Inform
Report

Care technology landscape review

June 2019

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Essex County Council

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Introduction

This report presents an independent review of the care technology market. Produced in association with Socitm Advisory, the report is designed to inform those involved in the development of local authority care technology strategy and procurement planning. The report forms part of a continuing programme of Socitm research on our priority policy theme of health and wellbeing. The original content for the report was commissioned by Essex County Council (ECC).

The primary focus of Socitm's programme is to enable the 'left shift' of intervention in people's health and wellbeing from the relatively expensive, acute end of the system to an earlier point grounded in community and place, and with citizens themselves. The programme will explore how taking a fresh look at the determinants of people's wellbeing can enable the public sector in the widest sense - housing authorities, leisure providers, environmental management, education, police, public health, care organisations and health providers - to refocus its efforts on addressing the often entrenched and endemic problems in our communities. This will provide the context for us to examine how digital technologies and better use of data can help deliver this transformation in collaboration with people in their diverse settings.

Specifically, we aim to:

› Identify and capture good use cases, where digital and information are enabling citizens to live independently and self-care, avoiding entry into the care systems, and to be better informed about conditions, thereby preventing illness, enabling faster discharge and out of hospital care.

› Consider methods such as 'Asset Based Community Development' (ABCD) that can be better enabled by digital and information, connecting people and communities together to become more resilient and caring for each other.

› Champion 'frugal innovation' in this area i.e. how emerging technologies, data analytics, digital literacy and so forth can be a significant enabler to better health and wellbeing.

› Where services have to be provided, capture use cases where they are done through new integrated teams, across organisations including the independent sector, enabled through common, open governance frameworks and integrated technologies.

› Capture use cases where data is combined, across different sources and organisations, for secondary uses such as 'population health management' to inform more targeted interventions and commissions that make better use of the limited budgets available.

› Consider a strong push for 'Open Platform' approaches to Digital Health to challenge the current industry incumbents, who provide systems where the data is locked in and not available for analysis or for others to develop new innovations with as detailed above. (Note: The Open Platform approach is as relevant to a range of other verticals of government.)

› Set out our policy position on this and work with NHS Digital, England and the Devolved Nations on progressing it, as well as utilise the 'Learning from Local Programme and Platform'.

Sam Smith

Socitm Vice President, Head of IT & Digital for 3C ICT, Strategic IT Lead for Shared Services Cambridgeshire County Council & Peterborough City Council

1. Executive summary

This report is designed to inform those involved in the development of local authority care technology strategy and procurement planning. It sets out the findings of an independent review of the care technology market. By 'care technology', we mean any technology-related product or service designed to enable independence for disabled and older people, including telecare.

Undertaken by Socitm Advisory, the research upon which the report is based comprised a wide-ranging literature review and 35 external stakeholder interviews. The work was originally commissioned by Essex County Council (ECC) to complement their own current status assessment, including lessons learnt from the existing pathfinder and pilot projects around the county.

1.1 National context

The process of digital transformation is having a significant, wide-ranging impact on every aspect of our lives. At the same time, the UK is facing a health and social care crisis due to ageing population and constrained budgets. National and local government leaders see digital technology as a key factor in helping to improve sustainability of services.

However, uptake of telecare has been static over the last 10 years at 1.7m users nationally. Community alarms still predominate based on an analogue, reactive service provided to people's dwellings rather than more flexible solutions that also provide reassurance outside of the home.

Despite a suite of national initiatives over the last decade, the major 2018 UTOPIA survey concluded that "only a fraction of the potential of care technology has been exploited". A key reason has been limited sound evidence of the benefits of investing in care technology, especially cashable cost savings.

1.2 The care technology solutions market

As a society, we are adopting – indeed expecting - digitally enabled solutions in many aspects of our lives; with extraordinary innovations emerging to support people to live independently. For example, technology, such as wearables, smart voice interaction systems, big data analytics and artificial intelligence, can offer so much more than legacy telecare, as a preventive tool to defer the need for or avoid more intensive forms of care. The digital switchover, due by 2025, will be a significant catalyst to the telecare industry, making many of the existing analogue solutions obsolete.

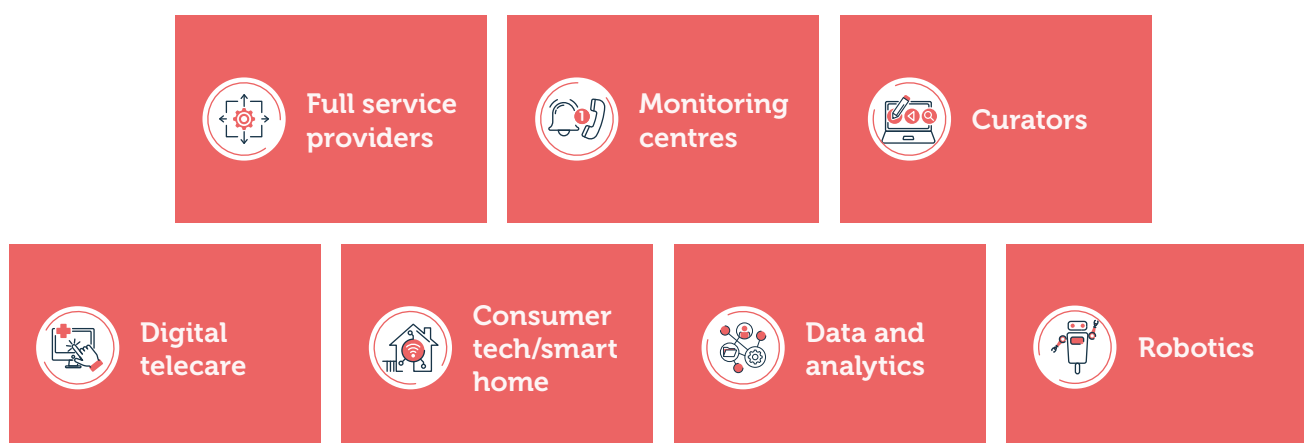We envisage several layers in an emerging care technology solutions framework, as shown in Figure 1.1:

Figure 1.1 Elements in the Socitm Advisory care technology framework

Our analysis is that the market will be in considerable flux over the next 5 years:

> The digital switchover directly affects monitoring centres and the devices connected. It will require commissioners to be actively engaged to ensure safety of service users are not compromised.

> Market consolidation of monitoring centres will continue, possibly even accelerate, due to the scale of investment needed to migrate to digital.

> Which of the many digital telecare suppliers will be able to achieve scale is as yet unclear, nor how quickly the industry will achieve open interoperability with health and social care data.

> The potential from gaining significant insight from the available data is bringing in new players including global technology companies. Information governance debates will intensify.

1.3   Commissioning models

Our analysis of pioneer councils adopting care technology services suggests a spectrum of four categories of (non-exclusive) commissioning models, as shown in Figure 1.2 below.

There are pros and cons associated with all these options that need to be considered by commissioners when determining an optimal procurement approach. A key question is whether, in view of the market going through a significant transition, the Return on Investment is yet robust enough and the timing appropriate for local authorities to be making a significant, large-scale, investment in care technology solutions. The options lie between:

> A pathways model, enabling a Council - working jointly with health and other partners - to focus on care technology solutions based on addressing highest priority service user needs.
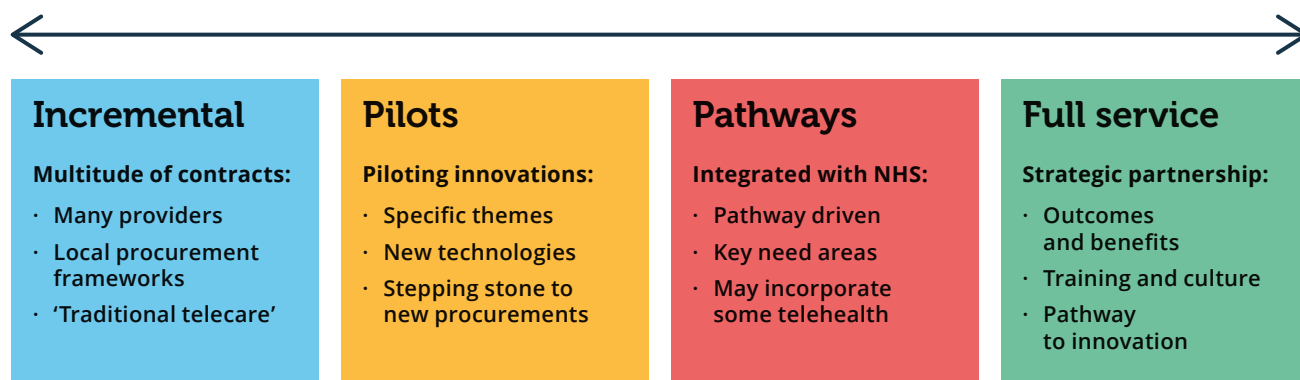
Incremental	**Pilots**	**Pathways**	**Full service**
Multitude of contracts:	**Piloting innovations:**	**Integrated with NHS:**	**Strategic partnership:**
· Many providers · Local procurement frameworks · 'Traditional telecare'	· Specific themes · New technologies · Stepping stone to new procurements	· Pathway driven · Key need areas · May incorporate some telehealth	· Outcomes and benefits · Training and culture · Pathway to innovation

Figure 1.2 Alternative commissioning models (as observed by Socitm Advisory)

Finally, it is evident that the consumer technology / smart home market is rapidly crossing over into the care technology sector. Perhaps the 'tipping point' will only come when care technology is created that people naturally want to engage with on a day to day basis and that provide additional passive, monitoring benefits; and connecting people to each other and their communities.

Given these factors, it is unclear yet how the ecosystem will settle down and who will be the future leaders. With no apparent 'silver bullet' yet, commissioners must avoid investing further in legacy telecare.

> A strategic partnership, with a technology agnostic, innovative player(s) demonstrably able to work with a Council on a transformation journey together.

> A focus on innovative pilots and, once it is determined there is more market clarity, seek to make a more substantive investment.

2. Background

This report presents the outcome of an independent external horizon scan of the social care 'care technology' landscape by Socitm Advisory. This section describes the strategic context to this Review, its objectives and scope, and the approach taken.

2.1 What do we mean by 'care technology'?

Care technology covers any technology-related product or service designed to enable independence for disabled and older people, to manage their health or to compensate for a disability. The Housing LIN identifies the scope of care technology typically as including:

> **Telecare** - responding to emergency health needs and incidents in the home

> **Care devices** - enabling independent living around the home

> **Remote monitoring** - supporting those with long term conditions (telehealth)

> **Lifestyle monitoring** - spotting changes in daily living for preventive intervention

> **Virtual solutions** - supporting social interaction

> **Digital support** - promoting the wellbeing of those with dementia

> **Remote consultations** - using video technology to connect with health professionals (telemedicine)

> **Use of robotics** - supporting people in the home with care activities.

As technology advances, the scope is constantly expanding. Care technology covers not only specific products, but also systems, combinations of technologies, and interfaces to mainstream technology such as the internet. In addition to addressing issues associated with physical health, developments in various types of care technology can help people with mental health difficulties live more independent lives; these can often involve online and behavioural approaches rather than devices.

The term 'care technology' is used throughout this document; it can also be called Assistive Technology or Technology Enabled Care Services. As it becomes 'smarter', care technology increasingly interacts closely with traditional care equipment, with increasing value able to be derived from the data captured.

2.2 Objectives and scope of the Review

This Review is designed to inform and increase knowledge of those involved in defining care technology future procurement strategy. Its scope includes:

> A synopsis of the current care technology experience and solution landscape including the range and type of benefits experienced

> Future trends in care technology including relevant areas of consumer electronics

> The range of commercial options linked to different social care operating models including wider Integrated Care models

> The link between care technology solution strategies and Case Management Solutions

> Care technology applications and use cases across both adults' and children's care

> A synopsis of care technology applications being rolled-out in NHS Community & Primary Care settings.

2.3 Approach taken

To develop a breadth of perspective, the material in the report draws from a wide literature review and 35 interviews with a representative set of stakeholders:

> Six national influencers / industry associations (including the Housing LIN, LGA, TSA, UK Research & Innovation, UK Telehealthcare)

> Seven councils known to the LGA as having a strategic approach to care technology (Cambridgeshire, Derbyshire, Hampshire, Hertfordshire, Lancashire, Leeds and Nottingham City)

> Eighteen care technology service and solution providers (many of which as members of UK Telehealthcare responded to a request for market consultation)

> Four major technology providers

The remainder of the report is structured as follows:

Chapter 3 - National context

> Policy / drivers / innovation at a national level

Chapter 4 - Care technology landscape

> Presents a framework to assess the care technology landscape. For each layer in the framework, trends in technology and examples of key players are provided, along with questions for commissioners to consider in relation to each

> Emerging technology trends, themes, implications and opportunities

Chapter 5 - The commissioning landscape

> Summarises our learning about other leading council commissioners

> High-level care technology commercial options linked to emerging Social Care target operating models are also covered

The report is supported by several appendices:

A. A list of stakeholder organisations interviewed

B. Further examples of other councils benefiting from care technology

C. Overview of telehealth

D. Glossary of terms

E. Literature review and bibliography

3. National and local context

This chapter summarises national policy and drivers towards the adoption of care technology and the current initiatives to stimulate innovation at scale in the sector.

3.1   National overview

Basic care technology solutions have been in use in people's own homes for decades, enabling older people and those with a long-term condition or disability, to continue to live independently at home. In recent years, recognising the potential role for care technology to play in providing care, early detection and prevention, the government has led several initiatives that have sought to encourage local authorities looking to invest in care technology.

In 2011, the 'Whole System Demonstrator' (WSD), described as 'the largest randomised control trial of telehealth and telecare in the world', was implemented across Kent, Cornwall and the London Borough of Newham. Initial headline results were very promising, claiming that telehealth led to significant reductions in both hospital admissions and mortality. On the back of this, the government launched the 3millionlives campaign to scale up care technologies. However, disappointingly, the final published findings from the WSD programme were not as positive. In 2012 – 2015 the 'Dallas' project (Delivering Assisted Living Lifestyles at Scale) evaluated the benefits of innovative health and care technologies to 169,000 people across the UK. The programme highlighted several key findings, which though helpful in informing future service design, still did not provide straightforward evidence for the benefits of widespread implementation.

Today, we are in a position where there are 1.7 million people using telecare solutions, the most popular being pendant alarms systems that are linked to a monitoring centre or carer and allow an individual to summon help should an incident occur. This type of care technology is reactive in nature and very much focused on the home environment. Solutions have

been proven to deliver a £890 net benefit per user (typically 70% cost avoidance; 30% cashable) according to the TSA; however, there is widespread view amongst industry leaders that a much bigger opportunity exists.

In 2018 the NHS National Institute for Health Research funded Kings College London and the School for Social Care Research to conduct the comprehensive UTOPIA study of local authority usage of care technology. The study concluded that, while the use of basic care technology solutions is an established part of practice, local authorities are only scratching the surface of what is possible:

> *"Though telecare use is focused largely on risk management and safety, and these are clearly important, these priorities only exploit a fraction of its potential benefit. Local authorities may wish to consider if telecare could be used to support other areas of an older person's life to help them maintain a good quality of life and enhancing outcomes in terms of social contact and meaningful use of leisure time."*

Although there are several innovative projects and pilots in operation, large scale innovation is not occurring, with critical barriers (drawing on analysis by the Housing LIN) including:

› Many telecare services have evolved from housing community alarm services. These are services that may have seen little or no service transformation and development over the past 10/15 years. Whilst these, often self-funded, services are valued by end users, they would benefit from service transformation to add additional value to health and social care economies.

› The sector, by its own admission, has tended to focus on the technology rather than desired outcomes for the end user. This has led to services with high numbers of connections, but limited evidence of efficacy.

› There has not been enough attention paid to design and delight in the way the solutions look and function. This is a serious shortcoming in today's world where design is so important. Equipment manufacturers, operating in a business-to-business context, have been slow to change and adapt to emerging requirements.

› A key hurdle is often the wider system, rather than the technology itself – e.g. who physically responds to emergency calls? How to manage the potential high number of false alarms? How to effectively signpost telecare users, if the monitoring centre does not have access to all their health and care records? How to make best use of all the data which can be – or indeed is – collected, to inform better designed or more personalised housing and care services?

Looking ahead, consumer selection and co-pay factors are shaping the market, with consumer access to emergent technology creating new expectations for services and a willingness to pay.

Furthermore, the pressures on health and social care systems to provide affordable care to an ageing population with more complex needs are well-known. There is an urgent need to find new ways of managing and reducing demand for health and social care services. Through our research it is evident that councils are actively considering their strategy for care technology and seeking to learn from others. Further, in the 2018 LGA Budget survey 93% of Directors of Adult Social Care said that assistive technology was quite or very important in making financial savings (3rd highest priority area), as shown in Figure 3.1.

> *"Local authorities may wish to consider if telecare could be used to support other areas of an older person's life to help them maintain a good quality of life"*
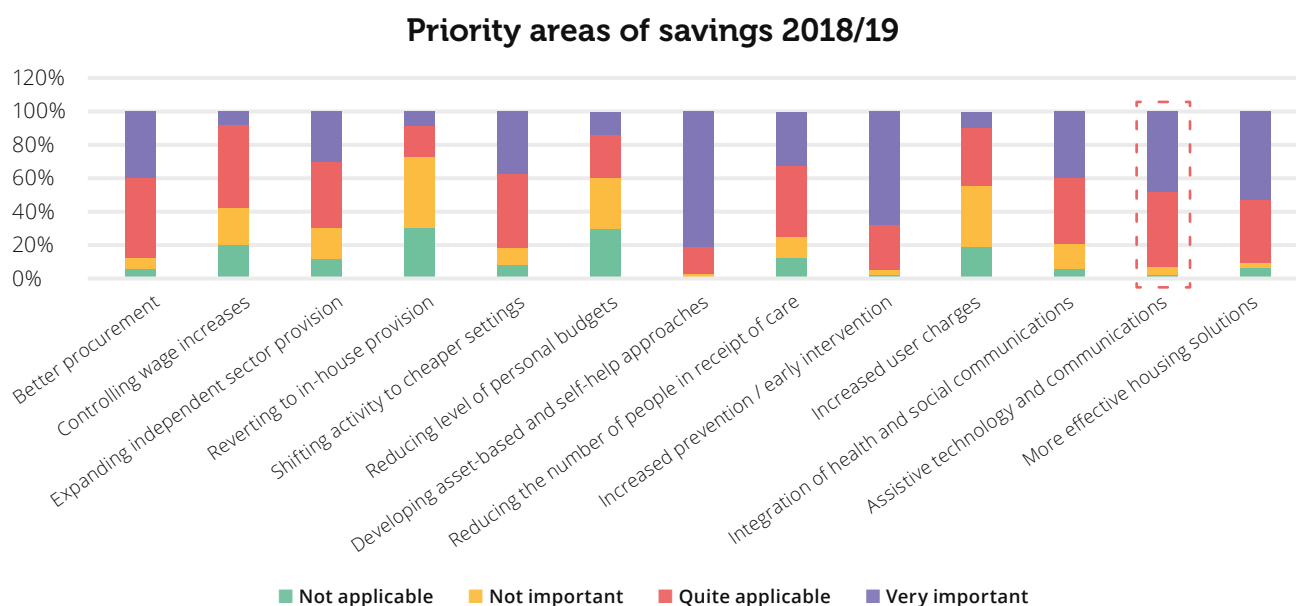
Priority areas of savings 2018/19

Figure 3.1 - 2018 ASC Budget Survey (Source: ADASS)

From our literature review and interviews, targeted care technology interventions are seen to be most beneficial for risk management and safeguarding with the following cohorts of service users:

› Supporting an early diagnosis of dementia

› Frailty/dementia, including those at most risk from falls or potential dehydration

› Those with complex learning disability packages, particularly with the need for 24hr care

› Transition from Children's to Adult services

› Those facing social isolation, including younger adults with a physical disability.

3.2 National innovation initiatives

Some significant initiatives will play a key part in fostering innovation in care technology over the coming years.

In particular, the government's Industrial Strategy published in 2017 identified the 'Ageing Society' as

one of its Grand Challenges and is awarding major research grants to support industry in the development of new innovative approaches that focus on:

› Stronger consumer orientation

› Development of new business models

› Lower cost versions of existing solutions

› Stimulating system-wide change

› Alleviating or deferring crisis points that require a step jump in the care intervention offered.

These priorities suggest a clear alignment with care technology; for example, in developing 'smart home'/ connected products, services and applications that enable activities of daily living, and marketing/branding these in age-friendly ways. UK Research & Innovation (UKR&I) recently ran an expression of interest seeking potential consortia to bid for the Challenge.

Another significant, albeit smaller scale, fund of note is the LGA's Social Care Digital Innovation Programme. Funded by NHS Digital, 31 councils (to date) have each received up to £50,000 towards projects using digital

technology to transform health and care. To date, several projects have focused on care technology in the home environment. As the programme grows in scale each year, it is likely that valuable developments will be produced. New technology to support social care is also expected to be a theme in the upcoming Green Paper on adult social care in England.

Whilst funding and policy is critical, it is important not to overlook the role of consumer brands in driving change in the care technology market. The Housing LIN has predicted that the 'tipping point', when care technology enters the mainstream, will come only come when technology is created that people naturally want to engage with on a day to day basis and provides additional passive benefits. Here, global technology giants such as Google, Apple and Amazon whose devices are a ubiquitous part of daily life, could play a critical role, with Amazon Alexa and Google Home already starting to be used in the context of care technology.

3.3 Conclusions arising

Nationally, while there has been a suite of initiatives over the last decade, there remains a view that "only a fraction of the potential of care technology has been exploited". A key reason has been limited sound evidence of the benefits of investing in care technology, especially in relation to cost savings.

Investment in and uptake of telecare has been relatively static over the last 10 years at 1.7m users. Community alarms still predominate based on an analogue, reactive service to people's dwellings rather than out in the community. Adoption still tends to be driven by providing reassurance to service users and their carers, rather than prevention by helping to defer the need for or avoid more intensive forms of care.

Looking forward, best practice would suggest a possible set of goals for commissioners to aim for in the use of care technology, including:

› Care technology recognised as an enabler for promoting independence and accessed early / at the start of a person's care journey, giving reassurance to families and carers.

› Care technology helping to defer the need for or avoid more intensive forms of care and embedded into a strengths-based assessment process.

› Using lifestyle monitoring to support informed decision making – 'just enough support' rather than 'just in case support'.

› Offering care technology as an alternative to, or to complement, other forms of care including reablement, medication checks, and well-being calls.

The current status, maturity and fitness for the future of current care technology services, together with learning and evaluation from any pathfinder or pilot programmes, will need to be drawn on as commissioners prepare their care technology strategy.

4. Care technology solutions landscape

This chapter begins by summarising relevant key digital technology developments and then introduces a Socitm Advisory framework to assess the care technology landscape. For each layer in the

"Investment in and uptake of telecare has been relatively static over the last 10 years at 1.7m users. Community alarms still predominate based on an analogue, reactive service to people's dwellings rather than out in the community."

framework, trends in technology and examples of key players are provided, along with questions for commissioners to consider in relation to each. The chapter concludes by drawing out key overall themes.

4.1 Technology trends specific to care technologies

Technology is developing rapidly – Figure 4.1 above show some of the opportunities from a shift to digital solutions. It strengthens the importance of 'place' in people's lives; the power of technology in connecting people to each other and their communities.

Based on our analysis, and drawing on the 2019 NHS Topol review "Preparing the Healthcare Workforce to Deliver The Digital Future", those developments likely to have a significant impact on shaping the future of care technology in the next 5 years are as follows:

Analogue switch off

Over the next few years, and possibly as soon as 2023 in some areas, analogue telephone services in the UK will be switched off and replaced by digital systems using internet protocol (IP) technology. Many services that employ analogue connectivity, including most

current telecare services, will need to be upgraded or decommissioned. Moving from analogue to digital care technology should be about more than just replacing existing technology on a like-for-like basis. Whilst simple replacement is an option, a more fundamental redesign of the care technology offer has the potential to transform health and care services across the UK to the benefit of those people who rely on them, for example by embedding digital technology within housing provision. This issue particularly affects the monitoring centres and is discussed more in figure 4.2 below.

5G connectivity

The speed, bandwidth and device connectivity promised by 5G will lay the groundwork for providers to re-imagine how the industry approaches care at a distance, by collecting smarter streams of data — rather than single points in time — and leveraging artificial intelligence. The Future Telecoms Infrastructure Review (FTIR), announced as part of the government's modern Industrial Strategy, proposes the changes that are needed to give most of the population access to 5G, connect 15m premises to full fibre broadband by 2025, and provide full fibre

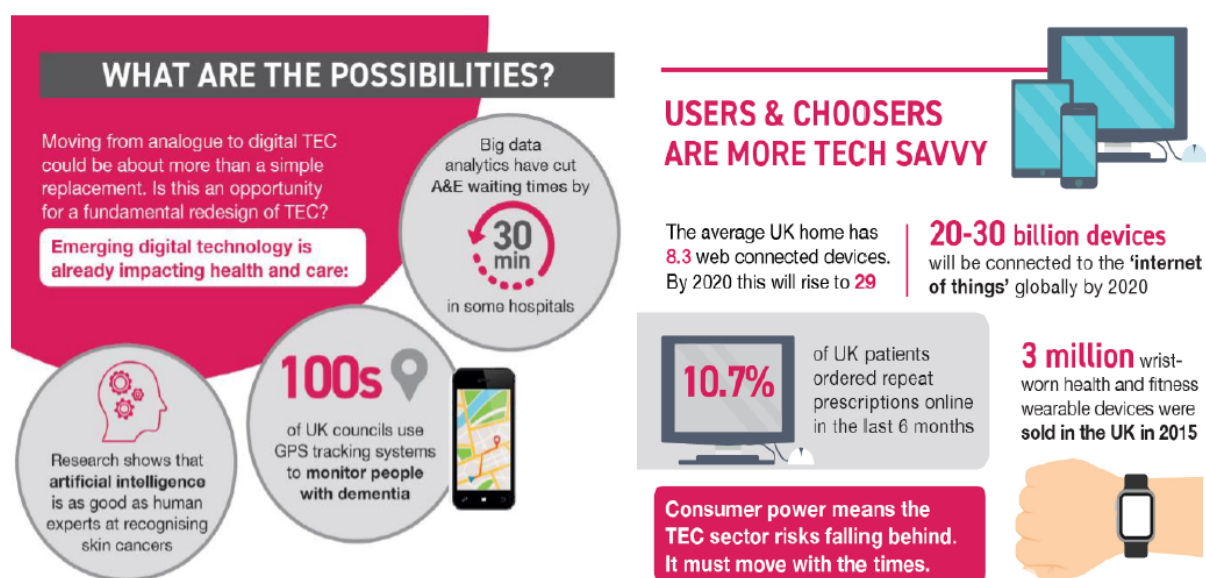## Opportunities from a shift to digital solutions

Figure 4.1 - Digital technology opportunities (Source: TSA)

broadband coverage across all of the UK by 2033. Full fibre infrastructure is vital to underpin 5G coverage. As 5G networks are introduced, there will be a plethora of new opportunities due to the much-improved connectivity available to citizens and the workforce.

Healthcare apps and wearables

There has been significant developments in healthcare apps and wearables in recent years, and growth in the popularity and uptake of these devices. They provide people with convenience and control to integrate technology into their lives both when well and when ill; they also afford patients the ability to share their data with who they want to. For example, the devices can support patients in assessing health signs and symptoms, keeping them healthy and managing long term conditions. This in turn can provide value in supporting independent living and the presence of non-traditional care technology brands in the sector may well grow.

Artificial Intelligence (AI)

Machine learning is the set of techniques and tools that allow computers to 'think' by creating mathematical algorithms based on accumulated data. Machine learning offers the potential for AI and robotic technologies to draw on data collected through sensors and social interaction to learn offline and on the job thus improving the quality of care provided. Given the predicted growth in data produced by new technologies such as smart sensors in homes, machine learning may offer a system of turning data into intelligence as shown in Figure 4.2. This in turn can ensure care plans are regularly updated to enable care workers to intervene proactively in a range of assistive scenarios, such as medicine adherence, nutrition and rehabilitation support, as well as social engagement.

IP unlocks great potential to combine mass data and connectivity, enabling the possibility of cloud data analytics

Predict events even before they happen and highlight increase the risk of falls or issues around the home
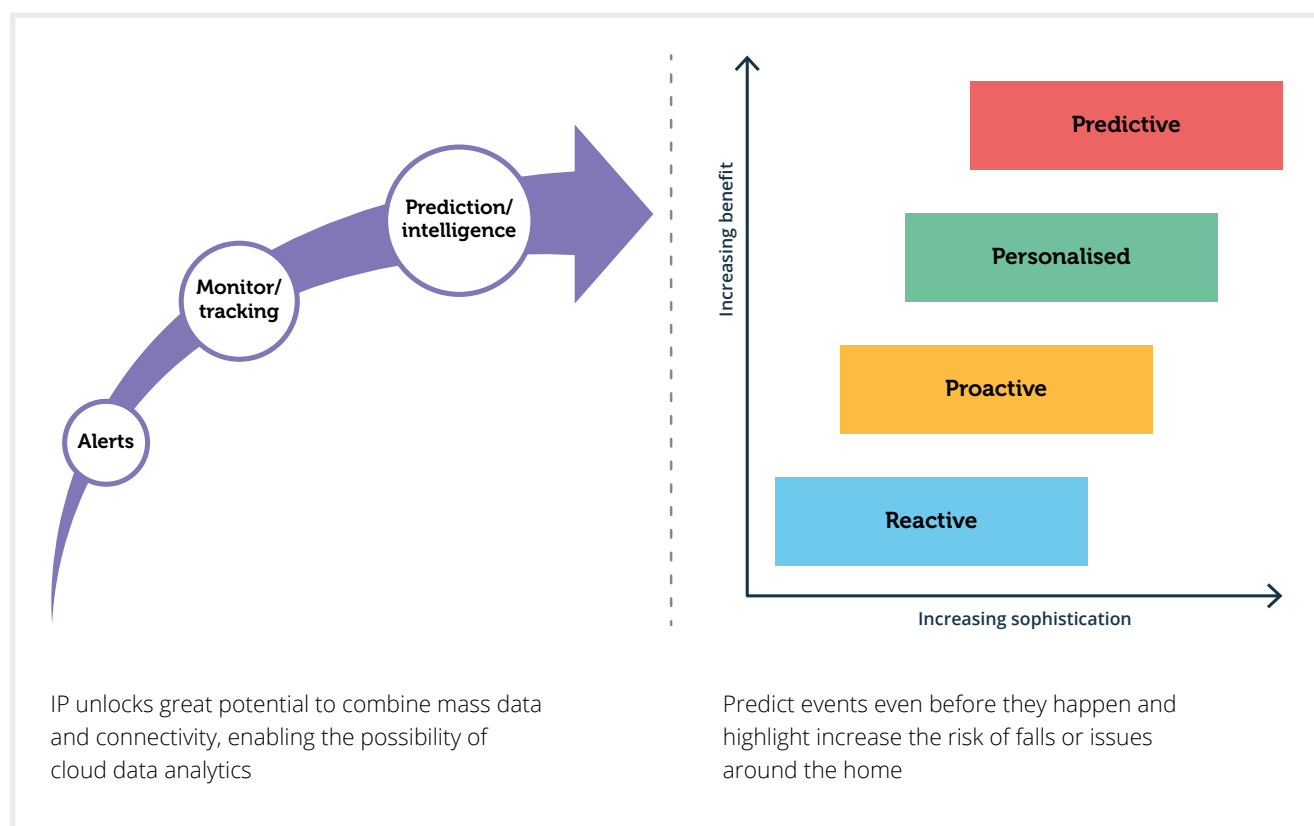
Figure 4.2 – Potential of more personalised services through AI (Source Tunstall)

Digital healthcare records

Stimulated by the Local Health and Care Record Exemplar (LHCRE) national programme, shared care records are being developed in many areas, enabling clinicians to share patient records across care settings. One example of such technology is the Hampshire Care and Health Information Exchange (CHIE), a shared care record containing key information from hospital, primary care, community health and social care records. More local shared care records, with more detail than the summary care record, are likely to emerge over the next few months and years. Looking forward, one can expect to see increasing integration of relevant information between care technology systems and the person's care record (the LGA estimated in 2016 that only about 10 per cent of councils have this in place but this is expected to increase). This will provide a single view of referrals, interventions and a record of the outcomes achieved.

Internet of Things (IoT)

The Internet of Things (IoT) is the interconnection via the internet of IP-enabled devices embedded in everyday objects, enabling them to send and receive data. By 2030, 20-30 billion devices are forecasted to be connected globally. The IoT revolution is creating complex digital ecosystems where care technology can be connected with other smart devices such as smart fridges, and security sensors. This opens up the opportunity to gather a much richer picture of a service users behaviour and support them to stay independent.

Remote (tele) consultations

Often called 'telemedicine', this involves the provision of care from a distance using telecommunication and information technology, including text, audio and video consultation, to deliver the same standard of care as face-to-face consultations. There is a rapid uptake of this technology in healthcare, especially primary care, with the Royal College of Physicians recently recommending making more use of telephone and video consultations to cope with the rising demand for new appointments. In social care, one can imagine reablement services including not just physical support but also potentially virtual care, for example to help with checking medications and assessing the wellness of a service user.

Privacy, security and confidentiality

As digital technologies grow more sophisticated and are applied to produce, collect, interpret and share volumes of personal information, the challenge of securing service user and organisational information has never been greater, with cyber-security a top concern for many. Care service providers have the responsibility of ensuring data security in line with GDPR regulations, whilst not hindering progress towards integrated care delivery.

"Over the next few years, and possibly as soon as 2023 in some areas, analogue telephone services in the UK will be switched off and replaced by digital systems using internet protocol (IP) technology. Many services that employ analogue connectivity, including most current telecare services, will need to be upgraded or decommissioned. Moving from analogue to digital care technology should be about more than just replacing existing technology on a like-for-like basis."

4.2 Framework to assess the care technology solutions landscape

By way of a reference point to explain dominant current technologies, the following describes most telecare today:

› Most technology in people's homes are in the form of a 'button and box' analogue solution. Current devices are, in most cases, stand-alone and specialist, chosen and installed by care providers. There can be issues about compliance with the pendants, with people forgetting to wear them so reducing their efficacy. These devices can send emergency alerts, should the user raise the alarm from anywhere in the home by simply pressing a pendant or through sensors automatically detecting an adverse event.

› The devices are linked to an alarm monitoring centre and /or a nominated carer (or warden in a supporting living scheme) over the Public Switched Telephone Network (PSTN).

› Alerts coming through the alarm receiving centre are answered by a telephone switch and delivered to a server that provides the call handling system, and then routed to an agent who handles the call.

This technology is old, analogue and will become obsolete because of the digital switchover. Turning to

the digital world, as an overall framework, we envisage several emerging layers, as shown in Figure 4.3 below.

Specifically, we see the layers as including:

› **Full service** – providing end-end services based on a transformational approach to care tech.

› **Monitoring** – large and small monitoring centres, responding to alarms and alerts from users.

› **Curators** – identifying the best products on the market to help customers navigate the market

› **Digital telecare** – solutions that are both 'digitising existing telecare', others are focusing on mobility.

› **Consumer technology including smart homes** – offering many passive devices to exploit for care support.

› **Data and analytics** – extracting insight from the data that care technology provides, integrating it with wider data sources including health.

› **Robotics** – supporting social care activities through robotic intervention.

The relevant trends in each layer are discussed in detail over the following pages and represent different types of providers serving the care technology industry. Questions for councils looking at strategic choices around care technology are also provided.
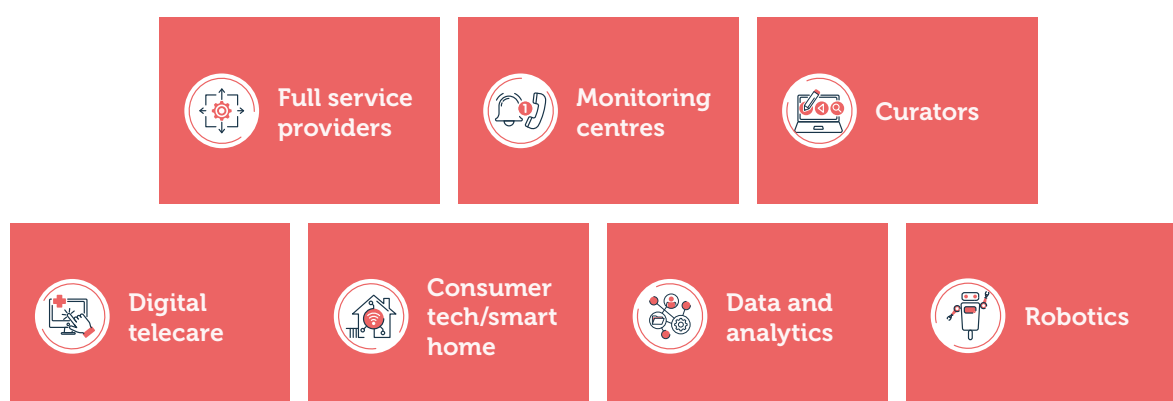

Figure 4.3 Elements in the Socitm Advisory care technology framework

4.2.1   Full-service providers

Full-service providers specialise in delivering - and having accountability for – **a managed end-to-end service**, from assessment through to installation and monitoring, with responsibility for the whole suite of care technology offered (irrespective of supplier). They often take responsibility for replacing or transitioning the existing services into the new service model.

Typically, a full-service provider will be **a prime contractor**, with other suppliers brought in on a sub-contract basis to deliver elements of the service (e.g. monitoring, installation) and potentially with a range of technology providers involved. Examples of typical providers are shown below. Different prime contractors have differing attitudes to being technology agnostic – but they will be responsible for ensuring collectively the technologies fully interoperate and for resolving any issues.

Full-service providers are often engaged by local authorities looking for a complete **service transformation** in all aspects of their service. For example, a full-service provider would typically look at the referral process – how could it be optimised so that the risks facing each customer are assessed uniformly, using the case management solution to drive a common process – and also provide significant engagement and training around the use of care technology for the social care workforce.

Charging is often based on a **per user basis** with the provider owning the equipment and therefore being responsible for reuse of equipment and hardware refresh. This contrasts with traditional telecare contracts where the equipment is sold to the customer (whether council or private payer) and a running cost charged for the monitoring service. In this way, the commissioner (council) rewards the desired service transformation and **transfers the risk of changing technology** to the provider.

A key element of full-service provision is **benefits tracking**. Contracts are usually **outcomes focused**, with providers collecting many different data points throughout the care pathway to evidence the value of their transformation work. In many cases they are incentivised to achieve set savings targets which impact

on their contract payment. However, an issue often arises here around the alignment of incentives. For example, telecare is usually funded by local authorities as part of social care delivery, yet often delivers healthcare benefits and savings to the NHS. Telehealth may reduce visitor numbers to a hospital, resulting in lower income, but a better standard of care. Thus, demonstrating and realising benefits can be a real challenge.

In some instances, the care technology services are **bundled in with wider council contracts**, such as for community equipment. The contracts may also involve transitioning in existing telecare monitoring contracts, with the new provider responsible for migrating service users from legacy technologies.

Example brands:

Questions to consider:

› **To what extent is full-service provision, potentially as part of a wider solution, an appropriate model for your service?**

› **Has your service found full-service provision effective in delivering benefits not just financial but in terms of service user response and impact?**

› **What has your service learnt about cultural changes required, for both service users and practitioners, to enable widespread promotion and adoption of care technology from any full-service arrangements?**

4.2.2 Monitoring centres and control software

In the UK there are currently about 200 monitoring centres which respond to alerts 24/7, triaging the calls and acting by either contacting next of kin, requesting ambulance assistance or some other local responder. Most centres' call volume is inbound (responding to alerts) but an increasing proportion of calls are **outbound** (e.g. for medication reminders).

Leading players in the space and the approximate numbers of user connections include: Appello (200k connections); Tunstall (125k); Centra Pulse (108k), Welbeing/Doro (80k) and AXA PPP Taking Care (52k). There are also many smaller sized centres that operate in specific localities, many of which are owned and operated by district councils, others by local housing providers. The centres market themselves to councils, supported living schemes (e.g. housing associations / retirement villages), dispersed users and to a lesser extent, private payers. A local presence for installation and maintenance remains key.

The monitoring centres all rely on control unit software to handle and manage the calls. There are a small number of providers of this software. There is a drive towards **common, open standards** to allow ready interoperability with a wide range of devices adhering to industry standards rather than being locked into one manufacturer. However, 50% of the market is said to be still using proprietary protocols.

A major opportunity – and challenge - for monitoring centres is the **upcoming digital switchover**. Over the next few years, analogue telephony services will be switched off as the UK's telecommunications infrastructure is upgraded to digital connectivity. While monitoring centres must plan how to deal with this upgrade to support IP connectivity to ensure that the safety of users is not put at risk, their operations can become more effective through smart routing and call scheduling. Equipment checking (such as batteries) can be automated rather than relying on a specific home visit just to check the equipment is working.

Digital communications will in time bring major **safety benefits** over analogue for monitoring services as it

will be 'always on', for example: network reliability will improve - analogue call failure rates are rising (one centre told us that the rate has increased from 7.5% to 11% in the last 3 years); analogue call transmission time typically takes 90 seconds, digital calls are almost instant; digital can support voice, video and data packet transmission at the same time, whereas analogue only permits one medium at a time (so if a telephone line is engaged during an emergency, the telecare device cannot issue an alarm to the monitoring centre). The industry expects that lives will be saved.

And by using mobile connections, the monitoring can be extended to **outside the home.** But the industry will need to cope with a hybrid analogue / digital world for some years.

It also provides an opportunity for technology services to better integrate with home care services. With scarce resource technology should help prioritise who gets the support and when. Home care services need to be better integrated with monitoring centres or have access to the "big data" in the future to enable them to prioritise.

However, service users may well be faced with a **cost increase**, since they will either need broadband or mobile connectivity rather than just a low-cost analogue line, and the equipment costs are generally more. What happens in the event of mains power failure needs careful planning. As 5G emerges, there is an opportunity to circumvent fixed line networks completely for an entirely wireless approach.

The installed population of analogue-connected telecare devices will require some **form of upgrade, at a cost**, in the shift to digital. With a typical shelf life of 5-7 years, and with a deadline only 6 years away, any new equipment now ordered by councils should **already be digital**. (The TSA has reported a national estimate that the digitisation of telecare would require £150 - £300m investment over a period of four years, if all existing analogue systems were to be replaced with digital devices and their associated communications fees.)

At present conditions in the market are challenging, with significant **ongoing market consolidation**. About 10 centres were subsumed during 2018, some by acquisition. In May 2018, for example, Swedish company Doro

acquired Wellbeing and previously AXA PPP purchased the Chichester centre. Further consolidation is expected, due to price competition and also the investment needed to support the digital switch over. (Two larger centres commented to us that a monitoring centre needs at least 10k-15k user connections to be economically sustainable.)

The recent entry of consumer brands from other sectors, such as Chubb Security, British Gas's Hive and EDF's Howz is also a threat to monitoring centres. These brands offer solutions that enable **friends and family to monitor relatives**, thus short-circuiting the role of the monitoring centre.

Despite these challenges, monitoring centres have significant opportunity to grow their offer to being more proactive. A new generation of digital care technology products which focus on passive monitoring is providing much richer data about users. This means that instead of simply responding to emergency calls, monitoring centres can discreetly capture data to build a deeper understanding of the behaviours of users, and provide family and health practitioners with **insight** that can help them provide better, more **personalised care**.

Example brands:

Questions to consider:

› How engaged is your service and its partners with the local timing and impact of the digital switchover, with a co-ordinated plan in place to manage the shift? What investment may be required?

› What is the most effective way for your service to work with their existing monitoring centres to ensure that potentially dangerous failures to current services are avoided? Should the services look to be consolidated?

› What benefits could be derived from linking monitoring centres better with care provision as end-to-end services?

4.2.3 Curators

Curators are those that identify and package the best care technology products available for customers to help them **navigate the market** and find the best solution for them.

Some curators attempt to differentiate themselves in the market by **applying stringent testing** on products before adding them to their directories. Such companies often work in partnership with local authorities, working with their occupational therapists to understand the needs and outcomes desired of different user cohorts. They then go out to market and invite suppliers to be part of an equipment review group, selecting equipment with LAs' objectives in mind. They may do a proof of concept trial and then an evaluation. This service can be attractive to customers as the care technology market place can be daunting and hard to navigate.

The curators offer online **catalogues** or local procurement frameworks to support easy purchasing whether by councils or self-funders.

Typically, the curators in the market do not specialise just in care technology - some offer other services such as selling medical and mobility equipment like wheelchairs and blood glucose monitors. This raises interesting issues around how care technology works as a package, alongside other sorts of aids and equipment, and how care technology can be introduced to service users who may already have other non-technical aids in their homes.

Example brands:

Questions to consider:

> **Does your service have experience of technology curation services and what lessons can be learnt?**

> **Is there a future role for your service – or an agent acting on its behalf – to act as a self-service curator by signposting self-payers to best in class kit and giving them confidence when making buying decisions?**

4.2.4   Digital telecare

Building on existing approaches to traditional telecare, digital telecare builds efficiency and improves reliability. Digital's **'always-on' connection** between a wider range of sensors - such as smoke and heat, movement and activity, local environment, and personal alarms - linked to a digital platform. The platform can then share information with health, housing and care providers, neighbours and next of kin. Ensuring that those most in need can be supported in their own home and for as long as possible.

Many leading telecare companies are already developing applications as part of a new end-to-end digital offering to work with their hubs. New digital telecare companies have also entered the market and while some are (arguably) digitised versions of traditional solutions, others are offering a much broader range of intelligent digital products. Other market entrants are focusing on keeping users safe while **in the community**, through mobile telecare with geolocation. The benefit of these products is that they do not restrict people to their homes, cutting them off from communities and compromising their wellbeing. For example, Mindme Locate finds people who wander because they have dementia or learning difficulties. If the user goes out of a specific radius, or is out for an unusually long period, an alert is triggered. Another example, widely implemented in Hampshire, is Oysta: pendant alarms and watches that track where users are with GPS signals. In an emergency, a panic button allows for two-way communication. Blackburn Royal infirmary is trialling an immediate telecare offer for those who are being discharged from hospital by way of an Anywherecare GPS mobile device provides a two-way pendant. Doro also offer an emergency response service from some of their mobiles.

Another key trend in the new products on offer is **passive monitoring** which aren't reliant on the service user wearing a pendant or taking any action to raise the alarm. Some do not require connection to a monitoring centre. Companies such as Canary Care, Alcove and Kemuri specialise in care technology that works by monitoring movement, temperature levels, doors and use of electricity within the home and can let a carer know if anything out of the ordinary occurs. Cambridgeshire are trialling an Intelligent Lifeline solution from Essence, as a hybrid between the existing

telecare service but using more advanced technology involving learning algorithms so that people's routines can be learnt, and outliers identified. In this sense, these companies are seeking to offer an end-end service.

A further area is for **medication reminders**. For example, Yourmeds provides a medication service with easy to read colour labels and clearly numbered doses, supported by a mobile device that clips to the pack and reminds the users to take their meds. Designated carers are alerted if medications are missed. Many innovations are coming to market, although these are often developed by micro SMEs who struggle to reach **scale and economic viability.** Since many are targeted at the self-pay market, councils themselves may have a role in curating the products and providing signposted advice to reputable solutions. This means the market is highly fragmented with a **plethora of niche point solutions.** Without a common framework or set of open standards to plug all the point solutions together. A service user might need multiple solutions, each with a service charge and a separate piece of equipment.

Example brands:

Questions to consider:

› **Where does your service want to be in terms of embracing digital telecare?**

› **What could the optimum digital telecare offer look like for your service?**

4.2.5 Consumer technology, including smart homes

A major, potential market disruptor is consumer and care technologies' convergence. This is driven by the ubiquity of smart phones and wearables. For example, the Apple Watch now offers vital signs monitoring, can detect falls, and can send SOS alerts, making it a care technology competitor.

Similarly, advanced are a new generation of mHealth apps that increasingly support independent living needs. For example, the uMotif app allows users to use their mobile phone to track symptoms, as well as assess the user's mood and send medication reminders. The app can be adapted to a number of conditions by using a subset of the 250 available symptom trackers. KeepUs is another example of a free app that describes itself as a "real solution for the families of elderly people who want to continue living active, independent lives," making it a potentially valuable care technology device.

There is also pressure on the traditional care technology market from related companies in the smart home sector, blurring care technology with the smart home market (e.g. entertainment/communication/home security/utilities). Here, the environmental and personal sensors typically used in a smart home environment can be extended for domestic and personal adverse events' early detection. Furthermore, continuous remote monitoring can identify activity patterns and increase predictive capabilities. Figure 4.4 illustrates some potential benefits to residents:

The smart home sector has grown rapidly over the last 5 years as major brands including Amazon, British Gas and Google have developed mass market devices. Today almost a quarter of Britons own one or more smart home devices such as a smart speaker or smart thermostat. In 2015 Hive (from British Gas) acquired Internet of Things app 'AlertMe' for £44 million in order to expand its Hive business. In 2018, the company announced that it was launching Hive Link, to help unpaid carers keep track of those they look after or if anything out of the usual routine happens. Energy giant, EDF Energy, also has a similar service called Howz.

Smart speakers are another piece of mass market technology that is being adopted to support independent living as demonstrated by the Hampshire / PA Argenti Partnership with their adoption of Amazon Alexa's, which are now being rolled out at scale in the county.

Telecare Apps	Enabling alarms and video calls to be placed anywhere in a home
Video Door Entry	Users can see who's outside without having to open the door
Smart Lights	To automatically turn on/off at certain times, helping to avoid falls
Smart Blinds and Heating	Enabling them to be operated anywhere in a home
Video Calling	Reduces loneliness, creating community environments
Voice Activation	Enabling convenience through devices being controlled remotely

Figure 4.4 Digital benefits sought by residents (Source: Appello)

In supported living and extra care schemes, the availability of this technology can extend the services available and expand the options for future use of the properties; it requires important IP-ready infrastructure decisions to be made in the case of new build facilities. Care staff can receive alerts and monitor residents on the go, control door entry security and connect with residents through voice or video call.

Figure 4.5 below demonstrates how a home could be set up with smart technology. Although many of these applications and devices remain unregulated for use in a telecare setting, and therefore used at the consumer's discretion, they represent an important move toward **self-care and monitoring**, enabled by

easy-to-use software. With time it can reasonably be expected that such innovations will start to take on more of the functionality of traditional telecare hardware. These major consumer brands also have considerable **brand equity** which should not be underestimated.

Their ability to **market at scale effectively** has the potential to change the image associated with care technology and as a result increase acceptability and uptake amongst a slightly younger age group, including in their role as carers or relatives. Should their marketing efforts be more focused on typical care technology users, their use to support independent living may well grow rapidly.
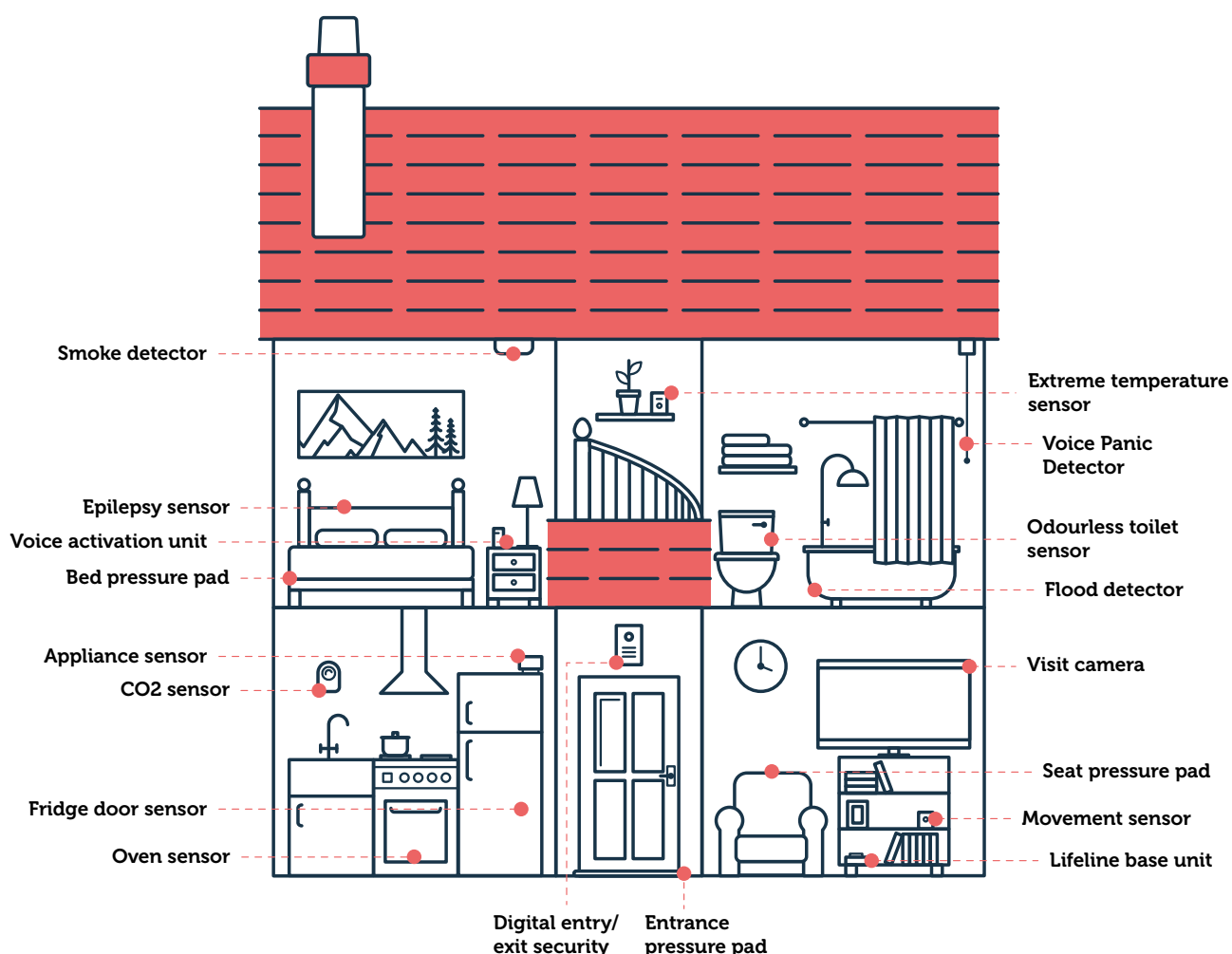
Figure 4.5 Supported living smart home example

The Wave 1 and 2 LHCRE's are starting to make significant headway in introducing open standards and platforms for sharing health related data. e.g. HL7, FHIR. The same cannot yet be said for both adults and children's social care data. There is growing recognition of the need to develop social care data standards including data generated by IoT and LHCRE sponsored projects are expected to progress this agenda shortly.

There is already significant **information governance** and GDPR debate in sharing an individual's health and social care within the public sector system. One can imagine this taking on greater significance as and when large consumer technology enterprises seek prominence in the sector.

Example brands:

Questions to consider:

› **What action might your service need to take with partners to address the interoperability and information governance challenges that come with combining health and care data from a variety of consumer-chosen devices?**

› **Who has ownership and visibility of data recorded by consumer care technology devices? What stance might a statutory provider take towards the use and capture of the data, and is it resourced to do so?**

› **Should you be encouraging specific innovation in the sector to meet the needs of the ASC end user population and targeted investment from the major brands?**

4.2.6   Data & analytics

Another, increasingly important, category in the care technology market are data and analytics capabilities, either from big data providers, specialist data scientists as well as from telecare players as they develop their digital offerings.
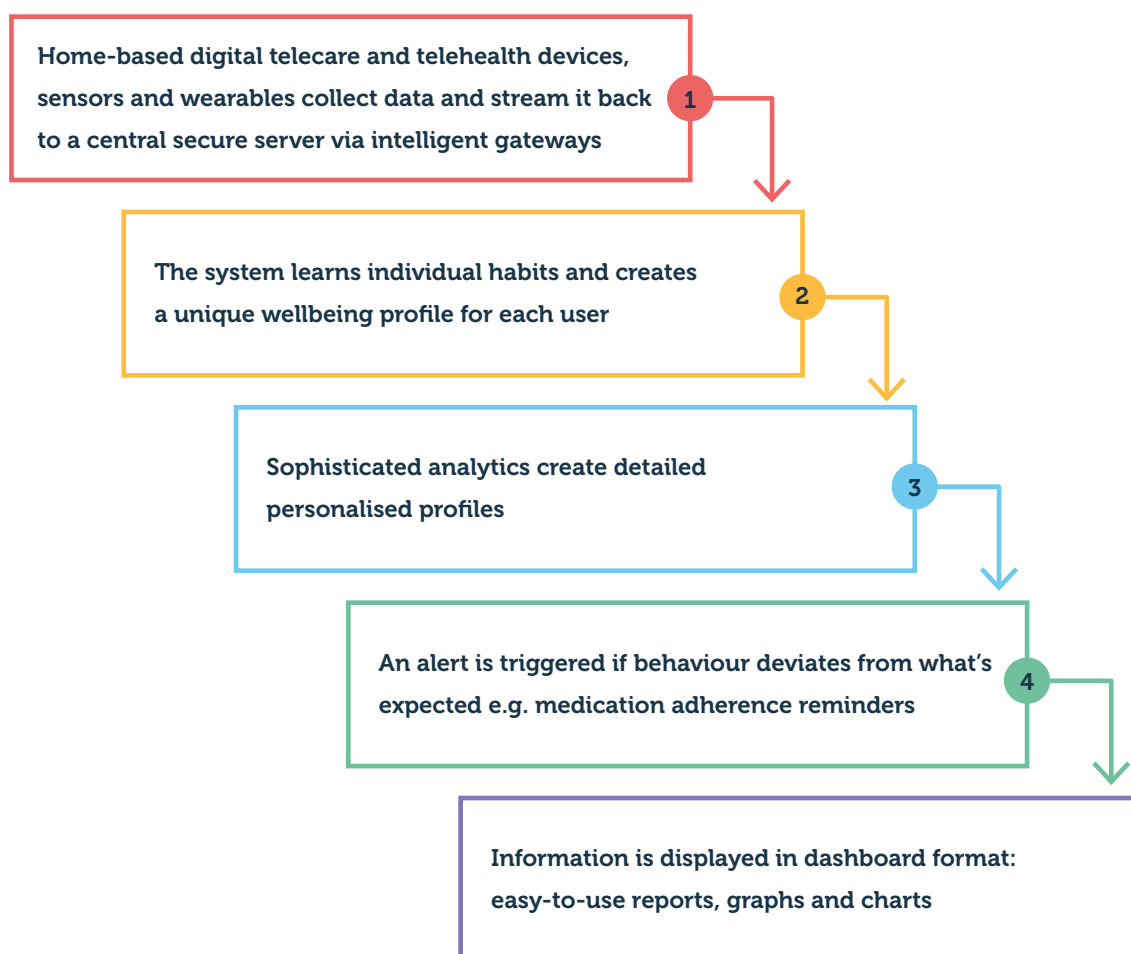
Traditionally, telecare has focused on crisis response i.e. responding to a care emergency that has taken place. However, data and analytics capabilities can help families and commissioners to understand the level of risk that an individual is at and predict, and possibly prevent care emergencies before they occur. This opens-up significant potential to improve safeguarding and reduce costly hospital admissions and ambulance call outs, thus enabling **early warnings.**

By drawing on **wide pools of service data** linked to health and care data, significant person-centric insights can be gathered. It requires use of a common identifier such as the NHS number with data privacy considerations to be addressed.

Figure 4.6 below illustrates how data & analytics specialist companies, such as Cascade 3d and Cloud Wick, can provide insight:

Figure 4.7 below shows the types of trend analysis outputs that can be produced. Through automating analysis of data, smarter commissioning can be enabled.

For example, one London Borough is known to be working to develop a solution which uses MASH data to predict when to intervene with people for changes in care patterns.

Home-based digital telecare and telehealth devices, sensors and wearables collect data and stream it back to a central secure server via intelligent gateways   1

The system learns individual habits and creates a unique wellbeing profile for each user   2

Sophisticated analytics create detailed personalised profiles   3

An alert is triggered if behaviour deviates from what's expected e.g. medication adherence reminders   4

Information is displayed in dashboard format: easy-to-use reports, graphs and charts

Figure 4.7 Example of data outputs (Source Cascade 3D)

In many cases, the platforms used are **comprehensive cloud-based infrastructure** such as from Microsoft and Amazon Web Services, connecting to IoT devices.

A critical question with these capabilities is 'who acts on the data?' since local authorities and primary care are not resourced to do so. This proved to be one of the reasons that telehealth did not become mainstream.

Example brands:

Questions to consider:

› **To what extent is your service engaged to use data and analytics to shift from a reactive, to a more proactive service?**

› **What type of partner would your service need to work with in order to do make meaningful use of available data and analytics?**

› **How does data and analytics in relation to care technology fit in with wider plans and activities your local authority has?**

4.2.7   Robotics

An interesting potential long term development is the growing range of robotics that have been piloted or are in use within social care either within the UK or, more commonly, internationally. Such initiatives are typically driven by highly innovative institutions and tend to be some way short of being **operationally and commercially viable.** Robotics being developed can be categorized as physically assistive robots and socially assistive robots.

Physically assistive robots (PARs) are being developed to perform discreet tasks including lifting and carrying to support people who use care services. Whilst some PARs have been designed to operate independently from the care workforce, others have been designed to support the care workforce to undertake physical tasks associated with performing their care role. For example, Hampshire are trialling the introduction of 'exo-skeletons' to help with the lifting of elderly patients, reducing the need for two carers to perform this task.

Socially assistive robotics (SARs) aims to endow robots with the ability to help people through individual non-contact assistance in convalescence, rehabilitation, training and education. SARs can be categorised into two operational groups, namely 'service robots' which are tasked with aiding activities of daily living and 'companion robots' which are more generally associated with improving the psychological status and overall well-being of its users. Example solutions include:

> The CompanionAble project is designing robots to help older people to stand up from a chair or bed, move around and carry objects in the kitchen and elsewhere. The robot would respond to voice commands and interact with other devices and sensors in the house. Friends and family could also be kept informed of individuals' health status and wellbeing.

> The RoBoSafe project is a joint project between academic and industrial organisations in the UK, which is focused particularly on the interactions between older people and robots in the home. Researchers are looking at how elderly people, or their carers or relatives, can make robots learn and respond to activities and sensors.

There are many examples of international developments not yet available in the UK. In the US, ElliQ, a robotic companion, has a "head" that lights up and moves in a human-like fashion when talking to a person. Also using an AI, it will proactively suggest actions for the person, such as when they need to take their medication, go for a walk, or play music if there are guests over. The Dinsow Elder Care robot was launched in 2015 following partnerships with hospitals in Thailand and Japan. The robot acts as a personal assistant of sorts helping people to remember to take their medications, track their health and automatically answer incoming calls from family and doctors.

However, significant acknowledged barriers for growing the use of AI and robotic systems **include cost and a lack of understanding or even antipathy within the sector to their introduction.** This in turn limits the opportunity to evidence their contribution to supporting the care workforce and improving outcomes for service users.

Example brands:

Questions to consider:

> **To what extent is your service engaged to use data and analytics to shift from a reactive, to a more proactive service?**

> **What type of partner would your service need to work with in order to do make meaningful use of available data and analytics?**

> **How does data and analytics in relation to care technology fit in with wider plans and activities your local authority has?**

4.3   Key themes arising

As a society, we are adapting – indeed expecting - digitally enabled services in many aspects of our lives. Traditionally, telecare has prioritised the safety of service users by giving peace of mind to their families and offering them a way to seek help in an emergency. Yet emerging digital care technology, such as wearables, smart voice interaction systems, big data analytics and artificial intelligence (AI) can offer so much more.

Key opportunities include:

❯ Richer datasets can enable the design of predictive services with the aim of preventing problems before they escalate

❯ Mobile health apps can improve the levels of self-care and medicine adherence, reducing reliance on formal care provision

❯ Wearable technology and activity sensors can increase understanding of falls risk and deliver prompts to user if they have been inactive for a prolonged period

❯ Geo tracked devices, that work outside of the home, can help to tackle loneliness and isolation as they give users confidence that they can stay safe outside of their property

❯ Everyday consumer technology can be utilised to passively monitor health and wellbeing, therefore allowing early intervention by carers/family and potentially negating the need to invest in new equipment

❯ Care providers can become more efficient through smart routing and scheduling for example, and in the management of equipment installed in the home.

Drawing together the material from the specific care technology service layers, it is evident that the market is in a state of considerable flux. We see several key aspects over the next 5 years:

❯ The digital switch over is already directly affecting monitoring centres and the devices connected, both in and outside the home. It will require commissioners to be actively engaged in the local implications of the switchover so that existing telecare services are not compromised

❯ Market consolidation of monitoring centres will continue, possibly even accelerate

❯ The consumer smart home market will increasingly cross over into the care technology sector

❯ Which of the digital telecare suppliers will be able to achieve scale is as yet unclear, nor how quickly the industry will achieve open interoperability

❯ Finally, the potential from gaining significant insight from the available data is also bringing in new players including global technology companies.

Given these factors, it is unclear yet how the ecosystem will settle down and who will be the future leaders. It may well be significantly different in the future.

Given there is no 'silver bullet' apparent yet, what is evident is commissioners must avoid investing in legacy telecare solutions or digitised versions thereof.

> *"Emerging digital care technology, such as wearables, smart voice interaction systems, big data analytics and artificial intelligence (AI) can offer so much more."*

5. The commissioning landscape

This chapter summarises our learning about what leading commissioners of services in other councils have achieved or have in progress. High-level care technology commercial options linked to emerging Social Care target operating models are also covered in order to inform future care technology procurement approaches.

5.1 Overview of commissioning intentions and experiences of use

The UTOPIA study, published in 2018, helpfully summarises the lie of the land regarding the national landscape for care technology / telecare. The study involved over 100 local authorities and surveyed their usage of telecare including awareness levels, strategic aims served, level of financial commitment, benefits achieved, barriers and facilitators.

5.1.1 Strategic aims

The survey collected information about what strategic aims local authorities wished to achieve through using telecare. Some needs were a particular priority including: the use of telecare to delay and reduce the need for care and support (97%): to enhance quality of life for people with needs for care and support (90%): to help with safeguarding (85%); and to prevent carer breakdown (84%). Fewer saw a role for telecare in ensuring people had a positive experience of care and support (66%).

Most respondents collected information about telecare deployment and use to see if they were meeting their aims, including the efficiency with which telecare was deployed and the degree to which it led to desired outcomes. The survey also collected information about the extent to which local authorities sought to comply with agreed national or international standards and codes of practice. About half (53%) of respondents said their local authority was accredited to the TSA's Codes of Practice for Telecare and Telehealth. A few (7%) said their authority had plans to seek accreditation at a future point.

5.1.2 Barriers and facilitators

Local authority respondents were asked to consider things that may have held back or promoted telecare use amongst older telecare user and family carers, care professionals and commissioners and senior managers. Key findings included:

› For older users and relatives, respondents felt access to telecare and availability of advice and support were good, however levels of awareness about it, and the knowledge and skills needed to maintain or adjust it, were seen as average or poor respectively.

› For professionals, the potential for telecare to reduce human contact and face-to-face care was a concern.

› For commissioners and senior managers, barriers to telecare were perceived to include: skill deficits amongst professional staff to assess for telecare; the inflexibility of 'service bundles' or contracts with existing suppliers of technology; and lack of staff with the right skills to install telecare.

> *"Local authorities may wish to consider if telecare could be used to support other areas of an older person's life to help them maintain a good quality of life"*

5.1.3 What gets considered when eligible older people are assessed for telecare?

Most (92%) respondents said that a telecare assessment should include the person's ability to mobilise and move around, their memory and whether this was impaired, and the person's ability to communicate and their daily routines. Other kinds of need were less likely to be assessed (see figure 5.1).

5.1.4 Devices and forms of telecare

Amongst respondents who answered the question, just under 40% obtained telecare from between 1-5 suppliers. The most commonly used types of technology were lifeline and pendant alarms (53%), fall detectors (50%), bed or chair occupancy sensors (48%), and smoke detectors/alarms (42%), as shown in figure 5.2 below.

What do you assess within your telecare assessment?

The mental and physical capacity of the person	89
The social support the person has inc. family, friends, neighbours, paid care workers	88
What may be unsafe about the way they do an activity/activities	80
The person's physical environment, inc. steps & stairs	89
The person's grip strength & dexterity	64
The person's ability to mobilise & move around	92
The ability of the person to problem solve	53
The person's memory & whether this is impaired	92
The person's ability to communicate	92
The person's daily routines	91
What activities the person needs to do in their day	83
What activities are important for the person to be able to do in their day	73
The person's insight into their abilities and limitations	75

Figure 5.1 - Assessment focus – UTOPIA study, 2018 (Source: KCL)

Most frequently used AT/telecare devices

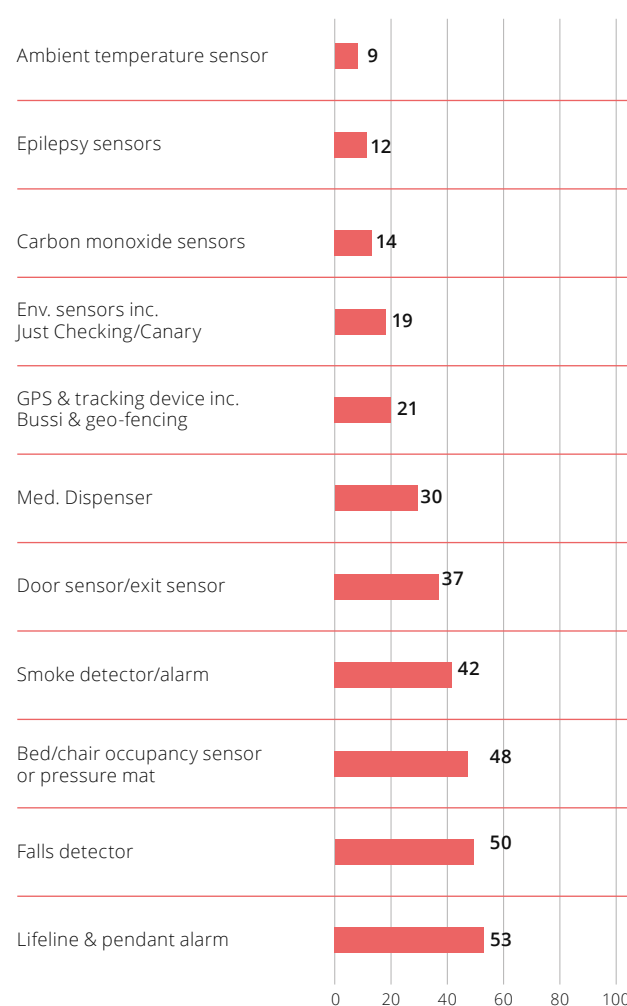|	
Ambient temperature sensor	9
Epilepsy sensors	12
Carbon monoxide sensors	14
Env. sensors inc. Just Checking/Canary	19
GPS & tracking device inc. Bussi & geo-fencing	21
Med. Dispenser	30
Door sensor/exit sensor	37
Smoke detector/alarm	42
Bed/chair occupancy sensor or pressure mat	48
Falls detector	50
Lifeline & pendant alarm	53

Figure 5.2 - Devices used – UTOPIA study, 2018 (Source: KCL)

5.1.5 How any response to information generated by telecare is organised

Relatives and family were the most frequently mentioned group of telecare 'responders' (20%), followed by the local authority's own response service (15%) or an independent sector service commissioned by the local authority (12%). Shire counties were less likely than other local authorities to offer a mobile service.

5.2 Benefits sought and achieved

Respondents to the UTOPIA study were also asked to indicate the main ways telecare was intended to meet their strategic needs – i.e. what benefits it aimed to achieve. The results are shown in figure 5.3

In terms of benefits achieved, the study commented that "40% felt telecare would save money but not all could evidence this claim, some had done some financial modelling, and developed hypothecated savings, a third had a specific spending target for telecare." The evidence reviews suggest that positioning technology correctly delivers cost avoidance and cashable results – the TSA quotes that evaluations across 39 councils identified average annual savings of £1,163 gross/£890 net per user (typically 70% cost avoidance; 30% cashable). Specific benefits examples from the councils we have interviewed are provided in the vignettes in 5.4 below, and further information is provided in Appendix B.

What are the main ways in which telecare is intended to meet the needs of older people?

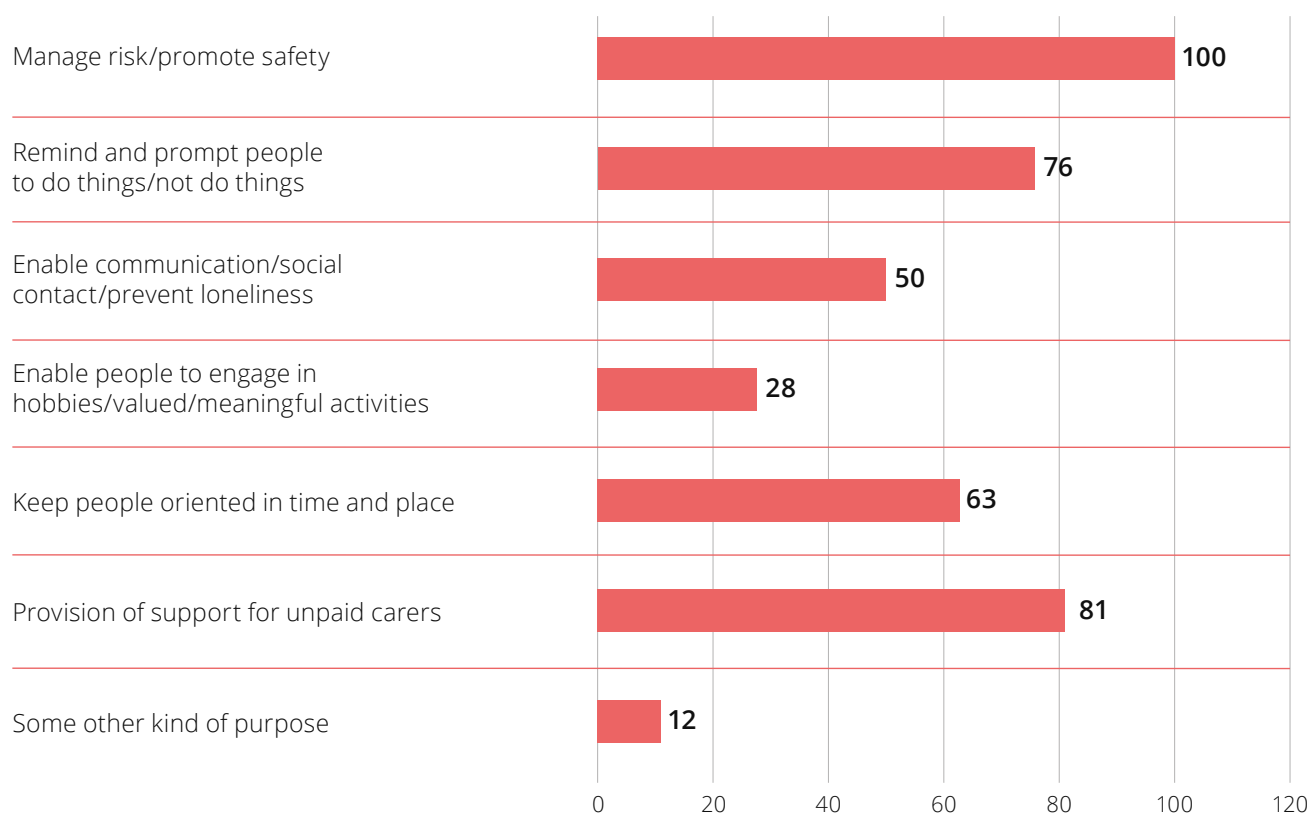| Benefit	Value
Manage risk/promote safety	100
Remind and prompt people to do things/not do things	76
Enable communication/social contact/prevent loneliness	50
Enable people to engage in hobbies/valued/meaningful activities	28
Keep people oriented in time and place	63
Provision of support for unpaid carers	81
Some other kind of purpose	12

Figure 5.3 - Benefits sought – UTOPIA study, 2018 (Source: KCL)

5.3   Operating Models

The LGA undertook an (unpublished) analysis in 2018 on councils' differing operating models towards care technology services, which they kindly shared with Socitm Advisory. Their conclusions on which models and scope of service is most and least common is illustrated in Figure 5.4 below.

Their analysis highlights the diversity of operating models and approaches that exist, including:

❯ Organisational – the most common scope of services lies with council (Adults & Children's), districts and housing providers.

❯ Customers – the most common clients of care technology are those who are Care Act eligible and a growing number of private payers; what is interesting to note is the apparent variability in councils applying funding eligibility criteria.

❯ Technology - the most common technology in use are traditional telecare SOS devices and home-based sensors to monitor movement and behaviours.

❯ Providers – prime contractor, in-house provider or none are the most common models. This operating model is discussed more in Section 5.4 below.

However, this situation is likely to evolve as councils develop new care technology strategies to take advantage of new technologies and care models, as joint working with health and other partners develops, particularly through Integrated Care Systems.

Models and approaches

Figure 5.4 - Review of Councils' Care technology Plans, 2018 (Source: LGA)
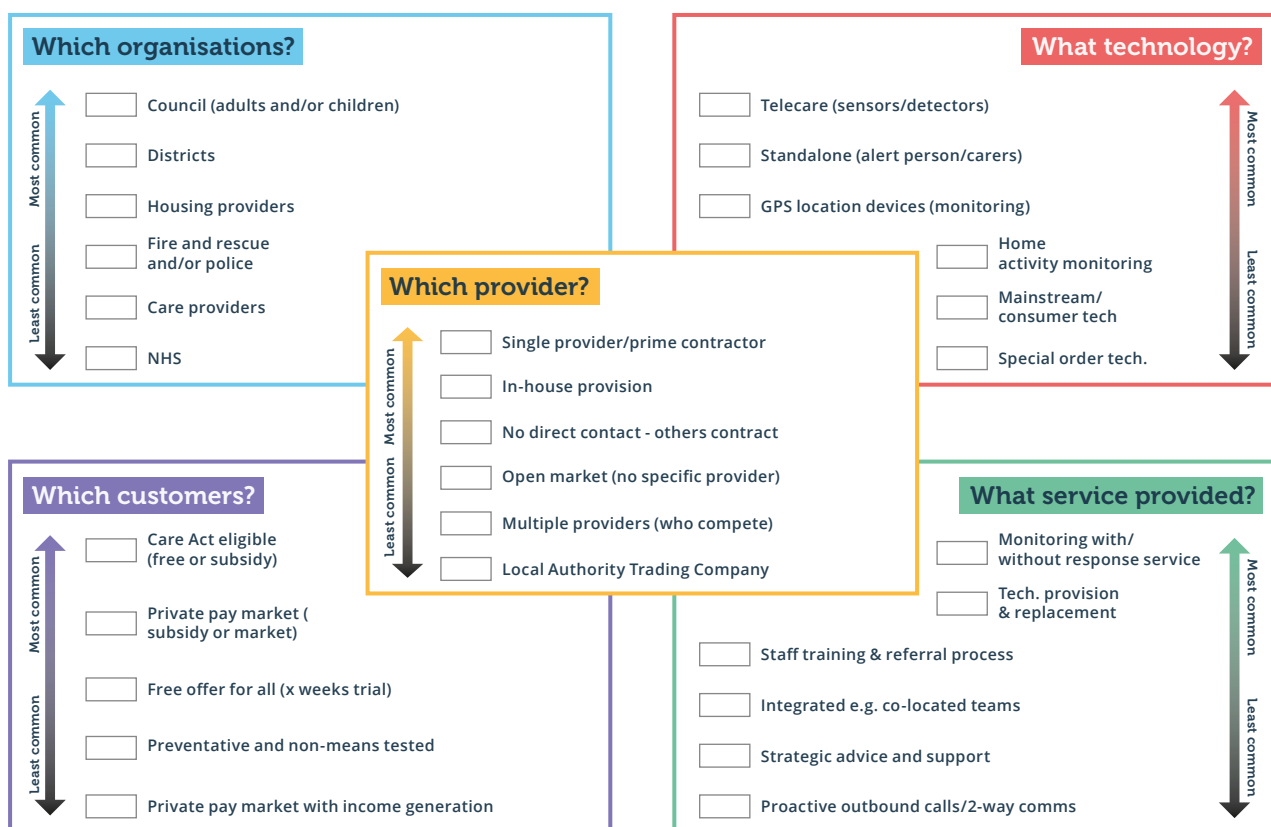
5.4   Commissioning Models for care technology

Based on discussions with councils that are regarded by TSA and LGA as pioneers in relation to commissioning care technology services, Socitm Advisory sees councils as falling into a spectrum of four categories of (non-exclusive) commissioning models, as shown in Figure 5.5 below:

Exemplars in each of these category areas are now presented as a series of vignettes for each of the councils we have consulted, together with questions for commissioners to consider. Where known, references to local telehealth projects are referenced – further material on the uptake of telehealth is in Appendix C.
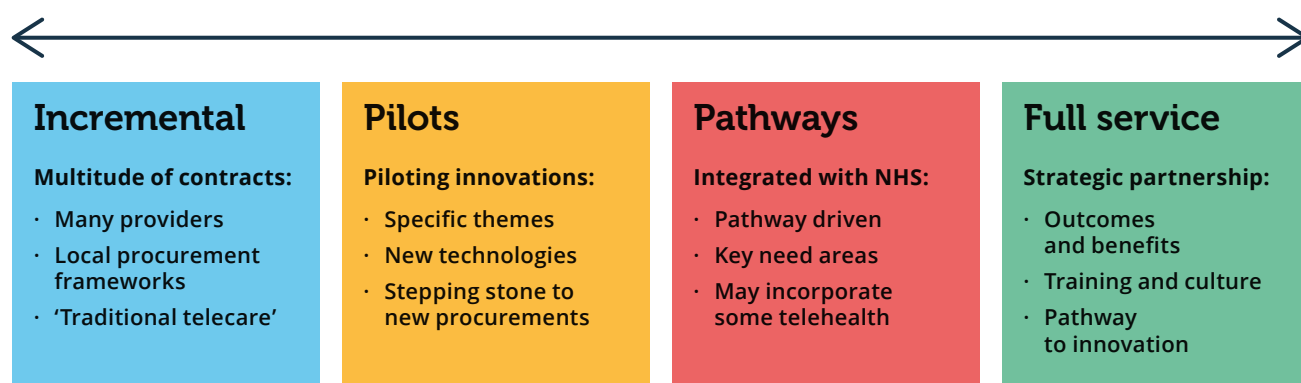
Incremental

Multitude of contracts:
· Many providers
· Local procurement frameworks
· 'Traditional telecare'

Pilots

Piloting innovations:
· Specific themes
· New technologies
· Stepping stone to new procurements

Pathways

Integrated with NHS:
· Pathway driven
· Key need areas
· May incorporate some telehealth

Full service

Strategic partnership:
· Outcomes and benefits
· Training and culture
· Pathway to innovation

Figure 5.5 Alternative commissioning models (as observed by Socitm Advisory)

5.4.1   Incremental exemplars

These councils have many existing providers delivering a 'traditional telecare' service and are seeking a more coherent approach to delivering care technology, often through local procurement frameworks.

Cambridgeshire County Council

The County Council and NHS Cambridgeshire and Peterborough CCG co-fund the Technology Enabled Care Team based on the joint benefits of working in this way. Lifeline provision across the county is provided by a range of providers, including two district Council partners and the remainder being private. The County Council works in partnership with these providers, providing additional telecare peripherals to service users and to support the assessment of service user needs.

Eligibility to the TEC service is based on prevention, delaying, reducing or preventing the need for formal care and supporting informal carers. The county will currently fund a lifeline trial for a six-week period to support reablement and discharges from hospital; this also ensures access to the enhanced response service which is critical to support informal carers and prevent readmission. The enhanced response service is the county's telecare response and is provided by Reablement.

There is an aim to move towards a more coherent care technology service across the county and knit together the monitoring services of existing Lifeline providers. Looking 2 to 4 years out, the council envisage more preventative, intelligence-based systems and technology to be part of business as usual.

The Council is working on some pilot innovations, including:

›   A next generation Intelligent Lifeline service – applying algorithms to learn people's behaviours and alert on deviation from the daily routine. This solution is offered as an alternative to Lifeline to support better anticipation of care needs. This project is funded by NHS England.

›   The Council has also received funding from the Local Government Association Innovation fund to participate in "Discovery" phase projects. Last year this started a project to consider digital medication adherence aids and this year will be looking at enablement technologies for those with learning disabilities.

DERBYSHIRE County Council

Derbyshire are midway through a 2 to 3-year transformation programme on Assistive Technology. Historically they have commissioned and provided a traditional community alarms and telecare service across the county. The intention now is to uplift the assistive technology offer to better enable independent living and to bring in new technology.

Currently the County Council has in place 13 different contracts with different providers, some of which are provided by district/borough councils, which each have separate monitoring arrangements. There are also a small number of contracts with specific housing schemes.

This contractual environment has developed over time and a sustainable future operating model and commissioning approach is being developed via a transformation programme.

Consultation has taken place to propose updating the funding criteria to change citizens' eligibility towards that based on the Care Act. Adult Care are also considering how consumer technology can support individuals to an outcome related to their health or social care need. These changes require developing, defining and implementing a new commissioning approach to technology in social care.

Questions to consider:

What relevant learnings are there from these councils for your service on matters concerning the consolidation of existing monitoring centres and the eligibility criteria for funding of care technology?

5.4.2 Innovation Pilots

These councils have a genuine desire to progress care technology strategically. The starting point is to pilot various technologies as a potential stepping stone to new procurements.Approximately 8,500 service users receive the current telecare service, one half through an outsourced arrangement, the other provided by North Hertfordshire District Council.

A review 18 months ago of the service suggested that the present telecare offer did not take advantage of developing digital technologies and was too much of a reactive service and often seen as an add-on in care planning. It is anticipated that modern technology could enable:

›   People to be more comfortable in their own homes and to apply predictive analytics in a proactive service.

›   Reduced social isolation and encourage better community engagement for vulnerable people.

›   Social workers and occupational therapist to think more digitally when they are assessing a customer's need.

›   Real-time information to be fed back to carers and referrers on the service user's activities and emerging needs.

As a result of this review, the Council went to Members with a new Assistive Technology Strategy. As a starting point, a series of pilots were initiated with ongoing evaluation and close involvement of service users, their carers and professionals. The main pilots include:

›   Predictive analytics - through the installation of sensors in the home a dashboard of information becomes available which can be useful to identify patterns of deterioration. The aim is to reduce

recurrent admissions into hospitals (such as those for UTIs); reshape existing care plans by using AT; ensure greater accuracy in care provision; enable vulnerable people with care needs to live independently for longer; increased levels of reassurance for carers; identify events that could indicate a decline in mobility and self-care; better management of emergency and non-emergency alerts.

›   Supported living – the pilot is looking at a capability to offer users a better quality of life through incorporating technology and apps. It may also help in terms of the staffing flexibility required to manage supported living accommodation.

Based on the outcome of the evaluations, the Council aims to define a new strategy in 12-18 months' time. An important criterion will be the impact on family carers through the use of technology to see whether it better .supports carers.

Over several years, through Better Care Funding, the Council and Nottingham City CCG invested significantly in an integrated telehealth / telecare service as a step-up / step-down service across health and social care i.e. different technology offered depending on the level of need. A two-year evaluation completed in 2016 by Cordis Bright found a £238 saving per service user across health and social care. However, funding cuts in 2017 caused CCG to cease telehealth, although the evidence suggested it was effective.

Since then, the Council has been focusing on commissioning incremental improvements to existing telecare services from their sole provider (Nottingham City Homes), to offer a broader assistive technology service. It is also expected that there will be tighter eligibility funding criteria for AT. A key platform is to move onto new digital control hubs as a platform for improved 2-way connectivity including with health devices. More

intelligent routing can be done on where to send the data not just to a call centre but for example to a relative.

This digital platform is enabling the Council to trial new applications for users such as: safer walking pathways with geo-fences; use of Amazon Alexa's and other passive monitoring technologies for continual assessment of needs, for a more preventative model of social care; improved medication adherence; and a Bring Your Own Device acting as a digital pendant alarm.

Questions to consider:

What experience of pilot and pathfinder projects does your service have?
Is there learning for you in terms of these councils' approaches to technology evaluation and funding?

5.4.3   Care technology Pathways

Other Councils, often working in partnership with health partners, are commissioning care technology specific to care pathway needs or use cases. (The two examples below are those we have heard of through the TSA but did not have the opportunity to interview them directly, so the information provided is more limited.)

NHS

Torbay and South Devon
NHS Foundation Trust

In Torbay and South Devon, social care commissioning sits with the local NHS Foundation Trust. The Trust's future vision is for a health model where patients have the skills, confidence and knowledge to self-manage and to become more 'active' in relation to their physical and mental health, and where support is available to people closer to home, from a broader range of organisations.

In line with this, the Trust has an asset-based approach to care technology to support specific user groups to be

confident in their ability to manage their own condition in their own home, increasing their sense of independence and further reducing demand on face-to-face services.

Following a recent procurement exercise, NRS was selected as technology provider. The service focuses on improving reablement and falls prevention.

Liverpool City Council

Liverpool is the only DALLAS site that has continued with its care technology programme, which brought together the City Council, NHS Liverpool CCG and local NHS trusts.

Starting in 2013, the city's More Independent (Mi) Programme uses a combination of education and remote monitoring tools to support people living at home with lung conditions, heart failure or diabetes. But it is also suitable for people who are looking ahead and planning the next stage of their lives. The technology offered includes fall detectors, 'talking' kitchen appliances. A Smart House has been set up where potential users can see a selection of the different tools that are available, and the ways they can help them.

As at January 2018, approximately 900 patients are supported through the clinical hub with the aim of growing it to 5,000 users per year.

There is a significant telehealth programme in which service users are provided with AT in hospital to take home on discharge.

Questions to consider:

Is this approach towards focusing around key care pathways, or high priority use cases, a valid alternative for your service to consider, ideally in conjunction with STP partners?

5.4.4   Full service

The final group of councils have opted to go for a full managed service model with a single contractor responsible for the end-end service, with a focus on outcomes and benefits. This is equivalent to the full-service provider model discussed in chapter 4.

Hampshire County Council

Since 2013, the PA Argenti consortium has been delivering Assistive Technology to Hampshire CC as a managed service that is explicitly outcomes focused and partnership-based to "transform social care delivery", and agnostic on technology. The service targets care technology at clients with the aims of: reducing reliance on domiciliary care; delaying admission to residential care; reducing carer breakdown; and assisting with managing the consequences of falling.

As part of the service redesign, financial benefits are tracked and audited in detail, based on a comprehensive measurement framework, with savings quantified at the point of referral so that these are understood at the service user level. Each telecare provision for a client saves an average of £840 per annum (ranging from approximately £230 to £1,500), with net savings of £9.8m over the first 5 years, largely cost avoidance.

The service is intended to be personalised with assessors visiting the home and with in-depth conversations with the service users about their needs and how the equipment works.

Hampshire undertook a competitive re-procurement in 2018, with a focus on proactive approaches and demonstrator homes. The outcome was a new 5+5-year contract awarded to PA Argenti, stated as a £67m Council investment. The service is to be scaled up from the current 10,000 to 14,000 people, with a private pay offer to be developed and an innovation journey.

Lancashire County Council

In 2015, Lancashire County Council appointed Tunstall as Development Partner to provide a managed Telecare service for up to 7-years. A local housing provider, Progress Housing Group, provides assessment, installation, call monitoring and home response services as a sub-contractor to Tunstall.

The contract included a service re-design to simplify referral processes and embed Telecare into mainstream assessment and frontline social work practice. If eligible under the Care Act, people can receive telecare from the council free of charge.

The service now reaches 11,000 users, with about 400 new installations per month. An initial evaluation by the council found that 46% of telecare users (all Care Act eligible) are only receiving telecare to support their eligible needs; 34% have telecare with homecare, with an average care package cost of £627 less per person per year than those receiving a home care package without telecare. York Health Economics Consortium is undertaking an economic study of the service with the results due shortly, and the council is working in partnership with Lancaster University and a PhD student on a sociological study.

The Council is currently progressing a range of service developments including:

> Piloting telecare as part of a 'Discharge to Assess' pathway using quick access to mobile technology.

> The roll-out of telecare to the five prisons located in Lancashire following success at HMP Wymott.

> The implementation of a private pay telecare offer to encourage self-help.

In the future, Lancashire is aiming towards better adoption of person-centred and innovative technology, using more proactive interventions, such as targeted wellbeing calls, and making greater use of data analytics as part of a broader approach to prevention.

An AT monitoring service was added to an existing community equipment contract so that it is now a full AT service, provided by NRS. There are reported to be 8,500 service users, with a 70% increase in referrals over the last 10 months.

NRS claims that a net saving of £1.25m has been achieved in last 12 months, 70% being cash avoidance and 30% cashable savings. A range of technologies are used and being piloted.

The Council manage the AT self-pay process themselves.

Questions to consider:

The three examples above have taken a different approach to procurement, the service specification and selected quite different providers – one headed by a consultancy, another by the leading telecare provider, the third by a major equipment provider. Which model might suit your service best?

5.5   Key Themes Arising for Commissioners

The material in this chapter has described differing operating models and strategic approaches other commissioners are adopting for care technology services.

The intention is that services could draw on this analysis as they prepare their care technology strategy and – in considering the best procurement approach – may choose to evaluate this further through developing an outline business case for investment. The following lists some considerations that commissioners could look to address during this process:

› How can care technology best contribute to the sustainability of health and social care in your communities?

› For which outcomes should your service be striving, both financial and non-financial, from investing in care technology services and who will benefit?

› In view of the market going through a significant transition, when is the best time for your service to be making a significant investment in future proof digital care technology?

› Which of the operating models described in the chapter best suit your local context and what implications does this have for the shape of the procurement? How will innovation be catered for?

› With which partners does your service need to work closely to exploit care technology, e.g. across district councils, health, housing, independent care provision etc?

› For which types of service user and in which settings should care technology services be targeted? How will you collaborate with service users to co-design services?

› How best can the care service be remodelled to take full advantage of the opportunity of care technology? What changes will be needed to referral processes?

› Is the necessary leadership sponsorship in place to deliver the cultural change to embed care technology most effectively into the care management process?

› With better use of available data and intelligence, how will the improved insight enable a more preventive service to be adopted?

› How is your service addressing the expectation that the building of new homes for an ageing population should incorporate smarter 'care aware' design, ready for the delivery of digital care services?

› How best to consolidate the services of the existing district monitoring centres into a county-wide service?

> Are the current care technology eligibility criteria fit for the future and the best use of Council resources? How might your service look to grow the self-funder market to leverage consumer technology, and provide self-funders with accurate and clear advice?

There are pros and cons associated with all the care technology commissioning options (discussed in 5.4 above) that your service will need to reflect on in determining their optimal procurement approach.   A key question is whether, in view of the market going through a significant transition, the RoI is yet robust enough and the timing appropriate to be making a significant, large-scale, investment in care technology solutions. The options lie between:

> A strategic partnership, with a technology agnostic, innovative player(s) demonstrably able to work with your Council on a transformation journey together.

> A pathways model, enabling your service - working jointly with health and other partners - to focus on care technology solutions based on addressing highest priority service user needs.

> Or your service could focus on innovative pilots and, once it is determined there is more market clarity, seek to make a more substantive investment.

6.   Appendices

6.1   Appendix A - List of stakeholder organisations interviewed

Councils	› Cambridgeshire › Derbyshire › Hampshire › Hertfordshire › Lancashire › Leeds › Nottingham
Essex Providers	› Essex Cares Ltd - ECL › Tendring
Industry associations	› Technology Services Association – TSA › Tech UK › UK Telehealthcare
Managed service suppliers	› PA Consulting Argenti › Tunstall › Nottingham Rehab Suppliers – NRS Healthcare
National organisations / agencies	› Local Government Association – LGA › Telecare / Housing LIN › UK Research & Innovation – UK R&I
Product suppliers – (digital) telecare	› Alcove › Canary Care › Kemuri › Lifemax › Medpage › Millbrook Healthcare › Mindme › Oysta › TecAngel › Tynetec/Jontek (owned by Legrand)
Product suppliers - generic	› Amazon Web services – AWS › IBM › Microsoft › Veni Loqui (Amazon Alexa applications for ASC)
Providers / monitoring centres	› Appello › Centra Pulse › Welbeing (Doro)

6.2 Appendix B – Further examples of how other councils benefit from care technology

Evaluations across 39 councils, initially led by the Department of Health in England, identified average annual savings of £1,163 gross/£890 net per user.

This appendix lists benefits that other councils have achieved or identified through the use of care technology that we have come across during the literature review:

> Havering London Borough Council avoided £938k costs relating to care home admission as well as £2.24m from a 44% reduction in hospital admissions due to falls.

> By embedding technology within reablement and ongoing support, Dudley Metropolitan Borough Council found their personal budgets are 8% smaller when telecare is included (average £800 per user reduction).

> Barnet London Borough Council, which has a contract with PA Argenti for the mainstreaming of technology in care, reported a net annual saving of £0.9m based on 2,800 service users receiving technology-enabled care in the first year of operations.

> PA Consulting undertook a detailed diagnostic study for Glasgow which forecast net savings of £4.3m between 2016/17 and 20/21 by mainstreaming AT.

> East Sussex has demonstrated an approximate cost avoidance value of £32 per client per week and has estimated preventative savings of £589,000 in 2014/15 through the better use of technology enabled care.

6.3 Appendix C – Overview of telehealth

The terms of reference for this study requested a synopsis of care technology in NHS community and primary health settings, often called telehealth. This appendix provides an overview of telehealth and supplements some of the councils' material in Chapter 5 which referred to relevant developments.
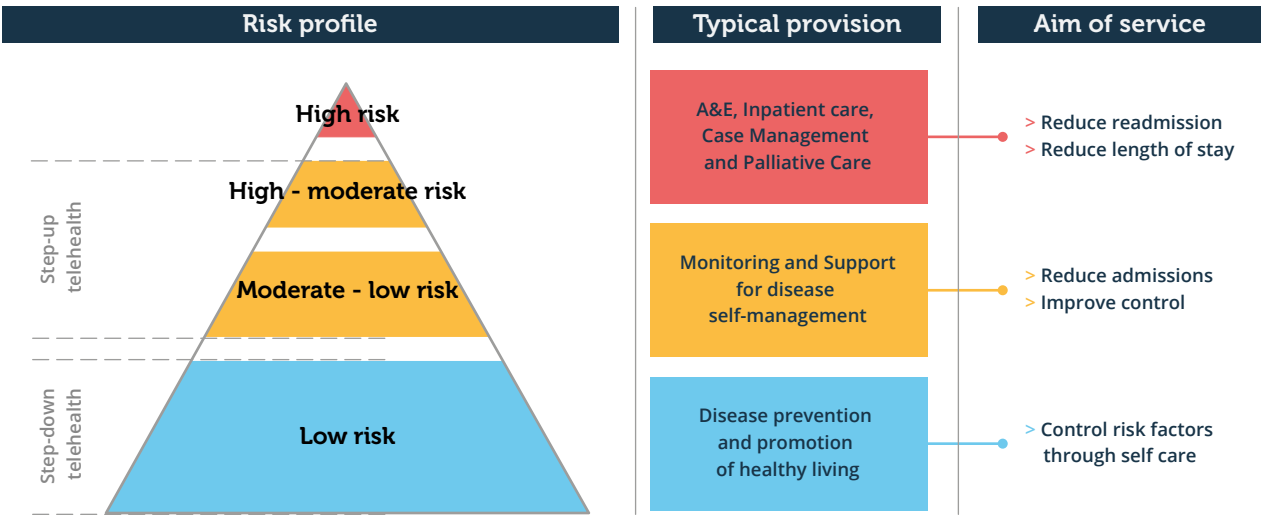
Telehealth involves using technology to enable healthcare professionals to remotely monitor data on certain aspects of a patient's health. It may include sensors that can monitor the amount of oxygen in a person's blood, or more straightforward examples, such as telephone check-ups. It works by monitoring vital signs and transmitting the data to a telehealth monitoring centre for clinical triage by a health care professional, where it is monitored against parameters set by the individual's clinician. Evidence that vital signs are outside of 'normal' parameters, which may indicate deterioration in health, instigates an appropriate response

Telehealth can be used to monitor people with long-term conditions such as Chronic Heart Failure (CHF) and Chronic Obstructive Pulmonary Disease (COPD). The individual patient benefits from more control and understanding of their long-term health condition, and the clinicians utilising telehealth as part of a care pathway can ensure that they are proactively involved in the ongoing wellbeing of their patient, managing timely interventions and helping to improve their patient's quality of life.

Initial findings from the Whole System Demonstrator programme in 2011 showed that, when used correctly, telehealth can benefit a patient's health and quality of life. The early findings from the WSD trial indicated: a 15% reduction in visits to A&E; 20% reduction in emergency admissions and a 45% reduction in mortality rates.

The government's 3millionlives campaign in 2012 created on the back of the WSD results set the stage for a rapid uptake in telehealth. An important distinction was made between 'step up' telehealth (with a full service model including clinical triage, with dedicated hubs and devices

in the patients home) and 'step down' telehealth (more appropriate to earlier stages in the disease, often using a text-based SMS service), as shown in the figure below:

Risk profile	Typical provision	Aim of service
High risk	**A&E, Inpatient care, Case Management and Palliative Care**	> Reduce readmission > Reduce length of stay
High - moderate risk		
Moderate - low risk	**Monitoring and Support for disease self-management**	> Reduce admissions > Improve control
Low risk	**Disease prevention and promotion of healthy living**	> Control risk factors through self care

Step-up telehealth

Step-down telehealth

Seven years further on, the uptake of step-up telehealth has been much less than forecast, for several reasons:

> The step-up telehealth services have tended to be relatively high cost using dedicated hubs, often based on old technology, with limited payback and often requiring significant service change across organisations to be fully effective.

> A burden is placed, particularly on primary care, to monitor results for which they are not well resourced.

> Many of the early telehealth projects and pilots were not continued, such as in Nottingham. Liverpool represents one of the exceptions.

On the other hand, step-down telehealth has continued to develop. In part, this is as a result of the explosion in the availability of high-quality apps and wearables, allowing many patients to self-care, at low cost to themselves and no cost to the system. And low-cost text-based solutions, such as the NHS Simple Telehealth or Florence services, have continued to have wide uptake and used in many situations. www.simple.uk.net

6.4 Appendix D - Glossary of terms

ADASS	Association of Directors of Adult Social Services
AI	Artificial Intelligence
ASC	Adult Social Care
AT	Assisted Technology, or Care Technology (any technology-related product or service designed to enable independence for disabled and older people).
DTOC	Delayed transfer of care
ECC	Essex County Council
IoT	Internet of Things (the interconnection via the Internet of computing devices embedded in everyday objects, enabling them to send and receive data).
IP	Internet Protocol (how data is sent from one computer to another on the Internet. Each computer has at least one IP address that uniquely identifies it.
LGA	Local Government Association
LHCRE	Local Health and Care Record Exemplars, an NHE England initiative
LIN	The Housing Learning and Improvement Network
MASH	Multi-Agency Safeguarding Hub data
OBC	Outline business case
PAR	Physically assistive robot
PSTN	Public Switched Telephone Network.
SAR	Socially assistive robotics
STP	Sustainability & Transformation Plan
TSA	Telecare Services Association

6.5   Appendix E – Literature review and bibliography

Literature review

There is a wide body of research that is associated with care technology. Over 30 documents have been reviewed as part of this report. In this literature review we have summarised key insights from what we see as particularly relevant and valuable papers.

1. Centre for Ageing Better (2019) Industrial Strategy Challenge Fund Healthy Ageing Challenge Framework

Access here

This document sets out a proposed framework developed by the Centre for Ageing Better for the Industrial Strategy Challenge Fund's £98 million challenge on Healthy Ageing.

In 2018 the Prime Minister announced a mission to "ensure that people can enjoy at least five extra healthy, independent years of life by 2035, while narrowing the gap between the experience of the richest and poorest". The Centre for Ageing Better proposed that the Healthy Ageing Challenge Fund should focus on seven themes where we think there are the greatest opportunities to tackle market failures and stimulate innovation in pursuit of longer, healthier lives for all:

1.   Sustaining physical activity

2.   Maintaining health at work

3.   Designing for age-friendly homes

4.   Managing common complaints of ageing

5.   Living well with cognitive impairment

6.   Supporting social connections

7.   Creating healthy and active places

› What is healthy ageing - The World Health Organisation defines healthy ageing as "the process of developing and maintaining the functional ability that enables wellbeing in older age." Functional ability is comprises: an individual's intrinsic capacity (their physical and mental health); and their environment/ extrinsic factor. Intrinsic capacity tends to decline over the life course. Where the environment is not supportive, even minor limitations in intrinsic capacity can significantly reduce functional ability

› Healthy ageing, therefore, is more than simply the promotion of good health and prevention or treatment of ill health. It is about creating supportive products, services and environments that maintain people's functional ability so that they can continue to take part as active and productive members of society, even when their health limits their intrinsic capacity.

2. Housing LIN (2018) Technology and Digital Connected Care Services: Towards a Tipping Point?

Access here

The purpose of this paper is to considers why technology and digital is playing only a limited role in meeting the current and future housing, health and care needs of older people. The key question is: 'What is the tipping point for true digital transformation of health, housing and care services?'

› The major developments in digital technologies do not, to date, seem to have impacted significantly on the world of health, housing and care, and on people's everyday experience of using these services at home, despite a lot of hype and excitement on the margins - with a few isolated exceptions. Across all three sectors, there are many promising projects, pilots, and short-term funded initiatives, but very few true examples of transformation at scale.

› Looking at recent surveys of the housing and care sector, it seems that persistent barriers to major digital transformation include:

› The ongoing lack of integration across housing, health and care systems more widely (including data, care pathways and working practices)

› Skills and knowledge deficits among staff

› A lack of strategic commitment to digital transformation

› A continuing confusion about the evidence base for its efficacy and efficiency in delivering improved outcomes and / or reduced system costs

› Looking ahead it seems likely that the digital revolution will come to the housing, health and care sectors, albeit decades later than in society more generally. The 'Future of House and Home' report, published by Shelter in 2016, highlights that the people who will be in their 70s and 80s in 2030 are in their 60s, or younger, today, and as a result, will certainly be more familiar with the digital world than many older people are now.

› The Shelter report predicts that the generational digital divide will fade, notwithstanding ongoing barriers to equal participation in the digital economy, such as the cost of access. They anticipate the rise of home monitoring technology, 'wearables', and telehealth in everyday life. Digital technology will be even more ubiquitous by 2030 than it is now, and personal devices will routinely engage with sensors and embedded digital tech. The tech world will also be more lightweight, based on phones and tablet-like devices rather than laptops and computers.

› Reflecting on these predictions, one hypothesis is that the 'tipping point' in housing and care will finally come when Google / Apple / Amazon (and their descendants) start to market health and care outcomes to end users, including to people with disabilities and care needs – offering bolt on care-focused offers, added to existing smart home systems, which also deliver entertainment, environmental controls, etc. This may also help to reduce the stigma associated with assistive technology, particularly with the extra benefits that mass-market developers could offer in terms of aspirational, marketable design being part of the package.

› Top tips - A number of key questions emerge which might be useful for strategic housing, care and health leads, commissioners, housing and care providers, and in some cases, digital / telecare developers and manufacturers, to ask of themselves:

1. What is your state of readiness for the analogue switch-off in 2025?

2. Do you have – or are you developing – a digital strategy in advance of this milestone?

3. Have you undertaken a risk assessment of the shelf life of any telecare, digital and assistive technology equipment you rely upon to deliver your services? As contracts come up for renewal and the time comes for replacement, do you take the opportunity to ensure your digital infrastructure is fit for the future?

4. If you are in the process of commissioning, designing, or building purpose-built housing and care, have you incorporated a commitment to HAPPI design principles? These include an expectation that the building of new homes for an ageing population should incorporate smarter 'care aware' design, ready for the delivery of digital care services.

5. Looking at the wider context within which you are working, are you taking a strategic approach to planning holistically and for the long term, with tech and digital fully embedded as a golden thread throughout your entire vision for the future?

6. In terms of knowledge and skills, are your workforce – including the leadership - fully digital aware, or are there key learning requirements which need to be met?

7. How are you engaging with your customers / residents / end users regarding their future needs, priorities, and aspirations? Do you regularly undertake market testing with older people, and other people with care and support needs, to understand their interests and concerns?

3. Kings College London (2018) The UTOPIA project: Using Telecare for Older People in Adult social care

Access here

This report is based on an online survey of local authority telecare managers carried out between November 2016 and January 2017. The survey, which was funded by the National Institute for Health Research School for Social Care Research (NIHR SSCR) aimed to find out how telecare is being used by local authority adult social care departments to support older people.

The survey had twelve main sections and included 58 questions. The survey was sent to all identifiable telecare leads in England. Directors of Adult Social Care Services were emailed in those local authorities in which a telecare lead could not be identified. 154 responses were received of which 114 were valid: an overall response rate of 75%. All types of local authority and regions of England are represented within the responses. The full report can be accessed here.

› Only 24% of respondents said that their telecare strategy had been produced in collaboration with NHS / other partners.

› 47% of respondents saw telecare as being a possible social care substitute, but also as a 'gateway' service (44%) as a potential way of delaying need for care.

› Priority uses of telecare included to delay and reduce the need for care and support (97%), to enhance quality of life for people with needs for care and support (90%), to help with safeguarding (85%) and to prevent carer breakdown (84%).

› Identified barriers included skill deficits amongst staff to assess for and install telecare, and inflexibility of contracts with existing suppliers of technology.

› 24% of respondents estimated that the use of telecare saved money, although respondents found it difficult to provide hard evidence for this.

4. Appello (2018) White paper: why housing providers are planning for a digital future

Access here

The focus of this report is the 2025 analogue telephony switch-off and its effect on telecare services in the sector, and also the expected outcomes from adopting digital technology and how prepared the industry is today. The report draws on recent conducted with housing providers. The full report can be accessed here:

› 93% of housing providers believed that digital will be 'critical for future success', especially with the forthcoming analogue switch off in 2025.

› 44% of housing providers were not yet ready for transformation.

› Almost 12% of housing provider respondents stated that their current telecare provider was unable to monitor digital, highlighting a gap in the market for end-to-end digital solutions providers.

› 9% of housing providers still had no digital plan in place; 7% were not aware of digital solutions; and 7% did not see digital as part of their current strategy.

The benefits of digital solutions:

› Fast connections - emergency telecare calls connect much faster than analogue systems: average connection times come down from roughly 1 minute 30 seconds to under 3 seconds.

› Future-ready infrastructure - IP-ready infrastructure is compatible with the new UK digital network. inclusion video calling supports improved communication between residents and staff, and greater safety through video door entry.

› Eco-system approach - digital enables providers to develop a single interposable infrastructure, where multiple devices can be integrated and care packages tailored.

› Multiple simultaneous calls - with digital systems, there's no call queuing — so door entry calls no longer block emergency telecare calls.

› Richer data - digital care enables huge amounts of information to be collected providing staff with insight into resident wellbeing and the use of technology.

› Cost effectiveness - A digital infrastructure can save staff time and improve housing management performance.

› Improved Outcomes For People - Ultimately, digital care enables a more personalised service, designed around the needs and preferences of individuals, and recognising that each person is unique, this opportunity should support better outcomes for residents.

5. NIHR Dissemination Centre (2018) Help at Home: Use of assistive technology for older people

Access here

This review presents a selection of recent research on assistive technology for older people funded by The National Institute for Health Research (NIHR) and other government funders. Summarises of all 40 studies showcased can be found from page 30 onwards in the paper. Examples of projects include:

› A project looking at wearable technology and remote monitoring brought together different disciplines to design a prototype for smart clothing for older people walking outdoors. The research team included experts in textiles, design, electronics and care of older people. The clothes included electronic tags and sensors of heart rates and activity levels. (Study 26).

› A project focused on using technology to stimulate and encourage mental wellbeing, as well as make connections with others which involved a small group of residents in a care home, along with a facilitator, using technology to access photographs, videos and music by a touchscreen. Results from a before and after test suggested improvements in memory and quality of life which were sustained over some months (Study 30).

6. TSA (2017) A Digital Future for Technology Enabled Care

Access here

Over the next few years, possibly as soon as 2023, analogue telephony services will be switched off as the UK's telecommunications infrastructure is upgraded to digital connectivity. The implications of this analogue to digital shift are what this report from the TSA is all about. The paramount concern of the TSA is that the reliability and safety of telecare and social alarm services is not compromised: that lives are not put at risk.

› Many services that employ analogue connectivity, including the vast majority of current telecare services, will need to be upgraded or decommissioned before the switch over. Yet action is uncertain and too slow, and a large-scale upgrade programme has not yet begun. If the UK fails to act in a swift and coordinated way, a great number of vulnerable people could lose the technology they rely on, and it is likely that other health and care services would be significantly impacted as a result.

› Whilst dealing with the urgent need to replace and upgrade technology, the TEC sector has an unmissable opportunity to consider what more could be achieved. Any new, digitally enabled care service should not be treated simply as requiring a minimal solution to a technical infrastructure problem, but as a powerful tool that could transform and integrate care services, giving vulnerable people a better way to manage and improve their lives within a connected community.

› Information security challenges will emerge, in relation to citizen identity, cyber protection, data control, data storage and consent models as the sector shifts to digital. This is a concern where user data is incorporated into electronic health and care records.

› Diversity will also become a key theme. Current TEC devices are, in most cases, stand-alone and specialist, chosen and installed by care providers and connected to dedicated monitoring systems. Contrast this with the adjacent world of the internet of things,

where forecasts are for 20-30 billion devices by 2020 that will connect in a multitude of new ways to support our lives, health and care. This digital future will increasingly rely on a variety of communication service providers as well as a range of devices that will connect digitally in the home or on the move, and onwards to a rich ecosystem of application software, data analytics and hence proactive care services.

› New Economic Models will also emerge in the shift to digital. Models are likely to include:

1. Consumer selection and co-pay (where consumer access to emergent technology creates new expectations for services and a willingness to pay).

2. Prospects for proactive health and care services (new, data-driven services will emphasise early detection and triggering of proactive services. They will change citizen expectations in terms of access and contribution to personal care information and will challenge commissioning practices)

3. More complex supply chains: devices, apps, data and services will be deployed across multiple providers in a digital ecosystem and therefore proven interoperability will be vital.

7. Local Government Association (2017) Transforming social care through the use of information and technology

Access here

The Local Government Association's (LGA) Care and Health Improvement Programme commissioned the Institute of Public Care at Oxford Brookes University to help explore current innovations and to set out a future vision for care that is enabled by the use of information and technology. Their final report is structured around five themes, three of which are particular relevance:

1. Enabling people to interact with care services through digital channels - A number of local areas are working with citizens to develop online self-assessment and self-service solutions that support people to transact online for goods and services whilst at the same time reducing back office

costs. Harrow is one example where the council has developed an approach called 'community e-purchase' that is enabling citizens to choose their services through an online e-marketplace. Harrow has delivered £4 million savings so far through reduced back office and purchasing costs.

2. Promoting independence and wellbeing through the use of digital services and technology - In adult social care, technology can help to enable this and can also help to drive down costs by, for instance, reducing the need for home care or helping to monitor and limit instances of carer burnout - Hampshire is one example where the use of assistive technology has made net savings of £1.9 million in 2015/16 and has received positive feedback from citizens and carers using services.

3. Integrating commissioning through the improved use of information and analysis - A number of local areas are using linked (but anonymised) health and care information at client level, which is helping them to understand how citizens access services. This information is being used to support enhanced joint strategic needs assessment activity and to take a more proactive and predictive approach to the commissioning of services. Areas such as Kent and Leicestershire, Leicester City and Rutland councils are already using anonymised, person level information to support the commissioning of prevention and early intervention services as well as broader health and wellbeing objectives.

8. Skills for Care (2014) Commissioning Assisted Living Technologies Guidance

(Report not available online)

Skills for Care has produced guidance to support people who have responsibility for commissioning assisted living technology (ALT) and assisted living services (ALS).

The document outlines the key steps and general principles involved in the commissioning process:

1. **Establish a clear vision** – this is important as there is a mixed understanding among local authority commissioners and wider stakeholders on what ALT and ALS are, and what role they can play in supporting the delivery of adult social care outcomes.

2. **Defining the strategy** - the commissioning process should reflect the local context and financial parameters within which services are operating. There are clear benefits in covering both telehealth and telecare as part of a joint social care and health strategy and involving both health and social care stakeholders.

3. **Business case** - The commissioning process should be guided by a clear business case developed collaboratively between social care and health partners for proposed investment and service transformation.

4. **Local needs assessment** – This is likely to provide the foundation for an analysis of the potential role of ALT and ALS in meeting social care and health needs.

5. **Service specification** - This aspect of the commissioning process should result in a detailed plan of the service which clearly outlines how individuals will be supported through it and how services will work together. Along with the business case, it should aim to provide an operational manual of how the service functions and the level of service expected.

6. **Delivery model** - There are four main delivery models through which to deliver the ALT service: In-house provision (i.e. local authority delivered services); Partially externalised service (i.e. arms-length management organisation); Fully externalised (i.e. commercial organisation or third sector provider); A mixed economy approach (a combination of the above models). The selection of delivery model will be largely influenced by the scope and scale of the services to be provided and the available resources (finances and workforce capacity).

7. **Service standards** - The service standards should cover the following areas: Referral; Assessment; Installation / implementation; Response; Monitoring and review; Risk assessment; Communication.

8. **Procurement process** - The first stage of the procurement process will involve defining the procurement strategy. The next phase of the procurement process will include inviting and evaluating tenders, awarding the contract and managing providers. The use of soft market testing and competitive dialogue can prove valuable by enabling Commissioners to engage potential providers in order to discuss the vision and strategic objectives for the ALT service.

9. **Workforce development** - Commissioners will need to ensure that all staff have the necessary skills, knowledge and confidence to support the delivery of the ALT strategy. A commonly cited barrier to the effective delivery and up-take of ALT is resistance from social care and health professionals who prefer more traditional care models and do not regard the use of ALT as a mainstream option. Skills for Care and Skills for Care and Development have developed a number of resources to support those involved in the commissioning, design or delivery of workforce development.

10. **Communication and marketing strategy** - The language associated with the ALT sector can be unhelpful when liaising or communicating with different stakeholders including staff, carers, family members and people in need of care and support. Commissioners need to think carefully about how the service is promoted and branded.

11. **Measuring impact** - Specific guidance on how to measure the impact of ALT is covered in Skills for Care's Impact Assessment Toolkit. Commissioners should recognise the different approaches to measuring impact and consider which approach is most appropriate / feasible within the scope of the commissioned ALT/ALS and the available resources. Engaging local academic institutions as part of the governance arrangements can help to establish an impact measurement framework and process for the monitoring the implementation of the ALT service.

9. Consilium and Skills for Care (2014) Supporting Commissioners of Assisted Living Services Stage 1 Research Report

(Report not available online)

Consilium was appointed by Skills for Care (SfC) to conduct research into the commissioning landscape for assisted living technologies (ALT) and services (ALS) in order that SfC can help to develop skills for those with commissioning responsibilities. The full report can be accessed here:

Commissioning model

› Commissioned services can be delivered through a range of routes including in-house, partially externalised (i.e. arms-length management organisation), fully externalised (i.e. commercial organisation or third sector provider) or a combination of these.

› The scope of commissioning of ALT/ALS can vary across local authority areas, ranging from small-scale focused services to wide-ranging and aspirational programmes that join-up a range of service areas such as supporting people with long-term conditions, community equipment services, learning disability, reablement, personal budgets or accommodation-based support.

› A proportion of local authorities have intentionally retained flexibility within their commissioning model by using different providers for different aspects of their ALS.

What is working well?

› Developing a clear strategy will assist Commissioners in communicating a vision to stakeholders, preparing a business case for investment or confirming the service objectives against which performance can be measured. However, many local authority areas have yet to establish a strategy or commissioning framework for the use of ALT/ALS.

› Bringing together a network of providers to work collaboratively can strengthen the resultant service delivery model by drawing on each partner's different areas of expertise and capacity.

› Investing in workforce development for frontline staff will support them in making an assessment of the potential to use ALT/ALS. This will in turn increase the number of people accessing support through the strategy.

› A process of on-going consultation and review with care recipients, their families and local groups of people who need care and support form part of an effective commissioning process. A clear marketing and communication plan can raise the profile of ALT and encourage a greater number of people who need care and support to consent to trying new products and services as part of their care plan.

› A lack of staff capacity and pressure to deliver immediate cost-savings present challenges to developing an effective commissioning process.

Workforce development

› To develop an effective approach to commissioning ALT/ALS Commissioners require detailed information relating to budget plans for future years and details of approaches to charging policies and evolving service delivery across social care and health.

› Commissioners may lack the required knowledge, skills and experience in order to develop and deliver an effective commissioning approach. Effective approaches draw on skills and experience from a range of internal and external partners.

› Nearly half of respondents have received no formal learning and development to support commissioning of ALT and ALS. Where learning and development had been accessed this had been provided through inhouse training, regional events or online learning.

› Networking with other local authorities was highlighted as an important part of the learning and development process. However not every region has an active network of ALT/ALS leads/professionals or the capacity to engage with relevant organisations.

› Commissioners and/or their wider support teams require detailed knowledge of the characteristics and nature of the ALT market (e.g. who are the potential suppliers of specific products and providers of services). They also require knowledge on product and service functionality (i.e. range of uses, integration with other technologies), unit costs and the scale and scope of potential outcomes that can be expected for specific groups of people who need care and support and particular conditions and/or disabilities.

› A range of Commissioners stated that they had learnt by trial and error before engaging in their latest approach to commissioning ALT/ALS. Many Commissioners are unaware of the presence of good practice in commissioning ALT/ALS or don't have the necessary capacity and ability to use it to inform and support a local commissioning process.

7. Bibliography

Links have been provided where documents are available online.

1. Alcove (2019) Care technology case studies

2. Alcove and East Thames Group (2016) Using the Internet-of-Things to revolutionise care and support http://learnfromothers.skillsforcare.org.uk/Library/Alcove%20and%20East%20Thames%20Group.pdf

3. Appello (2018) Meeting expectations with digital care. White paper: why housing providers are planning for a digital future https://appello.co.uk/meeting-expectations-with-digital-care/

4. Centre for Ageing Better (2019) Industrial Strategy Challenge Fund Health Ageing Challenge Framework https://www.ageing-better.org.uk/sites/default/files/2019-02/Healthy-Ageing-Challenge-Framework.pdf

5. Centre for Science and Policy (2019) Policy Workshop Emerging Technologies for Social Care

6. Deloitte (2015) Connected health: How digital technology is transforming health and social care https://www2.deloitte.com/content/dam/Deloitte/ie/Documents/PublicSector/deloitte-uk-connected-health-sm1.pdf

7. Department for Health and Social Care (2018) Research and development work relating to assistive technology https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/775870/Research_and_development_work_relating_to_assistive_technology_2017_to_2018.pdf

8. Doro Care (2018) Digital Telecare: the need for a transition to digital systems and the associated opportunities and benefits https://care.doro.co.uk/wp-content/uploads/2018/01/Doro-Care-Why-Digital-Telecare-Final-UK.pdf

9. Glasgow City Integration Joint Board (2016) Assistive Technology Transformation Board

10. Housing LIN (2018) Technology and digital connected care services: Towards the tipping point? https://www.housinglin.org.uk/_assets/Resources/Housing/Support_materials/Practice_briefings/HLIN_PracticeBriefing_Telecare-Transformation.pdf

11. Kings College London (2018) The UTOPIA project: Using Telecare for Older People In Adult social care https://kclpure.kcl.ac.uk/portal/files/87498580/Utopia_project_report.pdf

12. LGA (2017) Transforming social care through the use of information and technology https://www.local.gov.uk/sites/default/files/documents/transforming-social-care--6d7.pdf

13. LGA (2018) Hampshire County Council: pushing the boundaries by using Amazon Echo https://www.local.gov.uk/hampshire-county-council-pushing-boundaries-using-amazon-echo

14. LGA (2018) Using digital technology to improve the public's health: A guide for local authorities https://www.local.gov.uk/sites/default/files/documents/1%2077%20Digital%20public%20health_02%201.pdf

15. LGA (2019) Assistive Technology presentation

16. Nesta (2016) Connected councils: A digital vision of local government in 2025 https://www.nesta.org.uk/report/connected-councils-a-digital-vision-of-local-government-in-2025/

17. NHR Dissemination Centre (2018) Help at home: use of assistive technology for older people https://www.dc.nihr.ac.uk/themed-reviews/Help-at-home-WEB.pdf

18. NHS (2019) The Topol review: Preparing the healthcare workforce to deliver the digital future https://topol.hee.nhs.uk/wp-content/uploads/HEE-Topol-Review-2019.pdf

19. Rethink (2018) Digital Boomers: A theory of change for older people, technology and independent living http://www.rethinkpartners.co.uk/downloads/DigitalBoomers_FullReport_2018.pdf

20. School for Social Care Research (2019) Is there a clearer role for electronic assistive technology and telecare in adult social care? Summary https://www.uea.ac.uk/documents/5273605/10183310

21. Skills for Care (2018) Scoping study on the emerging use of Artificial Intelligence (AI) and robotics in social care - Final Report https://www.skillsforcare.org.uk/Documents/Topics/Digital-working/Robotics-and-AI-in-social-care-Final-report.pdf

22. Tech UK (2018) The state of the connected home https://www.techuk.org/connected-home/our_report

23. TSA & ADASS (2018) North West assistive technology conference https://nwemployers.org.uk/wp-content/uploads/2018/03/Full-Day-Presentation-Pack-Front-Stage.pdf

24. TSA (2017) A digital future for technology enabled care? https://www.tsa-voice.org.uk/sites/default/files/TSA301664%20Whitepaper_Oct17%20120917_ONLINE%20VERSION%20ONLY.pdf

25. TSA (2019) Positioning enabling technology at the heart of health and (self)care

26. TSA, ADASS & Think Local Act Personal TEC Stories: How technology enabled care has transformed people's lives https://www.thinklocalactpersonal.org.uk/_assets/TEC-Stories-brochure.pdf

27. West Sussex Council (2017) Technology Enabled Lives Service

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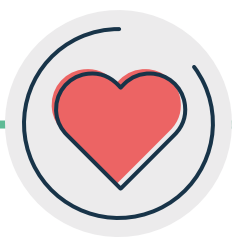
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Socitm President's Team sponsor: **Sam Smith**

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Have your say

We welcome comments and discussion on the ideas presented in this report.

Martin Ferguson
Director of Policy & Research, Socitm
martin.ferguson@socitm.net

Russ Charlesworth
Health and Social Care Director, Socitm Advisory
russ.charlesworth@socitm.net

Socitm Inform programme

Tel: 01604 709456
Email: inform@socitm.net
Website: www.socitm.net
              www.advisory.socitm.net
Linkedin: Socitm
Twitter: @Socitm
              @Socitmadvisory

About this briefing

Authors
John Cruickshank, Socitm Advisory
Helen Trimm, Socitm Advisory

Adviser
Chris Gee, Socitm Advisory

Editor
Martin Ferguson, Director
of Policy & Research, Socitm

Production
Christopher Doyle - Designer
Magdalena Werner - Senior Creative Designer

Reference: 19016

hello@socitm.net | 01604 709456