

# Agenda

- Introduction (Prof Nigel Harris, ALAN & WEAHSN)
- 'Exploring the impact of commercially available smart technology on the lives of residents within a retirement village environment' (Shirley Hall, The ExtraCare Charitable Trust; Prof Praminda Caleb-Solly, Assistive Robotics & Intelligent Health Technologies at UWE; Alex Sleat, Knowledge Transfer Fellow at UWE)
- Technology Showcase with Graham Worsley, Digital Health and Care Alliance
- Technology Showcase with Dan Stepney, Director RGS Care
- Technology Showcase with Jon Reynolds, Chief Executive Officer at GDS Digital Solutions
- Wrap up and final comments (Prof Nigel Harris, ALAN & WEAHSN)

## Knowledge Transfer Partnership ExtraCare Charitable Trust and UWE

Trialling smart home technologies and assistive robots with residents and staff to support independent living and well-being

Intelligent health and activity monitoring to enable early intervention



Shirley Hall  
Head of Innovation and Wellbeing  
ECCT



Alex Sleat  
Smart Technology Specialist  
KPT Associate



Praminda Caleb-Solly  
Prof. Assistive Robotics &  
Intelligent Health Technologies  
UWE



## Our integrated model

The  
**ExtraCare**  
Charitable Trust



**Our mission:** Creating sustainable **communities** that provide **homes** older people want, **lifestyles** they can enjoy and **care** if it's needed

- T3 – We will introduce two innovation apartments in every new village opened during the life of this corporate plan to showcase assistive technology that will be available for residents to acquire and use.
- T14 – We will improve our digital maturity score by 2 points during this corporate plan period
- C12 – Understand our future residents’ expectations and develop our customer insight capability
- C16 – Develop innovation partnerships with business, HE/FE and funders
- C21 – Encourage Staff Innovation
- Operational target – to introduce innovations to support care needs, issues around the cost of care, provision, staffing

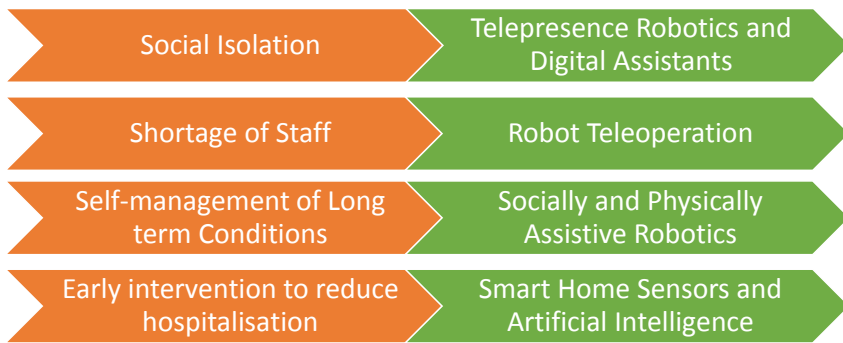


New ECCT Care  
Packages and Services

Increased Productivity  
Through Data Intelligence

Upskilled Care  
Workforce

# Assisted Living Research in the Bristol Robotics Lab @UWE



## Our key aims:

- 1. Developing multi-disciplinary research in interactive intelligent health technologies**  
Incorporating expertise from allied health professions, psychology, sociology and product design
- 2. Producing evidence of the efficacy of the technology**  
Producing evidence of the impact of research and technology on our target population's health and well-being
- 3. Working with care providers and end-users to respond to real needs and context**  
Designing solutions that will fit into existing health and social care models and inform future technology-enabled care using a diverse range of participatory and inclusive design approaches
- 4. Addressing the learning needs of the care workforce of the future**  
Developing new programmes and modules in consultation with care providers, health technology developers, regulatory bodies and advocacy groups

## Mixed-method approach to determine opportunities and constraints for real-world deployment and areas for further research

- Showcasing smart technology solutions in-situ
- Improving understanding of technology and staff skills
- Co-designing new solutions



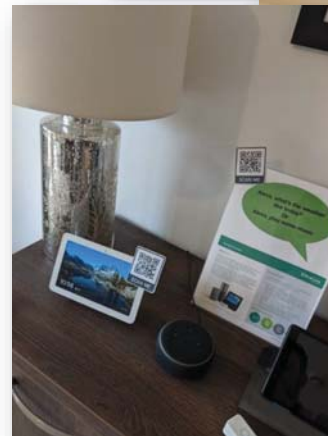
# Questions to ensure scale-up and sustainability

1. Are these systems cost effective?
2. What skills are needed to set-up and maintain the technology?
3. Who in the organisation would be taking on the role(s) for set-up and maintenance?
4. Is the infrastructure in place and capable of dealing with these additions?
5. How usable are the devices by the "end-user"?
6. Will they actually solve a problem?
7. Where is the device data kept, who is responsible for it?
8. Are there unforeseen effects of introducing this technology?



# Innovation Apartment

- Showcasing smart technology solutions in-situ
- Improving understanding of technology and staff skills
- Co-designing new solutions and materials, targeted to real aspirations and needs



# Smart Tech to Support Independent Living



**Scene 1:** Bespoke Amazon Alexa App developed by BRL to link to village activity schedule

**Scene 2:** Integrating Augmented Communication Aids to enable accessible control of multiple devices

**Scene 3:** Support for Cognitive Impairments using smart tracking tags

**Scenes 4 & 5:** Using Digital Assistants

**Scene 6:** Robotic Vacuum Cleaner

# Innovation Apartment – Lessons Learned

## Value of demonstration in-situ

- See and feel more realistically what it would be like using and experiencing technology

## Technical infrastructure

- Exploring ways around limitations
- What works and how realistic is it?
- Reduce time "debugging" issues when deploying technology for residents

## Make it a journey

- Joined up and demonstrating the "lived experience" of how technology can be beneficial

Making sure it wasn't an add on, but became part of what it ExtraCare Charitable Trust is about

# Innovation Residence

- Trialing smart technology solutions in real life environments
- Improving understanding of technology and the impact it has on residents' lives
- Determining what data is needed, how it is kept and what it can be used for



# Innovation Residence

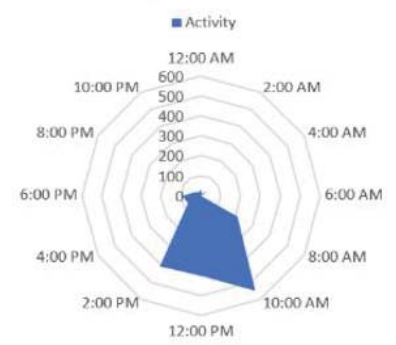
Average Monday Activity



Week 1 Activity



Monday Week 2 Activity



Further analysis is still underway.

Building on ongoing research in intelligent sensing and human activity analysis in the BRL:

Gupta, P., McClatchey, R. and Caleb-Solly, P., 2020. **Tracking changes in user activity from unlabelled smart home sensor data using unsupervised learning methods.** *Neural Computing and Applications*, pp.1-12.

# Innovation Residence – Lessons Learned

## Understanding long term impact

- What is the long-term effect on user behavior of technology in place?
- What information can be determined from long term studies that can support earlier interventions?
- Determining the MVP

## Short term, targeted studies can yield similar results

- Easily deployable sensor suites in-situ
- Focused data collection can reduce information overload

## Understanding technical constraints

- Is it deployable by staff or residents?
- How and who will support technical solutions in place

# Remote Interaction and Communication Using a Telepresence Robot - A Lifesaver During Lockdown



Senior Care  
Manager at  
ExtraCare



“We have set it up  
for 3 residents to  
have daily contact  
with family and have  
also got it set so the  
doctors can dial in to  
patient at agreed  
times to do 28 day  
checks ... it has  
proved really useful”  
19<sup>th</sup> May 2020

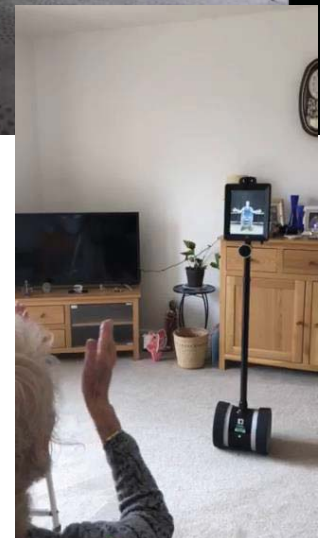
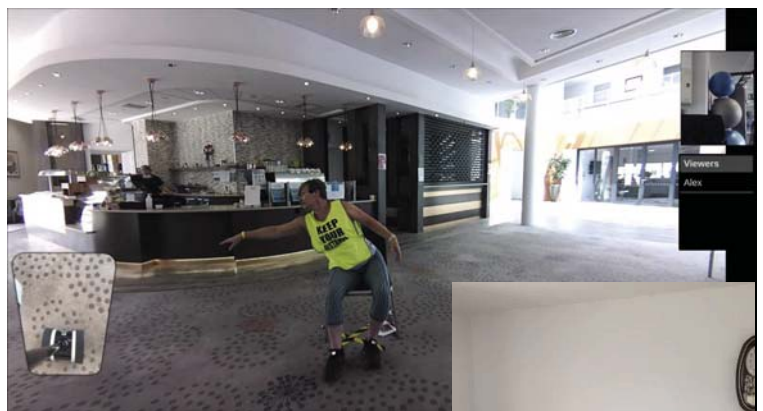


# Telepresence Robotics

## Addressing Social Isolation

### Exercise Classes with the Double Telepresence Robot

- *So much better with the 2-way conversation and being able to talk and see others in the group. It made me feel inclusive. Not sure if the sound system on the robot will interfere with hearing aids, but the sound level for me was fine. I could hear Kirsty's voice and the music clearly.*





# Assistive Robotics – Lessons Learned

Understanding impact of skill shortage and usefulness of trials to address staff reluctance to support these devices in a working environment

- Being able to start a video call remotely without interaction from the resident enhanced their experience and increased their satisfaction

Discovering how devices are used

- Double Robot used for FaceTime, because staff understood this paradigm

Change in circumstances dramatically changed the view of technology

# Smart Markets

- Loan Scheme
  - Trial before purchase, hoping to boost confidence through supported usage without the pressure to commit to a purchase
- Enabler Packs
  - Developed from work from CASA project
  - Information sheets around providing support and technology for aspirations rather than direct needs
- Feedback from Loan Scheme devices
  - *"It's like having someone else in the flat with me"* - on Amazon Echo
  - *"Love it - I don't want to be without it now I have it. I want to learn more about it"* - on Amazon Echo Show
  - *"Didn't provide peace of mind, was never sure if it was going to work"* - Smart Plug, with auto-off timer connected to the iron



**Hobby: Cooking**  
ideas for your kitchen

	<b>Amazon Echo Show</b> RRP from £49.99
A digital voice-assistant that can help with follow along recipes, cooking instructions, nutritional information, timers and more...	
	<b>Uccello Tipping Kettle</b> RRP from £39.99
An attractive kettle and tipper in one, enabling you to easily and safely pour boiling water	
	<b>Kasa Smart Wi-Fi Plug</b> RRP from £29.99
An energy monitoring smart plug, attached to your kettle could let a friend or family member know when you're having a cuppa (and that you're A-OK)	

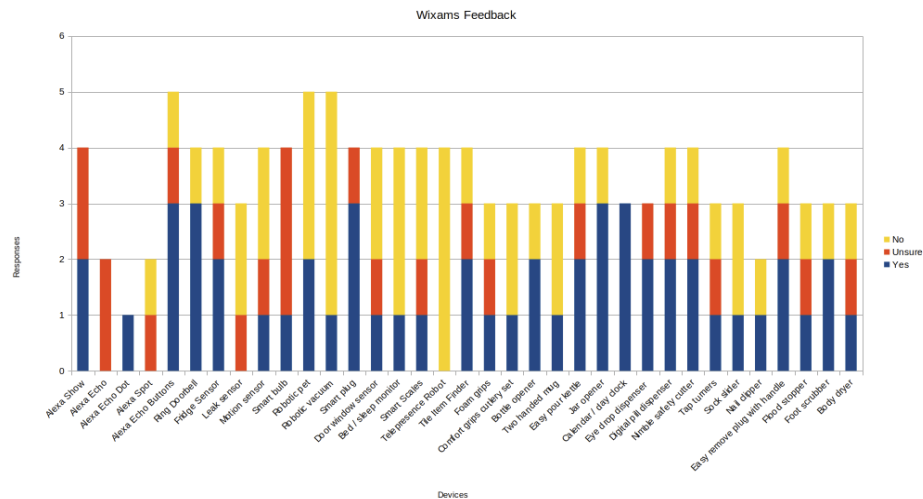
ExtraCare

# Technology Survey with ExtraCare Charitable Trust residents

- Digital responses: 586
- 65% fairly or very confident with technology
- 16% with Smart Assistant, but around 300 respondents said they own a Google Home or Amazon Alexa device
- 90% have "mobile" phones of which 82.51% connect to internet
- 68% open to try new smart technology

# Smart Markets – Lessons Learned

- Mixed responses on what technology people would trial
  - Shows diversity within demographic
- Understanding support requirements
  - Set-up procedures, problem solving and other "soft" requirements
- Discovering the authentic benefits
  - how better to promote and "sell" technology to older adults



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