PROGRAMME

Brain Injury Technologies Think (BITT) tank
Technologies for Independent Living

Wednesday 27th January 2016, 9:30am – 4:00pm
The Courtyard Suite, Madingley Hall, Cambridge, CB23 8AQ

The NIHR Brain Injury Healthcare Technology Co-operative is delivered in partnership between Cambridge University Hospitals NHS Foundation Trust and University of Cambridge
Brain Injury Technologies Think (BITT) tank

About the event

**Purpose**: The aim of the BITT tank is to raise awareness of the clinical unmet needs in the brain injury patient pathway and to explore potential NIHR Brain Injury Healthcare Technology Co-operative (HTC) collaborative opportunities. The BITT tank is delivered in partnership with the Knowledge Transfer Network Ltd.

Following the success of the Brain Injury Technologies Think (BITT) tank, held in March 2015, the NIHR Brain Injury Healthcare Technology Co-operative (HTC) will be delivering the BITT tank series throughout 2016. ‘Technologies for Independent Living’ is the first focused BITT tank of the year, which will be followed by three other technology showcases on our priority areas: Co-ordinated Care, Primary Prevention and Acute treatment and monitoring.

Confidentiality request

We kindly request that, for the protection of all organisations and individuals represented at the BITT tank, all presentations, discussions and recommendations are kept confidential to this meeting.

Any subsequent detailed discussions regarding potential collaborations will be subject to non-disclosure agreements, which will be coordinated by the HTC on behalf of its members, the relevant companies and any other party.

**Please note**: The agenda is extremely busy and we must work with the chairman and organisers to keep to time!
AGENDA

09.30 Registration and coffee

10:00-11:00 – Session 1: Clinical unmet needs

- Dr Peter Jarritt, Deputy Director, NIHR Brain Injury HTC
  Patient Inspired Innovation
- Dr Alexis Joannides, Clinical Lecturer in Neurosurgery, University of Cambridge
  Role of Informatics in the Adoption of Healthcare Technologies
- Professor Valerie Pomeroy, Professor of Rehabilitation, University of East Anglia
  Unmet Need for Motor Recovery early after Stroke
- Mr Austin Willett, Chief Executive, Headway Cambridgeshire
  Client led Challenges
- Ms Margaret Fosh, Reablement Manager, Cambridgeshire County Council
  Reablement: User Needs and Technology
- Ms Anava Baruch, Managing Director and Clinical Lead, Design for Independence
  Designing for Independent Living

11:00-14:45 – Session 2: Technology showcase, including panel Q&A
(15-minute slots for SMEs, start-ups and project teams)

Including:  11.30-11.45 – Coffee Break
          12.45-13.30 – Lunch & Networking
          14.45-15.00 – Tea Break

15:00-16.00 – Session 3: Panel discussion, chaired by Dr Peter Jarritt

- Mr David Walker, Senior Scientist, Philips Research
- Professor Nigel Harris, Director, Designability
- Professor Mehdi Tavakoli, Technical Director, Knowledge Transfer Network
- Mr Ravi Chana, Business Development Manager, NOCRI
- Dr Ian Newington, Senior Programme Manager, NIHR
**Technology showcase**, chaired by Dr Peter Jarrett, Deputy Director, NIHR Brain Injury HTC

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<td>1.</td>
<td><strong>Obex Technologies</strong> – A software company experienced in developing bespoke medical software solutions. Their primary focus is developing specialist databases for handling complex healthcare datasets across different disciplines and sectors.</td>
<td>11.00-11.10</td>
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<td>2.</td>
<td><strong>Red Ninja Ltd</strong> – Connected Kitchen enables brain injury service users to cook, independently and safely, at home. It is a tablet-based application that provides graded instructions to guide users with varying ability levels, throughout the cooking process. The platform is extended through the use of wearables and sensors, facilitating further freedom and safety.</td>
<td>11.15-11.30</td>
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**Coffee Break - 11.30-11.45**

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<td>3.</td>
<td><strong>Mimex Montague Healthcare Limited</strong> – Strannik is a neurological technology which is able to determine patient health in unprecedented detail and, using proprietary knowledge of brain function, is able to improve patient health and wellbeing.</td>
<td>11.45-12.00</td>
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<td>4.</td>
<td><strong>Novastone</strong> – The company delivers secure instant digital messaging which enables clinician and multi-disciplinary teams to connect communicate, collaborate around the needs of patients using secure mobile phone messaging. For patients it empowers patients and increases their engagement in their care.</td>
<td>12.05-12.20</td>
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<td>5.</td>
<td><strong>Maddison Product Design and University of Southampton</strong> – Two i4i projects in collaboration with Nottingham Trent University and University of Southampton that aim to enable stroke survivors to interact with complex instrumentation in an engaging and appropriate way.</td>
<td>12.25-12.45</td>
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**Lunch & Networking – 12.45-13.30**

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<td>6.</td>
<td><strong>Codamotion (Charnwood Dynamics Ltd)</strong> – Portable motion capture systems providing one familiar, unified environment for human motion analysis in central hospitals and decentralised locations including clinics and patient homes. Recent academic research suggests that motion capture is an easy and accurate technique for early identification and ongoing assessment of a wide range of traumatic and degenerative neurological conditions.</td>
<td>13.30-13.45</td>
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<td>7.</td>
<td><strong>Filisia Interfaces</strong> – The company develops connected devices that use music and games to support the training and access of people with additional needs. Monoma, consists of modular hardware controllers and a software platform with gamified rehabilitation modules. It collects and reports data of physical and cognitive abilities such as memory improvement, tremor, speed of movement and reaction time.</td>
<td>13.50-14.05</td>
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8. **Inclusive Media Solutions Ltd** – Q-View enables people with cognitive disabilities to scan any item with their smart device and it plays a video of how to use it for example; scanning the kettle with an iPad and it plays a video of how to make a cup of coffee.

   | 14.10-14.25 |

9. **Virtualware** – VirtualRehab is a clinically validated and CE Certified videogame platform that complements physical rehabilitation therapies. It uses the motion capture technology of the Microsoft Kinect and Leap Motion sensor and allows patients to augment their therapy through engaging gamified exercises that can be done in their own home.

   | 14.30-14.45 |

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**Tea Break – 14.45-15.00**
BITT tank – Speakers

Dr Peter Jarritt, Deputy Director, NIHR Brain Injury HTC
Dr. Peter Jarritt is the Deputy Director of the Brain Injury HTC. He is currently undertaking projects with Health Education East of England and The Academy for Healthcare Science. He previously held appointments as: Clinical Director of Medical Physics and Clinical Engineering at Addenbrooke’s Hospital; Lead Scientist for the EoE Strategic Health Authority; Chief Executive, Northern Ireland Regional Medical Physics Agency; Honorary Professor, Queen’s University Belfast; Scientific Director, Northern Ireland PET Institute. Lecturer and Senior Lecturer at the Institute of Nuclear Medicine, UCL.

Dr Alexis Joannides, Clinical Lecturer in Neurosurgery, University of Cambridge
Alexis Joannides is a clinical lecturer in neurosurgery at the Department of Clinical Neurosciences, University of Cambridge. He completed his PhD at the Cambridge Centre for Brain Repair in the use of human stem cells in experimental models of neurological disease. He is currently the programme director of the Outcome Registry Intervention and Operation Network, a national informatics platform for collecting and analysing health outcome data following neurosurgery and other neuroscience-related procedures. His research interests include molecular pathogenesis and clinical heterogeneity in traumatic brain injury.

Professor Valerie Pomeroy, Professor of Rehabilitation, University of East Anglia and Rehabilitation lead, NIHR Brain Injury HTC
Professor Valerie Pomeroy is a professor of Neurorehabilitation and Associate Director of Research for the School of Health Sciences. Her research upon stroke rehabilitation specifically; recovery of movement control and functional activity through identifying underlying mechanisms to inform the content of rehabilitation interventions in clinical trials.

Ms Margaret Fosh, Reablement Manager, Cambridgeshire County Council
Margi is Reablement Locality Manager for City and South Cambridgeshire (1st September 2016). Margi has been employed by Health and Social care for 23 years and many of you will know her from previous position as Assistive Technology Manager. After 14 years establishing and building the Technology service, Margi felt it was time for change both for the service and for herself. Margi was successful through the recruitment process and is
now keen to use her enthusiasm to influence and shape wider community services. Margi continues to support the NIHR Brain Injury HTC as a member of the Advisory Board, as well as participating in national Department of Health steering committees.

Mr Austin Willett, Chief Executive, Headway Cambridgeshire
Austin joined Headway Cambridgeshire in August 2015. Prior to this, he has spent 20 years working in the community sector in a variety of roles, and has a thorough understanding of the rewards and frustrations that come from managing a charitable organisation. His previous positions include running shops for Oxfam, managing a furniture reuse project, and most recently as the CEO of a counselling charity. He also spent two years with Voluntary Service Overseas, as an advisor to regional government in Vanuatu.

Ms Anava Baruch, Managing Director and Clinical Lead, Design for Independence
Anava Baruch is the MD and clinical lead for Design for Independence Ltd. She has a BA degree in Occupational Therapy, an MSc in Ergonomics and over 15 years’ experience in housing, sensory integration and inclusive design.
As an occupational therapist Anava has vast knowledge and experience of observing people functioning at home; she also has an in-depth understanding of how medical conditions and old age affect individuals. Her background enables her to support product designers and developers in creating inclusive design solutions for those who are less able. She is passionate about helping to increase the quality of life for everyone.

Mr David Walker, Senior Scientist, Philips Research Laboratories
Philips Research focus on supporting Home Healthcare initiatives in the UK, Point of Care fluid diagnostics, Oral Healthcare, Indoor and Outdoor location technologies, microbiology and hygiene. They work with close to 80 partners in the UK, including Cambridge University, Imperial University, Cranfield University, Southampton University, the European Bioinformatics Institute and the National Health Services Innovation Hub South East. Further to initial discussions with the Brain Injury HTC, David offers expertise in commercial R&D with an emphasis on providing technical solutions for healthcare.
Professor Nigel Harris, Director, Designability
Nigel Harris has been Director of Designability (Bath Institute of Medical Engineering) since 2009 and is a visiting Professor within the Department of Health, at the University of Bath. He is a Clinical Scientist and has over 30 years’ experience of clinical research, specialising in physiological measurement and the use of technology to support rehabilitation and the self-management of those with long term conditions. Recent research projects include the application of ICT to support individuals with cognitive impairments and development and understanding barriers to the adoption and uptake of new technology.

Designability is a not for profit design and development organisation working to improve the quality of life of people with disabilities and healthcare problems. It has an active programme of research in medical engineering and user centred design of enabling technologies. Designability is based in the Royal United Hospital in Bath and works with a range of third sector care providers, academic partners and clinicians.

Professor Mehdi Tavakoli, Technical Director, Knowledge Transfer Network
Professor Tavakoli works collaboratively with DH, NIHR and NOCRI partners to ensure output from the NIHR infrastructure is influencing policy where appropriate. As part of his main responsibilities, within KTN, he works closely and primarily with the Innovate UK as well as other national and international stakeholders and funding organisations supporting and accelerating innovation and product commercialisation in healthcare and medicine. He has been particularly active in supporting SMEs to identify academic and clinicians as collaborators and have access to public funding. He has worked as Consultant and Technology Manager at TWI Ltd for many years and has been involved in the developments of many medical and implantable devices, particularly for cardiovascular and orthopaedic applications. He is also a Visiting Professor of Medical Devices and Related Materials at the University of Strathclyde and has been serving as a Member of the Steering Committee or Advisory Board of many major healthcare initiatives, including three HTCs.
Mr Ravi Chana, Business Development Manager, NOCRI
Ravi is Business Development Manager within the industry team of the UK NIHR Office for Clinical Research Infrastructure (NOCRI). Ravi’s remit is to facilitate initial engagement between the life sciences industry and NIHR academic investigators, linking them together, to form research collaborations and partnerships. Ravi has a particular focus on NIHR medtech and diagnostic research, and has good connections to NIHR investigators/centres that focus on medtech/diagnostic clinical research. He has worked closely with the NIHR Diagnostic Evidence Cooperatives (DECs) and the NIHR Healthcare Technology Cooperatives (HTCs) to develop the process to help generate clinical evidence necessary for technology adoption.

Dr Ian Newington, Senior Programme Manager, Innovations Directorate, NIHR Central Commissioning Facility
My 30-year career in synthetic/medicinal chemistry R&D in industry resulted in some 38 patent applications covering a broad range of applications including drug delivery, biomaterials and diagnostic imaging. After 14 months at the CCF, I manage a portfolio of projects across 2 translational research programmes: i4i and Health Innovation Challenge Fund. In addition, I manage our relationship with the Horizon Scanning Centre and I have been asked to lead a new project to improve our engagement with SMEs.
BITT tank – Panel Members

Lead Panellists:  Professor Valerie Pomeroy – Rehabilitation Sciences
Dr Peter Jarritt – Medical Device Development

1. Ms Anava Baruch – Design for Independence
2. Mr Ravi Chana – NIHR Office for Clinical Research Infrastructure (NOCRI)
3. Dr Ford Esther – Intellectual Property
4. Ms Margaret Fosh – Social Care and Reablement
5. Dr Fergus Gracey – Clinical Neuropsychology
6. Dr Nigel Harris – Designability
7. Dr Kate Holmes – The Stroke Association
8. Dr Alexis Joannides – Clinical Informatics
9. Dr Ian Newington – NIHR HICF and i4i Programmes
10. Professor John Pickard – Neurosurgery
11. Mr Robert Runcie – Patient Perspective
12. Dr Thomas Stone – Clinical Engineering
13. Professor Mehdi Tavakoli – Innovate UK and Knowledge Transfer Network Ltd
14. Mr David Walker – Chronic Disease Management
15. Professor Paul White – Clinical Engineering
16. Mr Austin Willett – Patient’s Groups Perspective
17. Dr Gareth Williams – Intellectual Property
BITT tank - Technology Showcase

**Obex Technologies** – Obex Technologies, in partnership with the University of Cambridge and Addenbrooke’s Hospital, developed the Outcome Registry Intervention and Operation Network (ORION) web application framework in 2012.

ORION enables cloud-based, multi-site capture and processing of diverse healthcare information. ORION provides the platform for a number of modules including various national neuroscience registries and datasets for specific studies.

Most recently Obex has developed the Integrated Rehabilitation Management Application (IRMA). This module allows all of the institutions involved in the rehabilitation of brain injury patients to share data in a seamless and structured fashion. The data is also available in anonymized form for audit, reporting and research purposes.

The IRMA project has been commissioned and funded by NHS England through an initial feasibility study and has been awarded follow on funding also by NHS England for a pilot phase that involves a full rollout in the East of England and the North-West.

*Presenter(s): Dr Michael John Gifford, Mountain Hare Consulting, Director*

**Red Ninja** is a design-led digital technology company working with several trusts, councils, commissioners and providers to create software and hardware solutions to meet health and social care needs. The Red Ninja approach to design and development is relatively unique to the industry; Red Ninja take an agile and collaborative approach to product development, hosting ‘hack days’ to rapidly prototype solutions to identified priorities utilising new and existing technology. The end-users are actively involved in the co-creation process where individual and shared experiences are use to creating solutions that are pertinent to the user’s needs.

Connected Kitchen is a phase 1, SBRI project and is jointly funded by North Wales Betsi Cadwaladr University Health Board, Welsh Government and Innovate UK. This aims to promote independence in cooking tasks, to identify and develop innovative solutions that maximise the benefits for service users’ and benefits for public services.
The product Red Ninja are developing consists of a multitude of technology centred around a tablet and smartwatch with a personalised, co-created cooking application with analytics and a management dashboard with the ability to connect various sensors around the kitchen to regulate and monitor safety in the cooking process. Connected Kitchen will provide support at each level of the task in the kitchen, from planning, preparation to completion with notifications on the smartwatch from sensor detection around the kitchen connected to the dashboard and visual and auditory support on the tablet for the user.

**Presenter(s): Dr Hayley Webb, Technical Strategist**

**Mimex Montague Healthcare Limited** - Strannik technology is based upon an original mathematical model of the autonomic nervous system and Physiological Systems. It was first commercialised in 1999. It has taken until 2013-2015, until the existence of the European Commission's EUR1.2BN funded Human Brain Project, for the world to recognise the significance of Grakov's brilliant research which (i) is able to determine what the brain does and how it does it; (ii) determine the health of a patient in an unprecedented level of medical detail, and (iii) treat autonomic dysfunction thereby alleviating the symptomatic manifestations of pathological onset and/or progression.

**Presenter(s): Mr Graham Ewing, Chief Executive, and Dr Elena Ewing, Medical Director**

**Novatsone** – The company delivers secure instant digital messaging which enables clinician and multi-disciplinary teams to connect communicate, collaborate around the needs of patients using secure mobile phone messaging. For patients it empowers patients and increases their engagement in their care.

**Presenter(s): Ms Angela Single, Business Development Director**

**Maddison Product Design** – Maddison is a design company at the cutting edge of innovative product development. We specialise in transforming disruptive technologies into ground breaking, market leading products, building on clients’ IP and creating new IP to maximise
Inclusive Media Solutions Ltd – Q-View enables people with cognitive disabilities to scan any item with their smart device and it plays a video of how to use it for example; scanning the kettle with an iPad and it plays a video of how to make a cup of coffee.

Virtualware – VirtualRehab is a clinically validated and CE Certified videogame platform that complements physical rehabilitation therapies. It uses the motion capture technology of the Microsoft Kinect and Leap Motion sensor and allows patients to augment their therapy through engaging gamified exercises that can be done in their own home.

Codamotion (Charnwood Dynamics Ltd) – Portable motion capture systems providing one familiar, unified environment for human motion analysis in central hospitals and decentralised locations including clinics and patient homes. Recent academic research suggests that motion capture is an easy and accurate technique for early identification and ongoing assessment of a wide range of traumatic and degenerative neurological conditions.

Filisia Interfaces – Filisia Interfaces is an assistive technology company that enables people with disabilities to live their lives to the fullest. Our first product, Monoma, is a modular set of hardware controllers and a software platform with gamified rehabilitation modules. The software trains cognitive, communication and motor skills through games and musical expression. Therapists can select among a variety of interactions that train socialisation, logical reasoning, exergaming, memory and turn taking skills among others. The hardware is interoperable with training, automation and gaming applications, making it the first connected device for people with additional needs. Monoma also collects and reports data of users’ abilities.

Presenter(s): Mr Patrick Hall, Development Director, Maddison Product Design, and Professor Jane Burridge, Professor of Restorative Neuroscience, University of Southampton

Codamotion (Charnwood Dynamics Ltd) –

Presenter(s): Mr Jon Gamble, Global Business Manager

Filisia Interfaces –

Presenter(s): Mr Georgios Papadakis, Founder and CEO, and Ms Eirini Malliaraki, Business Development and Operations
**Inclusive Media Solutions** specialise in mobile technology for people with cognitive disabilities. We provide expert advice and innovative products to a range of industries including health, local authority, educational providers, housing associations and third sector. We are the company behind the award winning innovation Q-View, Q-View is the world’s largest library of ‘how to’ videos for people with cognitive disabilities. Each video is created by our industry experts and accessed through our unique QR code system.

Q-View enables people with cognitive disabilities to use their smart device to scan an item around their home and it plays a video of how to use it for example; scanning the kettle with an iPad and it plays a video of how to make a cup of coffee.

*Presenter(s): Mr William Britton, Founder and CEO*

**Virtualware** – Virtualware develops Healthtech products and solutions that help manage diseases and disorders in the fields of neurology, physiotherapy and psychology. These are solutions oriented at aiding the diagnosis and treatment of patients and are used by healthcare professionals around the world.

The product **VirtualRehab** is a **clinically validated** and **CE Certified** videogame platform that complements physical rehabilitation therapies. It uses motion capture technology to allow patients to augment their therapy through engaging gamified exercises that can be done in a clinical setting as well as in their own home through telerehabilitation.

VirtualRehab was developed in conjunction with neurologists and therapists to assure that it meets the requirements of both patients and rehabilitation professionals. VirtualRehab is currently being used in various hospitals around the UK as well as rehabilitation centres throughout Europe, Asia, the Middle East and Latin America.

*Presenter(s): Mr David Fried, Director of International Business Development*
BITT tank – Delegates

1. Ms Jane Aldridge – L2S2 Ltd
2. Dr Kais Al-Timimi – Datamation Ltd
3. Ms Emily Ashworth – Imperial College Healthcare NHS Trust
4. Dr Alexey Bannykh – Mountain Hare Consulting
5. Professor Philip Bath – University of Nottingham
6. Dr Nanette Bartram – AgPlus Diagnostics
7. Mr Niraj Brahmabhatt
8. Mr Jonathan Brech – Cambridge Network
9. Mr Mike Burton – Steeper Group
10. Mr David Calder – The Knowledge Transfer Network (KTN)
11. Dr Ed Chadwick – Keele University
12. Professor Damien Coyle – Ulster University
13. Ms Lucy Forrest – Cambridgeshire County Council
14. Ms Karen Hansen – Mountain Hare Consulting
15. Ms Kate Homan – Cambridge University Hospitals
16. Mr Jamie Joint – Health Enterprise East
17. Mr Bill Johnson – Amies Innovation
18. Ms Collette Johnson – Plextek
19. Dr Kathryn Mares – University of East Anglia
20. Mr Gavin Mintern – Intelliconnect (Europe) Ltd
21. Ms Erica Moyes – The Brain Tumour Charity
22. Lee Omar – Red Ninja Studios
23. Mr Keith Page – AgPlus Diagnostics
24. Dr Michael David Pedersen – Mydodl
25. Dr Shamim Quadir – The Stroke Association
26. Dr Paul Roach – Keele University
27. Mr John Smejka
28. Ms Paula Smejka
29. Dr Andrew Walsh – Cambridge Enterprise
30. Dr Mark Wilson – London Institute of Pre-Hospital Care
What is the NIHR Brain Injury Healthcare Technology Co-operative (HTC)?

The HTC is dedicated to identifying areas of unmet need amongst patients of all ages with brain injury.

To robust delivery of this the HTC:

1. works with patients, carers, NHS, charities, academia, inventors, SME’s and business angels to develop new medical devices, healthcare technologies and technology-dependent interventions which have high potential for improving quality of life and improving the effectiveness of healthcare services

2. provides a ‘go-to’ centre of expertise for understanding of the care pathways including market size based on unique registries, clinical research networks, innovation pathways, funding landscape, roadmapping, regulatory framework, public and patient engagement, patient-centred design, early phase evaluation and rapid response consultants.

3. is delivered in partnership by Cambridge University Hospitals NHS Foundation Trust and the University of Cambridge and is hosted within the University Department of Clinical Neurosciences at Addenbrooke’s Hospital in Cambridge UK building on a track record of technological innovation including software, medical devices and translational biology.

The HTC is lead by Professor John Pickard (Director) and Dr Peter Jarritt (Deputy Director) and has a number of workstreams that support delivery of the objectives outlined above.

To find out more please visit: www.brainhtc.org