



Review Paper

Assistive Technology: UK Land-Escape Study

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Abstract

People with disabilities accomplish daily living task with the help of assistive technology products. For example, medical equipments or Tele-care can support older people living and enable them for caring themselves. Assistive technology enables quality life for peoples with disorder or impairment, and people with physical and mental weaknesses. Latest technology can help in developing assistive living products or improving caring methods. Improvement in technology enables various techniques for caring older people or people with disabilities. Research and products in result of this research are significantly increased for utilizing improved technology. For this purpose, this research investigates the current and past research/projects for assistive living technologies. This research studies various universities, research centers and companies/organizations involve in assistive living research/projects/ product development. This research can provide the insight for any business case, business who wants to invest in new innovative technology and serve the society. This study consolidates assistive living information with various perspectives, and present assistive living information with the help of various tables. The information is analyzed in relation to universities, research centers, companies/organizations, funding and timeline. It is found that there are significant numbers of research projects running by various universities and organizations with considerable amount of funding. It is analyzed that there is extensive need for assistive living technology research for utilizing advance technologies for true assistive living.

Keywords: Assistive technology, survey report, research in healthcare, research in Universities.

Introduction

Assistive technology¹ is a generic term that includes assistive, adaptive, and rehabilitative devices for older people and people with disabilities and includes the process used in selecting, locating, and using them². Adoption of Assistive Technology devices improve the physical and learning capabilities of disabled/impaired persons. The technological advancement in field of electronics makes it possible to produce sufficiently small, powerful and low cost computers on a small chip that can be integrated with items of daily life such as furniture, tools, appliance etc. making them smarter and interactive with the environment. Especially Assistive Technology devices are become more responsive that not only they are capable to support the disability of a person but also have the ability to communicate with each other and with central controlling system.

Assistive technology promotes greater independence³ by enabling people to perform tasks that they were formerly unable to accomplish, or had great difficulty accomplishing⁴⁻⁶ by providing enhancements to or changed methods^{7,8} of interacting with the technology needed to accomplish such tasks⁹. ICT (information and communication technology) and especially mobile technology research enables various application to facilitate physically/mentally impaired persons. Various

research projects throughout the world and specially research in UK make these applications possible through diverse funding streams which are still happening due to significant need of this technology. In this connection, this research investigates and provides a landscape study (UK region) for assistive living technologies¹⁰⁻¹² and reports the following. i. Current and past assistive living projects/research conduct by Universities and research centers in UK. ii. Various funding bodies' involvement for assistive living work, iii. Funding allocated to various research/projects with associated time period. iv. Companies and organization involve in assistive living work.

Research Structure

This study provides the information about universities and research centre involve for assistive living technology research¹³. Project wise information is available in section IV for analyzing various perspectives. This information is available project wise. Each project information is available in relation to funding bodies, timeline and allocated fund for that project. This research analyze the funding amount, period of each project and total allocation in various areas of funding streams for assistive technology research and innovation. This analysis and categorization helps to understand the significance of doing research and potential for involvement in this field for next few years.

Universities Involve in at (Assistive Living) Research

This section describe universities involve in AL (assisted living) research. Each university work is categorized into research centers and projects. Brief description, commissioning and duration are defined for each project/research. Following section IV describes universities involved in AL work¹³

Universities Research Projects reflecting Funding bodies, cost and timelines

1. University of Bath, 5, EPSRC, Technology Strategy Board (TSB) and others, 3706829, 1st Apr 2008 to 29th Feb 2012.
2. University of Bradford, 1, European Commission - FP7, 2464000, 1st Jan 2008 to 31st Dec 2010.
3. University of Bristol, 2, EPSRC and New Dynamics of Ageing Research Programme, 289165, 30th Mar 2007 to 30th Sep 2011
4. Coventry University, 3, Assisted Living Innovation Platform, EPSRC and NIHR- i4i, 2926135, 1st Oct 2008 to 1st May 2013.
5. University of Dundee, 3, EPSRC and American Alzheimers Association, 4605063, 1st Mar 2000 to 31st Dec 2012
6. University of Edinburgh, 1, Engineering and Physical Sciences Research Council, 238471, 1st Jun 2006 to 31st May 2009
7. University of Essex, 2, EPSRC , 800191, 1st Apr 2006 to 16th Sep 2010
8. Kings College London, 5, EPSRC and Parkinson's UK, 886987, 1st Oct 1999 to 4th Nov 2012
9. University of Liverpool, 3, EPSRC and European Commission - FP6, 4149949, 1st Oct 2000 to 23rd Apr 2007
10. Loughborough University, 5, EPSRC and New Dynamics of Ageing Research Programme, 805226, 1st Oct 1999 to 30th Sep 2008
11. The University of Manchester, 2, NHS Stroke Association and EPSRC, 1825359, 1st Oct 2004 to 31st Oct 2010
12. Newcastle University, 4, EPSRC FP6 CELS, 7, 768802, 19th Mar 1999 to 28th Feb 2009
13. University of Oxford, 4, EPSRC FP7 and European Commission's Lifelong Learning Programme, 7830591, 1st Jan 2001 to 31st Aug 2012
14. Queen Mary University of London, 1, EPSRC, 230927, 9th Aug 2010 to 8th Feb 2012
15. University of Reading, 2, EPSRC, 173217, 1st Jan 2001 to 1st Nov 2007
16. University of Sunderland, 1, EPSRC, 314704, 1st Sep 1997 to 28th Feb 2001
17. University of Surrey, 3, NIHR - Health Technology Devices and New and Emerging and EPSRC Applications of Technology, 1, 154053, 24th Nov 2006 to 31st Mar 2011
18. Sheffield Hallam University, 5, BBSRC , 2474715, 1st Oct 2006 to 1st Sep 2012
19. University of Southampton, 3, EPSRC and Multiple Sclerosis Society, 447877, 1st Jun 2006 to 30th Sep 2010
20. University of Southampton, 2, NIHR - Programme Grant for Applied Research and Inspire - INtegrated SPInal Rehabilitation - Salisbury District Hospital, 832833, 15th Mar 2009 to 15th Mar 2014
21. University of Newcastle, 3, European commission FP7 New Dynamics of Ageing Research Programme and ALIP - Assisted Living Innovation Platform , 3591646, 1st Jan 2008 to 30th Sep 2011
22. Queen Margaret University Edinburgh, 1, Multiple Sclerosis Society Charity, 94027, 1st Jan 2009 to 31st Dec 2012
23. University of Ulster, 6, DELNI - Department for Employment and Learning in Northern Ireland and The Atlantic Philanthropies (Ireland) Limited, UK-India Education and Research Initiative (UKIERI) and EPSRC FP7, 10922,610, 1st Oct 2006 to 1st Dec 2011
24. The Manchester Metropolitan University, 2, European Commission and Technology Strategy Board - Collaborative research and development, 2975893, 1st Jan 2004 to 31st Mar 2011
25. Glasgow Caledonian University, 3, BSRF - British Scoliosis Research Foundation, New and Emerging Applications of Technology (NEAT) and European Union, 5708389, 28th May 2004 to 30th Jun 2008
26. De Montfort University Leicester (DMU), 1, Technology Strategy Board's Assisted Living Innovation platform, 1650000, 22nd Sep 2010
27. Brunel University, 3, European Commission - FP6 and NHS Innovations London, 2 957839, 1st Sep 2006 to 31st Dec 2011
28. University of Hertfordshire, 2, European Commission - FP6, 7125000, 1st Jan 2004 to 31st Mar 2014
29. University College London, 6, Parkinson's UK and NHS R&D Transitional Funding & NIHR - Health Technology Devices – EPSRC – BECTA – AAL Joint Programme and The Prostate Cancer Charity, 2251098, 30th Aug 2005 to 31st Dec 2011
30. Newcastle University Business School, 2, EPSRC, 10910661, 1st Oct 2000 to 31st Oct 2012.
31. University of Strathclyde, 2, Arthritis Research UK and LLHW - Lifelong Health and Wellbeing, 1447060, 5th Jan 2010 to 4th Jul 2013
32. UCLIC - University College London Interaction Centre, 1, EPSRC, 1504100, 1st May 2010 to 30th Apr 2014
33. Bournemouth University, 1, Royal Academy of Engineering, 120000, 2nd Apr 2007 to 31st Jan 2013
34. Lancaster University, 1, EPSRC, 147233, 1st Oct 2009 to 31st Mar 2011
35. University of Aberdeen, 1, Asthma UK, 222387, 1st Nov 2007 to 31st Jul 2009

36. University of York, 2, European Commission - FP6 and NHR Health Technology Assessment Programme, 2508624, 1st Sep 2004 to 1st May 2013
37. Queen's University Belfast, 2, European Commission - FP6 and ETAC - Everyday Technologies for Alzheimer Care , 3358773, 1st Sep 2004 to 1st Apr 2010
38. University of Sheffield, 3, European Commission - FP6 and ALIP - Assisted Living Innovation Platform , 13598306, 1st Nov 2006 to 28th Feb 2014
39. London Metropolitan University, 1, EPSRC, 296702, Aug 2004 to Mar 2010
40. Imperial College London, 2, EPSRC and Ambient Assisted Living Joint Programme, 4923809, 1st Oct 2005 to 1st May 2012
41. University of Bolton, 1, EPSRC, 152142, 24th Oct 2005 to 1st Apr 2009
42. University of Wales, 1, NDA - New Dynamics of Ageing Research Programme, 16917, 1st Apr 2007 to 1st Apr 2008
43. Reading University, 1, European Commission - FP6, 2464000, 1st Jan 2007 to - 1st Jun 2010
44. University of Brighton, 1, NIHR - Health Technology Devices (HTD), 142380, 1st Jan 2007 to 18th Feb 2009
45. Imperial College School of Medicine, 1, NHS London - Medical Research Council, 231069, 1st Jun 2004 to 1st Jun 2007
46. RNCB - Royal National College for the Blind , 1, European Commission, 326059, 1st Nov 2006 to 30th Sep 2008
47. Oxford Brookes University, 1, EPSRC, 110224, 1st Jul 2007 to 30th Jun 2008
48. University of Stirling, 1, Chief Scientist Office, 49096, 18th Feb 2008 to 30th Sep 2008
49. University of Exeter, 1, EU-FP6-IST: IST-654, 1464302, 1st Dec 2004 to 30th Nov 2007
50. Cardiff University, 10, EPSRC - Wales Office of Research and Development / Medical Research Council, Social Care Institute for Excellence - Welsh Assembly Government - National Institute for Health Research and National Health Research Funding Scheme, 4137844, 1st Oct 2004 to Sep 2012
51. Hereward College, 3, European Commission and AAL Joint Programme, 3932367, 1st Nov 2007 to 31st Dec 2011
52. University of Northumbria, 1, ALIP - Assisted Living Innovation Platform - EPSRC, 293116, 1st Oct 2009 to 30th Sep 2012

Summary, Total 52 universities were investigated for 125 projects for given period and funding, 129414210, 1st Sep 1997-to 30th Apr 2014

Key Findings: In relation to above mention data following finding can be elaborated: i. Significant funding is allocated for assistive living research, ii. Considerable number of universities and research centers involve in assistive living work, iii. There is significant gap between technology advancement and true assistive living for older population and people with disabilities.

iv. Significant number of projects engages collaborative research for assistive living.

Scope of the Study: This research consider UK as a case and other significant research is going on around the globe^{14, 15,16,17} and landscape study based upon UK proves the importance of this research throughout the world. However, this study has following limitations. i. This study investigates data available through internet and did not consider healthcare professionals' perspective. Adding their perspective can provide more understanding for problems facing by older or disable people. It can also provide understanding of problems facing by professionals for caring older or disable people. ii. This study does not include professionals' opinion working on assistive living technologies. Adding their opinion can provide significant understanding for technology limitation or support for assistive living products.

Conclusion

This study provides the snapshot for the assistive living research in UK between 1997 to 2012. This study present detail of assistive living projects conduct by various universities and organization, these projects include current and past research for various duration. The detail of the projects include allocated fund, funding body and collaborative organizations (if applicable). This study also include organization and companies information involve in assistive living research including various assistive living products. The study analyze assistive living work with various perspective such as how many funding bodies involve in fund allocation for assistive living research, evolvment of assistive living research during various time frames and universities/organizations involvement in various type of assistive living research. There is need for understanding the new technology potential for supporting the daily life.

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