The TAPPI Inquiry Report

Technology for our Ageing Population: Panel for Innovation - Phase One

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Remarkable research for healthy ageing
THE DUNHILL MEDICAL TRUST

Housing LIN
Connecting people, ideas and resources

TAPPI

Contents

Foreword

The last 18 months of global tragedy have provided an opportunity to reflect, reset & rebuild strategic thinking in so many aspects of our lives. Additionally, I know from personal experience that crises drive innovative thinking and action.

It has, therefore, been an honour and a pleasure to engage on this first phase of the TAPPI Inquiry during such a period of challenge and change. I am fortunate to have been able to work with a Panel of skilled, highly knowledgeable experts and witnesses from across the stakeholder community. I am so grateful for their involvement and commitment. They have made my job easy.

TAPPI has examined current practice and set some directions for the use of technology in housing and care contexts. To create practical and useful principles for action that makes life better and more fulfilling for our ageing population is something that we must all be involved in. And there is no better time to work on this than now.

This Phase One report, expertly crafted by the Housing LIN and funded by Dunhill Medical Trust, provides three outcomes.

First, the establishment of core principles that are crucial to creation of housing and care environments in which technology is embedded to make life better and easier for people, whoever they are. These are principles that must be at the heart of matching "what's needed with what's possible" for everyone as they grow older. We have no time to waste in applying them.

Second, the provision of best practice insight and action examples that can inspire all of us to do better. Central to this is the obvious, but often ignored, principle that working with people to understand their lives, their motivations, their aspirations and their concerns is vital to any innovative development. Take a look at these case studies. They are illuminating and helpful.

Third, this report highlights several vital questions that we must address in further conversations and actions.

- Best-practice use of technology is a multi-agency and multi-sectoral challenge. How can we collaborate better?

- Inter-agency learning and reapplication of technology insights is key. Who strategically convenes stakeholders for this knowledge sharing? It can't be accidental. We need deliberate intent.

- Education and training on the value and use of technology in all settings is vital. Everyone needs to get to and stay on the leading-edge, especially given the pace of technological change. This is exciting and should not be seen as a burden. So, where is the coherent, national strategy for this?

The TAPPI Inquiry will continue to Phase Two, with the aim of taking the TAPPI Principles to create a TAPPI Framework for Action. This will be the practical foundational framework for meaningful technology innovation in housing and care development in the future.

Finally, enjoy reading the report. If you take away useful insights, the Panel's sterling efforts will have been worthwhile. I hope that we can all look forward to a time when enabling technology better supports independence, choice, social engagement, mobility, safety and many other aspects of everyone's lives, and is expertly and wisely deployed as an integral part of "living better for longer".

D.R. Sandbach

Professor Roy Sandbach OBE FRSC
CHAIR, TAPPI INQUIRY - PHASE ONE

Acknowledgements

Introduction

This report details Phase One of the Technology for our Ageing Population: Panel for Innovation (TAPPI) project. Phase One consists of a scoping exercise to demonstrate the case for a further, full 'TAPPI' inquiry (Phase Two), leading to the creation of a downloadable TAPPI framework that sets out the potential roadmap for housing and care organisations and commissioners to achieve technology-enabled transformation in this area.

Phase One has involved collating information, intelligence, and practice examples, demonstrating the effective use of digital and technology solutions in housing and care. It has also considered likely future trends and possible aspirations of the next generation of older people (in their late 40s / 50s now).

TAPPI has also sought to identify examples of innovation and true integration of digitally-enabled technology in housing and care settings, in the UK or internationally. Additionally, it has started to explore the success factors in these examples, capturing lessons learnt, while also considering key barriers preventing commissioners, providers and others from moving towards true digital transformation. The full terms of reference can be viewed at: https://www.housinglin.org.uk/Topics/browse/Design-building/tappi/

It is hoped that the objectives will establish a new set of 'TAPPI' principles – an industry-recognised benchmark for what 'good' looks like in technology for housing and care for an ageing population. This would relate to services, design, and solutions, and to how housing, care and health partners can create a joint 'roadmap' to an integrated, system-wide and strategic approach to the delivery of technology that supports independence.

What do we mean by 'technology'?

Technology is an enabler. It encompasses a breadth of tools that when used in the right way can help improve our quality of life, keep us independent, healthy, fit and well.

Given the fast-approaching Analogue to Digital Switch Over in 2025, TAPPI is primarily focused on digital technologies. We take this to mean anything from devices and apps to modern smart appliances and internet communications and connected homes.

However, when considering the housing and care needs of our ageing population, we want to be clear that in all cases we need to think about the 'right solution first' rather than thinking 'digital first'.

> Technology doesn't solve humanity's problems. It was always naive to think so. Technology is an enabler, but humanity has to deal with humanity's problems.

SUNDAR PICHAI, THE CEO OF GOOGLE

What do we mean by our 'ageing population'?

Ageing is not synonymous with older people; it is a process we are all experiencing. TAPPI is considering how technology can enable all of us to live the life we want across our life-course. The TAPPI Panel's focus was to consider what this means for older and disabled people in particular.

Context

Over the past few decades, we have seen a 'revolution' in the way that digital and online technologies, communications and media have influenced our daily lives. However, the same cannot be said for the role of digital and technology in care, health and housing — especially in relation to older and disabled people.

COVID-19 has further embedded the use of technology into the lives of many, but it has also exacerbated the digital divide. Yet, the pandemic provides us with an opportunity; the opportunity to drive the 'digital revolution' across housing, health and care, putting the real needs of older people at the heart.

Over the past year, the COVID-19 pandemic has escalated the need for digitalisation and improved the recognition of the positive impacts that technology can have on our lives. Whilst this is true, the Housing LIN and the Dunhill Medical Trust have been considering building a case for a TAPPI Framework even before this unprecedented time.

The 2025 Analogue to Digital switch over provided some of this reasoning, it is essential that organisations have a better understanding of digitisation and opportunities through technology in the lead up to this.

Dunhill Medical Trust and the Housing LIN are committed to creating a society where everyone has the right to age well and getting the technology right as a key part of this.

What is TAPPI's mission?

The TAPPI Inquiry, and by extension this report, is intended to scope out the need for a transformational TAPPI framework that addresses the opportunity that technology has to enhance the lives of our ageing population and the barriers that prevent its adoption.

The Panel Members and witnesses (see Appendix for details) have supported the need for a TAPPI Framework which will include a set of overarching principles that can be applied by all stakeholders within the context of everyday living environments for our ageing population to enable us all to live independent, health and happy lives.

As a result of the COVID-19 pandemic, we have seen a surge in technology use and some excellent examples of where technology has enabled our ageing population to stay safe, well and connected. However, as this Inquiry heard, digital inequalities and exclusion are still very much present and TAPPI seeks to redress this balance.

Image copyright of Rethink Partners

Method

Funded by the Dunhill Medical Trust, the Housing LIN formally launched the TAPPI Inquiry in January 2021. The 6-month Inquiry consisted of 4 virtual sessions or 'hearings', 4 virtual regional roundtable showcase events and a call for written evidence. A full list of those who gave evidence virtually or made a written submission can be found in the Appendix.

This report has been divided into the 4 key themes, capturing the Panel's 'Big TAPPI Insights' that shaped the 4 Inquiry sessions. They are:

1. The perspectives on our ageing population

2. Building quality and scalable construction/development

3. Improving design, quality and standards

4. Delivering better housing, health and social care outcomes

The report synthesises the oral and written evidence presented that helped Panel Members' consider the components of a TAPPI Framework. It also includes examples of practice showcased during the Inquiry that either exemplify how older and disabled adults have used technology at home to support their independence or enabled the facilitation or design of housing and related, health or social care services, data or systems to deliver a range of better outcomes.
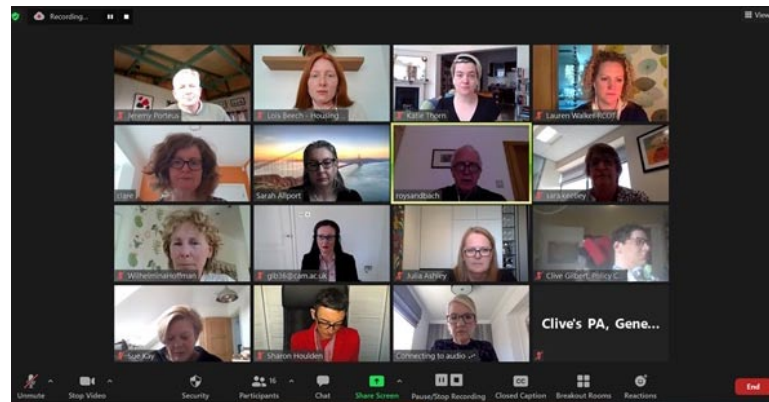
▲ TAPPI Inquiry Panel Session

Technology should enable me to live the life I want and do the things that are important to me as independently as possible. 〞

CLENTON FARQUHARSON MBE,
CHAIR OF THINK LOCAL ACT PERSONAL

Image copyright Tunstall Healthcare (UK) Ltd
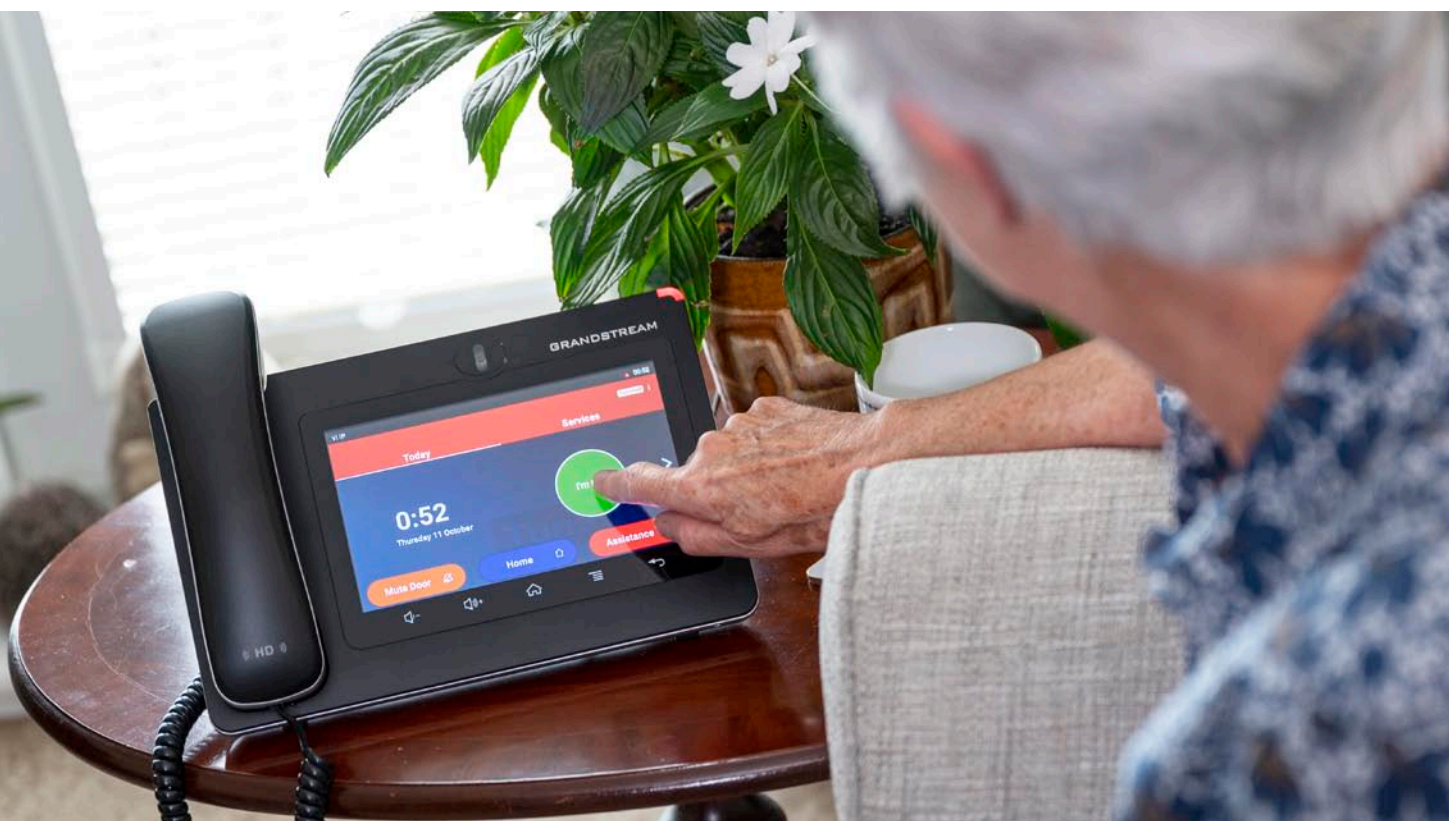
From HAPPI to TAPPI

Drawing on the pioneering HAPPI design principles, the TAPPI methodology has paralleled the original HAPPI Inquiry undertaken by the Homes and Communities Agency back in 2009 and the subsequent All-Party Parliamentary Group on Housing and Care for Older People Inquiry reports since then.

Over the last decade and more, these influential reports have successfully led to the creation of a set of 10 'care ready' housing design principles[1], now widely recognised by commissioners, architects, developers, and operators of retirement living and extra care housing schemes as the benchmark for quality in the provision of housing for an ageing population. This Inquiry has mirrored this approach from a technology perspective to determine what principles could underpin TAPPI.

One of the 10 HAPPI design principles refers to technology, as follows: "In the implementation of measures to ensure adaptability, homes are designed to be 'care ready' so that new and emerging technologies, such as telecare and community equipment, can be readily installed".

The full set of HAPPI design principles are:

- Generous internal space standards

- Plenty of natural light in the home and in circulation spaces

- Balconies and outdoor space, avoiding internal corridors and single-aspect flats

- Adaptability and 'care aware' design which is ready for emerging telecare and telehealthcare technologies

- Circulation spaces that encourage interaction and avoid an 'institutional feel'

- Shared facilities and community 'hubs' where these are lacking in the neighbourhood

- Plants, trees, and the natural environment

- High levels of energy efficiency, with good ventilation to avoid overheating

- Extra storage for belongings and bicycles

- Shared external areas such as 'home zones' that give priority to pedestrians

And, with regard to design quality, at the time of writing, the Dunhill Medical Trust are also funding the SCIE Commission on the Role of Housing in the Future of Care and Support. SCIE's initial briefing[2] recognises the progress made in relation to age-friendly design and indicates that there is a need to further exploit the full potential of digital technologies to accelerate supporting people to live independent and fulfilling lives.

1   Housing our Ageing Population Panel for Innovation (HAPPI) Reports
2   https://www.scie.org.uk/housing

The 10 TAPPI Principles

The TAPPI Panel Members have produced a set of overarching TAPPI principles that they believe should form a future TAPPI Framework captured in this infographic.

Adaptable
Able to adapt to changing user needs and technological advances

Co-produced
Involving people to co-create solutions to inform how they want to live their lives

Quality-focussed
In designing products, systems and services to ensure 'fit for purpose'

Cost-effective
Offer value for money and benefit both to individuals but also to workforces in local housing and care economies

Preventative
Focused on prevention rather than reactive models

Choice-led
Enabling access to more options that meet individual needs and wishes

Person-centred
Putting the person first to give control over own environment, care and support needs etc

Interoperable
Ability to integrate and work across systems and platforms to meet individuals' diverse needs and aspirations

Outcome-focussed
Improve health & wellbeing to improve quality of life or maintain independence

Inclusive
Reduce digital, health, income inequalities to enable active involvement in home, local community or networks

10 TAPPI Principles

Recommendations

We are indebted to the TAPPI Panel for helping us to come up with a set of key digital-ready recommendations.

The Panel identified that a TAPPI Framework needs to:

Empower digital citizenship:
linked to consumer behaviour around person-centredness.

Overcome digital inequalities:
linked to solutions that prevent further digital exclusion and divides.

Promote digital co-design:
incentivise collaboration and demonstrate the benefit to the individual and the collaborator.

Improve digital standards:
unite and futureproof existing standards, adopt interoperable technology charters, linked to the Minimum Digital Living Standard (see below).

Invest in digital infrastructure:
linked to design quality including modern methods of construction (MMC), smarter new build and adaptations/retrofit of existing housing stock (see below).

Enhance digital skills and learning:
linked to workforce training to service transformation and improvement.

Making the case:
encourage an industry-led approach to develop, test out and pilot a comprehensive TAPPI Framework that has 'digital rights' at its core.

Beyond these foundational considerations, there are several radical and innovative strategic interventions that could and should be considered as the TAPPI Framework is constructed in advance of the 2025 Digital Switchover. These are...

- Establishment of a clear benchmark that works alongside industry codes and charters – a Minimum Digital Living Standard – that sets out what is needed to live well and safely in a digital society.

- Development of a simple action system that enables personalised conversations that bring care-users and care-givers into any decision-making room, to better co-design new models of integrated housing and care that draw on digital solutions and outcomes that match their needs.

- Engage with the new Centre for Assistive and Accessible Technology for the creation of a one-stop, easy to access Technology in Housing and Care Knowledge Centre. Curated and publicly accessible.

- Call for a national digital strategy for transformation, aligned with the work within the NHS with housing and social care to ensure the establishment of a "housing and care products and services" marketplace platform and to enable easy consumer access to relevant digital products and services.

- Development of a "National Technology in Housing and Care Training Programme" for provision of co-ordinated CPD and new learning for care professionals from any domain.

- Review and update Government planning policy and guidance and the regulatory framework for housing generally to build in technology infrastructure to accelerate mainstream application of smart technology in new homes so they are adaptable to needs of an ageing population.

- Review and update Government guidance on Disabled Facilities Grants to ensure that it is futureproofed to support the retrofitting and adaptations of homes for an ageing population, such as Technology Facilities Grant and/or address climate change.

- Work towards a TAPPI 'kitemark' that encourages the housing sector to apply the TAPPI principles when designing, developing, managing, or marketing homes.

- Ensure that the TAPPI Framework provides the opportunity to champion digital leadership, so the sector better embraces technology at all levels.

01

Perspectives on our ageing population

> **❝** I want to lead an ordinary life and not be defined or limited by my health and care needs. I want a life, not a service

CLENTON FARQUHARSON MBE,
CHAIR OF THINK LOCAL ACT PERSONAL

The Big TAPPI Insights

1. **Person-centred at the heart....**

   rather than starting with what technology is available and what it does, we need to focus on the individual and understand their aspirations, wants, and wishes. Technology should facilitate an individual to achieve their aspirations.

2. **Technology as an enabler....**

   it should work alongside face-to-face activities to enable people to live the life they choose to lead.

3. **Supporting integrated approaches....**

   we should encourage collaboration to breakdown the assumptions and stereotypes that are made about older adults and disabled people that prohibit us from seeing the full potential of the individual.

4. **Creating attractive choices....**

   treating our ageing population as 'consumers' not 'service users', will enable products, services, and systems to be designed so that people want and are attracted to using them. We need technology that supports us to live independently whilst remaining stylish, smart, and part of everyday life.

5. **Tackling digital inequalities....**

   we should tackle digital exclusion at all levels to reduce the inequalities in how people access, use and value technology. There is a specific need for the development of digital skills, not necessarily just for older adults and disabled people, but also for those involved in their lives, including practitioners/those involved in service delivery.

The Panel started with the perspectives of our ageing population in relation to technology, drawing on the lived experiences of people using technology to support their independence and organisations working closely with them to coproduce digital solutions.

Although TAPPI is considering the use of technology across the life-course, we heard that older adults and people with a disability or long-term conditions are more likely to be digitally excluded yet may have the most to gain; much of the technology that already exists is not targeted at older or disabled people.[3]

Sam Mauger, The Third Age Trust's chief executive stated that, as a society, we too often view people through a prism of 'ageism', as highlighted in the UN Global Ageism report.[4] This prevents us from providing technology solutions that suit the individual as we make stereotypical assumptions about people based on their age or disability. We often [incorrectly] assume that because of a person's age or disability they do not want or have the skills to use technology or go online.

Sam Mauger provided us with evidence that, from a random sample of 450,000 U3A members, 95% had internet access and 82% access the internet on most days.

▼ Individual supported with technology by
   TEC services provider, amica24
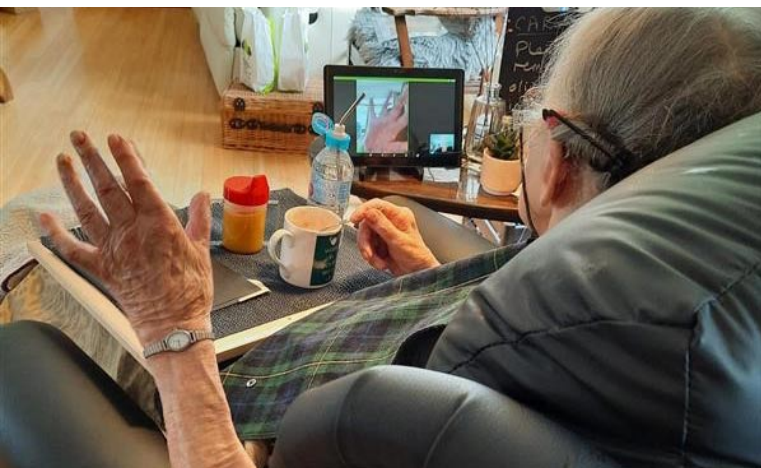
This was supported by Rethink Partners' co-founder, Clare Morris, who shared the following 12 key findings gained from their conversations with older people in Essex[5]:

1. **We are more tech savvy than we realise**

2. **We all underestimate how tech savvy we are**

3. **We trust our peers**

4. **We are happy to learn from young people (not sons and daughters)**

5. **We trust professionals – to a point**

6. **We want to have fun**

7. **We don't want to be targeted as 'old people'**

8. **We want to connect with our loved ones**

9. **Some of us have a competitive streak**

10. **Not every community has a 'Nigel'[6]**

11. **We like tablets (especially iPads)**

12. **We don't feel like we are doing it 'right', but nobody does**

Furthermore, Katie Thorn from Digital Social Care drew attention to an Office for National Statistics (ONS) report[7] that shows that only 54% of adults aged 75 years and over and 81% of disabled adults were internet users.

This conflicting data highlights the diversity of experience amongst older and disabled people and that digital inequality is not synonymous with older age, as well as emphasising the 'digital divide', a division that TAPPI should explore how to close.

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3   Aging in Place Technology Watch. (2018) *Technology for Aging in Place*

4   World Health Organization (2021) *Global report on ageism*

5   Carson, I & Morris, C (2018). Digital Boomers: A Theory of Change for Older People, Technology and Indpendent Living

6   A 'Nigel' is the name we have given to the son or neighbour (we only heard of male ones) who is the go-to person in a community to resolve queries about tech.

7   ONS Report on Internet users, UK (2020)

The ExtraCare Charitable Trust

This is an example of an extra care housing provider seeking to embed assistive and smart technology and digitalisation within their corporate plans.

Through their Knowledge Transfer partnership with the University of West England (UWE) they learnt that a key to success is making sure that technology isn't just an add on.

In practice this meant, introducing two 'innovation apartments' in every new village that showcased smart technology. This gave residents the opportunity to trial technology in real life environments. In turn, this enabled ExtraCare to better understand customer expectations and the impact technology has on residents' lives. As well as enhancing staff technology skills and confidence.

To encourage uptake ExtraCare also embarked on a loan scheme in two villages – a 'smart market' - that aimed to give residents the opportunity to trial devices without the pressure to commit to a purchase.

The innovation apartment at Solihull goes one step further, incorporating a new kitchen and bathroom with all features from their accessible design standard, produced in partnership with Motionspot. It showcases features such as drop-down cupboards in the kitchen, a rise and fall hob, grab rails in the bathroom that can easily be retrofitted or, for example, look like a normal shower rail. Better lighting and contrasts, sensors and smart tech devices demonstrate how residents can continue to live independently or just make life easier.

Find out more:
https://www.extracare.org.uk/newsroom/
news/charity-opens-doors-to-innovation-
apartment-for-stoke-gifford-s-older-people/

Image copyright of ExtraCare Charitable Trust

Sam Mauger also suggested that closing 'the digital divide' and enabling older and disabled people to benefit from technology, requires us to understand people as 'consumers' not 'service users'. As such, it will create technology people want and find easy to use.

We also heard from TLAP's chair, Clenton Farquharson MBE, who - along with many other TAPPI witnesses - believes that a future TAPPI Framework that advocates a collaborative way of working with our ageing population, will help to break down assumptions. He stressed: *"People need to be 'involved' not 'sold'"*.

> *'Older people need to engage with technology companies [...] and to `make a noise` about the kind of developments that would benefit them for which there would be a significant market'*
> -EngAgeNet, 2019[8]

This is considered by the Centre for Ageing Better as 'the missing market'.[9] Whilst not technology specific, their Missing Market report makes a number of TAPPI-relevant recommendations that can be usefully applied by manufacturers and service providers alike. They include:

- manufacturers and product designers should ensure home products are easy-to-use without compromising on aesthetics;

- gathering more detailed consumer insights from over 50s consumers;

- considering the diverse needs of over 50s shoppers throughout the customer journey;

- helping over 50s consumers consider and identify their current and future needs;

- making inclusive design a selling point of products.

The Panel also heard from George MacGinnis, Director of the Healthy Ageing Challenge at UK Research and Innovation, that coproducing solutions will also enable technology for our ageing population to become part of the 'mainstream' market rather than a 'specialism' that is not attractive to older adults or working age adults with a disability. In turn, he pointed out that mainstreaming will also help with scalability and adoption.

Whilst the Panel saw pockets of good practice, it found that collaboration is not happening sufficiently enough. Some of the barriers considered were the cost, length, and number of stakeholders involved and the subsequent impact this would have within a competitive market. The Panel identified that a TAPPI Framework needs to incentivise collaboration and demonstrate the benefit to the individual and the collaborator.

The Panel also noted a University of Stirling's evidence review[10] that provides guidance on how to coproduce solutions to improve the chances of implementing the right technology, in the right way, to meet the desires and needs of older people, as well as delivering benefits for family members and other stakeholders. It makes the following recommendations:

- Identifying the desires, needs and capacity of older people;

- Identifying and introducing possible technology options;

- Using, adapting, and continuing to use technology.

Image copyright of ExtraCare Charitable Trust

8   EnglishAgeNetwork (2019) *Mature conversations on Ageing*, EngAgeNet Publications.
9   Centre for Ageing Better (2021). The Missing Market: How home retailers can better meet the needs of over 50s customers
10   University of Stirling (2021). Ageing well with assistive technology: Coproducing technology solutions with older people

Astraline and Johnnie Johnson Housing (JJH)

JJH is a not – for – profit housing association with properties across the north of England. Astraline is the in-house telecare, monitoring and response service providing support to over 70,000 customers across the UK.

In November 2020, they embarked on a co-designed research project at one of their WiFi flooded schemes at Spey House, Stockport, Greater Manchester, and the Centre for Housing and Planning Research at the University of Cambridge.

Funded by Dunhill Medical Trust, the purpose was to work with a group of residents with varying digital skills to understand how different digital and mobile technologies can enable them to live independently. With the customer at the centre of all that they do and using a variety of tools including pilot groups and personas, they were able to step into the customer's shoes and introduce practical solutions to everyday problems.

A range of devices were selected, individual needs were assessed, and testing took place over several months. Researchers captured their views which were then reviewed to assess the outcomes, noting, amongst many benefits, that residents felt more independent and safer, loved ones felt assured that support was only a call away and the burden on emergency services reduced.

One resident used a smartwatch for the trial and reported that one of the benefits was that it looked like a normal watch but with added functionality. She felt that the watch gave her added security explaining; *"I had a bad fall, and I pressed the button and they got in touch. They checked that I was okay and then called my daughter for me."* The 'smartwatch has also increased the resident's confidence as she commented; *"It has built my confidence up quite a bit…., I go and visit my friend who lives upstairs, I go in the lift."*

Weblink: https://www.astraline.co.uk/

> **"** I had a bad fall, and I pressed the button and they got in touch. They checked that I was okay and then called my daughter for me. It has built my confidence up quite a bit.
>
> RESIDENT

SMART Housing – Innovate Trust

In collaboration with universities, Innovate has been researching ways of using different types of mainstream technology to support people to live independently. Since 2015 they have developed 2 SMART house's that demonstrate and provide a test bed for how mainstream technologies can be used to support people with learning disabilities. They have incorporated a variety of affordable mainstream consumer technology from voice/video activated devices to devices that are controlled using gestures, EEG (Electroenphalogram) and EMG (Electromyography), whilst leveraging the IoT (Internet of Things).

Research found that people's health and wellbeing improved since using the mainstream technologies to support their daily living. They are also looking at ways at creating more affordable solutions that use open-source technologies that empower creatives in designing their own products at a lower cost.

Innovate have been working in collaboration with local housing associations (First Choice Housing) to develop two properties to increase independence and maximise opportunities for adults with a disability.

Innovate were technology partners in delivery of a pioneering net zero carbon property, which has changed how people with a physical disability can remain living at home. Due to the design and development of home people can now live in a purpose-built, energy-efficient adapted property that meets their requirements. The property uses affordable mainstream consumer technology activated through voice assistants, in this case, Amazon Alexa's.

The charity has implemented technology that enables you to see who's at the door – locking it, monitoring movement, turning on a light or appliance, controlling the heating, shutting blinds and controlling other environmental factors. To assist with everyday tasks that may have been seen as a barrier for the individual to safely remain at home.

During the pandemic Innovate has been working on another property in collaboration with a local authority.

"We are committed and driven to make positive social change for adults with disabilities. Working in collaboration to research, shape and deliver the future of housing. Developing in collaboration with First Choice Housing one of the first supported living SMART homes and a second net zero carbon SMART home using mainstream technologies – widening possibilities for greater independence and wellbeing - whilst also ensuring a green, sustainable and adaptable property that meets the individual's needs and requirements, now and into the future."

- Ashley Bale - Digital Innovations Manager (@AshleyBaleUK)

Weblink: https://www.innovate-trust.org.uk/our-work/intelligent-personal-assistants

Image copyright of First Choice Housing Association

We are committed and driven to make positive social change for adults with disabilities. Working in collaboration to research, shape and deliver the future of housing.

ASHLEY BALE - DIGITAL INNOVATIONS MANAGER (@ASHLEYBALEUK)

Mencap Connected Living with Vodafone Business Ventures

The Connected Living digital care service is the result of a partnership between Mencap with Vodafone Business Ventures (the social enterprise division of Vodafone).

It is an innovative scheme that provides greater independence, choice and accessibility to people with a learning disability, enhancing their quality of life.

The project has involved a collaborative effort between people with learning disabilities, support workers and Vodafone to make sure that a product is created that really meets the need of each individual, and helps them in their everyday life.

Technologies, including a range of user friendly, intuitive IoT-enabled devices are installed in Mencap Supported Living homes controlled by a bespoke app, called Vodafone MyLife. Unlike standalone devices including GPS trackers or fall detectors, the MyLife app offers a simple user interface that is integrated and accessible via a single tablet. It gives the people Mencap supports control of their smart devices, while also enabling their support workers to have remote access. In addition, the Vodafone MyLife app allows users to create visual guides for everyday tasks and a host of other features.

As a result, 70% of users reported improvements in confidence, quality of life and independence and 89% of support workers included Connected Living in their support plan.

Weblink: https://www.vodafone.com/business/why-vodafone/vodafone-business-ventures/connected-living
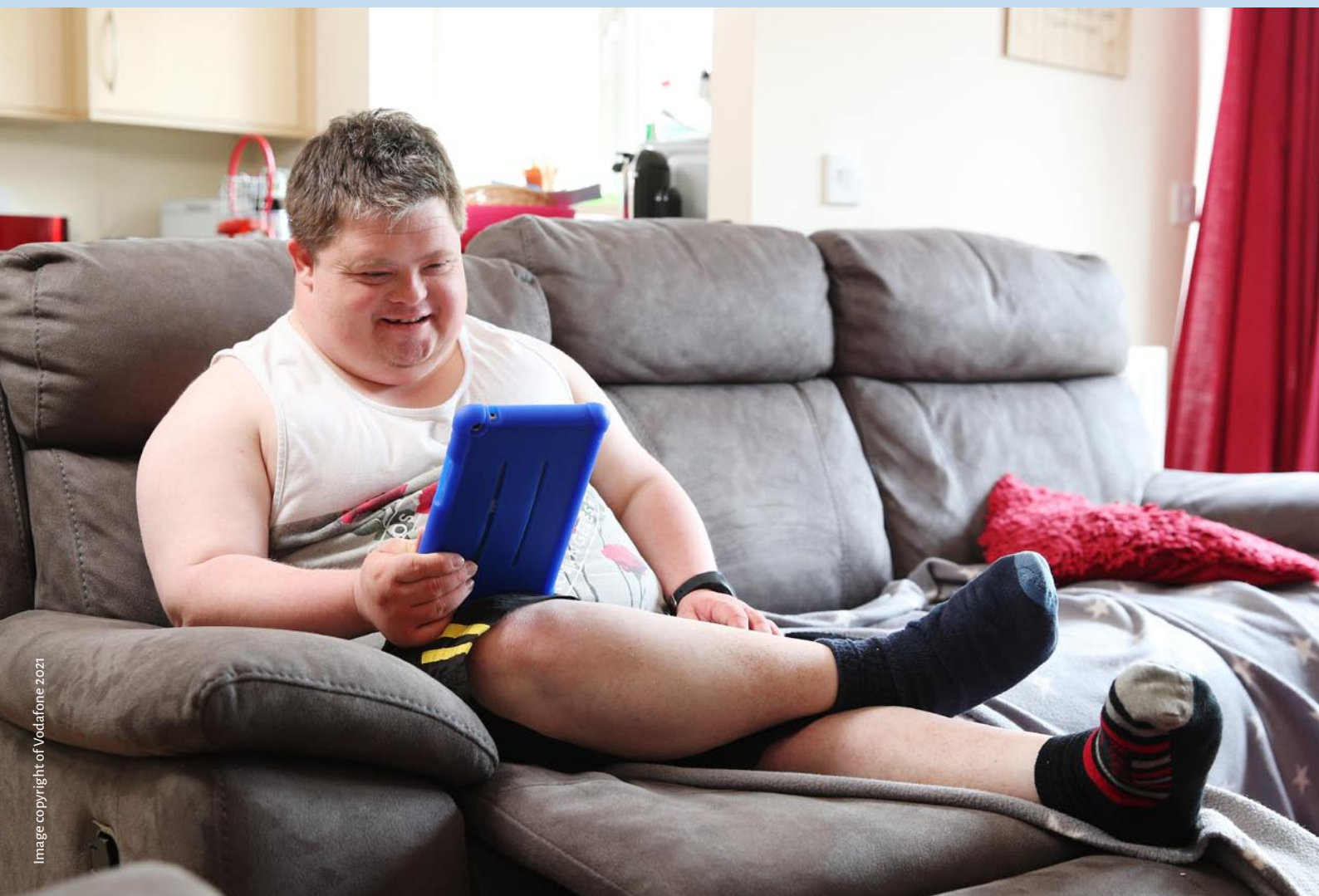
We also heard from researchers at Northumbria University, who outlined important issues about digital exclusion. Dr Gemma Wilson indicated that digital exclusion exists in three forms[11] that are intrinsically linked:

1. Access to technology – meaning both access to products and good connectivity

2. Skills and usage - having the ability, confidence, and digital skills to use technology

3. Tangible outcomes - the extent to which an individual sees value in the use of technology

In particular, the Panel's attention was drawn to the multiple inequalities that predict digital exclusion including ageing and disability. Furthermore, Dr Wilson explained that COVID-19 has exacerbated existing inequalities in relation to digital exclusion.

As referenced above, this has been further highlighted in a recent Centre for Ageing Better report on 'the digital divide.'[12] It found that there is a significant digital divide among 50–70-year-olds, exacerbated by the pandemic.

Overview of Digital Exclusion

01. Access
02. Skills and Usage
03. Tangible outcomes from technology/internet use

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11   Van Deursen, A. & Helsper, E.J. (2015). The third-level digital divide: Who benefits most from being online? In: *Communication and information technologies annual* (pp. 29-52). Emerald Group Publishing Limited.

12   Centre for Ageing Better (2021). COVID-19 and the Digital Divide

CASE STUDY

Good Things Foundation

The Good Things Foundation is a social change charity, helping people to improve their lives through digital through a plethora of different programmes.

One example is Digital Lifeline, an emergency response project delivering devices, data and digital skills support to digitally excluded people with learning disabilities. It's funded by the Department for Digital, Culture, Media & Sport (DCMS) and delivered in partnership with AbilityNet and Digital Unite. The project is also supported by Learning Disability England, the Voluntary Organisations Disability Group, self-advocates and other disability and digital inclusion organisations.

The project benefits from a Digital Lifeline Advisory Group made up of the aforementioned organisations, who ensure the project remains focused on how to best provide opportunities to those who will most benefit.

Through Digital Lifeline, more than 5,500 adults with a learning disability have received a new device, free data and has already or is receiving digital skills support from a local partner.

Weblink: https://www.goodthingsfoundation.org/

The Panel also noted that digital exclusion may be especially risky for some older adults 'preventing them from accessing goods and services and obtaining the social support they may need during the pandemic. Thus, taking into account 'the digital divide' that may exist for disadvantaged older adults deserves attention'.[13] This was echoed by Emma Stone, the Director of Evidence and Engagement at the Good Things Foundation (GTF), who stated we need to *"embed digital inclusion in support for an ageing population because otherwise you will be deepening and widening inequalities in later life."*

> ❝❝ **(We need to) embed digital inclusion in support for an ageing population because otherwise you will be deepening and widening inequalities in later life.**
>
> EMMA STONE, DIRECTOR OF EVIDENCE AND ENGAGEMENT, THE GOOD THINGS FOUNDATION (GTF)

Image copyright of Blackwood

CASE STUDY

One Digital – Age UK

One Digital was a National Lottery Community funded collaborative project between Age UK, Digital Unite, SCVO, Clarion Futures and Citizens Online to deliver better digital skills in the UK through empowering, supporting, and inspiring trusted intermediaries or Digital Champions.

One Digital has delivered a person-centred approach to digital learning amongst older people, tapping into interests and individual goals as a basis for this learning amongst a group without recent experience of learning, and with low levels of confidence around technology.

This has a positive impact, older people who have been supported with digital learning can now face the world post COVID-19 differently to how they may have done a year ago.

Weblink: https://www.ageuk.org.uk/our-impact/programmes/one-digital/

13   Yarker, S., Lang Reinisch, L., Phillipson, C., Doran, P., Lewis, C., Buffel, T., & Goff, M. (2020). COVID-19 and social exclusion: experiences of older people living in areas of multiple deprivation. University of Manchester, Manchester Institute of Collaborative Research on Ageing

The Panel also learned from GTF and other witnesses that a TAPPI Framework needs to emphasise the need for greater digital rights, access and understanding of what it means to be a 'digital citizen'. For example, in Barcelona, Spain, the municipality has adopted a Charter of Citizen Rights.[14]

> "All persons have a right to digital citizenship, understood as a set of rights and obligations as subjects interacting in digital environments and generating legal relations and obligations, especially as regards the responsible use of information and communications technologies." - Barcelona Charter Of Citizens' Rights In The Digital Era

Building on this, GTF's Emma Stone advocated for the development of a 'Minimum Digital Living Standard', building on the 'Minimum Income Standard' methodology. Drawing attention to their recent report[15], she stressed the need to adopt a "minimum digital living standard", pointing out that it would provide a baseline on which to build policy interventions.

Image copyright of Johnnie Johnson Housing

Good Things Foundation, Carnegie UK Trust, the Digital Inclusion Alliance for Wales and Demos are among the organisations calling for improved metrics on digital inclusion and exclusion - metrics which have been shaped by the public, including those who face digital exclusion. As Emma Stone explains: 'We need much better metrics to track progress and monitor the links between digital inclusion and key areas of national social and economic wellbeing - such as health, education, poverty, employment, and financial inclusion. We need a clear benchmark - a Minimum Digital Living Standard informed by the public - of what we need to live well and safely in a digital society.'

The Nuffield Foundation has recently awarded a research grant to support the development of a Minimum Digital Living Standard - taking families with children as the starting point - with potential to evolve this to develop benchmarks for other household types. What is the minimum basket of digital goods, services and skills that a household with children needs to gain an adequate quality of life, including social participation? What are the social, economic and cultural consequences of not having this minimum basket? The project is led by the University of Liverpool, with Loughborough University (building on their established Minimum Income Standard methodology), City University and Good Things Foundation.
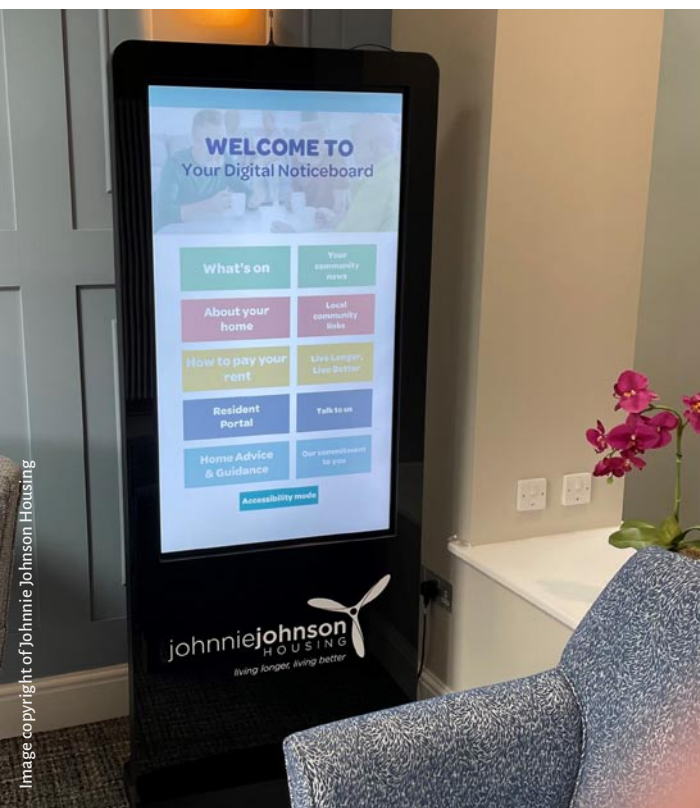
> All persons have a right to digital citizenship, understood as a set of rights and obligations as subjects interacting in digital environments and generating legal relations and obligations, especially as regards the responsible use of information and communications technologies.
>
> BARCELONA CHARTER OF CITIZENS' RIGHTS IN THE DIGITAL ERA

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14   Barcelona Charter Of Citizens' Rights In The Digital Era

15   Good Things Foundation (2020). Blueprint for a 100% Digitally Included UK

Digital Boomers – Rethink Partners

Digital Boomers is a group of pioneering citizens and academic professionals across Essex who are committed to improving digital skills for the health and social care workforce and for the over 55s. The aim is to help older people, as well as those with disabilities to live more independently and be tech confident. It was created by Rethink Partners alongside Essex County Council.

A Digital Buddies scheme to support digital skills development, and a Living Smart Homes pilot project were set up and continue to be run by Council for Voluntary Services Uttlesford (CVSU).

Weblink: https://rethinkpartners.co.uk/

Image copyright of Rethink Partners

DIGITAL BOOMERS
Switched On

Theory of Change: "By 2021, older people in Essex are the most tech confident in the world."

Essex County Council

RETHINK PARTNERS

Create a radical new commissioning model for tech enabled services

Digital Skills for All citizens and professionals confident and capable about technology as a core part of life and work

Technology is a First Line Response for health and care

Our working, care and living environments support a digital first approach

Create spaces and opportunities for people to Explore and Enjoy technology

Essex is a leading destination for innovators and independent living technology in practice

Invest in the community and voluntary sector so they can participate as equal partners

Develop and sustain Digital Boomers as the system delivery vehicle for driving the change

www.rethinkpartners.co.uk

Image copyright of Rethink Partners

Concurrently, Dr Wilson's research at Northumbria University indicated that some people don't want technology to replace face-to-face activities or communication. And, as highlighted in the Big Insights, it was noted that TAPPI should advocate that technology should work alongside a suite of other options that are person-centred – focusing on what an individual wants and needs.

Further to this, the Panel reflected that digital exclusion also exists at all levels across the housing, health, and social care workforce. There was evidence for this from an earlier Appello/Housing LIN survey. It found that 1 in 5 felt they still needed more education on the benefits of digital.[16] Therefore, a future TAPPI Framework should promote digital education across all levels to ensure everyone can benefit from digital technology.

16   Appello & Housing LIN (2017). 'Fast forward to digital care' White paper: why digital tops housing providers' agenda

CASE STUDY

Blackwood Housing Group, Scotland

Blackwood is a Scottish housing association and care provider specialising in homes and care services for people with an independent living need. Co-design and co-creation are embedded into the creation of their products and services, involving customers, their families and staff teams.

For example, the Blackwood House and Design Guide sets a new standard for beautiful, affordable, accessible and connected homes, providing homes that will adapt to tenants needs now and into the future.

Blackwood's CleverCogs™ customisable digital system enables residents to access many of Blackwood's services online using a tablet-based app. As part of the wider Blackwood CleverCogs™ offer, all tenants can have WiFi connectivity in their home, are offered a Blackwood tablet device, are provided with free digital skills training for all levels to get online with confidence and ease as well as the CleverCogs™ Digital System. CleverCogs™ enables emergency alarms, care planning, home automation, communication including family and friends video calls, health and wellbeing advice as well as entertainment functions. CleverCogs™ enables tenants to achieve new levels of independence, promotes choice and control and, because the system is based around a series of tiles onscreen, it can be adapted to the individual needs of the user.

One example is their new development in the Helenvale area of Glasgow. Many of their tenants have moved from residential care to independent living. They receive care and support from Blackwood, as well as the peace of mind that a 24/7 responder service is there to assist at the touch of a button. Staff can video call the tenants, triage the situation and respond as required. The homes achieve new levels of home automation and accessibility including rise and fall kitchen units and worktops, a rail system in the bathroom that make the space adaptable to suit individual needs.

Weblink: https://www.blackwoodgroup.org.uk

Image copyright of Blackwood

02

Building quality and scalable construction/development

> **❝** Whether we are referring to an architect designing one home, or a design and build company developing 100 homes, smart care technology should be a fundamental part of the process. The core elements should be incorporated at the design and build stage, just as foundations are laid before bricks [17]
>
> ADAPTECO

The Big TAPPI Insights

1. **Future-proofing for digital...**
   good quality homes should mean future-proofed, adaptable properties that have the infrastructure for digital readiness at the outset, as well as energy efficiency and features that address climate change.

2. **Championing quality...**
   we need to entrench the importance of adhering to higher quality and accessible building standards, and planning policy should support this to create a level playing field across the housing construction sector.

3. **Creating interoperability...**
   'designing in' interoperability across the construction, building management, and utilisation of technology products and services will ensure better outcomes for our ageing population.

4. **Demonstrating value...**
   we need to make the argument that designing to 'TAPPI principles' is an investment opportunity and highlight the demand and cost benefits. TAPPI needs to call on government to mandate designing to building and quality standards that embed procurement of social value as the norm.

5. **A recognised consumer label...**
   TAPPI should be used as a quality marker or 'kitemark' to provide customer reassurance and market confidence in smart tech in the light of the digital switch over.

17   Adapteco (2021). Housing LIN Blog

The TAPPI Panel heard that the quality of our homes is integral to ensuring our ageing population can live well at home for as long as possible. Building on the HAPPI design principles outlined at the beginning of this report, the Panel understood 'good quality' to mean fully future-proofed and accessible design that is tech-ready, energy efficient with low carbon features that address climate change.

Faithful + Gould's Regional Director and MMC lead, Stephen Wightman, advised the Panel that Modern Methods of Construction (MMC) is an historically underused method of construction that has the potential to achieve what we refer to as 'good quality' above. He pointed out that MMC can create adaptable buildings from durable materials and embed interchangeable technologies and integration of smart technologies. And, as a construction process, he explained that MMC is well suited to delivering products that respond to an individual's needs across the life-course.

However, he also emphasised that although we are starting to see a shift in uptake, influenced by an alignment in government housing targets and policy drivers, there needs to be a recognition of the real value of MMC, especially in relation to 'designing-in' quality from the outset. He suggested that there is future scope for TAPPI to work alongside industry to develop codes that demonstrate future adaptability, accreditation and building warranty to robust performance standards.

+Home – igloo Regeneration

Joint winners of the UK government's Home of 2030 competition, igloo's +Home helps communities to build green, walkable, vibrant neighbourhoods, bypassing traditional housebuilders. Instead of traditional house designs it proposes community-led and self-build that people can design themselves. The homes are simple to build with affordable frames and components, are climate friendly and can be recycled at the end of their lives.

At the heart of the model is the +Home connected platform, a collective database that developers, manufacturers, installers and homeowners can all use in the delivery process.

+Homes are flexible and customisable meaning they can meet every occupier's individual needs during their lifetime and have the infrastructure to provide smart and connected homes.

Weblink: http://www.iglooregeneration. co.uk/2020/12/04/igloo-joint-winner-home-of-2030-competition/

Image copyright of igloo

Image copyright of igloo

Panel members also heard from LIFEstyle by ENGIE's former Director of Retirement Solutions, Paula Broadbent, that for their existing and future customers what is key is having choice and control about where they live. ENGIE's response was to design and build new homes that are versatile, adaptable, and flexible. LIFEstyle builds a shell with internal flexibility; it builds technology into the infrastructure as a means to future-proof the home.

Paula Broadbent stated that a TAPPI Framework that defines good quality design in relation to technology and advocates that adhering to TAPPI principles not only makes business sense but would provide a customer-recognised 'kitemark' that would encourage more housing developers to apply TAPPI principles.

LIFEstyle by ENGIE

The LIFEstyle by ENGIE brand provides retirement living developments, which have been intelligently designed to respond to what people have said they both aspire to and struggle with, in older age.

The homes aim to meet the aspirations of older people today, with homes that are care ready for tomorrow. Intuitive features that are designed into the home along with digital technology that is subtly incorporated to enable independent living. They choose a location with considerable care, to ensure that there are existing amenities in the neighbourhood. The services and on-site amenities provided then compliment those already existing in the location.

Residents have the opportunity to create the perfect home from an extensive range of purpose built house styles, that have been especially designed to meet the needs of people in later life. Exclusively for the over 55's, their communities offer a range of enabling services personalised to individual needs. The service charge is not high, because is covers the basics and customers don't pay for existing amenities existing within the community - simply on a "pay as you go basis" for things they may want such as cleaning or gardening services. This keeps costs manageable and not with a "one size fits all" approach.

A peppercorn ground rent fixed in perpetuity that is not collected, gives customers peace of mind that costs will not spiral out of control. These lifelong homes can be customized from new or very easily adapted at a later date, which avoids major works or more importantly the need to make any critical move in the future. This enables people to remain in the community that they are a part of which creates a far better outcome, than moving home late in life and when people are often at their most vulnerable.

LIFEstyle properties are 'care ready" and intelligently designed; they are built within enabling environments to guarantee owners their home will change easily to meet any increased care need in the future, creating a platform for a healthy, stress free and socially inclusive living experience. The focus of each LIFEstyle development is the community hub which is at the heart of the development and is designed to integrate the wider community. Each hub can be different depending on the needs of individual community in which it is set. Where there is a need locally for a pharmacy, library etc, then the hub has the capacity to create a community-based response. The developments are not gated communities, they are part of a wider community that bridges all age groups through use of intergenerational social initiatives such as a geek café or reading groups for young children.

Weblink: https://lifestyle.engie.co.uk/business-partnering

Smile Homes® by ADS Independent Living Solutions

Smile Homes® are sustainable personalised intelligent homes for independent living; clever enough to help look after the people living in them™.

The elements that make up Smile Homes® means that many of the TAPPI principles are being met. These are permanent homes but with the capability as off-site constructed volumetric modules to be located where they are needed in the community. Speed of manufacture allows them to factory build unique specifications as robust as required, with flexibility to respond to changing needs and ultimately to remove, relocate or remanufacture if required; key sustainability credentials. With green roof, solar panels, a screwpile foundation system in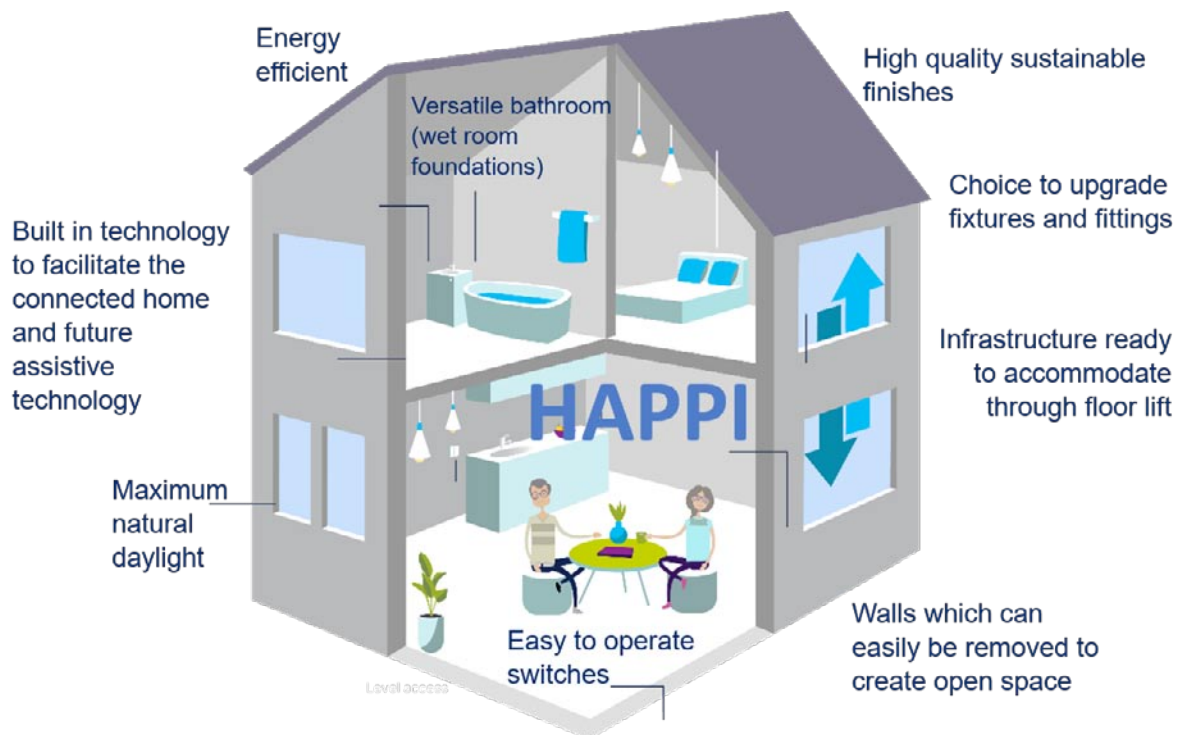stead of concrete and environmental control, these are low-carbon, low impact homes which are high impact in terms of social value.

Built-in technology infrastructure supports personalised technology, agnostically, with flexibility for whatever technology might be needed to assist with the activities of daily living. The Smile Homes® prototype, co-funded by Innovate UK is a demonstration unit and living lab where technology can be tested, and interoperability proven as part of our Smile Homes® delivery system which de-risks the procurement of intelligent homes for independent living.

Weblink: https://www.adsindependentlivingsolutions.org/ or www.smilehomes.org

▼ The Smile Homes® prototype nearing completion

Image copyright of ADS Independent Living Solutions Ltd

Energy efficient

Versatile bathroom (wet room foundations)

High quality sustainable finishes

Built in technology to facilitate the connected home and future assistive technology

Choice to upgrade fixtures and fittings

Infrastructure ready to accommodate through floor lift

Maximum natural daylight

HAPPI

Easy to operate switches

Walls which can easily be removed to create open space

Level access

▲ The ENGIE Interoperable Home

The Panel recognised that a TAPPI Framework should also consider how we adapt our existing housing stock so that it meets 'good quality' standards. Particularly as approximately 80% of the homes we live in today will still be in use in 2050[18], therefore presenting a huge challenge.

In their 2018 report, the Cambridge Centre for Housing and Planning Research (CCHPR) highlighted the challenge of retrofitting existing housing stock for a digital age: 'most new digital tools that are currently being developed for the housing industry, are designed for new build stock. The use of digital records is difficult to apply to existing buildings, and data collection is hindered by a lack of existing information, particularly building safety information.'[19]

Furthermore, in their report, the Institute of Engineering and Technology at Nottingham Trent University argues that a nationwide programme to upgrade the existing housing stock is the only way for the UK to achieve its carbon saving goals.[20]

The CCHPR also suggest that digital tools will need to adapt to the variety in housing type, as well as tackling the inequality between the existing and new build housing stock.[21]

The Panel raised that TAPPI should support the retrofit of existing homes so that they meet the current and future requirements of individuals/households, changing digital needs and energy efficiency.

18 Dowson et. al (2012). Domestic UK retrofit challenge: barriers, incentives and current performance leading into the GD. Energy Policy

19 Burgess, G & Valentine, Q (2018). Housing Digital Built Britain Network. Position Paper 3: How will the UK govern, maintain and manage housing stock in a Digital Built Britain?

20 Nottingham Trent University (2020). Scaling up retrofit 2050

21 Burgess, G & Valentine, Q (2018). Housing Digital Built Britain Network. Position Paper 3: How will the UK govern, maintain and manage housing stock in a Digital Built Britain?

E.ON – Homes for Living

E.ON's Homes for Living programme emerged out of its current Energy Company Obligation activity which has helped to engage with vulnerable people and ensure they have energy efficient homes and are less likely to fall into fuel poverty. The programme is aimed at helping to create safer homes that allow an ageing population to stay in control of their own lives as they get older, helping everyone to remain active, independent, and socially connected in their own homes.

Funded by the UKRI's Healthy Ageing Challenge programme, E.ON is working in collaboration with Invisible Creations® and Newcastle University to offer the home solutions to residents. So, for example, when a trusted professional visits a home to advise on and install energy efficiency measures, they are also able to advise on and install novel home adaptations such as bathroom or door rails, all designed to fit seamlessly into people's homes, encouraging mobility, freedom and supporting their independence.

By offering the additional range of homes solutions, E.ON is able to build on its existing energy efficiency schemes, supporting local residents beyond just their energy needs and offering a whole home solution at the same time, for those who need it. This further demonstrates E.ON's commitment to ensuring people can live a warm, healthy and happy life independently at home for as long as possible.

Weblink: https://www.eonenergy.com/About-eon/media-centre/eon-awarded-government-funding-to-offer-free-home-solutions-to-help-people-stay-warm-and-age-well-at-home/

Image copyright of Invisible Creations®

Panel members were eager to learn what is needed and what the role of TAPPI might be in ensuring that our current and future housing adheres to what the Panel has come to regard as 'good quality'.

Evidence from the Building Research Establishment (BRE) suggested that a future TAPPI Framework should consider the role of government, the push of the consumer, and how to demonstrate the social and economic value of 'good quality' to investors and developers.

The BRE's Gwyn Roberts pointed to the Government's recent Home of 2030 competition[22], a cross-Government initiative that brings together formerly named MHCLG (the Ministry of Housing Communities and Local Government), BEIS (Business, Energy and Industrial Strategy) and DHSC (Department of Health and Social Care), which BRE, RIBA and the Design Council helped deliver, as an example of an effective government intervention created to address challenges and identify solutions and change beyond just delivering the minimum.

The Panel recognised that our future ageing population will have higher expectations and are likely to be more tech-enabled and more demanding, which will drive the 'good quality' agenda; particularly as more people are spending time at home after COVID-19. They foresaw that TAPPI can offer significant advances in the way that technology can futureproof our homes for longer.

22   https://www.homeof2030.com/

Future Homes – The Future Homes Partnership

Future Homes is a development of 66 homes at Newcastle Helix. The project is designed collaboratively between Future Homes Partnership, a community interest company, Karbon Homes and Ryder Architecture who will develop and manage the properties. The co-design process involved multiple stakeholders including residents, local community, demographic representative groups, housing providers and health and social care professionals.

The key objective of the project is to provide homes and a community that are flexible and adaptable to changing needs. A key challenge in meeting this objective is designing to meet current needs, whilst providing the environment to innovate, test and evaluate new ideas and technologies. The primary areas for technological innovation include:

- High performance building envelope to Passivhaus principles;

- Flexible and adaptable layouts with modular services and plug and play interfaces;

- Renewable energy including PV, battery storage, connection to a heat network and high speed broadband;

- Sensors and monitoring connected with the Urban Observatory and the city's data network.

Air quality, acoustic, daylight and overheating will be measured using plug and play sensors with wireless connectivity. Smart monitoring of water, electricity and heating will inform resident behaviours. Activity mapping sensors in the community will provide objective data on how the development is used, anonymised to ensure privacy, dignity and data security.

Weblink: https://www.futurehomesalliance.com/

Image copyright of Ryder Architecture

> ❝ Ageing populations will create new demands for technologies, products, and services, including new care technologies, new housing models and innovative savings products for retirement. We have an obligation to help our older citizens lead independent, fulfilled lives, continuing to contribute to society .

BEIS (2020) GRAND CHALLENGES POLICY PAPER

Gwyn Roberts also highlighted that to encourage financial sector investment in good quality housing it needs to be perceived as a good investment. He suggested that this could be achieved if TAPPI can evidence the financial and social value of designing to TAPPI principles. As mentioned by Lifestyle by ENGIE's then Retirement Solutions Director, Paula Broadbent, a set of voluntary standards are a way of driving the housing market forward; for example, BRE developed the Home Quality Mark to help people measure and drive the market forward.

'We will harness the power of innovation to help meet the needs of an ageing society. The UK population is ageing, as it is across the industrialised world. The prospect of longer lives will require people to plan their careers and retirement differently. Ageing populations will create new demands for technologies, products, and services, including new care technologies, new housing models and innovative savings products for retirement. We have an obligation to help our older citizens lead independent, fulfilled lives, continuing to contribute to society'
- BEIS (2020) Grand Challenges Policy Paper[23]

23   Department for Business, Energy and Industrial Challenge (2021), The Grand Challenges. Policy Paper. Updated January 26th . The Grand Challenge missions – GOV.UK (www.gov.uk)

Inspired Villages

Inspired Villages is an award-winning operator and developer of retirement villages across the UK, with six operational villages, four in construction and an ambitious development pipeline. Inspired Villages uses technology in a variety of ways to support resident quality of life.

The group's latest apartments are fitted with tablets, phone systems and push button devices that are designed to support residents, especially as their care needs develop. The systems enable emergency calls, communication with the village teams, as well as contact with other residents and family.

As part of its drive to improve physical wellbeing, the company invested in trialling tech-driven equipment by eGym in some of their villages. The trial showed a 50% increase in gym usage in villages with eGym equipment compared to those with traditional equipment, as well as outstanding fitness outcomes, with a 35% increase in strength among users of the eGym equipment.

The company's foresight in embracing technology came in particular use during the COVID-19 pandemic; they made best use of existing tech platforms such as Cubigo and Facebook, as well as software like Zoom to keep residents engaged, combat loneliness and improve wellbeing.

Crucially, they are now seeking to develop an ecosystem that ensures the variety of technology offers they provide work seamlessly together and allows for continuous improvements, enabling older adults to make the most of new tech through a platform they understand. Inspired Villages are looking to broaden their tech partnerships with the likes of Mysense and Adapteco to continually develop in this area.

Find out more: www.inspiredvillages.co.uk

▼ Cardio wall at Great Alne Park, Alcester

Image copyright of Inspired Villages

03

Improving design, quality, and standards

> Bricks and mortar, plumbing and electrics are no longer the only key elements to consider in the construction of residential developments. Making sure connectivity via smart technology is incorporated into future design is becoming paramount and if not taken seriously, could have a negative impact on the saleability of future homes [24]
>
> LAWCOMM SOLICITORS (2019)

The Big TAPPI Insights

1. **Technology-enabled housing...**
   we need Government to provide a commitment and make it a mandatory requirement that housing developers engage with tech and digital infrastructure to support an ageing population. (e.g. through Building Regulations, National Planning Policy Framework, Planning Policy Guidance, Design Guides and Codes etc)

2. **Investing in digital...**
   we need Government to encourage investment in a digital infrastructure across all our housing types, from specialist to mainstream, from both developers and our own personal finances, that ensures our current and future accommodation is care and technology ready.

3. **Creating an overarching platform...**
   there is a need for a TAPPI Framework that unites existing standards/frameworks, ensures manufacturer commitment to TAPPI Principles, such as data sharing and interoperability, and is led by consumers. This will generate better consumer confidence and stimulate the market.

4. **Understanding the market...**
   TAPPI needs to focus on using buyer behaviour to drive improvements in design, quality, and standards. This will help to mainstream the adoption of technology and promote healthy ageing earlier in the life course.

5. **Understanding data boundaries...**
   we need to better understand how to use data to deliver personalised care but also be aware of the tensions that arise from data sharing. `Privacy` is considered a core component of the concept of `home` and needs to be protected.

24 LawComm Solicitors (2019). How 'smart technology' needs to be seriously considered in future property development

The Panel explored what 'instruments', i.e. incentives, codes, standards and/or regulation would best suit the further adoption of technology within a housing setting and how a future TAPPI Framework might support this.

One of the Panel members, Andy von Bradsky - the government's former chief architect - explained that the National Design Guide[25] and National Model Design Code[26] sets out clear design parameters to help local authorities and communities decide what good quality design looks like in their area taking into consideration healthier, greener and more distinctive places. At its core the Code states: 'well-designed homes and buildings should be functional, accessible, inclusive and sustainable.'

In relation to technology, he signposted to the accompanying guidance, explaining that it specifies the importance of technology; for example, 'designing in' for greater energy efficiency or minimising embodied energy and renewable energy use. The Code references the importance of materials, new and emerging technologies to help meet Passivhaus standards.

The Panel also heard that the government has consulted on reviewing housing accessibility standards. As reported in the National Disability Strategy[27], it plans to improve the framework to deliver accessible new homes by December 2021 and is commissioning new research to develop the statutory guidance on meeting Building Regulations, covering access to and use of buildings. It was pointed out that it is an ideal opportunity to embed TAPPI in any new accessible housing standards.

25   Ministry of Housing, Communities and Local Government (2021). National Design Guide
26   Ministry of Housing, Communities and Local Government (2021). National Model Design Code
27   HM Government (2021). National Disability Strategy

CASE STUDY

Legrand – The Digital Premium

The digital premium refers to the potential that digital technology has to deliver more cost effective, efficient and reliable services. These key themes of prevention, flexibility and independence apply in numerous ways across housing, health and social care, emergency services and third sectors. The digital premium can be achieved by predicting or preventing issues in the first place, if we take the opportunity to better share the wealth of data which is already collected and held by those organisations who are making important decisions about an individual's welfare, this can be of enormous benefit. And can offer greater flexibility in the delivery of services, thereby giving recipients of these services more independence for longer.

Legrand Assisted Living and Healthcare are delighted to have contributed to the research of this important TAPPI report. The insights gained should very much be taken forward and used to help to integrate digital technology at the heart of all care environments now and in the future, to assist individuals to live as independently as possible in the home environment of their choice. The UK TECs sector is clearly in transition and to unleash the digital premium we need to make that leap. Whether it be to maintain the integrity and security of an existing service or platform or for the integration of new services we all need to have a plan and to execute that plan to transition from an analogue to a new digital world.

Weblink: https://www.legrand.co.uk/products/assisted-living-and-monitoring/

The Panel heard from George MacGinnis, Challenge Director, Healthy Ageing at UK Research and Innovation (UKRI) who emphasised that buyer behaviour rather than standards is a key driving force for change. He reiterated that technology for our ageing population is now being driven by wider consumer markets rather than specialist age-related needs. It is UKRI's experience that offering an experience that 'delights' is key to technology uptake across all ages.

He also suggested that this creates an opportunity for technology to support healthy ageing earlier in the life-course. As a result, he recommended that TAPPI should understand how to market to and influence people to adopt such technologies before they need it.

Furthermore, we heard that the housing market is the least consumer-demand driven market there is. George MacGinnis suggested that there is an urgent need to incentivise, regulate and influence the behaviour of house builders, something that a TAPPI Framework could deliver. He shared that whilst on their own, standards are not a panacea, they can be an enabler for scaling up. Indeed, in some cases, propriety solutions are preferred over standards in business models because whilst standards might fix a capability, they can prevent innovation. Therefore, the Panel considered that TAPPI needs to utilise 'buyer behaviour' to influence the industries driving the standards.

Panel members took evidence from Peter Kerly, Managing Director at everon™. He expressed the view that a lack of infrastructure is stifling innovation in the current assistive technology market and causing market entrants to disappear in the UK.

Image copyright of Blackwood

What does a lack of infrastructure mean? With the 2025 digital switchover deadline looming, he drew attention to a range of customer, technical, service and systems issues including:

- a lack of customer awareness across a range of housing settings;

- poor intelligence into the scale of impact on housing, social care and health economies and assessing associated risks;

- a focus of reactive not proactive models of technology;

- closed protocols – no commitment to data sharing or interoperability;

- poor health integration (hardware and data);

- failing cable networks;

- one size fits all approach to personal care;

- lack of understanding of the required upgrade works.

Peter Kerly advocated that there is a need for a TAPPI Framework that is driven by the digital switchover that helps to establish a digital infrastructure and makes addressing the issues above mandatory. He called for a TAPPI Framework that can unite existing standards and frameworks such as the TSA's TEC Quality Standards, the Social Care Alarm Internet Protocol (SCAIP) or NowIP (BS 8521-2:2020). Doing so would give better consumer confidence and stimulate the market.

He went on to explain that everon™ encompasses some of the proposed TAPPI principles already, its technologies are built for the user, providing a bespoke healthcare solution around them and their individual care needs.

To achieve this, everon™ has strived to ensure its systems are future-proofed and interoperable. Through open Application Programming Interfaces (APIs), they can be seamlessly integrated with third party systems and devices, including all major control centres and legacy equipment.

He pointed out that the benefit of this approach is that it enables everon™ to connect its customers and partners to a world of possibilities where they can exchange data and combine expertise. He stressed that everon™'s solutions are empowering its partners to deliver a personal, well informed healthcare service, to those in their care.

everon™

everon™ has been working in partnership with Clarion Housing, the UK's largest housing association and has recently been appointed as its sole provider of digital telecare and telehealth solutions.

everon™'s unique ability to integrate and deliver interoperable solutions that are flexible and tailored made have ensured it can provide the

infrastructure and digital capacity to support Clarion's large and diverse resident population.

So far, they have upgraded 20 grouped living schemes to everon™'s wireless digital call system and are about to embark on a project to upgrade the remaining 200 over the next 3 years.

Weblink: https://everon.net/

Similarly, Appello's Chief Executive Tim Barclay, stated that establishing formal guidance and standards around the use of technology will bridge the existing knowledge gap, particularly within supported housing environments. He shared that currently there are significant proportions of the market still investing in technology that has a short lifespan; there needs to be minimum standards to ensure investment in solutions that will support the next generation of customers.

Image copyright of Appello

The TEC in Housing Charter - Scottish Federation of Housing Associations (SFHA)

The Technology Enabled Care in Housing (TECH) Charter is a framework for Scottish housing providers based on 7 commitments. Pledges include commitments to being outcomes and solution focussed, engaging with the customer, working in partnership, service redesign, preventative analytics, supporting the workforce, and getting the infrastructure right.

The Charter is a keystone of the Technology Enabled Care in Housing (TECH) programme, a Scottish Government funded programme of work hosted by the Scottish Federation of Housing Associations (SFHA) bringing housing, health and care together. The programme is designed to support a holistic approach to the integration of customer facing digital technologies into quality, cost effective, care and support services where customer outcomes are improved. This directly aligns with TAPPI.

Housing providers are supported to use the TECH Charter as a tool to assess where they are on their journey; to capture achievements and consider aspirations for the future. On sign up to the Charter organisations are invited to be part of a Scotland wide TECH Community where they are supported to achieve their goals through access to subject matter experts, peer support, funding & learning opportunities as well as opportunities to collaborate on projects.

A comprehensive repository of resources has been collated based on each pledge area to further support providers goals.

The Charter has been endorsed by all Scottish housing bodies and has been used to structure the recently published Digital Telecare in Housing pathway.

Find out more about the TECH Charter including its application in a range of Case Studies at https://techousing.co.uk/

Rose Gilroy, Professor of Ageing, Policy & Planning at Newcastle University, reminded the Panel that investment in housing that is accessible, adaptable, affordable, and well located is the most important contribution that any society can make to living well. Whilst technology has an increasing role to play in this, it is not 'a silver bullet'. She pointed out that we need to get the housing right first.

Professor Gilroy also suggested that a big challenge for TAPPI is not only how we persuade mainstream developers to invest in housing with the digital infrastructure to enable us to live and grow old in place, but how we encourage investment in our own homes. The latter becomes particularly challenging

as the Good Home Inquiry survey by the Centre for Ageing Better found that half of over 50s who want home renovations are 'unable to afford' them.[28]

A Centre for Ageing Better blog ahead of the launch of Good Home Inquiry report[29] noted: 'For individuals and households, affordability is a key challenge — particularly for those on lower incomes, people aged over 65, people who are unemployed and disabled people. Data poverty is an ongoing issue that can prevent people from accessing the services they need, connecting with others, or carrying out vital activities like applying for jobs.'[30] As a result, the Panel suggested that TAPPI should therefore seek to address financial inequalities and seek to create a level playing field when it comes to accessing technology.

CASE STUDY

Anchor Knowledge Transfer Partnership

A two-year Knowledge Transfer Partnership between Newcastle University and Anchor explored the willingness of residents to engage further with home based digital technology.

The study suggests that voice-activated technology could be a positive step given its simplicity of use for people of different abilities including both those who do not or cannot use a mobile phone. This cost-effective approach of using readily available systems such as Alexa potentially increases connectivity with staff and reduces isolation.

Further phone-based interviews during the Covid-19 lockdown suggested that family and peer support was critical in supporting older people to engage with technology for the first time. This raises interesting issues of how best to promote confident engagement with technology.

The testing of a new digital offer across the stock was halted due to Covid 19 restrictions but going forward Anchor are committed to undertaking a pilot.

28   The Good Home Inquiry (2021). Home Improvement Survey

29   The Good Home Inquiry (2021). Good Homes for All: A proposal to fix England's housing

30   Rogan. A (2021). A good home must be a digitally connected home

The Panel were advised that Government must create the right regulatory environment to stimulate investment in digital infrastructure. It was indicated that whilst there are pockets of local planning and housing authorities engaging in dialogue around the potential benefits of technology for our ageing population, such as Essex County Council[31], Manchester City Council and Liverpool City Council (see case study in Chapter 4), in general this is limited. Ultimately, it was suggested that we need the National Planning Policy Framework and Planning Practice Guidance to provide a nationwide commitment and mandatory requirement that developers engage with technology and a digital infrastructure to support an ageing population.

> 'We need accommodation that is care and technology ready; that is, level-access homes which have stairs wide enough for stairlifts and wheelchairs, rooms wide enough so a carer can work on each side of the bed, bigger and lower windows, and the facilities to have tele-health and tele-care installed at a moment's notice. Not everyone will need everything; some won't need any, but we need homes that can accommodate with minor modifications, a vast range of physical and sensory needs.' (Manchester City Council, undated: 18)[32]

The All-Party Parliamentary Group for Assistive Technology Smart Homes and Independent Living Commission shared that: 'despite advances in technology, inclusive housing standards and service models for care and support, the real world needs and aspirations of older and disabled people still are too often overlooked in the designs of homes, products and services. The TAPPI Framework will be invaluable in providing a clear vision of how the health and social care, housing and technology sectors can work with older and disabled to ensure everyone can lead independent, healthy and socially fulfilling lives.'

The Inquiry also received evidence to suggest tensions around the development of the smart home, data collection and privacy. A Smart Home Industry Report for Future Homes Alliance indicates that, 'issues of privacy are a key concern for this market as `privacy` can be considered a core quality of the concept of `home`. The increased amount of data that smart home devices produce raises issues of fairness, responsibility and accountability for users and manufacturers'.[33] At the same time, data collection is key to developing proactive and personalised models of technology. The Panel concluded that a future TAPPI Framework must address this and suggest appropriate regulation around this.

Images copyright of Appello

31   Hillier, G and Rank, S (2021). Emerging and developing work to digitally enable care across the East

32   Manchester City Council (nd) Living Longer, Living Better Housing for an age-friendly Manchester, Strategy Statement 2014–20

33   Hetherington, R. (2019) Smart Home Industry Report for Future Homes Alliance, Newcastle, NICA

Appello Cloud Services

Appello Cloud Services, finalist in the 2021 Cloud Excellence awards, provide a suite of applications for delivering Technology Enabled Care (TEC). From CareNet, a digital monitoring platform for emergency contact centres, to AppelloHQ which provides housing staff with access to customer and equipment data remotely. These applications are hosted in the cloud to offer greater access, insight and flexibility.

A digital transformation strategy is at the forefront of many organisations' minds for future growth and greater customer experience. They see cloud as one of many cogs in the digital transformation wheel. By hosting applications such as a monitoring centre in the cloud, and managing the data drawn from field technology in the cloud, the capabilities and possibilities for TEC expand exponentially.

Cloud has transformed many industries, in fact, in 2018, research undertaken by McKinsey identified cloud-based services as the second most adopted technology in successful digital transformations, only behind traditional internet services. They believe a cloud approach needs to be a consideration amongst housing and care providers embracing digital Technology Enabled Care.

TAPPI can be the driver to providing greater education around cloud through highlighting best practices and case studies. Furthermore, TAPPI has the potential deliver guiding principles to support organisations embracing cloud as part of a wider digital transformation.

Weblink: https://appello.co.uk/cloud_services/

Image copyright of Appello

04

Delivering better housing, health and social care outcomes

> "The potential exists to use digital technology to integrate the worlds of housing, health and social care to create a more holistic system that eases the pressure on overburdened services and improves the lives of some of society's most vulnerable members [34]
>
> LEGRAND

The Big TAPPI Insights

1. **Creating the desire...**
   TAPPI needs to create a system where people and professionals use, trust and love technology. A system that normalises technology as a key part of a preventative model across health and social care.

2. **Making an impact...**
   we need to better evidence how preventative technologies and digital infrastructures are not only a cost or care efficiency saving but also enable our ageing population to live healthy and independent lives.

3. **Driving integration...**
   what we need is the funding and the agreements at a local level to enable housing, health and social care to better embrace more integrated technological approaches, working alongside tech providers to make sure that people receive the right solution for them.

4. **Informing decision-making...**
   incorporating a 'tech strategy' that follows TAPPI principles should be a core part of any project across the housing, health and social care sectors.

5. **Digital leadership...**
   TAPPI needs to champion digital leadership at all levels.

34 Good Governance Institute & Legrand (2020). Unleashing the Digital Premium

At the heart of TAPPI is a drive to create a framework that enables those that use it to deliver better health, housing, and social care outcomes for our ageing population.

The evidence the Panel have gathered indicates that when used properly, technology can be instrumental in supporting people to live healthy, independent lives but that there are several obstacles preventing this from happening on a wider scale.

As mentioned, the Panel heard from Clare Morris, Chief Executive of Rethink Partners, an agency that undertakes transformation work with local authorities, that their experience and research reveal 'a desert' in terms of technology use in the health and care sectors. Summed up by one of their research participants: '*the NHS don't want you to use technology*'.

Furthermore, Legrand's Sales and Marketing Director, Wendy Kendall drew attention to their research findings with the Good Governance Institute: 'Too many health and care organisations still largely rely on paper-based systems - with some reports suggesting just one in ten NHS trusts are fully digitised'[35] Rethink Partners' vision is to move from a place where technology is an afterthought to a system where people, and professionals, use, trust and love technology. They see an opportunity for technology to support independence, prevention and to enhance lives which will benefit the system as a whole.

To deliver better health and wellbeing outcomes, Clare Morris suggests that TAPPI needs to demystify technology, particularly in the workplace. She pointed out that often our personal and professional relationship with technology can be quite different. She explained that there is still considerable poor 'tech literacy' across health and social care and, this poor understanding and skill base, is impeding the way services can be better coordinated and deliver better outcomes. She stated: "*We need to stop using jargon and focus on the social impact and value of technology.*"

In the light of the above, a TAPPI Framework would therefore need to champion digital leadership at all levels; our current challenge is that leaders are not 'digital natives'.

35   Good Governance Institute & Legrand (2020). Unleashing the Digital Premium

Digital Fight Club – Rethink Partners

Rethink Partners, a leading transformation organisation that helps to facilitate the adoption of digital technology in the public sector, has launched a digital movement in response to the government's white paper on digital care during the pandemic.

Digital Fight Club has been launched to create conversation around existing policies and stimulate change following the COVID-19 pandemic.

During the pandemic, Rethink Partners played a pivotal role in the UK's fastest adoption and roll out of digital technology in the care sector in its partnership with Essex, Suffolk and Kent County Councils and Alcove. The collaboration meant 5,000 carephones were made available to families and health professionals to keep in touch with loved ones, when face to face contact wasn't available.

It is hoped by encouraging discussion and debate in other public sector organisations, these case studies will demonstrate how important technology can be to make a positive difference. Care tech will be at the forefront of innovative care in the future.

By launching Digital Fight Club, Rethink Partners' founders Clare Morris and Irene Carson are hoping to create a network of Digital Care champions across the UK to begin making a real change to the way care is provided.

Earlier this year, Rethink Partners was commissioned by the LGA (Local Government Association) to develop and deliver a Care Technology Support Programme for councils.[36]

The aim was to deliver a series of connected interventions that will ultimately create momentum and shift the way organisations think about care technology, equipping them with the tools, capability, and mindset to deliver this ambitious agenda.[37]

Weblink: https://rethinkpartners.co.uk/

Image copyright of Rethink Partners

An influential ADASS and TSA Commission[38] also identified that not enough local authorities or care providers are using available technology within social care to keep people safe, happy and healthy at home. Whilst it found pockets of best practice, its' report concluded that projects are rarely joined up and turned into intelligence to prevent people reaching a crisis. The Commission is calling on Government to fund a two-year programme of 10 social care innovation projects to begin the process of normalising the use of digital within social care.

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36   https://www.local.gov.uk/our-support/our-improvement-offer/care-and-health-improvement/informatics/care-technology-support
37   Thorn, K (2021). Why the public sector needs to rethink its approach to technology
38   ADASS & TSA (2021). Exploring How Technology Can Be Truly Integrated Into Adult Social Care

In this Sanctuary Supported Living scheme, residents were closely involved in the design of the both the building and all the technology integrated in it. The picture shows one of the residents and the scheme manager.

> If we are going to meaningfully support people to have a life and not just a service then we have to holistically think about how we build and design our environments and use technology. TAPPI brings many of these elements together for consideration succinctly together, which is essential to move forwards.

HANNAH GILL, DIGITAL AND LEADERSHIP DEVELOPMENT, LOCAL GOVERNMENT ASSOCIATION

CASE STUDY

The Hubble Project – Digital Innovation Hubs

The National Care Forum-led The Hubble Project[39] is an example of a programme that helps care providers to understand the benefits of technology, how to build a business case for investment, and how to successfully introduce, use and evaluate technology. It illustrates the importance of shared learning and showcase events in enhancing professionals' digital knowledge.

Based on a series of virtual visits to three innovative care providers, the Hubble Project published a series of films, information packs, templates and guides. Senior leaders, managers, care staff and family carers share their experiences of planning, implementing and using technology.

The Hubble Project demonstrates the value of investing in technology for the long term. The tech that was showcased clearly benefits people who use services, care workers, management and leaders.

Weblink: https://www.nationalcareforum.org.uk/projects/the-hubble-project-digital-innovation-hubs/

39   https://www.digitalsocialcare.co.uk/social-care-technology/the-hubble-project/

Lauren Walker, the Royal College of Occupational Therapy's professional advisor on housing, stated that Occupational Therapists (OTs) have the necessary assessment skills to identify personalised approaches and recommend suitable technological solutions, that would deliver positive outcomes for our ageing population. However, the fractured and often siloed funding and investment streams for technology creates a barrier. She stated: *"We have a postcode lottery, where many professionals and users are not aware of the routes to access technology, nor are they familiar with technological solutions that are available to support their patients or clients."*

Therefore, TAPPI needs to explore ways to enable OTs and other social care workforce to better embrace technological approaches. It should encourage a more joined-up approach to funding that is better understood by the workforce as well as fostering better collaboration and multi-disciplinary working between TEC teams to gain insights to understand what the needs of the local population are, help facilitate the coordination of care and support, enable the personalisation of services to ensure patients/clients have greater choice and control.

She also outlined that there is a real opportunity to better embed technological solutions, along with community equipment and home adaptations, as part of hospital discharge arrangements in the shape of the Discharge to Assess (D2A) agenda. She drew attention to the outcomes that can be achieved supporting rehabilitation and recovery following the transfer of care back home, as referenced in the RCOT publication, Adaptations without Delay.[40]

40   Royal College of Occupational Therapist (2019). Adaptations Without Delay

Tunstall Healthcare

Tunstall has a strong heritage of innovation in developing technology solutions which support independence and enable people to live life to the full. As the UK continues its transition to a fully digital communications infrastructure, the opportunities to use technology to connect people, enable integrated care provision and empower individuals to manage their own health and wellbeing are greater than ever.

TAPPI brings together a wide range of stakeholders, together with a wealth of insight and evidence to inform and facilitate future collaboration, with a focus on enhancing quality of life.

Technology will continue to advance exponentially. Technology Enabled Care Services (TECS) in particular have already developed from just responding to crises to being able to provide more preventative and proactive support. Tunstall's next generation of solutions, Tunstall Cognitive Care™, combines data-driven insights from multiple sources to create an intuitive and highly personalised care model that enables a more predictive approach.

The pandemic has in many cases hastened the adoption of technology by both users and providers; TAPPI can help reshape our housing and care services in post-COVID world to make the most of a more digital future.

Weblink: https://www.tunstall.co.uk/our-solutions/tunstall-cognitive-care/

Images copyright of Tunstall Healthcare (UK) Ltd

Katie Thorn, the Project Lead at Digital Social Care, also highlighted a lack (or possibly a perceived lack) of data or evidence prevents decision making around technology at a systems level. She suggested that to deliver better housing, health and wellbeing outcomes we need a better understanding and evidence base on the impact of preventative and predictive technologies in the short, medium and long term has on the need for direct social care interventions and support – including consumer led/mainstream technologies.

Furthermore, a recent ADASS discussion paper, *The future of data-driven social care: How can we harness information to care more proactively?*[41] focused on the need to utilise data much more effectively within the social and health care system.

Katie Thorn suggested that such evidence should inform a TAPPI Framework, capturing data and use outcome metrics that have been co-produced with users of technology as good indicators of the positive impacts of technology.

41   ADASS (2021). The future of data-driven social care: How can we harness information to care more proactively?

Delta Wellbeing, Wales

The Delta CONNECT project transforms how social care is delivered, implementing a new model of self-help and pro-active care. It offers flexible support packages tailored towards an individual's specific needs to improve wellbeing, assist independent living for longer and reduce demands on long-term or acute health and social care.

Focusing on supporting prevention and wellbeing through a technological and digital approach, CONNECT provides a wrap-around service including wellbeing calls, digital support, Technology Enabled Care (TEC) packages, keyworker support, wellbeing plans and access to a 24/7 Community Response.

TEC has moved from a reactive to more pro-active service where data trends can be used to predict a client's health. Through TEC and information sharing, this enables clients to remain safer at home and supports early hospital discharges. This approach can help identify a potential crisis, ensuring the right help is provided at the right time.

Weblink: http://www.deltawellbeing. org.uk/delta-connect/

◄ Mrs J was provided with a lifeline and Digital tablet as part of the CONNECT proactive service being delivered by Delta Wellbeing to maintain her safety at home and connect with her family and friends throughout the Covid pandemic which made such a difference to her life.

The County Councils Network and Tunstall Healthcare have jointly called for a new framework and funding to make assistive technology 'mainstream' in adult social care services, including providing the infrastructure to roll out the practice effectively in rural areas.[42] The Panel were quick to contemplate how this might dovetail with the current Government's 'levelling-up' agenda.

The Panel's attention was also drawn to the growing focus from both local government and the NHS on more community-based care which adopts population health management approaches of prevention and personalisation, often supported by technology-enabled care.[43]

The Panel learned from an unpublished Northumbria University research project 'Flexible Living to Age in Place' the desire amongst older people for Home Management Hubs to integrate technologies than can support people at home.[44] The Panel therefore considered how TAPPI should support the development of homes as digitally-enabled health and wellness monitoring environments that enable individuals to manage their own health and wellbeing. From energy consumption to changing circumstances to meet care and support needs.

42   County Councils Network (2021). Employing Assistive Technology in Adult Social Care

43   Good Governance Institute & Legrand (2020). Unleashing the Digital Premium

44   Northumbria University (2021). Flexible living to Age in Place

The Caring Home – The Smart Home & Buildings Association

The 'Caring Home' is a concept developed by the Smart Home & Buildings Association (SH&BA). It refers to a home, whether retrofitted or new-build, that supports wellbeing and promotes self-care whilst at the same time providing the facility for delivering community care and hospital-at-home care.

The basic requirement of the Caring Home is a robust telecommunications infrastructure referred to as the Home Area Network (HAN).

In broad terms SH&BA have assumed that needs increase with age and have divided these needs into four categories viz. Community Cohesion, Lifestyle, Health Maintenance, and Care & Assisted Living.

Therefore, SH&BA has suggested 4 different sensor packages that could be provided to the homeowner or resident interfaced to the HAN to support their wellbeing at different stages of their life and the benefits to them of doing this.

Once the HAN has been installed the number of packages connected can be increased to cater for the changing needs and the aspirations of the resident or homeowner.

In the Community cohesion, Lifestyle and, to an extent, the Health Maintenance categories these packages would be available from multiple retail outlets whilst Care and Assisted Living packages because they include an element of professional care service would be available "on prescription".

SH&BA advocate that all homes in the UK should be upgraded to the Caring Home standard. This would help address the current lack of capacity in the statutory services by building more resilient communities.

Weblink: www.shaba.eu

▼ Future Homes development at Newcastle Helix

Image copyright of Ryder Architecture

Liverpool 5G Create Programme

Liverpool 5G Create delivers a ubiquitous 5G high speed private network that provides free connectivity for Health, Social Services and Education services. The main aim is to address digital poverty and help lessen the health inequalities in the city, as well as showcasing Liverpool as a centre for high tech 5G innovation and encouraging companies to be based in the city.

By providing free, reliable connectivity - a key barrier to the adoption of technology in public services - the project demonstrates the benefits of affordable connectivity to those for whom data charges and current connectivity costs are prohibitive, whilst reducing costs and saving clinician time for stretched healthcare services like the NHS.

The health, social care and education applications have measurable social benefits, with Use Cases including remote GP consultations, a device to diagnose and monitor pressure ulcers, telehealth and telecare sensors that help people stay independent longer in their own home, whilst reducing costly home visits from healthcare providers. The 5G Test bed and Trial is also trialling novel technology that can only be provided with 5G in the Haptic Hug vest, a wearable vest that gives virtual hugs by physically reproducing the pressure felt on the chest and back. It aims to help connect isolated older people with family and friends who may live some distance away.

Find out more: https://uk5g.org/discover/testbeds-and-trials/liverpool-5g-create/

Liverpool 5G Create: Connecting Health and Social Care

Technical Solution
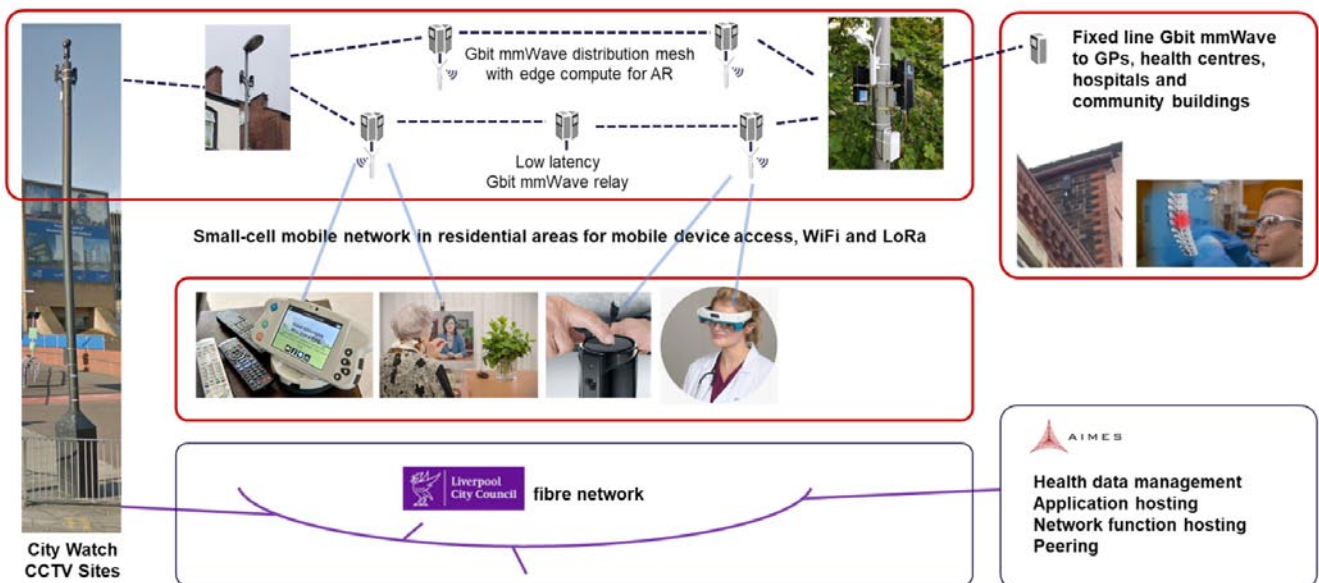
The Panel also noted a recent government announcement of plans to publish new guidance for local authorities in England on effective delivery of the £573 million Disabled Facilities Grant (DFG).[45] The Panel expressed the need to better utilise DFGs to provide technology solutions that enable people to live well at home. It saw the opportunity for a means-tested Technology Facilities Grant that could give people better access to tech that supports their independence at home.

The Panel also observed the Government's commitment in the National Disability Strategy to develop a new Centre for Assistive and Accessible Technology and considered that the Big TAPPI Insights and a proposed TAPPI Framework could dovetail with the Centre's stated objectives of:

- acting as a central source of evidence and expertise that supports local assistive and accessible technology services to better assess and meet peoples' needs and keep pace with technological innovations;

- piloting and helping to scale new models of delivering technology in a more joined-up, cost-effective and user-friendly way including exploring a 'lifelong' provision model;

- ensuring more effective awareness raising, training and support for disabled people to use the technology, to maximise its potential to improve lives, and;

- encouraging the technology sector to work with disabled people when developing new products — improving design and usability for all consumers.

The Panel was also pleased to see the recent commitment to expand the use of digital technology in social care that is expected to lead to £127m worth of benefits, from NHS Digital's Social Care Programme.[46] It hopes that the TAPPI principles will have a role to play in achieving the benefits.

The findings from the TAPPI report will be crucial to transform our social services as we develop new models of care with a digital offer at the core with other services wrapped around.

ANN WILLIAMS, COMMISSIONING & CONTRACTS MANAGER, LIVERPOOL CITY COUNCIL

▲ Individual supported with technology by TEC services provider, amica24

45   National Disability Strategy (2021)

46   NHS Digital (2021). Digital revolution in social care to bring £127m of future improvements

Alcuris and Radius Connect24 – Alcuris's Memo Hub®

Technology-enabled care providers, Alcuris and Radius Connect24 are working together using Alcuris's Memo Hub® suite providing next generation telecare which shifts the traditional reactive alarm focus to one that is proactive, preventative, data driven and delivers better outcomes for users and their families.

Memo is a digital telecare platform that puts the individual and family at the centre and aims to provide unobtrusive home monitoring. It uses wireless sensors to monitor day-to-day activity around the house and enables the user and family members to set alarms and notifications to give peace of mind. With a focus on expanding the circle of care and prevention the Memo Hub suite can help people remain independent and reduce demand for formal health and social care.

By putting relevant information into the hands of carers and families of people needing support, Memo can reduce carer anxiety and increase the opportunities to ensure a minor event does not become a crisis.

For care providers, insight derived from data will improve planning, ensuring optimum care is provided while at the same time providing more personalised services to users.

Weblink: https://www.tsa-voice.org.uk/news_and_views/tsa-member-news/alcuris-and-radius-connect24-partner-to-deliver-next-ge

▼   Trudy lives in a supported living setting and she uses 24/7 Grid, a visual planning tool to choose how her personal budget is spent each week

> TAPPI is an important place to share learning and experience in using technology and helps to create a framework that all providers can engage with and help to build effective services using new technologies that have demonstrable impacts on the lives of older people.

ORBIT

Orbit

Over the last three years Orbit has been working to develop their support and service to their customers by adapting and using new technologies to enable older people to live independently and safely, maintaining their engagement with their local communities.

Orbit have seen the 2025 digital switchover as a real opportunity to deliver new services and provide a modern and effective service. They have already replaced the old analogue warden call systems in 19 of their retirement housing schemes with the Appello digital system, investing in the properties through installing new digital wiring and the full Appello system, introducing many residents to tablet technology for the first time. Safety has been the main driver, installing an easy-to-use system that significantly improves the connectivity for people in their own homes. Being able to have multiple calls going through to Careline at once, with immediate connections has had real benefits to residents, knowing they can get help quickly, with better quality sound on the calls.

Some of the best outcomes have come through the additional benefits derived from the system. During the Covid lockdown, the ability to make video calls between apartments really came into its own, helping people to maintain friendships and make new connections with other residents, keeping the sense of community despite physically being apart due to the restrictions in place. At every scheme using the system people are making more social calls to each other and taking advantage of the different services provided. The next step is to add in their online portal so people can use the warden call tablet to access their rent account, book a repair or contact our central services.

In addition to the service improvements, they are also starting to use the data generated more effectively. In Autumn 2021, will see the start of a research project with University of Sussex and Appello into the environmental and social impact of digital technologies. Once started on this, the plans is to then use other assistive technologies to build their service offer and provide greater support to people living in our properties to help them maintain their independence.

TAPPI is an important place to share learning and experience in using technology and helps to create a framework that all providers can engage with and help to build effective services using new technologies that have demonstrable impacts on the lives of older people. We want to support the development of TAPPI and continue sharing our experiences and help lead the way in transforming services.

Weblink: https://www.orbit.org.uk/

Conclusion – defining moment

The TAPPI Inquiry – and this scoping review - has exposed the need for a transformational Framework to support us all to embrace technology and better understand its potential to support us to live independent, happy, and healthy lives.

The case studies showcased many excellent and innovative ways in which organisations are exploring how to best use technology but what is now needed is a Framework that can help commissioners, suppliers, consumers to select and purchase useful, attractive, good value and fit for purpose technology.

The Panel has distilled the evidence into a number of overarching insights and principles as follows:

Overarching Insights

1. **Supporting wellness...**

   recognising that technology is omnipresent in society will enable us to accept its value and help us to shape how it can be better utilised to enable people to live fulfilled and healthy lives.

2. **Promoting independence...**

   good quality should mean that across the housing, health and social care sectors digital infrastructures are in place to support independent living.

3. **Facilitating prevention...**

   we need to move to a system whereby technology is recognised as a key part of a preventative model across housing, health, and social care.

4. **Reducing inequalities...**

   the creation of a Minimum Digital Living Standard will embed digital inclusion and improved digital skills across all sectors and at all levels. This will reduce the inequalities in how people access, use and value technology and ensure we all understand the benefit of digitalisation.

The TAPPI principles

The TAPPI Panel Members have produced a set of overarching TAPPI principles that they believe should form a future TAPPI Framework:

Adaptable

able to adapt to changing user needs and technological advances

Co-produced

involving people to co-create solutions to inform how they want to live their lives

Cost-effective

offer value for money and benefit both to individuals but also to workforces in local housing and care economies

Choice-led

enabling access to more options that meet individual needs and wishes

Interoperable

ability to integrate and work across systems and platforms to meet individuals' diverse needs and aspirations

Inclusive

reduce digital, health, income inequalities to enable active involvement in home, local community or networks

Outcome-focussed

improve health and wellbeing to improve quality of life or maintain independence

Person-centred

Putting the person first to give control over own environment, care and support needs etc

Preventative

focused on prevention rather than reactive models

Quality-focussed

in designing products, systems and services to ensure 'fit for purpose'

Appendix

The TAPPI Inquiry Panel - membership:

The TAPPI Inquiry Panel was made up of leading figures from housing, care, academia, the tech industry and design. They were:

Professor Roy Sandbach OBE FRSC (Chair), former Director of the National Innovation Centre for Ageing, University of Newcastle

Sarah Allport, Head of Communities and Governance, Dunhill Medical Trust (Inquiry Sponsor)

Julia Ashley, Chief Executive, Central & Cecil Housing Association

Lois Beech, Senior Research Officer, Housing LIN & TAPPI Secretariat

Dr Gemma Burgess, Acting Director, University of Cambridge Centre for Housing & Planning Research

Ian Copeman, Business Director, Housing LIN

Clive Gilbert, Policy Manager (Assistive Technology), Policy Connect

Wilhelmina Hoffman, Managing Director, SilviaHemmet, and President, Svenskt Demenscentrum, Sweden

Sharon Houlden, Executive Director of Adult Social Care and Health, Royal Borough of Kingston-upon-Thames, and ADASS tech lead

Ian James/Hannah Gill, Digital and Leadership Development, Local Government Association

Susan Kay, Chief Executive, Dunhill Medical Trust (Inquiry Sponsor)

Sara Keetley, Operations Director, Sanctuary Housing

Jeremy Porteus, Chief Executive, Housing LIN

Alyson Scurfield, Chief Executive, TEC Services Association

Andy Von Bradsky, former Head of Architecture, Ministry of Housing, Communities and Local Government

The TAPPI Panel heard evidence from the following witnesses:

David Adams, Owner, ADS Living Solutions

Ashley Bale, Digital Inclusion & Innovations Manager, Innovate Trust

Tim Barclay, Chief Executive, Appello

Geraldine Begg, Technology Enabled Care in Housing (TECH) Lead, Scottish Federations of Housing Associations

Paula Broadbent, (former) Retirement Solutions Director, LIFEstyle by ENGIE

Francis Burrows, Director of Support and Service Development, Orbit

Charlotte Carpenter, Executive Director Growth & Business Development, Karbon Homes

Martin Coates, Principal Product Manager, Vodafone Business Ventures

Ian Crow, Director, Ryder Architects

Carla Dix, TEC Prevention Strategy
Manager, Delta Wellbeing

Clenton Farquharson MBE, Chair,
Think Local Act Personal

Colin Foskett, Head of Innovation,
Blackwood Housing Association

Professor Rose Gilroy, Professor of Ageing,
Policy & Planning, Newcastle University

Shirley Hall, Head of Research, Innovation and
Customer Insight, The ExtraCare Charitable Trust

Wendy Kendall, Sales & Marketing Director, Legrand

Peter Kerly, Managing Director, everon™

Tom Lord, Chief Operating Officer, Inspired Villages

George MacGinnis, Challenge Director, Healthy
Ageing, UK Research and Innovation

Sam Mauger, Chief Executive, Third Age Trust

Joe McLoughlin, Managing Director of
Astraline, Johnnie Johnson Housing

Kevin McSorley, Head of, Radius Connect24

Clare Morris, Chief Executive, Rethink Partners

John Nordon, Creative Director, igloo Regeneration

Gwyn Roberts, Homes and Communities
Principal, Building Research Establishment

Ceri Roberts, Strategic Funding Manager, E.ON

Emma Stone, Director of Evidence and
Engagement, Good Things Foundation

Katie Thorn, Project Lead, Digital Social Care

Wendy Trew, Business Development
Director, Tunstall Healthcare

Lauren Walker, Professional Adviser, Royal
College of Occupational Therapy

Stephen Wightman, Regional Director
- MMC Lead, Faithful+Gould

Ann Williams, Commissioning & Contracts
Manager, Liverpool City Council

Dr Gemma Wilson, Health Psychologist & Senior
Research Fellow, Northumbria University

Laura Wood, Marketing Director, Invisible Creations®

The TAPPI Panel was also pleased to receive written evidence from the following organisations:

Action Centre

Anchor

Appello

The Heywood Foundation

Karantis

Nottingham City Homes

Oxfordshire County Council

Sheffield University

The Smart Home & Buildings Association

About the Housing LIN

The **Housing LIN** is a sophisticated network that brings together policy makers and practitioners in England, Wales and Scotland to exemplify innovative housing and care solutions for an ageing population. Recognised by government and industry as a leading 'ideas lab' on specialist housing/supported living and technology-enabled care and housing, our networked activities and consultancy services:

- Connect people, ideas and resources to inform and improve the range of housing that enables older adults and disabled people live independently in a home of their choice.

- Provide insight and intelligence on latest funding, research, policy and practice to support sector learning and improvement.

- Showcase what's best in specialist/supported housing and feature innovative projects and services that demonstrate how lives of people have been transformed.

- Support commissioners and operators to review their existing provision and develop, test out and deliver solutions so that they are best placed to respond to their customers' changing needs and aspirations.

To access a range of resources on technology-enabled care and housing curated by the Housing LIN, visit:
https://www.housinglin.org.uk/TECH

Follow us on Twitter: @HousingLIN, @HLINComms and/or @HLINConsult

About the Dunhill Medical Trust

The **Dunhill Medical Trust** funds remarkable science and the radical social change needed for healthier older age. It supports researchers and communities, systems and services, fundamental science and applied design.

It is committed to applying its resources to inspiring and enabling academic researchers (from across the disciplinary range) and health and social care professionals to apply their knowledge and skills to:

- Improving the quality of life, functional capacity and well-being for older people now, or

- Creating the context for change in the future: preventing, delaying or reducing future health and social care requirements.

It also wants to play its part in informing and influencing the collective understanding of "what works" and enabling community organisations to develop innovative, evidence-informed and best practice ways of delivering care and support for older people and drive systemic change needed to secure a healthier later life for us all.

For more information visit: www.dunhill.medical.org.uk

Follow us on Twitter: @DunhillMedical