	This is a five-year programme of research into the key scientific challenges involved in the widespread adoption of ubiquitous computing, involving researchers from a wide range of disciplines. Research projects in the assistive technology field include work on digital inclusion and on future transport needs. Link to more information on FAST website	01/10/2009 30/09/2014

Project title Organisation(s) Contacts Funding	Project summary	Start and finish dates
How was School Today...? in the Wild **Research team:** School of Computing, University of Dundee **Contact:** 01382 385597 **Other partners:** University of Aberdeen, Capability Scotland, Openstorytellers, Fairview School, Dynavox Ltd, Communication Matters **Funder:** RCUK **Amount:** £286,256	This research is helping children who use augmentative alternative communication (AAC) to talk about their day at school. Researchers have developed a system which uses a dictaphone, camera and sensors to collect information on the child's location, activities and interactions while at school. This data is transmitted to a software programme and used to generate a draft story which the child can edit. The system was trialled in a special school over a six month period with two participants. Feedback from participants, parents and staff reported an increased motivation and more interaction from the children using the system. Link to more information on FAST website	01/01/2010 30/06/2011
i2Web **Research team:** Human-Computer Interaction Research Group, University of York **Contact:** 01904 432722 **Other partners:** FAST, National Council for the Blind of Ireland, Public-i Group Ltd, partners in Germany, Italy, Slovenia **Funder:** European Commission FP7 **Amount:** €2,700,000	Demographic change means that a significant number of internet users will be over 60 years of age in 2025. As the web is now evolving from primarily static pages to inter-related interactive applications, it is important that everyone, including older and disabled people web users and web designers areable to use the technology. The aim of this project is to provide both industry and the public sector with tools and frameworks that support seamless web accessibility. The first round of user testing has been undertaken in York, Ireland and London. Link to more information on FAST website	01/11/2010 30/04/2013
i-Care: distributed integrated care services and systems **Research team:** Mechatronics Research Centre, De Montfort University **Contact:** 0116 255 1551 **Other partners:** Airetrak, Intamac, Sure Technologies, HIA Foundations, Leicester City Council, Orange PCS, TAHI, Telecare Services Association **Funder:** TSB ALIP **Amount:** £800,000	The project developed an open software framework for integration and interoperability between telecare systems, in order to support the remote delivery of care services. Researchers have designed a communications platform to connect a variety of sensors and alarms as well as a mobile telecare device which can be worn by the user when outside and which will integrate with a smart home environment. Link to more information on FAST website	01/10/2009 01/03/2012

Project title Organisation(s) Contacts Funding	Project summary	Start and finish dates
ICARENET - Intelligent Context-Aware Systems for Healthcare, Wellness, and Assisted Living **Research team:** Computing Department, Lancaster University **Contact:** 01524 510311 **Other partners:** Imperial College London, partners in Germany, Israel, Netherlands, Switzerland, Denmark, Finland **Funder:** European Commission FP7 **Amount:** €5,000,000	Context-aware systems are able to analyse and automatically respond to users' behaviour and to the varying situation users encounter. The aim of this project is to create an interdisciplinary network of European research groups who will work together with partners from industry to build up the knowledge base in this area. The aim is to develop real-life applications in the assisted living area. This will include work using body-worn sensors as well as sensors placed around the home. Link to more information on FAST website	01/01/2011 31/12/2014
i-DEAL - Intelligent Design Engine for Assisted Living **Research team:** Medilink West Midlands **Contact:** 0121 452 5630 **Other partners:** Coventry University, University of Ulster, Icue Care, Safe Patient Systems Ltd, Health Exchange CIC Ltd, Hereward College **Funder:** TSB ALIP **Amount:** £1,500,000	This project focused on involving users, carers and health professionals throughout the design and development cycle of different assisted living technology-based products. It supported one partner, Health Exchange, to build assistive technology into a new domiciliary care service, and has resulted in an expanded market for specialist software from another partner, I-Cue Care. The work raised awareness of emerging business models for assisted living technologies in the market place. Link to more information on FAST website	01/10/2008 01/08/2011
I'DGO TOO - Inclusive Design for Getting Outdoors 2 **Research team:** Edinburgh College of Art **Contact:** 0131 221 6000 **Other partners:** University of Salford, University of Warwick **Funder:** EPSRC **Amount:** £900,000	This project focused on identifying the most effective ways of shaping outdoor environments to include disabled and older people. The three strands of the research looked at: the relationship between tactile paving and older adults' mobility and risk of falling; the implications of high-density urban housing for residential outdoor space; and the effect of pedestrian-friendly, 'shared space' neighbourhoods on older people's activity patterns and time spent outdoors. The research involved over 3,580 people aged over 65 across the UK. The findings indicated that minor changes to make outdoor environments more people-friendly could have the opposite effect on older people if they created places that felt unfamiliar or posed a real or perceived risk of falling. The project's findings were launched in April 2012 in celebration of the European Year for Active Ageing. Link to more information on FAST website	01/02/2007 01/11/2011

Project title Organisation(s) Contacts Funding	Project summary	Start and finish dates
ImPaCT in Europe - Improving Person Centred Technology in Europe **Research team:** Home Farm Trust **Contact:** 0117 9302600 **Other partners:** Learning Disability Wales, Nottingham Community Housing Association, European Association of Service providers for Persons with Disabilities, partners in Belgium, Italy, Portugal, France, Finland **Funder:** LLP **Amount:** Not disclosed	Person Centred Technology (PCT) is the term used by the project to describe assistive technology to support independent living for disabled people in the home and at work. The project delivered a mapping of PCT implementation in Europe, a toolkit to support the ethical implementation and use of PCT, a training needs analysis for social care staff, and a web-based information portal on PCT. Link to more information on FAST website	01/01/2009 31/12/2011
inCASA: integrated network for Completely Assisted Senior citizen's Autonomy **Research team:** Chorleywood Health Centre **Contact:** 01923 287100 **Other partners:** Brunel University, partners in Italy, France, Germany, Greece, Spain, Sweden **Funder:** European Commission CIP **Amount:** €2,140,000	This project is investigating whether it is possible to use data from existing telecare and environmental control systems to build up a profile of an individual's typical habits, in order to spot instances where changes in behaviour may indicate that more support or intervention is required. Researchers have begun a series of pilots, starting in Italy, where older people are being assessed as they use a range of telecare services. Link to more information on FAST website	01/04/2010 30/09/2012
INDEPENDENT: Coordinated eCare **Research team:** Tunstall Group Ltd **Contact:** 01977 661234 **Other partners:** Work Research Centre Ltd, Milton Keynes Council, Hull City Council, University of Hull, Connect MK Ltd, plus 20 organisations across six EU states including public authorities, social and health service providers, global industry players and specialist SMEs **Funder:** European Commission CIP **Amount:** €2,630,000	Most EU countries are making increasing use of telecare and telehealth services as a way of supporting older people to live independently and safely at home. However, many services are delivered in isolation from each other and cannot easily be accessed by informal carers or voluntary or third sector agencies, which limits their efficiency and usefulness. The aim of this project is to define, deliver and pilot a digital infrastructure which will support co-ordinated cross-sector delivery of services. Six pilot sites across Europe were set up in November 2011 and will be active for 12 months. Two of the sites are in Hull and Milton Keynes. Link to more information on FAST website	01/01/2010 31/12/2012

Project title Organisation(s) Contacts Funding	Project summary	Start and finish dates
Innovating rehabilitation using Wii technology and telerehabilitation: exploring and evaluating the experience **Research team:** School of Engineering and Design, Brunel University **Contact:** 01895 265814 **Other partners:** Central London Community Healthcare **Funder:** NHS Innovations London, Brunel University, NHS Barnet Community Services **Amount:** £75,000	This project examined the use of Wii console technology in physical rehabilitation programmes in four NHS Trusts across hospital and community settings. Researchers also developed a customised application to allow people who have had a stroke to complete individualised rehabilitation programmes by following the movements of a 3D representation of themselves (called an avatar) on a screen in front of them. Link to more information on FAST website	01/10/2010 31/12/2011
Innovative Dementia Telecare **Research team:** Dementia Services Development Centre South East, Canterbury Christ Church University **Contact:** 01227 782602 **Other partners:** Geonovo Ltd, ICOM, Avante Partnership **Funder:** SEEDA **Amount:** £8,000	The project tested out two commercially available examples of technology to see if they had applications for people with dementia: biometric locks in a care home and a simple to use GPS phone. The findings suggest that the use of bio-metric locks in an internal space should be permanent, so that the person with dementia has time to learn how to use the technology before their symptoms progress. Users of the GPs phone were positive about its benefits in locating people easily. Link to more information on FAST website	01/03/2011 31/05/2011
Intelligent Pre- and Post-Processing Algorithms for Autonomous Multiclass Brain Computer Interfaces **Research team:** School of Computing and Intelligent Systems, University of Ulster **Contact:** 028 7137 5605 **Funder:** EPSRC **Amount:** £101,963	Researchers conducted trials with 30 able bodied individuals to test a range of different Brain Computer Interface (BCI) innovations. They then tested new applications, mainly gaming applications aimed at improving rehabilitation performance and motivation. Participants included someone with a spinal cord injury who was able to play a computer game for the first time, and an individual who was in a minimally conscious state who was able to demonstrate awareness using the system. Researchers have published more than 25 research papers in academic journals. Link to more information on FAST website	01/10/2009 31/03/2012

Project title Organisation(s) Contacts Funding	Project summary	Start and finish dates
inTouch: A video link system to improve social inclusion for people with dementia **Research team:** Bath Institute of Medical Engineering Ltd **Contact:** 01225 824103 **Other partners:** University of Bath, Peggy Dodd Centre, Research Institute for the Care of Older People **Funder:** EPSRC **Amount:** £190,044	Researchers have developed and trialled a prototype video link system designed to enable people with dementia to interact with relatives during virtual 'visits'. A key requirement is that the person with dementia is able to operate the system themselves, by using appropriately designed audio and visual cues and touch screen interfaces. A second prototype is being tested in a care home to assess participants' responses to different interfaces. Link to more information on FAST website	01/01/2011 30/06/2012
Investigating strategies for environmental learning in typical and atypical development **Research team:** Institute of Education, University of London **Contact:** 020 7612 6000 **Funder:** ESRC, Williams Syndrome Foundation **Amount:** £423,770	Individuals with learning disabilities such as Down Syndrome (DS) and Williams syndrome (WS) find it difficult to learn routes, which makes it hard for them to travel without assistance. This project is using computerised virtual environments of local towns and landmarks to identify the difficulties that people with DS and WS have in finding their way around and to provide training in learning routes. Link to more information on FAST website	01/04/2010 30/09/2013
Investigation to improve lower-limb amputee prosthesis fit through the design of an intelligent socket **Research team:** School of Design, Engineering and Computing, Bournemouth University **Contact:** 01202 524111 **Other partners:** Chas. A. Blatchford and Sons Ltd **Funder:** EPSRC, Chas. A. Blatchford and Sons Ltd **Amount:** £86,000	Fitting a lower limb prosthesis so that it remains comfortable is challenging and depends on achieving a good fit between the socket and the residual limb. This interface can be uncomfortable or painful if not designed properly. Researchers have developed a 'smart socket' prosthesis which records data on movement so as to ensure a comfortable fit. Researchers are focusing on miniaturising their work, as well as making it wireless and optimising the means of collecting data. Blatchford is currently manufacturing a socket that integrates the smart technology, which will then be tested by amputees. Link to more information on FAST website	01/10/2010 31/03/2014

Project title Organisation(s) Contacts Funding	Project summary	Start and finish dates
ISISEMD: Intelligent System for independent living and self-care of seniors with cognitive problems or mild dementia **Research team:** Belfast Health and Social Care Trust **Contact:** 028 9504 0100 **Other partners:** Partners in Denmark, Finland, Greece, Italy **Funder:** European Commission CIP **Amount:** €2,260,000	The aim of the project was to pilot a set of scalable services to support older people, and particularly those with mild cognitive problems, to live independently. The project developed and tested out a range of services in Denmark, Greece, Finland and Northern Ireland, using assistive technology such as bed sensors and internal door alarms. Tests with end users in Northern Ireland showed considerable support for an electronic calendar and to-do list, which helped older people with mild dementia to feel safer because they were aware of the day and date, and also reduced calls for help to family members. Link to more information on FAST website	01/03/2009 31/08/2011
iStretch: Intelligent STroke Rehabilitation Exercise TeCHnology **Research team:** School of Computing, University of Dundee **Contact:** 01382 385597 **Other partners:** Partners in Canada and Mexico **Funder:** EU-Mexico International Cooperation Fund in Science and Technology, Canadian Institutes of Health Research **Amount:** £282,880	The project has developed a prototype intelligent robotic system designed to conduct the early stages of physiotherapy for people who have had a stroke affecting their upper limbs. The device simulates traditional therapy and is able to adjust automatically to patient's abilities. In a small trial, the therapist confirmed the system decisions were correct in approximately 65% of the time and both therapist and patient were satisfied with using the iStretch robot as a method of rehabilitation. Link to more information on FAST website	01/01/2009 31/12/2012
ITTS - Implementing Transnational Telemedicine Solutions **Research team:** Centre for Rural Health, University of Aberdeen **Contact:** 01463 255892 **Other partners:** National University of Ireland Galway, European Centre for Connected Health, partners in Norway, Finland, Sweden **Funder:** European Commission, Northern Periphery Programme **Amount:** €2,300,000	The sparsely populated regions of the Northern Periphery of Europe are faced with natural and geographical challenges, such as severe weather conditions and long distances, which make it more difficult to access health services. eHealth and advanced ICT solutions can offer a cost efficient and innovative way to provide health services to these areas. The aim of this project is to implement transnational telemedicine and telehealth solutions at scale and in a sustainable manner into everyday practice across the region. Ten demonstrator projects will be implemented in clinical specialities including speech therapy, renal services, psychiatry, diabetes, inflammatory bowel disease, rehabilitation and care of older people. Link to more information on FAST website	01/09/2011 31/12/2013

Project title Organisation(s) Contacts Funding	Project summary	Start and finish dates
JADE: Joining innovative Approaches for the integration and Development of transnational knowledge of clusters policies related to independent of Elderly **Research team:** SEHTA **Contact:** 0845 130 8179 **Other partners:** consortium of 38 commercial companies, regional authorities, third sector operations and academic partners in Italy, France, Finland, Turkey **Funder:** European Commission FP7 **Amount:** €2,819,904	The project is developing and promoting a Common Research Agenda and Joint Action Plan around independent living services and telecare applications. The partners have analysed overall strengths, gaps in provision, expertise, potential areas for mentoring and potential further research areas on a regional level. This information is being used to produce an overall analysis for the whole of Europe. Workshops have been held in Italy, England and Turkey and further workshops will be held in 2012 in France and Finland. Link to more information on FAST website	01/02/2011 31/01/2014
Kinetic User Interfaces and Multiuser 3D Virtual Worlds for Older People **Research team:** School of Engineering and Digital Arts, University of Kent **Contact:** 01227 823246 **Funder:** EPSRC **Amount:** £97,397	As they age, older people may experience greater social isolation. Online options such as 3D virtual worlds offer a creative and social space for activities, but conventional computer interfaces such as the keyboard and mouse are not always easy for older people to use if they have restricted hand function. This project aims to conduct a detailed investigation into how Kinetic user interfaces, like those used in the Wii and Xbox, can be employed effectively to design innovative 3D virtual worlds that are accessible to older people. Link to more information on FAST website	01/04/2012 30/04/2013

Project title Organisation(s) Contacts Funding	Project summary	Start and finish dates
Knowledge based engineering applied to the creation of custom moulded special seats to meet the clinical, functional and social needs of severely disabled patients **Research team:** Medical Electronics and Signal Processing Research Unit, University of Glamorgan **Contact:** 08456 434 030 **Other partners**: Cardiff and Vale University Local Health Board **Funder:** EPSRC **Amount:** £85,000	People who use wheelchairs for prolonged periods of time risk acquiring pressure sores and even musculo-skeletal damage should their wheelchair seats be poorly designed. Special seats moulded to match individual body shape are designed to manage pressure and posture by distributing the forces experienced by wheelchair users over the whole body-seat interface. Traditional methods of customised seat design and manufacture are labour-intensive and rely heavily on the skill of the clinician. The aim of this project is to develop an expert system which incorporates knowledge-based engineering and which will integrate special seating and wheelchair system design into a single computer model. Following the first stage of the study, a further investigation is looking at the seat design process. Link to more information on FAST website	30/09/2009 30/09/2012
KT-EQUAL: Putting ageing and disability research into practice **Research team:** School of Health and Related Research, University of Sheffield **Contact:** 0114 222 5454 **Other partners:** University of Cambridge, Bath University, Salford University, Edinburgh College of Art, Reading University, University of Loughborough **Funder:** EPSRC **Amount:** £1,873,016	This is a consortium of UK researchers dedicated to extending quality life for older and disabled people through the use of technology. The network has organised a number of public events, including workshops on age friendly cities, assistive technology and stroke rehabilitation, digital engagement, and ethical issues. Link to more information on FAST website	01/06/2009 31/01/2013

Project title Organisation(s) Contacts Funding	Project summary	Start and finish dates
LIREC - LIving with Robots and intErative Companions **Research team:** Dept of Computer Science, Queen Mary University of London **Contact:** 020 7882 5200 **Other partners:** University of Hertfordshire, Herriot Watt University and universities, research institutes and commercial partners in Germany, Hungary, Poland, Sweden, Portugal, Belgium **Funder:** European Commission FP7 **Amount:** €8,200,000	The aim of this project is to create a new generation of interactive, emotionally intelligent, robot companions who can connect with humans for extended periods of time. Work at the University of Hertfordshire has demonstrated the use of prototype robot companions in assisted living scenarios and in December 2011 researchers participated in an industry-focused event at the London Science Museum showing LIREC robots. Link to more information on FAST website	01/03/2008 31/08/2012
LLM - Long Lasting Memories **Research team:** Global Security Intelligence Ltd **Contact:** 0207 993 4431 **Other partners:** Milton Keynes Council, partners in Greece, Germany, Austria, Spain, France **Funder:** ICT Policy Support Programme, TSB collaborative research and development **Amount:** €4,720,000	The aim of this project was to combine environment and health monitoring systems, state-of-the-art cognitive exercises and physical activity in an integrated technology platform. The system was piloted with 1,000 people in five EU countries. Preliminary results indicated overall improvement in several physical and cognitive indicators for users, and usability surveys showed high levels of user satisfaction with the LLM system, as well as interest in continuing the use of the system after the study concludes. Link to more information on FAST website	01/06/2009 30/11/2011
Low Power Body Worn Antenna Systems **Research team:** School of Engineering and Digital Arts, University of Kent **Contact:** 01227 823246 **Other partners:** University of Sheffield, Great Ormond Street Hospital, W L Gore & Associates Ltd **Funder:** EPSRC **Amount:** £488,378	The project is investigating new techniques for integrating sensor systems and screens into clothing for telehealth applications. The project team is working on a range of devices, including buttons similar to those worn on jeans, which could be used to transmit data wirelessly. Link to more information on FAST website	01/10/2009 30/09/2012

Project title Organisation(s) Contacts Funding	Project summary	Start and finish dates
MALT: Overcoming barriers to mainstreaming Assisted Living Technologies (ALTs) **Research team:** School of Health and Related Research, University of Sheffield **Contact:** 0114 222 5454 **Other partners:** Leeds University Business School **Funder:** TSB ALIP **Amount:** £1,710,000	The aim of this project is to bring together a range of partners, including health and care providers and commissioners, users, industry suppliers and researchers in order to look at the service redesigns and changes to supply models which will encourage wider use of assisted living technologies. The work will focus on telehealth systems for people with chronic heart failure and chronic obstructive pulmonary disease. Researchers are preparing to collect data from several sites in Yorkshire. Link to more information on FAST website	01/03/2011 28/02/2014
MAPP-MAL: Multidisciplinary Approach to a Prototype for Prevention of MALnutrition in older people: products, places, people and procedures **Research team:** Institute for Ageing and Health, Newcastle University **Contact:** 0191 248 1300 **Other partners:** Glasgow School of Art, University of Reading, Loughborough University **Funder:** NDA **Amount:** £1,086,000	This project exploited new and existing technologies to design ways to provide food to older people in hospitals (and other care settings). The aim was to allow for greater personal choice. The result is a prototype product called hospitalfoodie (food for older people on demand information exchange). This is a colour touchscreen by the hospital bed which allows people to choose their menu and which stores details of any preferences, allergies or dietary restrictions. Link to more information on FAST website	01/10/2008 30/09/2011
MATCH - Mobilising Advanced Technologies for Care at Home **Research team:** Dept of Computing Science and Mathematics, University of Stirling **Contact:** 01786 467423 **Other partners:** University of Glasgow, University of Dundee, University of Edinburgh **Funder:** SFC **Amount:** £1,274,324	Researchers have created a flexible design for an assistive technology system providing care at home which is built from individual components that can easily work with each other. The design includes different kinds of networks inside and outside the home, rules for how the home care system should react to different situations, automatic speech recognition and speech synthesis, and the use of touch, gesture and audio techniques for collecting information. Link to more information on FAST website	01/11/2005 31/10/2012

Project title Organisation(s) Contacts Funding	Project summary	Start and finish dates
MATCH- Renewal of IMRC Award **Research team:** Dept of Information Systems and Computing, Brunel University **Contact:** 01895 203397 **Other partners:** University of Ulster, University of Birmingham, University of Nottingham **Funder:** EPSRC **Amount:** £6,941,929	This is a follow-on project supporting the work of Brunel University's Innovative Manufacturing Research Centre. This focuses on bringing together economic evaluation, industrial processes, and user needs in a wide range of healthcare and assistive technology applications. Link to more information on FAST website	03/11/2008 02/11/2013
MATCH-Plus **Research team:** Dept of Information Systems and Computing, Brunel University **Contact:** 01895 203397 **Other partners:** University of Birmingham, University of Ulster, University of Nottingham, King's College London **Funder:** EPSRC, NIHR i4i **Amount:** £1,764,282	This is an additional element of funding for work at Brunel University on methods to address user needs. Researchers have also organised a set of conferences to train the academic, and other bid communities, in the use of economic assessment and other evaluation techniques in relation to medical devices. Link to more information on FAST website	11/03/2008 11/02/2013
MATSIQEL: Models for Ageing and Technological Solutions for Improving and Enhancing the Quality of Life **Research team:** School of Computing, Engineering and Information Sciences, University of Northumbria **Contact:** 0191 243 7379 **Other partners:** Partners in Germany, Bulgaria **Funder:** European Commission FP7 **Amount:** €189,000	Demographic changes across Europe mean there is an urgent need to develop ways of using technology both to model the likely impact of an ageing population on healthcare and support services, and to find ways of using technology to improve quality of life for older and disabled people. The aim of the project is to build expertise in mathematical and computer modelling of the ageing processes, including forecasting models for requirements for prevention and rehabilitation. Researchers are also looking at how to develop technological solutions such as telecare and online recreational games, which could help improve quality of life in later life. Link to more information on FAST website	20/01/2011 19/01/2014

Project title Organisation(s) Contacts Funding	Project summary	Start and finish dates
MICHELANGELO: Patient-centric model for remote management, treatment and rehabilitation of autistic children **Research team:** School of Electronics and Computer Science, University of Southampton **Contact:** 023 8059 5000 **Other partners:** University of Ulster, partners in Italy, France, Malta **Funder:** European Commission FP7 **Amount:** €3,930,000	This research is exploring ways to monitor the behaviour of children with autism in their home environment. The aim is to identify situations which the child finds difficult and develop strategies to help them cope. Researchers are building a system using a combination of a camera-based system and a wearable electro-encephalography (EEG) system. This technology will record brain wave and eye signals and correlate these with what the child is doing in order to assess how different stimulus affects their behaviour. Link to more information on FAST website	01/10/2011 30/09/2014
Mobile phone technologies for enhancing self-management and education for patients with diabetes **Research team:** Faculty of Computing, Information Systems & Mathematics, Kingston University **Contact:** 020 8417 2809 **Funder:** CARA **Amount:** £24,000	There is a high incidence of diabetes in the Middle East, but little research has been done on how mobile health (m-health) technology could support people with diabetes to manage their condition. On this project, UK researchers are conducting a small scale pilot of the feasibility and effectiveness of m-health technologies for diabetes in the region. Link to more information on FAST website	01/04/2010 31/03/2013
MOBISERV: An Integrated Intelligent Home Environment for the Provision of Health, Nutrition and Mobility Services to the Elderly **Research team:** Bristol Technology Institute, University of West of England **Contact:** 0117 965 6261 **Other partners:** Partners in Greece, France, Finland, Italy, Netherlands, Switzerland **Funder:** European Commission FP7 **Amount:** €3,600,742	The project is developing a robotic unit, a wearable health status monitoring unit, an optical recognition unit, and a smart home automation and communication unit which can be combined to support older people to live independently. A first version of the wearable unit has been released, which includes a shirt and pyjamas incorporating embedded sensors. Trials are being conducted with the first robotic system. Link to more information on FAST website	01/12/2009 31/12/2012

Project title Organisation(s) Contacts Funding	Project summary	Start and finish dates
MonAMI - mainstreaming on AMbient Intelligence **Research team:** Personal Social Services Research Unit., LSE **Contact:** 020 7405 7686 **Other partners:** OpenHub Ltd, partners in Sweden, France, Germany, Belgium, Slovakia, Spain **Funder:** European Commission FP6 **Amount:** €8,699,478	The project has produced five publically available services: home safety and security monitoring; an environmental control service for use inside and outside the home; a system providing status information about the home environment and an individual's movements around the house; a time management system which gives prompts about appointments and medication; and an application providing accessible games to encourage physical activity and social interaction. These have been trialled in 70 homes in three countries. Project findings include the importance of understanding local context and the need to supply, maintain and support robust technologies. Link to more information on FAST website	01/09/2006 01/05/2011
MOST: Model for Optimising Scaleable Telehealthcare **Research team:** Tunstall Group Ltd **Contact:** 01977 661234 **Other partners:** NHS North Yorkshire and York, Ernst & Young **Funder:** TSB ALIP **Amount:** £940,375	The aim of this project is to support the development of robust business models for delivering assisted living at scale. The project will construct and validate a toolkit of technology, guidelines and models to support the telehealthcare pathway, along with understanding service re-design requirements and the need for technology integration. Link to more information on FAST website	01/01/2011 01/04/2013
MultiMemoHome: Multimodal Reminders Within the Home **Research team:** Dept of Computing Science, University of Glasgow **Contact:** 0141 330 8430 **Other partners:** University of Edinburgh, Queen Margaret University **Funder:** EPSRC **Amount:** £775,085	This project is looking at different ways in which the alerts generated by home care systems can be communicated to users. Such alerts need to be designed to appeal to users and to take into account any auditory or sensory difficulties they may have. Researchers have compared the disruptiveness and effectiveness of visual, auditory, tactile and olfactory notifications. They have also worked with older users testing the use of smart pen technology and musical clips as a way of helping people learn and remember actions. Link to more information on FAST website	01/09/2009 28/02/2013

Project title Organisation(s) Contacts Funding	Project summary	Start and finish dates
Multi-Role Shadow Robotic System for Independent Living **Research team:** Manufacturing Engineering Centre, Cardiff University **Contact:** 029 2087 4641 **Other partners:** University of Bedfordshire, partners in Spain, Austria, Italy, Germany, Bulgaria **Funder:** European Commission FP7 **Amount:** €3,300,000	The aim of this project is to develop a robot which can provide home care for older people living at home. Researchers are trialling prototype robotic systems which address three areas of activity: providing emergency help once an incident or problem is detected; fetching and carrying items in response to user needs and instructions; and situation monitoring whereby family members can have 'virtual' entry to an older person's residence to ensure that all is well. These are being tested with older people at sites in Spain and Italy. Link to more information on FAST website	01/02/2010 31/01/2013
My Amego **Research team:** Faculty of Health and Life Sciences, Coventry University **Contact:** 024 7679 5959 **Funder:** TSB SBRI **Amount:** Not disclosed	The My Amego technology is used in care homes and supported settings as a way of monitoring the behaviour of people with dementia in order to anticipate areas of difficulty or risk. The project assessed the use of this technology by people with dementia living at home. The system was evaluated by healthcare professionals and carers of people with dementia through a series of focus groups and a six week home trial, and the results are being analysed. Link to more information on FAST website	01/01/2011 31/12/2011
MyLife - multimedia technology to support independence for and participation by people with dementia **Research team:** Trent Dementia Services Development Centre **Contact:** 0116 257 5017 **Other partners:** Innovations in Dementia, Housing 21, partners in Norway, Germany **Funder:** AAL, TSB **Amount:** Not disclosed	Multimedia technologies are increasingly used in all walks of life, in shops and online services, as well as leisure activities. People with cognitive impairment and dementia can have difficulties accessing such technologies in their current format because the interface is too complex or confusing for them to use easily. This project tested and enhanced an interface which has been specifically developed for people with dementia so they can access web services through an easy-to-use display accessed via a touch screen. The UK partners were involved in user testing. Link to more information on FAST website	01/03/2011 30/04/2012

Project title Organisation(s) Contacts Funding	Project summary	Start and finish dates
MyUI: mainstreaming accessibility through synergistic user modelling and adaptability **Research team:** Human Factors Research Group, University of Nottingham **Contact:** 0115 9514040 **Other partners:** Clevercherry.com, Birminghambition, partners in Germany, Netherlands, Spain, Hungary **Funder:** European Commission FP7 **Amount:** €2,400,000	Many everyday products and services are inaccessible to disabled or older people. While some assistive technology products are available which do meet user requirements, they are often expensive. The aim of this project is to foster the mainstreaming of accessible and highly personalised ICT products. Researchers have developed an email application for internet-based SmartTV. Work is continuing on developing the system to improve its accuracy and ability to adapt to users with different impairments. Link to more information on FAST website	01/02/2010 31/07/2012
Natural Speech Technology (NST) **Research team:** Centre for Speech Technology Research, University of Edinburgh **Contact:** 0131 650 4434 **Other partners:** University of Sheffield, University of Cambridge **Funder:** EPSRC **Amount:** £6,200,000	Current speech recognition systems fail when more than one person is speaking or in noisy environments and require individuals to speak directly into microphones. All of these features limit their usefulness in real life situations. The aim of this project is to research ways to improve speech recognition software, by developing new speech technology software which is adaptable and can be personalised.This software could be used in systems to support older and disabled people to continue to live at home independently. Link to more information on FAST website	01/05/2011 30/04/2016
Neural and biomechanical correlates of response to the use of an ankle-foot cast provided to improve walking early after stroke: the SWIFT Cast Trial **Research team:** School of Allied Health Professions, University of East Anglia **Contact:** 01603 456161 **Other partners:** University of Strathclyde, University of Cambridge, Norfolk and Norwich University Hospital NHS Foundation Trust **Funder:** NIHR EME **Amount:** £926,967	Weakness of the leg and foot is common after a stroke and can have a substantial impact on people's lives. Some rehabilitation treatments may be beneficial, but a common problem limiting an individual's ability to practice walking is when the affected foot cannot be held in the correct position in relation to the lower leg. The aim of this study is to investigate whether a splint designed to maintain the correct position of the foot in relation to the leg will enable people to participate in more walking re-training. The trial is ongoing and 53 participants have been recruited so far. Link to more information on FAST website	18/10/2010 17/10/2013

Project title Organisation(s) Contacts Funding	Project summary	Start and finish dates
New approaches to banking for the older old **Research team:** Newcastle University Business School **Contact:** 0191 243 0770 **Other partners:** University of York, AgeUK, Barclays Bank **Funder:** RCUK **Amount:** £240,023	The project is looking at ways to ensure older people who are unfamiliar with computer technology are not excluded from online banking services. Ideas which have been trialled with focus groups include a means of making electronic payments with what looks like a traditional paper cheque . Researchers have also developed a secure PIN reminder that incorporates three types of biometric sensors. Link to more information on FAST website	01/05/2010 31/10/2012
NOCTURNAL - Night Optimised Care Technology for UserRs Needing Assisted Lifestyles **Research team:** Faculty of Computing and Engineering, University of Ulster **Contact:** 028 9036 6305 **Other partners:** Fold Housing Association, Northern Health and Social Care Trust **Funder:** EPSRC, TSB ALIP **Amount:** £112,721	People with dementia frequently wish to continue to live at home for as long as possible. However, they may experience difficulty sleeping at night and get out of bed numerous times. Researchers have developed a 'bedside assistant' which is a tablet-based system to provide support for people with dementia at nightime, such as managing the lighting when they get out of bed and providing interventions such as music or familiar images to encourage people back to sleep. Link to more information on FAST website	01/09/2008 31/08/2011
OASIS - Open architecture for Accessible Services Integration and Standardisation **Research team:** School of Civil Engineering and Geosciences, University of Newcastle **Contact:** 0191 222 6323 **Other partners:** 33 partners from Italy, Greece, Spain, Germany, Belgium, Bulgaria, Switzerland, Romania, Mexico, China **Funder:** European Commission FP7 **Amount:** €12,410,000	A barrier to the scale up of assisted living services is the lack of interoperability betwee systems. The project has developed the Common Ontological Framework (COF) which provides a methodology for developing interoperable telecare and telehealth applications, a software infrastructure to underpin this, and a formalised method of connecting applications. The project team has developed a number of applications which have been tested in living labs, sheltered homes and independent homes in Italy, Denmark, Greece and the UK. Link to more information on FAST website	01/01/2008 31/12/2011

Project title Organisation(s) Contacts Funding	Project summary	Start and finish dates
OPTIMI - Online Predictive Tools for Intervention in Mental Illness **Research team:** Bristol Neuroscience, University of Bristol **Contact:** 0117 92 88293 **Other partners:** Partners in Spain, China, Switzerland, Italy **Funder:** European Commission FP7 **Amount:** €3,760,000	People with mental health difficulties often exhibit changes in behaviour as they start to become unwell. For example, their speech patterns may be different and they may become less expressive and speak more hesitantly and in a lower tone than usual. By tracking such changes, it is possible both to intervene earlier when someone appears to be at risk of developing depression or another mental illness, and also to assess how effective therapy is proving. The aim of this project is to develop tools to perform predictions based on early identification of the onset of an illness by monitoring poor coping behaviour. The research uses both wearable sensors and also sensors fitted to domestic appliances. The UK project team is designing a methodology for monitoring cortisol levels throughout the day, as this is a hormone produced when someone is feeling stressed. Link to more information on FAST website	01/01/2010 31/12/2012
OPT-in - Older People and Technological innovations **Research team:** Faculty of Health & Social Care, Open University **Contact:** 01908 653420 **Other partners:** University of Stirling, partners in Slovenia, Germany, Netherlands **Funder:** LLP **Amount:** €25,000	Use of the internet and mobile phones is now ubiquitous, but older people risk missing out on the opportunities they offer to increase social contact because of a lack of familiarity with the technology. This project looked at older people's attitudes to new innovations. The UK partners ran a series of workshops offering older people opportunities to explore innovative ways of interacting with computers using tactile, mobile, portable and pervasive technologies. As well as these 'technological playgrounds', researchers also developed simulation centres to demonstrate how a range of healthcare interventions can be self-managed. Link to more information on FAST website	01/08/2009 31/07/2011

Project title Organisation(s) Contacts Funding	Project summary	Start and finish dates
OsteoLink **Research team:** Syzgy Group **Contact:** 020 3206 4100 **Other partners:** Hill & Knowlton UK, partners in Sweden, Austria **Funder:** AAL **Amount:** €1,845,583	This project is a Pan-European collaboration designed to develop a grassroots network of people with osteoporosis. It includes a dynamic online forum to help people manage their condition. The website has been developed and promoted by the UK partners for users in Austria and Sweden. There are plans to continue development in Germany and Switzerland, and to expand to five new countries: Spain, Australia, Greece, Portugal and France. Link to more information on FAST website	01/04/2010 31/08/2013
Out There and In Here: Social Inclusion through Distributed Team Collaboration **Research team:** Institute of Educational Technology, The Open University **Contact:** 01908 274066 **Other partners:** Microsoft Research Cambridge, The Sea, Cambridge Council, Friends of Mill Road Cemetery, Parkside School Cambridge **Funder:** EPSRC **Amount:** £185,087	Students with mobility disabilities are sometimes unable to participate in field trips or other external activities which form part of their course. Simply reading about the area or site in question does not equate to the experience of making a visit. In this project researchers developed and evaluated a range of 'social inclusion' systems which support active participation between teams of physically able and disabled students during fieldwork for school and college studies. The systems use a mix of web cam, multi-media systems, and laptop applications. The technology was trialled with university and sixth form students during a visit to a nature site in Cambridge. Link to more information on FAST website	01/03/2010 31/08/2011
Pain rehabilitation: E/Motion-based automated coaching **Research team:** University College London Interaction Centre **Contact:** 020 7679 0686 **Other partners:** University of Leicester, Imperial College London **Funder:** EPSRC **Amount:** £1,504,100	Almost 1 in 7 UK citizens experiences chronic pain, some due to chronic diseases such as osteoarthritis, but much of it mechanical low back pain (LBP) with no treatable cause. People who live with this condition are advised to manage their responses to pain by using a combination of psychology and physiotherapy techniques. The aim of this project is to design and develop an intelligent system which will monitor and assess how people's moods and movements are being affected by pain and then provide feedback and prompts during self-directed physiotherapy sessions. Researchers are developing a set of methods for automatically recognising audiovisual cues related to pain, behavioural patterns typical of LBP, and affective states influencing pain. Link to more information on FAST website	01/05/2010 30/04/2014

Project title Organisation(s) Contacts Funding	Project summary	Start and finish dates
PAL: Personal and sociAL communication services for health and lifestyle monitoring **Research team:** HW Communications Ltd **Contact:** 01524 888604 **Other partners:** University of Essex, University of Cambridge, MAC Ltd, Thales **Funder:** EPSRC, TSB ALIP **Amount:** £804,252	Current assistive living systems mostly work only in certain environments and are not able to provide a continuous support to users. One of the main reasons for these gaps in services is the existence of different communication infrastructures, which means that users have to adjust to different systems and different methods of operation once they move from their own home, for example, to a residential setting. This project is investigating the development of a system to provide a seamless and continuous experience in assistive living scenarios. Researchers have looked at how to take data from a range of sources, including sensors, phones, internet, and environmental control systems,locate the details which are significant and present that information to the user in a way which they find meaningful. Link to more information on FAST website	01/07/2009 30/06/2012
PD REHAB - Randomised controlled trial to assess the clinical- and cost-effectiveness of physiotherapy and occupational therapy in Parkinson's disease **Research team:** Dept of Clinical Neuroscience, University of Birmingham **Contact:** 0121 414 3943 **Funder:** NIHR HTA **Amount:** £1,354,031	This is a large, multicentre, randomised controlled trial of physiotherapy and occupation therapy versus no therapy in 750 people with Parkinson's disease from around 40 care homes and neurology units across the UK. It will evaluate the clinical and cost effectiveness of therapy interventions in order to improve people's quality of life and help in the planning of services and the development of new treatments protocols. Link to more information on FAST website	01/01/2009 01/01/2015
PEACE - PErsonAl Care Environments delivering support for vulnerable people **Research team:** Docobo UK Ltd **Contact:** 01372 459866 **Other partners:** Southampton City PCT, HW Communications Ltd, Age UK, Hywel Dda Local Health Board, Carmarthenshire Division, Chubb Electronic Security Systems Ltd **Funder:** TSB ALIP **Amount:** £1,740,335	This research built on the significant experience the partners have in deploying and operating telehealth and telecare systems to develop a system which combined both functions into a single system. The project has developed a colour screen 'health hub' which acts as a community portal providing patient management, video communications and social networking. Link to more information on FAST website	01/09/2008 30/11/2011

Project title Organisation(s) Contacts Funding	Project summary	Start and finish dates
PEACEanywhere - PErsonAl Care Environments anywhere at anytime **Research team:** Docobo UK Ltd **Contact:** 01372 459866 **Other partners:** Southampton City PCT, HW Communications Ltd; AgeUK, Hywel Dda Local Health Board, Chubb, Carmarthenshire Division, Guidance Monitoring Ltd, Glenside Manor Healthcare Services Limited **Funder:** TSB ALIP **Amount:** £2,428,909	This project is expanding on earlier work to integrate telecare support for health and social care applications for people living with long term conditions. The partners have developed a prototype handheld colour terminal based on multimedia touchscreen technology, and this project is extending the scope of the features available in the unit to include additional support such as meal delivery or handyman repairs. Link to more information on FAST website	01/10/2009 31/12/2012
Project Hydra **Research team:** Acute Technology Ltd **Contact:** 07977 577 627 **Other partners:** Brunel University, Chorleywood Health Centre, Innova Partnership, Philips, Onzo, Scottish and Southern Energy, Echelon, Vault-IC, Oracle **Funder:** TSB ALIP **Amount:** £2,300,000	Governments worldwide have set targets for the roll-out of smart meters to monitor consumption of utilities such as electricity and water supplies. This move means a new communications infrastructure is being put into people's homes to create a 'smart grid' which can support other monitoring applications such as telecare. The aim of this research was to establish proof of concept for using smart metering technology in the home to develop future healthcare services. The project has developed telecare/telehealth software and hardware based on the Continua Alliance (IEEE 11073) standards. It ran a pilot for home monitoring of blood pressure, with information sent to community matrons for analysis. Link to more information on FAST website	01/09/2009 01/05/2012
Proposal to invest in Portable Assistive Technology to Facilitate better Social Care Assessment Processes **Research team:** Cumbria County Council **Contact:** 01228 606060 **Funder:** Cumbria County Council **Amount:** £11,000	Assistive technology solutions such as the commercially available system Just Checking are recognised as having potential benefits for supporting vulnerable people to live independently at home. However, few local authorities have a robust framework for determining when or how such technology should be introduced. This project assessed and developed the infrastructure for the recommendation, purchase, recycling and feedback from potential consumers of the Just Checking telecare service in Cumbria. Link to more information on FAST website	01/01/2010 30/06/2011

Project title Organisation(s) Contacts Funding	Project summary	Start and finish dates
Prototype Communication System for Residential Homes **Research team:** School of Engineering and Digital Arts, University of Kent **Contact:** 01227 823246 **Other partners:** Visions4Technology Ltd **Funder:** ICE-T (SEHTA) **Amount:** £50,000	When people move into residential care homes, they can find it hard to keep in contact with family and friends because of the distances required for visits. Computers, phones and webcams offer a way to keep in touch, but some older people find them too complex to be easily used. This project designed a highly simplified video device which is not unlike the functionality of an old-style television set. By pressing a few buttons, residents can send videos, pictures and messages. The connection is instantaneous, as the unit connects to the network when powered on and remains on standby until calls are made or received. Link to more information on FAST website	01/06/2010 01/06/2011
Providing Access to Life Stories for Adults with Communication and Language Impairment **Research team:** School of Computing, University of Dundee **Contact:** 01382 385597 **Funder:** EPSRC **Amount:** £149,991	People living with neurological conditions such as cerebral palsy or stroke may have speech which is severely impaired and difficult to understand. Options are to use voice output communication aids (VOCAs), but these are more suited to producing short answers rather than enabling people to engage in dialogue. In this project, researchers are working with people living in a residential care centre who use VOCAs to find ways to use technology to create and communicate their own narratives. Researchers have organised a weekly story telling group of users, who will contribute to design plans for the software prototype. Link to more information on FAST website	01/07/2011 31/12/2012
Randomised controlled trial of continuous positive airway pressure treatment in older people with obstructive sleep apnoea hypopnoea syndrome **Research team:** Faculty of Medicine, Imperial College **Contact:** 020 7594 9826 **Other partners:** Oxford Respiratory Trials Unit, Royal Infirmary of Edinburgh, University of York, MRC Clinical Trials Unit **Funder:** NIHR HTA **Amount:** £1,507,799	People with obstructive sleep apnoea hypopnoea syndrome (OSAHS) have difficulty in breathing during sleep due to blockage of the throat. It causes people to stop breathing, which leads to disturbed sleep and excessive daytime sleepiness. OSAHS can be treated with continuous positive airway pressure (CPAP) whereby the sleeper breathes pressurised air through a mask. This has been approved by NICE for use with middle aged people, but there is little research on its effectiveness for older people. This study is assessing the effectiveness of the device for 270 older people. Fifteen sites are participating and 213 participants have been recruited. Link to more information on FAST website	01/08/2009 30/06/2013

Project title Organisation(s) Contacts Funding	Project summary	Start and finish dates
REACH112 - REsponding to All Citizens needing Help **Research team:** Centre for Deaf Studies, University of Bristol **Contact:** 0117 9546900 **Other partners:** Action on Hearing Loss (RNID), AuPix, Avon and Somerset Police Authority, Avon Fire and Rescue 22 partners in Italy, Belgium, Finland, France, Greece, Spain, Sweden, Netherlands **Funder:** ICT Policy Support Programme **Amount:** €4,400,000	The European emergency number 112, which is used to contact emergency services free of charge all over the EU, was not accessible to the majority of disabled people when first introduced. This project developed a communication solution using text, voice and video modes to allow disabled people direct access to emergency services via this number. This solution, called 'Total Conversation' allows for simultaneous combination of these modes, along with lip reading and sign language. Link to more information on FAST website	01/07/2009 01/06/2012
REACTION: REmote ACcessibility to diabetes management and Therapy In Operational healthcare Networks **Research team:** Dept of Information Systems and Computing, Brunel University **Contact:** 01895 203397 **Other partners:** Chorleywood Health Centre, 16 organisations in Spain, Sweden, Denmark, Germany, Greece, Hungary, Austria, Belgium, Switzerland **Funder:** European Commission FP7 **Amount:** €11,000,000	This project aims to research and develop an intelligent service platform that can provide remote monitoring and therapy management to people with diabetes in different healthcare regimes across Europe. Researchers have developed some initial requirements based on work at two sites, including in the UK, which are now being validated by focus groups in other locations, including Greece and Italy. Link to more information on FAST website	01/03/2010 28/02/2014
REALISE: REfining And Learning from online tools for Internet Shared Enterprise **Research team:** School of Electronics and Computer Science, University of Southampton **Contact:** 023 8059 5000 **Other partners:** OSS Watch, Full Measure, D4D HTC **Funder:** JISC, D4D HTC **Amount:** £176,315	The aim of this project was to create an online community to support open innovation in IT and internet accessibility. Researchers also sought to engage key researchers, businesses, developers and users in exploring open innovation. The online portal has seen high volumes of traffic and been a focus for the exchange of ideas about improving accessibility for older and disabled people. Link to more information on FAST website	28/06/2010 27/06/2012

Project title Organisation(s) Contacts Funding	Project summary	Start and finish dates
RECALL: Location Based Services -- Reconnecting Excluded Communities and Lifelong Learning **Research team:** Interactive Systems Research Group, Nottingham Trent University **Contact:** 0115 848 6019 **Other partners:** Greenhat Interactive Ltd, BID Services, partners in Bulgaria, Romania, Greece **Funder:** EU LLP (Grundtvig) **Amount:** Not disclosed	People with learning disabilities sometimes have problems in planning and undertaking independent travel on public transport. This project assessed a range of mobile-phone based services and applications designed to help with route finding. The results suggested that commercially available systems were too complex for the intended users to learn easily, not physically robust enough and needed clearer interfaces. Link to more information on FAST website	01/11/2009 30/10/2012
Recent developments in lower-limb prostheses: To gain full advantage of improved mechanical function are sensorimotor control features necessary? **Research team:** School of Engineering, Design and Technology, University of Bradford **Contact:** 01274 233721 **Other partners:** University Hospital of South Manchester **Funder:** EPSRC **Amount:** £102,238	Sensory feedback from the ankle and foot are known to play a major role in controlling human standing and walking. This means that individuals who have one (or both) of their lower limbs amputated have to learn to use other sensory inputs in order to walk using an artificial device. This research is investigating what sensory feedback is used by people with amputations when negotiating obstacles in a series of laboratory tests. The aim is to improve the design and functionality of prosthetic limbs. Data has been collected for all participants and data analysis is currently underway. Two papers reporting preliminary findings were presented at International Society for Prosthetics and Orthotics (ISPO) Annual Scientific meeting, in October 2011. Link to more information on FAST website	02/02/2010 04/10/2012
REEACT - the Randomised Evaluation of the Effectiveness and Acceptability of Computerised Therapy trial **Research team:** Dept of Health Sciences, University of York **Contact:** 01904 321344 **Funder:** NIHR HTA **Amount:** £1,621,924	The purpose of this study is to compare two computerised cognitive behavioural therapy (CBT) packages to see if they offer any additional benefits over the care that people already receive from their GP. The project team is evaluating a free-to-use internet product (MoodGYM) and a higher-cost commercial product (Beating the Blues -BtB). Link to more information on FAST website	01/05/2009 01/01/2015

Project title Organisation(s) Contacts Funding	Project summary	Start and finish dates
Regional Telemedicine Forum **Research team:** The Scottish Centre for Telehealth, NHS 24 **Contact:** 01224 285680 **Other partners:** Partners in Denmark, Italy, Spain, Norway, Estonia, France, Sweden, Poland **Funder:** EU INTERREG IVC programme **Amount:** €1,977,831	Despite the benefits and technical maturity of applications, the use of telecare and telehealth services is still limited in Europe. The aim of this partnership of nine European Regions is to encourage wider implementation and deployment of such services at regional level. In Denmark, the project is trialling a telehealth application for people with diabetes, called TeleUlcerCare, which allows people to report on the condition of their legs and feet and receive treatment in their own home. Link to more information on FAST website	01/01/2010 31/12/2012
RELEASE: Rehabilitative Elegant Locomotion with Exoskeleton and Active Support for Exercise **Research team:** Civil and Environmental Engineering, University College London **Contact:** 020 7679 7224 **Funder:** EPSRC **Amount:** £101,763	The project is designing a new type of exoskeleton (an external 'framework' with a power source which can be used by someone with limited mobility to improve their ability to move). To create the exoskeleton researchers are developing a material that can be stiffened in response to a command in order to support movement but which is also breathable so that it is comfortable to wear. They are also investigating suitable energy approaches to drive the exoskeleton system. Link to more information on FAST website	01/09/2011 31/08/2012
Restoration of Reach and Grasp in Stroke Patients using Electrical Stimulation and Haptic Feedback **Research team:** School of Electronics and Computer Science, University of Southampton **Contact:** 023 8059 5000 **Funder:** EPSRC **Amount:** £464,231	People who have had a stroke need to practice specific exercises in order to re-learn lost skills and use the feedback on their performance to improve their movement patterns. Damaged muscles can be made to work by using electrical stimulation of the nerves, an approach which works best if the person is also attempting a purposeful movement themselves. This project extends earlier work done in a laboratory which showed that a learning approach based on adjusting stimulation to match the person's level of skill, enabled people with stroke to re-learn to move their arm. Researchers are performing trials in people’s homes to assess how to provide tasks which encourage the correct kind of action for rehabilitation and thus the opportunity for relearning movement. Link to more information on FAST website	01/03/2011 28/02/2014

Project title Organisation(s) Contacts Funding	Project summary	Start and finish dates
REWIRE: Rehabilitative Wayout In Responsive home Environments **Research team:** Dept of Engineering Science, University of Oxford **Contact:** 01865 273000 **Other partners:** Partners in Italy, Switzerland, Spain, Slovenia **Funder:** European Commission FP7 **Amount:** €3,560,000	Many people are discharged from hospital with the recommendation that they carry out specific exercises in order to continue their rehabilitation. It can be difficult for individuals to find the motivation to do the exercises when at home and to do the exercises in the correct way to ensure their optimum recovery. This project aims to test an virtual reality-based rehabilitation approach which will allow people to continue intensive rehabilitation at home under remote monitoring by the hospital. Researchers will also set up a virtual community to educate and motivate individuals. Link to more information on FAST website	01/10/2011 30/09/2014
RICHARD: Regional ICT based Clusters for Healthcare Applications and R&D Integration **Research team:** Centre for Health and Social Care Research, Sheffield Hallam University **Contact:** 0114 225 5854 **Other partners:** ADI, Bradford Municipality, Airedale Hospital NHS Trust partners in Italy, Sweden, Poland **Funder:** European Commission FP7 **Amount:** €2,749,999	The project aims to develop a centralised approach to innovation and research for support for long term conditions, with the involvement of people living with the conditions and their clinicians. The goal is to introduce new technologies into the healthcare system. The UK team is shortly due to complete a systematic review of barriers and facilitators to the introduction of new technology in e-health delivery and is hoping to launch in mid 2012 a practical toolkit on how to implement e-health services. Link to more information on FAST website	01/09/2010 31/08/2013
Robobraille in Education **Research team:** Royal National College for the Blind **Contact:** 01432 265725 **Other partners:** National College of Ireland, partners in Denmark, Hungary, Cyprus, Italy **Funder:** EU LLP (Grundtvig) **Amount:** €53,000	RoboBraille is a free email and web service capable of converting electronic documents into a range of high-quality, alternative formats including Braille, mp3 and DAISY, with full text and full audio presentation in a range of languages. This project is analysing RoboBraille's impact in education for both students and teachers. It aims to raise awareness of the technology and improve and extend services. Link to more information on FAST website	01/11/2011 31/10/2013

Project title Organisation(s) Contacts Funding	Project summary	Start and finish dates
ROBOT-ERA: Advanced robotic systems and intelligent environments for the ageing population **Research team:** School of Computing and Mathematics, University of Plymouth **Contact:** 01752 584584 **Other partners:** Partners in Italy, Germany, Sweden **Funder:** European Commission FP7 **Amount:** €8,459,081	The objective of this research is to develop, implement and demonstrate the general feasibility, scientific and technical effectiveness to support older people of a range of advanced robotic services integrated into intelligent environments. Researchers will also look at the social acceptability of using robots in this way. The UK team is working on human-robot interaction interfaces. Link to more information on FAST website	01/12/2011 30/11/2014
Rural Digital Economy Research Hub **Research team:** Geography & Environment, University of Aberdeen **Contact:** 01224 273856 **Funder:** RCUK **Amount:** £12,360,027	The research hub is working on a range of technologies to enhance interactions between older people in rural communities and health and social care systems. They include sensor systems, mobile devices, location based services, software models to support coordination and intelligent information management, and personalisation techniques. Link to more information on FAST website	01/10/2009 30/09/2014
SALT: designing scaleable assistive technologies and services for independent healthy living and sustainable market development in the mixed digital economy **Research team:** Newcastle University Business School **Contact:** 0191 243 0770 **Other partners:** Years Ahead, Critical Data Ltd, Docobo, RTC North Ltd, Cybermoor Services Ltd, AgeUK, ADL Smartcare, Manus Neurodynamica, Intrahealth Ltd **Funder:** TSB ALIP **Amount:** £2,00,000	The main objectives of the project are to design new business models for scalable assistive technologies and services. The research team will seek to understand the factors that promote or inhibit people living in the community from making use of such technologies. This project will leverage resources and expertise built up through the RCUK Digital Economy Hub on Social Inclusion throughthe Digital Economy (SiDE) programme. Link to more information on FAST website	01/07/2011 30/06/2014

Project title Organisation(s) Contacts Funding	Project summary	Start and finish dates
SCRIPT - Supervised Care & Rehabilitation Involving Personal Tele-robotics **Research team:** School of Computer Science, University of Hertfordshire **Contact:** 01707 284000 **Other partners**: University of Sheffield, R U Robots Ltd, partners in Netherlands, Italy, Germany **Funder:** European Commission FP7 **Amount:** €4,640,000	This project aims to use robotic technology in people's homes to encourage the intensive use of rehabilitation exercises after stroke. The research will focus on hand and wrist exercises as these represent an area that has had the least research and where regaining function is seen as critically important for an individual's ability to achieve personal independence. Link to more information on FAST website	01/11/2011 31/10/2014
SENIORENGAGE **Research team:** Microlink PC **Contact:** 0808 1180 485 **Other partners:** Partners in Spain, Austria, Finland **Funder:** AAL **Amount:** €1,272,595	Many older people are at risk of becoming depressed and feeling excluded once they retire from the workplace. This project published two reports, one looking at what senior citizens need in order to be able to participate in an online platform and the best ways to help them to enter the digital world, as a way of keeping in touch with other people. The second was a study of the usability and accessibility requirements of older people with a range of special needs. Link to more information on FAST website	01/12/2010 01/12/2012
SHIELD - Support at Home Interventions to Enhance Life in Dementia: home treatment programme **Research team:** Research Dept of Mental Health Sciences, University College London **Contact:** 020 7679 2000 **Other partners:** University of Hull **Funder:** NIHR PGfAR **Amount:** £1,981,951	This is a large-scale research project focusing on interventions to support people with dementia living at home. The Home Treatment Package is developing, evaluating and implementing ways for professionals to support people with dementia experiencing crises at home and prevent admissions to hospital or care homes. Options under consideration include home adaptations and the use of assistive technology. Link to more information on FAST website	01/08/2008 31/07/2012

Project title Organisation(s) Contacts Funding	Project summary	Start and finish dates
SiDE - Social inclusion through the Digital Economy **Research team:** School of Computing Science, Newcastle University **Contact:** 0191 2227972 **Other partners**: University of Dundee **Funder:** EPSRC **Amount:** £12,632,447	This user-centred and user-driven programme of research is looking at how technology can produce inclusive products. Devices under development include an indoor navigation system for people with low vision and mobility needs, digital jewellery, a system designed to improve swallowing in people with Parkinson's by providing them with a prompt and interactive reminiscence aids for people with dementia living in a care home. Link to more information on FAST website	01/10/2009 30/09/2014
SilverGame **Research team:** Golden-Oldies Charitable Trust **Contact:** 01761 470006 **Other partners**: Partners in Austria, Germany, Finland **Funder:** AAL **Amount:** €1,862,000	Older people often experience social isolation, as their friends become more immobile and their family moves away. The internet and other digital technologies offer a way to create or sustain relationships, but older people can be reluctant to engage with new technologies. This project aims to develop attractive and stimulating online game-based multimedia applications designed to encourage older people to form social connections and interact with others. The idea is to provide an online environment to allow older people to share hobbies such as singing and dancing. Link to more information on FAST website	01/05/2010 01/07/2012
SMART 2: Self Management supported by Assistive, Rehabilitation and Telecare Technologies **Research team:** Faculty of Computing and Engineering, University of Ulster **Contact:** 028 9036 6305 **Other partners:** Sheffield Hallam University, University of Sheffield, University of Bath, University of Newcastle **Funder:** EPSRC **Amount:** £2,300,000	The aim of this project was to deepen the understanding of the potential for technology to support self-management of long term chronic conditions, with a focus on chronic pain, congestive heart failure and stroke. Pain control systems which combine psychological therapy with behavioural monitoring and intelligent feedback have been successfully trialled, and researchers have evaluated a range of information screens for people with stroke, which include presenting information on balance and gait gained from sensors in the soles of shoes. Link to more information on FAST website	01/01/2008 31/12/2011

Project title Organisation(s) Contacts Funding	Project summary	Start and finish dates
Smart home healthcare system for the elderly **Research team:** Centre for Healthcare Modelling and Informatics, University of Portsmouth **Contact:** 023 9284 6403 **Other partners:** PassivSystems Ltd **Funder:** HEFCE, SEEDA **Amount:** £165,000	The aim of this project is to test a set of sensors in a 'living laboratory' as a way of gathering information for planning a 'smart home'. Researchers have developed a modularised infrastructure for a wireless network of sensors, which includes heartrate monitoring and ways of monitoring posture via the use of accelerometers. This system can record someone's usual pattern of activity and spot when this has been disrupted and also be able to distinguish between incidents where someone is immobile because they have fallen rather than simply being asleep. Link to more information on FAST website	01/03/2010 31/10/2011
SMART: Study internal MARket for inclusive and assistive ICT, targeted market analysis and legislative aspects **Research team:** AbilityNet **Contact:** 0870 240 4455 **Other partners:** Deloitte Consulting Belgium **Funder:** European Commission ISMD **Amount:** €250,000	This report analysed the market, legal frameworks and methods of implementation for assistive technologies in nine EU member states. Amongst the trends identified are a greater interest in mobile technologies, a move towards the adoption of mainstream products and technologies rather than specialised equipment, and the move led by France and Germany towards a single point of access for services. Link to more information on FAST website	01/01/2010 01/04/2011
SOFTCARE - unobtrusive plug and play kit for chronic condition monitoring based on customised behaviour recognition **Research team:** HealthSystems Group Limited **Contact:** 01932 352011 **Other partners:** Partners in Austria, Finland, Spain **Funder:** AAL **Amount:** €1,205,832	The aim of this project is to develop and test out a monitoring system for older people that allows carers and users to get real-time alarms about dangerous situations, along with warnings on long-term trends which could indicate a future problem. The user wears a small bracelet and places one static sensor in each room of their home. The bracelet contains a 3D accelerometer and a mobile communication device. The system also requires an internet connection and there is an additional key fob device to extend the system's capabilities outside the home The system is on trial in sheltered housing and in private homes. Link to more information on FAST website	01/11/2009 31/10/2012

Project title Organisation(s) Contacts Funding	Project summary	Start and finish dates
Software Development to Facilitate Communications in Residential Homes **Research team:** School of Engineering and Digital Arts, University of Kent **Contact:** 01227 823246 **Other partners:** Graham Care Group **Funder:** ICE-T (SEHTA) **Amount:** £50,000	The project is investigating ways for care home residents to stay in touch with their families via Facebook, texts, emails and an online social network.The software has been developed and researchers are now piloting it in the home of one of the participants. The pilot exercise is expected to last until mid 2012, at that point the software will be rolled out across the group. Link to more information on FAST website	01/06/2010 01/06/2012
SSHOES - Special SHOES Movement **Research team:** School of Health, Sport & Rehabilitation Sciences, University of Salford **Contact:** 0161 295 2275 **Other partners:** Soletec Systems Ltd, 11 partners in Spain, Italy, Slovenia, Germany **Funder:** European Commission FP7 **Amount:** €4,874,025	People with foot problems, such as those caused by diabetes, frequently require customised footwear which is designed to alleviate pressure points and provide appropriate support. This project aims to devise methodologies and manufacturing systems for the production of orthotic footwear and insoles which are adapted to the requirements of individual customers. The team has devised experimental protocols, recruited participants and data collection is underway. Link to more information on FAST website	01/07/2009 30/06/2012
Strokeback - telemedicine system enpowering stroke patients to fight back **Research team:** School of Electronics and Computer Science, University of Southampton **Contact:** 023 8059 5000 **Other partners:** Research for Science and Technology Ltd, partners in Germany, Greece, Hungary **Funder:** European Commission FP7 **Amount:** €4,300,000	The aim of this project is to develop an automated remote rehabilitation system so that people who have had a stroke and their carers can carry out rehabilitation therapy effectively at home. Researchers will use a combination of state-of-the-art monitoring devices to form a wireless body area network which monitors information about the person who has had the stroke and tracks their progress. Link to more information on FAST website	01/10/2011 30/09/2014

Project title Organisation(s) Contacts Funding	Project summary	Start and finish dates
Supporting Safe Walking for People with Dementia **Research team:** Halliday James Ltd **Contact:** 0121 661 6806 **Funder:** NIHR i4i **Amount:** £64,003	Researchers worked with people with dementia to design a GPS-based system which would help provide assistance if they were lost when out and about. Users reported that the device gave them more confidence to continue to go out independently as their dementia progressed. Users also provided feedback on the need for a discrete design which was wearable and had good battery life. Link to more information on FAST website	01/05/2010 30/04/2011
SUS-IT: SUStaining IT use by older people to promote autonomy and independence **Research team:** Dept of Information Science, Loughborough University **Contact:** 01509 223052 **Other partners:** Nottingham Trent University, University of Dundee, University of Lincoln, Anglia Ruskin University, University of Surrey, Northumbria University **Funder:** NDA **Amount:** £1,106,342	This multidisciplinary project looked at ways to encourage greater uptake of ICT amongst older people. One of the ideas developed by the project team is the 'story lamp'. When someone places an object or a photo under the light of the lamp, an audio recording tells a story around it, so the photograph album reminds the individual about the people in the pictures and what they were doing. Link to more information on FAST website	01/01/2009 31/03/2012
SYSIASS : Autonomous and Intelligent Healthcare System (SYStème Intelligent et Autonome d'aide aux Soins de Santé) **Research team:** School of Computer Science and Electronic Engineering, University of Essex **Contact:** 01206 872770 **Other partners:** University of Kent, East Kent Hospitals University NHS Foundation Trust, partners in France **Funder:** European Regional Development Fund INTERREG IVA 2 Seas programme **Amount:** €2,466,406	The aim of this Anglo-French project is to develop an intelligent and autonomous powered wheelchair which can be used by anyone who has limited functionality as a result of either physical or cognitive impairment. The first clinical trials of an adapted electric wheelchair with a navigation assistance system have started at a hospital near Paris. Link to more information on FAST website	01/12/2010 31/12/2013

Project title Organisation(s) Contacts Funding	Project summary	Start and finish dates
TACT3: Tackling Ageing Continence through Theory Tools and Technology **Research team:** Institute of Bioengineering, Brunel University **Contact:** 01895 274000 **Other partners:** Sheffield Institute for Studies on Ageing, BioMed Healthcare Technology Co-operative, University of West of England, Sheffield Hallam University, University of Manchester, Helen Hamlyn Centre **Funder:** NDA **Amount:** £1,278,470	This was a wide-ranging inter-disciplinary project investigating ways to reduce the impact of continence difficulties for older people. The team has produced the 'Great British Public Toilet Map' and two assistive technology devices for people who use continence pads. Pilot tests of smart underwear and a key ring system which alert the wearer to a pad leak produced positive results, and the team are considering options for commercialisation. Link to more information on FAST website	01/11/2008 30/04/2012
TCares: Technology Cares **Research team:** South East Health Technologies Alliance **Contact:** 0845 130 8179 **Other partners:** University of Portsmouth, partners in Netherlands, Spain, Poland, Romania **Funder:** EU INTERREG IVC programme **Amount:** €412,060	The project's aim was to encourage and improve the take up of telecare systems by demonstrating how they meet the needs of users and create more efficient and effective care systems. In the UK, training packages were developed, user-need questionnaires conducted and a 'beauty parade' of technology companies was held to demonstrate potential assistive technologies to care staff. A telecare technology pilot was undertaken with a care village in Surrey. Link to more information on FAST website	01/06/2010 01/08/2011
Telemetric supported self-monitoring of long-term conditions **Research team:** Centre for Population Health Sciences, University of Edinburgh **Contact:** 0131 650 3220 **Other partners:** Napier University, Wellcome Trust Clinical Research Facility, Scottish Primary Care Research Network, Edinburgh Clinical Trials Unit, Primary Care Research Network South East, Chest Heart & Stroke Scotland, University of Aberdeen **Funder:** Chief Scientist Office, NHS Lothian, BUPA Foundation, The Blood Pressure Foundation, Scottish Centre for Telehealth **Amount:** £1,400,000	The aim of the project is to investigate whether home monitoring is a safe and effective way for people with a range of long term conditions to manage their condition. Results of a trial with 400 people with hypertension have been analysed and are currently being prepared for publication. A trial for people with chronic obstructive pulmonary disease (COPD) has been undertaken with 256 participants and is now in the follow up phase with results expected in summer 2012. The research team are now recruiting people living with stroke or diabetes for subsequent trials. Link to more information on FAST website	01/04/2008 31/01/2013

Project title Organisation(s) Contacts Funding	Project summary	Start and finish dates
TeleSCoPE - Telehealth Services Code of Practice for Europe **Research team:** Health Design & Technology Institute, Coventry University **Contact:** 024 7615 8000 **Other partners:** Telecare Services Association, 13 partners in Belgium, Bulgaria, Hungary, Italy, Ireland, Slovenia **Funder:** European Commission Health Programme **Amount:** €961,518	The aim of this project is to develop a European code of practice for telehealth services. The project has produced three Foundation Papers covering a glossary of terms, ethics and good practice, and a literature overview. The framework and initial content of the draft Code is being validated during 2012 in five member states. The code will be launched at the Medetel Conference in Luxembourg in April 2013. Link to more information on FAST website	01/08/2010 01/07/2013
TeleSynth: Computer-generated voices for telecare messages **Research team:** Centre for Speech Technology Research, University of Edinburgh **Contact:** 0131 650 4434 **Funder:** CSO **Amount:** Not disclosed	The project assessed whether computer-generated speech of the sort commonly used in telecare systems is easy to understand over the phone, even for people with hearing loss and under adverse conditions such as background noise. The study found it is feasible to give people spoken reminders over the telephone even if they have mild hearing problems, but that these reminders need to be about something they already know, and they should be reinforced by other measures. Link to more information on FAST website	01/01/2011 30/08/2011
The Telling Stories Project - how does the construction of narrative occur between teacher (natural speaker) and pupil (aided speaker)? **Research team:** School of Allied Health Professions, University of East Anglia **Contact:** 01603 456161 **Funder:** School of Allied Health Professions, University of East Anglia **Amount:** £39,000	The aim of this project was to analyse the use of narrative language between children using augmentative and alternative communication (AAC) and their teaching staff. Initial findings have been presented at a Communication Matters National Symposium, and suggested that narrative interaction does involve both staff and children taking turns to speak and so progress the conversation, although the teacher also takes a more dominant and initiating role. Link to more information on FAST website	01/10/2009 01/12/2011

Project title Organisation(s) Contacts Funding	Project summary	Start and finish dates
The use of commercial gaming devices for upper limb rehabilitation following stroke **Research team:** School of Community Health Sciences, University of Nottingham **Contact:** 0115 823 0208 **Funder:** Nottinghamshire CLAHRC **Amount:** Not disclosed	The project is evaluating the feasibility of using commercially available games consoles in the home to assist in rehabilitation after stroke. In collaboration with a local user group, games have been produced for two systems which are designed to elicit the accurate movements required for upper limb rehabilitation. Participants are trialling the systems. Early findings suggest people need additional support to undertake the number of rehabilitation sessions required. Link to more information on FAST website	01/09/2009 01/03/2013
TiKL - Transitions in Kitchen Living **Research team:** Faculty of Health & Social Care, Open University **Contact:** 01908 653420 **Other partners:** Loughborough University **Funder:** NDA **Amount:** £296,607	This project investigated the experience of the kitchen for older people living in a variety of ordinary and supported housing in urban and rural locations in England. The team researched assistive technology features that could be added to kitchens to make them sensitive to people's changing needs as they grow older. Outputs are being disseminated via Ricability and via a new website set up by the project. Link to more information on FAST website	01/09/2009 30/11/2011
TOBI - Tools for brain-computer interaction **Research team:** Multimodal Interaction Group, University of Glasgow **Contact:** 0141 330 4256 **Other partners:** Partners in France, Germany, Austria, Italy Switzerland **Funder:** European Commission FP7 **Amount:** €12,000,000	The TOBI project aims to develop practical technology for brain-computer interaction (BCI) which, combined with other assistive technologies, will improve the quality of life of disabled people. Researchers have produced prototypes, including a document browser and text entry application; a functional electrical stimulation (FES) orthosis for maintaining elbow positioning; a photo browser; and BCI-based mobility and rehabilitation aids. Link to more information on FAST website	01/11/2008 31/10/2012

Project title Organisation(s) Contacts Funding	Project summary	Start and finish dates
TOPS - Technologies to support older people at home: maximising personal and social interaction **Research team:** Centre for Rural Health, University of Aberdeen **Contact:** 01463 255892 **Other partners:** University of the Highlands and Islands, Newcastle University, University of Dundee, Institute of Rural Health **Funder:** RCUK **Amount:** Not disclosed	An estimated 73% of older people in the UK live with persistent pain that lasts longer than three months and is difficult to treat. People who live in rural areas often have limited or no access to specialist pain centres due to their geographical isolation. The aim of this project is to develop a device which can support older people in rural areas living with chronic pain by giving them advice. The team is undertaking a large-scale survey of older adults with chronic pain and setting up focus groups to explore views and opinions on a variety of potential technologies. Link to more information on FAST website	01/01/2011 31/12/2013
TRACY - TRansport needs for an Ageing soCiety **Research team:** School of Geography, Earth and Environmental Sciences, University of Plymouth **Contact:** 01752 584584 **Other partners:** Partners in Spain, Norway **Funder:** European Commission FP7 **Amount:** €633,600	The aim of this project is to provide a systematic and comprehensive study of current initiatives to take older people's mobility needs into account when designing transport systems. The final action plan will include guidelines, requirements and specifications to promote safe and widespread use of all forms of land transport by older people. Link to more information on FAST website	01/10/2011 30/09/2013
TrAHVIIT - Transfer of audio-haptics for visually impaired information technology **Research team:** Royal National College for the Blind **Contact:** 01432 265725 Other partners: Partners in Romania, Austria, Turkey, Bulgaria, Malta **Funder:** European Commission LLP (Leonardo da Vinci) **Amount:** €299,825	Earlier work by the project team explored the use of 'talking tactile' technology which uses audio-haptics information as a way of supporting distance learning for people with visual impairment. TrAHVIIT is a follow-on project looking at how to transfer that innovation and make it part of national policies in the education of people with sensory and cognitive impairments. Draft overlays and scripts have been created and are available via the project website. Link to more information on FAST website	01/09/2009 01/10/2011

Project title Organisation(s) Contacts Funding	Project summary	Start and finish dates
TravelChair **Research team:** Medical Engineering Resource Unit **Contact:** 020 8770 8286 **Funder:** D4D HTC **Amount:** Not disclosed	The project has developed a 'Travelchair' for use as a postural support system for children aged 3-11 travelling by air. The chair provides a range of supportive features, plus the ability to accommodate feeding tubes for children fed gastrically, and fits a standard airline seat. It can be stowed onboard for use when needed and has already been ordered by Virgin Airlines for use in summer 2012. Link to more information on FAST website	01/01/2011 01/01/2012
Trial of Wii STroke : TWIST **Research team:** Royal Cornwall Hospitals NHS Trust **Contact:** 01872 250000 **Funder:** NIHR RfPB **Amount:** £249,794	People who have had a stroke often go on to experience weakness in their hand or arm. Undertaking regular physiotherapy exercises can help improve function. However, some people have only limited access to appropriate therapy, while others may find it hard to maintain motivation for rehabilitation once they are back at home. This research is studying whether the use of the Nintendo Wii sports system improves arm function and whether it is an acceptable therapy to people who have had a stroke. The study is recruiting 240 people who have weakness in their dominant arm, half of whom will exercise with the Wii for six weeks in addition to their usual rehabilitation, while the others will be taught personalised arm exercises. Link to more information on FAST website	01/01/2011 29/06/2013
TRUMP: A Trusted Mobile Platform for the Self-Management of Chronic Illness in Rural Areas **Research team:** Dept of Computing Science, University of Aberdeen **Contact:** 01224 272295 **Other partners:** University of Newcastle, Northumbria University, University of Dundee **Funder:** EPSRC **Amount:** £1,684,861	The project is exploring the potential of mobile technologies to support the management of long term conditions by simultaneously considering the needs of rural areas of India and the UK. Focusing on diabetes and depression, researchers are analysing the healthcare context, designing sustainable technology solutions compatible with local and national healthcare policies and incorporating existing programmes and training. Link to more information on FAST website	01/09/2011 31/08/2014

Project title Organisation(s) Contacts Funding	Project summary	Start and finish dates
Ultrax: Real-time tongue tracking for speech therapy using ultrasound **Research team:** Centre for Speech Technology Research, University of Edinburgh **Contact:** 0131 650 4434 **Other partners**: Queen Margaret University **Funder:** EPSRC **Amount:** £586,154	This project will develop a technology called Ultrax to turn ultrasound into a tongue imaging device capable of providing real-time visual feedback of tongue movements. This will then be used to help people with speech disorders who will be able to see the movements of their own tongues and use this information to modify their speech. Researchers are currently developing the ultasound protocols and the algorithms to describe tongue movements, which are being tested on a group of children. Link to more information on FAST website	01/02/2011 31/01/2014
UMSIC - Usability of Music for Social Inclusion of Children **Research team:** Institute of Education, University of London **Contact:** 020 7612 6000 **Other partners:** University of Central Lancashire, partners in Finland, Switzerland, Greece **Funder:** European Commission FP7 **Amount:** €2,130,000	Children with learning disabilities may find it hard to socialise at school because they have difficulty understanding how to interact with their peers. Previous research has indicated that music therapy can help children develop self-esteem and is also linked to improvements in the way in which they interact socially and their academic progress. This project produced two pieces of software which are now commercially available as JamMO. The software can be used on computers or mobile phones. Data from trials with 1400 children at schools in the UK and Finland indicated that teachers felt the software encouraged creativity and learning, while children who used it showed higher levels of motivation. Link to more information on FAST website	01/09/2008 01/08/2011
USEFIL: Unobtrusive Smart Environments For Independent Living **Research team:** Institute of Digital Healthcare, Warwick University **Contact:** 02476 151341 **Other partners:** Partners in Germany, Finland, Israel, Greece, Netherlands **Funder:** European Commission FP7 **Amount:** €4,630,000	The aim of this project is to develop affordable and unobtrusive home monitoring and web communication solutions to support older and disabled people living at home. Researchers plan to use low cost 'off the shelf' technology which will not require retro-fitting and will be almost invisible once installed. The concepts will be validated in a wide variety of residential environments in three different field trial studies. Link to more information on FAST website	01/11/2011 31/10/2014

Project title Organisation(s) Contacts Funding	Project summary	Start and finish dates
User centred independent living: the freedom to roam **Research team:** School of Life Sciences, University of Northumbria **Other partners:** Centre of Excellence for Life Sciences, Trackaphone, ADI **Contact:** 0191 227 3571 **Funder:** TSB ALIP **Amount:** £293,116	This project aims to develop a user-centred and personalised independent living solution that is commercially viable and affordable for the mass market. Link to more information on FAST website	01/10/2009 30/09/2012
Utilising communications technologies for anytime and anywhere assisted living **Research team:** Advanced Digital Institute **Contact:** 01274 535220 **Other partners:** HoIP CIC, Innovatech, Microsoft, Socitim, Telemedic, Willmott Dixon, 3DReed, Sasie Ltd, Digital Access Provision Forum **Funder:** TSB ALIP **Amount:** £1,292,191	The aim of this project was to create a broad range of assisted living applications and to see if they were appropriate for hard-to-reach communities in rural and deprived areas. The project defined the requirements of a mobile health device to enable roaming technology; developed communications technology to support 'anytime anywhere' assistive technologies; assessed the barriers to the economic provision of broadband to rural and deprived areas; and developed a network of assistive living facilities where these technologies were piloted in real situations. Link to more information on FAST website	01/10/2009 30/12/2011
Utilising multi-modal bio-digital technologies to assess the cognitive abilities of children with severe physical and neurological impairment **Research team:** School of Computer Science, University of Hertfordshire **Contact:** 01707 284000 **Other partners:** Games for Life **Funder:** EPSRC Electronics KTN iCASE award **Amount:** £85,000	Children with severe physical and neurological impairments may have highly restricted motor movement and no speech. Their communication and motor difficulties prevent them from being assessed by conventional tests of ability. As a consequence many of their abilities go unrecorded or under-estimated. This research is investigating ways to integrate two bio-digital input methods that provide information on a child's electrical brain potentials and point of gaze. This will provide an accurate indicator of the on-screen stimulus that a child with severe disabilities is selecting when being assessed. Researchers have early promising results and are encouraging EU collaborative enquiries for informal discussions. Link to more information on FAST website	01/10/2010 31/03/2014

Project title Organisation(s) Contacts Funding	Project summary	Start and finish dates
VenUS IV (Venous leg Ulcer Study IV): A randomised controlled trial of compression hosiery versus compression bandaging in the treatment of venous leg ulcers **Research team:** Dept of Health Sciences, University of York **Contact:** 01904 321344 **Funder:** NIHR HTA **Amount:** £1,012,624	The project is running a randomised controlled trial comparing four-layer compression bandaging with standard compression hosiery. The study aims to recruit 489 participants with venous leg ulcers from community and outpatient clinics, home settings, nursing and residential homes. The primary outcome to be assessed is the time the ulcer takes to heal. Trials are ongoing and so far the research team has recruited 162 participants from 21 local sites. Link to more information on FAST website	01/05/2009 30/11/2012
VERITAS: Virtual and augmented Environments and Realistic user Interactions To achieve embedded Accessibility designS **Research team:** Dept of Information Systems and Computing, Brunel University **Contact:** 01895 203397 **Other partners:** University of Newcastle, 34 partners in Germany, Greece, Italy, Spain, France, Belgium, Bulgaria, Czech Republic, Switzerland **Funder:** European Commission FP7 **Amount:** €8,000,000	There is a need for a more consistent methodology to ensure all products meet basic accessibility requirements. This project aims to develop, validate and assess tools for built-in accessibility support at all stages of ICT and non-ICT product development, including specification, design, development and testing. The project team organised two user conferences, the second in Nottingham in September 2011, at which videos were shown illustrating accessibility engineering using computer models, simulation and virtual reality. Link to more information on FAST website	01/01/2010 31/12/2013
VET4VIP - Vocational English training for visually impaired people **Research team:** Royal National College for the Blind **Contact:** 01432 265725 **Other partners:** Totnes School of English, partners in Germany, Netherlands, Ireland, Italy **Funder:** European Commission LLP (Leonardo da Vinci) **Amount:** €529,779	The project is devising guidance for language teachers on how to use and create teaching materials for students with visual impairment using suitable assistive technologies. It is also developing computer-based training on business English designed for blind and visually impaired adult learners.The team has completed a needs analysis, developed a course framework and produced a train-the-trainers module. The course has been made available in English, Dutch, German and Italian versions. Link to more information on FAST website	01/12/2009 01/06/2012

Project title Organisation(s) Contacts Funding	Project summary	Start and finish dates
VICON : Virtual User Concept for Supporting Inclusive Design of Consumer Products and User Interfaces **Research team:** Action on Hearing Loss (RNID) **Contact:** 0808 808 012 **Other partners:** Partners in Germany, Turkey, Sweden **Funder:** European Commission FP7 **Amount:** €3,136,608	The aim of this project is to develop a library of virtual personas, who have varying degrees of impairment in vision, hearing and manual dexterity. Designers can use this information to test product designs for accessibility and usability issues at an early stage of the design process. Researchers have completed the scientific and technical foundation for compiling the library and are now starting the virtual user model development and implementation stages. Link to more information on FAST website	01/01/2010 30/06/2012
ViPi: Virtual Portal for Interaction and ICT Training for People with Disabilities **Research team:** Interactive Systems Research Group, Nottingham Trent University **Contact:** 0115 848 6019 **Other partners:** Partners in Lithuania, Belgium, Greece, Cyprus **Funder:** EU LLP (Grundtvig) **Amount:** €428,931	The aim of this project is to explore the ways in which ICT can be used to provide alternative and creative solutions for the employment of disabled people. Researchers are developing an online portal for training which is available on computers and mobile phones. A survey was undertaken to investigate the needs of the stakeholders. The iterative development stage began in early 2012 and partners are starting to develop a curriculum and services that meet the requirements that were identified. Link to more information on FAST website	01/01/2011 31/12/2013
VirtEx **Research team:** Tunstall Group Ltd **Contact:** 01977 661234 **Other partners:** Looking Local, Housing21, Fold Housing Association, University of Sheffield **Funder:** TSB ALIP **Amount:** £2,003,128	The aim of this research was to create a 'virtual community' of connected carers, older people and people living with long-term conditions. The project developed a number of prototype applications. These were designed to provide communications channels between older people and those living with long term conditions and their carers, and to provide information of potential interest to users in a readily accessible form with simple user interfaces. Link to more information on FAST website	01/10/2008 01/02/2012

Project title Organisation(s) Contacts Funding	Project summary	Start and finish dates
VIVOCA2 **Research team:** School of Health and Related Research, University of Sheffield **Contact:** 0114 222 5454 **Other partners:** Barnsley Hospital NHS Foundation Trust, ELPedium Technologies Ltd, Toby Churchill Ltd, Medipex Ltd **Funder:** NIHR HTD **Amount:** £823,364	The aim of this project is to produce a device which will assist spoken communication for people with severe speech impairment (dysarthria). It will recognise utterances and `translate' them into clear, natural sounding synthesised speech output which can be understood by the listener. A prototype device has been produced and is being evaluated by user groups. Link to more information on FAST website	01/03/2010 01/10/2012
West Midlands Automated Pill Dispenser Pilot **Research team:** Charter & Plan Ltd **Contact:** 017815 073611 **Other partners:** Dudley Metropolitan Borough Council, Boots UK, PivoTell; NHS West Midlands, Staffordshire North PCT, Staffordshire County Council, Wolverhampton Metropolitan Borough Council, Telford and Wrekin Metropolitan Borough Council, Worcestershire County Council, Coventry City Council **Funder:** IEWM, NHS Innovations West Midlands **Amount:** £140,000	This project looked at using the PivoTell automated pill dispenser for older people who were at high risk of failing to take medicine correctly. During pilot trials the pill dispenser was given to people living at home and data was collected on their levels of GP visits, hospital admissions and quality of life before and after using the device. The trial demonstrated savings of £1,700 per person over a six month period, split equally between social care and health. Reduced emergency admissions to hospital and a reduction in the number of domicilary visits to remind people to take their medication accounted for two-thirds of the savings. Link to more information on FAST website	03/07/2009 31/03/2012
What are the views of people with Spinal Cord Injury (SCI), healthcare professionals and researchers about the current and future use of FES? **Research team:** School of Health Sciences, University of Southampton **Contact:** 023 8059 7979 **Funder:** INSPIRE **Amount:** £29,602	For nearly half a century Functional Electrical Stimulation (FES) has been used in the treatment and management of physical problems encountered by people with spinal cord injury (SCI). Although there appears to be a growing body of research into this technology, applications are only used by a small fraction of the SCI community. This project worked with focus groups throughout the UK to explore key themes in the use of FES. These included concerns over the selection of potential users and timing of any intervention; the lack of equipment and staff training; and the view that some FES devices were unreliable. Link to more information on FAST website	21/09/2009 01/10/2012

Project title Organisation(s) Contacts Funding	Project summary	Start and finish dates
WheelSAS - Wheelchair Stability Assessment System **Research team:** Faculty of Engineering and Computing, Coventry University **Contact:** 024 7688 8673 **Other partners:** West Midlands Rehabilitation Centre, Kings College Hospital NHS Foundation Trust, Betsi Cadwaladr University Health Board **Funder:** NIHR i4i **Amount:** £600,000	The issue of stability is of crucial importance in allowing wheelchair users to get the most from their chair whilst maintaining safety. Stability problems can arise after modifications have been made to a wheelchair or following the installation of additional equipment that changes the original centre of gravity. The aim of this project is to develop a system for measuring and improving wheelchair performance. Researchers have started developing an algorithm that can be used for prediction of the stability of wheelchairs or 3 wheeled scooters. Work includes semi-structured interviews and an online survey to explore user and market needs. Link to more information on FAST website	01/05/2010 30/04/2013
Whole System Demonstrator (WSD) for telecare and telehealth **Research team:** Department of Health, Whole System Demonstrators (WSD) **Contact:** 0113 254 5930 Other partners: London Borough of Newham, Kent County Council, Cornwall County Council, Tunstall Group Ltd, t+Medical **Funder:** Department of Health Long Term Conditions Team **Amount:** £31,000,000	This was a substantial randomised controlled trial of telecare and telehealth, with 238 GP practices signed up and 6191 participants to the trial, including 470 carers. The early indications from the three pilot sites show that if used correctly telehealth can deliver a 15% reduction in A&E visits, a 20% reduction in emergency admissions, a 14% reduction in elective admissions, a 14% reduction in bed days and an 8% reduction in tariff costs, along with a 45% reduction in mortality rates. More analysis is to be released during 2012. Link to more information on FAST website	01/05/2008 31/05/2011
Working Late: Strategies to Enhance Productive and Healthy Environments for the Older Workforce **Research team:** Dept of Human Sciences, Loughborough University **Contact:** 01509 223036 **Other partners:** Institute of Occupational Medicine, Edinburgh, RSA, The Age and Employment Network, COPE, Engineering Employers Federation, Major Contractors Group, Eon, PPG, I-Smart **Funder:** NDA **Amount:** £1,300,000	The project is developing an online resource, Organiser for Working Late (OWL), which is a suite of web-based design tools designed to encourage employers and designers to understand and respond to the needs of the older workforce in the construction industry. This includes the development of simulation devices to explain the impact of long term health conditions to workers. Link to more information on FAST website	01/11/2008 31/12/2012

Full information available from the Foundation for Assistive Technology (FAST) Assistive Technology research and development database at www.fastuk.org.

Report produced by:

Ms Pat Sweet and Ms Keren Down
FAST – The Foundation for Assistive Technology
302 Tower Bridge Business Centre
46-48 East Smithfield
London E1W 1AW

Phone: 0300 330 1430
Email: info@fastuk.org
Web: www.fastuk.org