INNOVATION
DRIVING CARE SYSTEMS
CAPABILITY

DISCUSSION PAPER

ACIITC
Aged Care Industry
Information Technology Council

OCTOBER 2020

BARNETT K, LIVINGSTONE A, MARGELIS G, TOMLINS G, GOULD G,
CAPAMAGIAN L, ALEXANDER G, MASON C & YOUNG R

INNOVATION DRIVING CARE SYSTEMS CAPABILITY

DISCUSSION PAPER

Dr Kate Barnett OAM
Ms Anne Livingstone
Dr George Margelis
Ms Georgie Gould
Mr Gavin Tomlins
Ms Lisa Capamagian
Professor Greg Alexander
Dr Claire Mason
Mr Rod Young

Discussion paper on the Innovation Driving Care Systems Capability research report and survey by the Aged Care Industry Information Technology Council.

Authors

Citation

Barnett K, Livingstone A, Margelis G, Tomlins G, Gould G, Capamagian L, Alexander G, Mason C, Young R (2020) Innovation driving care systems capability: Discussion Paper, Aged Care Industry IT Company.

Sponsored By

The Aged Care Industry Information Technology Council would like to acknowledge the funding and support of the Department of Health.

Date of Publication

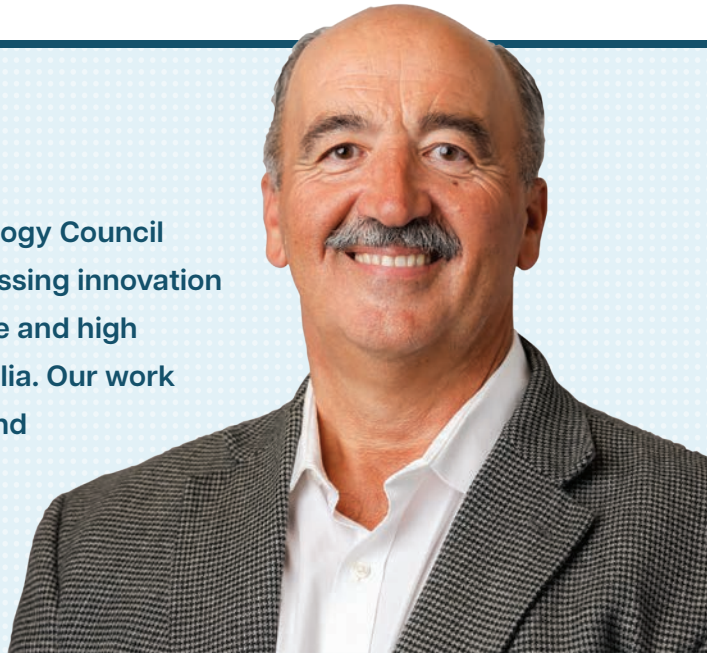
October 2020

Publisher

Aged Care Industry I.T Company
Building 1 / 747 Lytton Road
Murarrie QLD 4172
Contact Number: 0499 006 729
Email: secretariat@aciitc.com.au
ABN: 77 152 699 324

WWW.ACIITC.COM.AU

FOREWORD



The Aged Care Industry Information Technology Council (ACIITC) was established to focus on harnessing innovation and technology to help create a sustainable and high quality aged and community care sector in Australia. Our work has concentrated on promoting sound research and analysis to provide evidence of the opportunities technology and innovation offer for better care and support of older people and their carers.

The ACIITC has completed a series of research projects which have added to this mission - including our landmark Technology Roadmap for the Australian Aged Care Sector in 2017 and the publication in late 2019 of an updated literature review report - Aged and Community Care Sector Technology and Innovative Practice. Our current research, the CARE IT Project summarised in this report, adds significantly to collective understanding of the sector, its current level of digital maturity and the significant opportunities technology and innovation can offer in providing a more sustainable and high-quality sector.

> **The CARE IT Research Report is being tabled at a significant and critical time for the aged and community care industry. The sector is facing substantial challenges globally, nationally and in every community where services and support are provided.**

Improved uptake of technology and innovation is critical to assist service providers to deliver the high quality assistance older Australians want and need, now and into the future. Equally important is the role that a digitally included and digitally mature workforce will play in achieving this vision.

This research has identified many examples of services and individuals who are excelling and transforming the sector through very innovative approaches to incorporating technology and new service models into their offerings. These leaders and champions of innovative service provision should be rightly acknowledged for their contributions. However, we also need to clearly highlight those parts of the aged and community care sector which are struggling to undertake the necessary business transformation and reform. This report outlines some of the key findings of our national survey of aged care providers which identifies those key stresses and makes recommendations for improvements and a pathway forward.

I acknowledge the Department of Health for providing funds to undertake this important project and to the Department team who contributed to this work - Ms Catherine Burkitt, Mr George Lemon and Mr Don White. Finally, I acknowledge the Project Team who undertook this important project - Ms Anne Livingstone, Dr Kate Barnett OAM, Mr Gavin Tomlins, Ms Lisa Capamagian and Ms Georgie Gould. This Project Team was supported by an Expert Advisory Committee and I appreciated the opportunity to chair this group and acknowledge the contributions made by Mr Rod Young, Dr Claire Mason, and Professor Greg Alexander.

I trust the detailed research undertaken and the recommendations resulting from this endeavour will be used to ensure that we achieve an innovative, sustainable, quality-focused and digitally mature aged and community care sector for older Australians and their families.

Dr George Margelis
October 2020

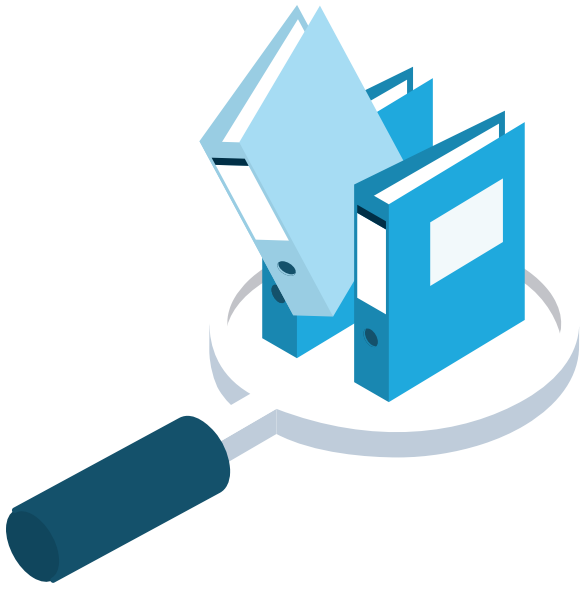
TABLE OF CONTENTS

05.

06.

07.

08.



1. INTRODUCTION: THE CARE-IT PROJECT

PROJECT BRIEF

The Aged Care Industry Information Technology Council (ACIITC) was contracted by the Commonwealth Department of Health on 23 March 2020 to undertake a benchmark assessment of the digital maturity of the aged care sector (both residential and community care).

The Aged and Community Care Innovation and Technology Capabilities and Readiness (CARE-IT) Project brief sought a specific focus on the following five areas in undertaking this analysis:

01. BUSINESS AND ADMINISTRATIVE SYSTEMS

02. REPORTING AND ONLINE ACCESS TO GOVERNMENT, INCLUDING B2G REPORTING

03. SURVEILLANCE AND MONITORING TECHNOLOGIES

04. TELEHEALTH AND TELECARE

05. SAFETY IN THE HOME VIA A RANGE OF SMART HOME APPLICATIONS

What is meant by 'digital maturity'?

Digital maturity involves adaptation by an organisation so that it can function effectively in an increasingly digital environment.[1]

1 Drawing on Kane G, Palmer D, Nguyen-Phillips A et al (2017) Achieving Digital Maturity: Adapting your Company to a Changing World, Findings from the 2017 Digital Business Report (in collaboration with Deloitte Digital, MIT Sloan Management Review, https://sloanreview.mit.edu/projects/achieving-digital-maturity/#:~:text=Digital%20maturity%20draws%20on%20a,in%20an%20increasingly%20digital%20environment.

PROJECT TEAM

Ms Anne Livingstone
Project Manager and Chair of ACIITC National Home Care Committee, Project Director Global Community Resourcing

Dr Kate Barnett OAM
Project Research Lead and Managing Director, Stand Out Report

Ms Lisa Capamagian
Project Vendor Advisor

Ms Georgie Gould
Administrative Lead and Project Assistant, Global Community Resourcing

Mr Gavin Tomlins
Project Technical Lead and Chair of ACIITC National CIO Forum.

PROJECT EXPERT ADVISORY COMMITTEE

Dr George Margelis
ACIITC Chair and Project Expert Advisory Committee Chair

Professor Gregory Alexander PhD
Columbia University School of Nursing, New York, United States of America.

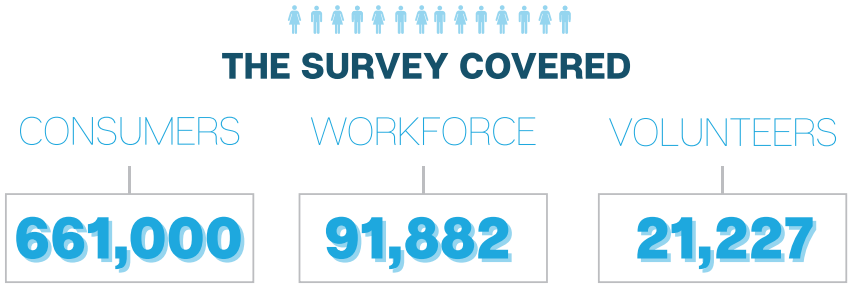
Dr Claire Mason
Principal Research Scientist, Data61, CSIRO

Mr Rod Young
Chair ACIITC ITAC Committee

PROJECT METHOD

01.

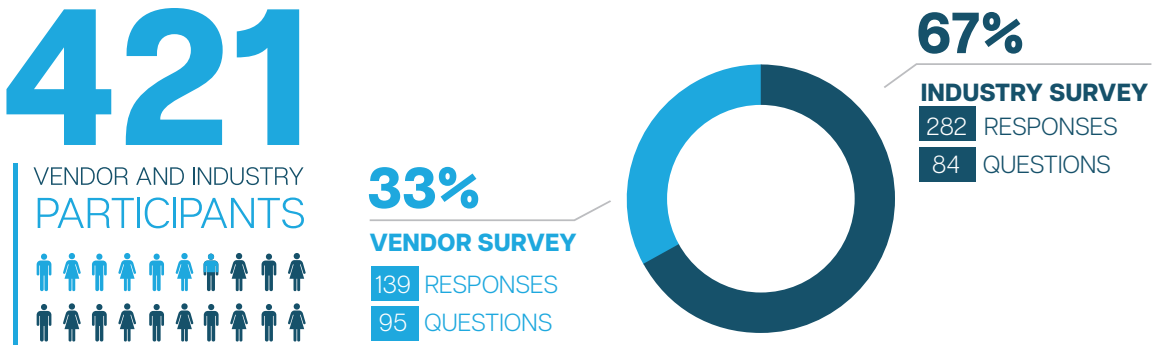
An **Environmental Scan** was undertaken to provide an overview of the current landscape of technology-enabled health and aged care (community and residential).



ACIITC (2020) CARE-IT Survey Coverage

02.

A **Survey of Aged Care Providers** across Australia was designed, based on the information yielded from the Environmental Scan, feedback from a number of experts and piloting of the draft questions. A total of 282 aged care organisations participated in the ACIITC Aged and Community Care Innovation and Technology Capabilities and Readiness (CARE-IT) Survey.



ACIITC (2020) CARE-IT Survey of Aged Care Providers and Survey of Technology Vendors

03.

A Survey of Technology Vendors across Australia was undertaken as a value-add contribution by the ACIITC. A total of 139 technology vendors participated in the ACIITC Aged and Community Care innovation and Technology Capabilities and Readiness Survey.

04.

ACIITC provided **2 Industry Forums**, each structured to obtain aged care industry, technology vendor, peak body, government and specialist information. Forum 1 (April 2020) drew 445 registrations while Forum 2 (June 2020) attracted 366 registrations.

POLL 01. April 2020	**445** Registrations	**336** Participants	★★★★½ Rating
POLL 02. June 2020	**336** Registrations	**243** Participants	★★★★½ Rating

05.

A total of **6 Case Studies**, informed by individual structured interviews, were designed to highlight lessons or exemplify trends identified in the Environmental Scan and Surveys.

PROJECT GOVERNANCE

The Project has been managed and guided by a nationally and internationally respected Project Team and Expert Advisory Committee and these six reference committees:

01. **Project Governance Committee**
02. **Research and Report Sub Committee**
03. **Marketing and Events Sub Committee**
04. **Survey Sub Committee**
05. **Industry Co-Design Group**
06. **National Reporting and Business Systems Reference Committee**

Membership details are provided in **Appendix II**.

The ACIITC wishes to express appreciation for the positive contribution made by the Project's Expert Advisory Committee, Industry Co-Design Group and National Reporting and Business Systems Reference Committee members.

THIS DISCUSSION PAPER

The ACIITC CARE-IT Project, and in particular, its **Aged and Community Care innovation and Technology Capabilities and Readiness Survey**, provides the first benchmark of digital maturity in the aged care sector and fills a critical gap in the evidence base regarding industry readiness for innovation and technological change. This summary of the main Project report outlines the key findings and trends arising from this survey, case studies, interviews with experts and the environmental scan.

2. THE CHALLENGING CURRENT ENVIRONMENT OF THE AGED CARE SECTOR

COVID-19 AND THE POWER OF INCENTIVES

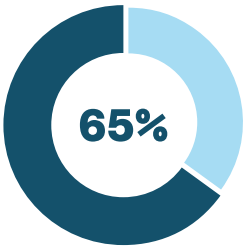
The aged care sector is operating in one of the most challenging environments it has ever faced. In the past year the Australian community has grappled with devastating losses arising from unprecedented drought, heatwaves and bushfires, followed by the COVID-19 pandemic.

For aged and community care organisations, these broader sources of disruptive change have occurred during a period of ongoing, significant sector reform, as well as the hearings of the Royal Commission into Aged Care Safety and Quality. These major sources shaping the environment in which the sector is operating are interactive, compounding their overall impact.

Not all of COVID-19's outcomes have been negative, and over time the positive changes being brought will become increasingly evident. One of those benefits is forced innovation and another is the integration of technologies, particularly digital technologies, into the care system – an integration that has been largely lacking. The pandemic has provided a powerful incentive to accelerate the adoption of care-enabling technologies in order to overcome barriers imposed by physical distancing and the need to control infection (Berwick 2020; Filev 2020; Fisk 2020; Fisk Livingstone & Pit 2020; Marr 2020; Marjanovic 2020; Meskó 2020).

THE MAJORITY HAVE ACCELERATED ADOPTION

OF TELEHEALTH AND TELECARE DUE TO COVID-19



62%

HAVE INTRODUCED TELEHEALTH AND TELECARE TECHNOLOGY

67.7%

HAVE IMPLEMENTED REMOTE WORKING POLICIES

ACIITC (2020) CARE-IT survey Accelerated Adoption of Telehealth and Telecare

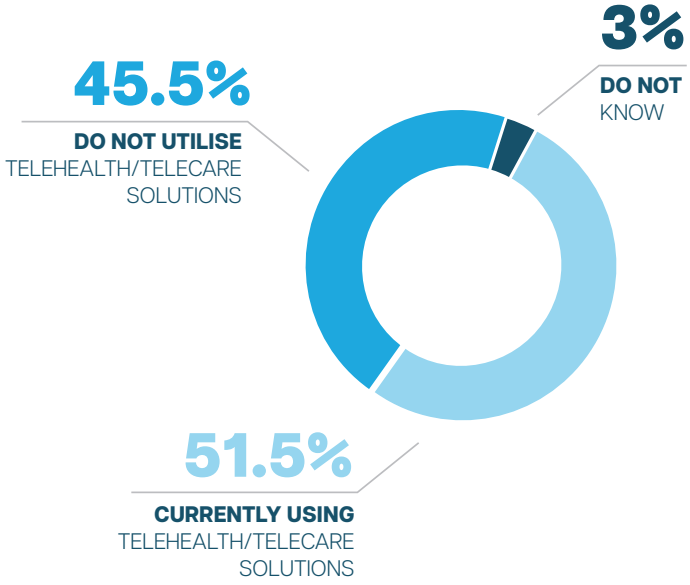
The CARE-IT Survey of Aged Care Organisations found that 65% have accelerated their adoption of telehealth and telecare technologies because of COVID-19, and 62% have introduced them in response to the pandemic. The majority (67.7%) have now implemented a remote working policy as part of their COVID-19 management strategy. Across most of the issues explored in this Survey, a Digital Maturity Divide was evident across multiple aspects of technology-enabled service provision and business processes.

3. TELEHEALTH AND TELECARE

> We transformed the whole of Medicare, the whole of what was going to be a 10 year program for Telehealth in 10 days.
>
> The Hon Greg Hunt MP Minister for Health Radio Interview on 7 April 2020[2]

COVID-19 has also accelerated the adoption of tele-technologies in both the health and aged care sectors, and government support has played a key role in this uptake. The impact of the new Medicare items reimbursing health providers for telehealth services extends beyond health care delivery and offers the potential for GPs and geriatricians to provide more care for residential aged care consumers.

The CARE-IT Survey explored aged care providers' utilisation of telehealth and telecare. Findings from the survey reveal a Digital Maturity Divide with just over half (51.5%) utilising telehealth or telecare services and 45.5% not having adopted this form of delivery. Although this constitutes a relatively low total level of adoption by the aged care sector, it can also be interpreted as an opportunity to grow technology-enabled care provision over time.



ACIITC (2020) CARE-IT Survey of Aged Care Providers

2 https://www.health.gov.au/ministers/the-hon-greg-hunt-mp/media/interview-with-tom-elliott-on-3aw-about-coronavirus-covid-19-0

KEY DISCUSSION POINT

One of the most consistent lessons from the ACIITC's 2019 updated literature review, recent digital health webinars, ACIITC Industry Forums, and from the Project Case Studies, is that the adoption of telehealth/telecare as part of standard care requires a range of non-technological interventions, in particular, a structured approach to its integration into workflows, standards and systems (Outcome Health 2020a, b, c; Smith et al 2020).

Adoption of telehealth/telecare requires a range of non-technological interventions.

The same principle applies to their integration into the daily living activities of older people living in the community (Scenna et al 2020). Often it is not the technology itself that can limit its adoption but a perceived lack of relevance to its utility and the absence of co-designed processes for its integration into everyday life.

Accompanying this integration is the need for workforce training and development as well as building consumer readiness, and the redesign of existing models of care. At present, even with the impact of COVID-19, adoption is dependent on individual clinicians and their willingness to engage with telehealth. A whole system strategy is needed to address this issue.

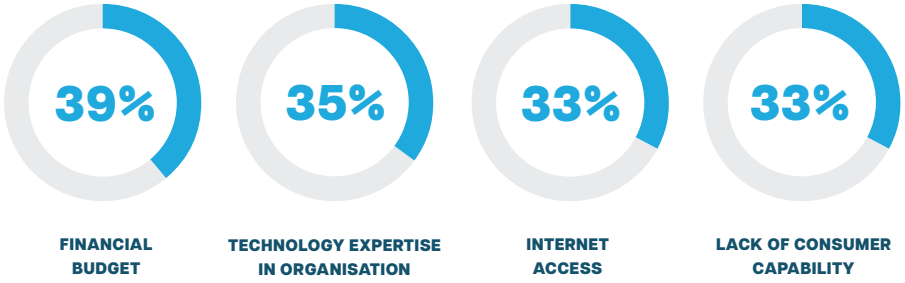
There is a need for workforce training and development as well as building consumer readiness, and the redesign of existing models of care.

BARRIERS TO IMPLEMENTING TELEHEALTH AND TELECARE

ACIITC's environmental scan and literature review identified a number of barriers to telehealth and telecare adoption.

TOP 4

BARRIERS TO ADOPTION



8% responded 'None of the above' / 6% responded 'Ido not know'/ 10% responded 'Other'

These are compared in the table below with barriers identified in the CARE-IT Provider Survey.

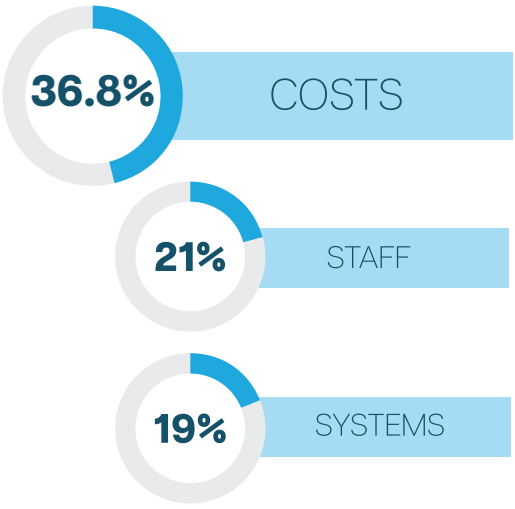
IDENTIFIED BARRIER	ENVIRONMENTAL SCAN	CARE-IT PROVIDER SURVEY
Absence of clinical governance standards and training to ensure safe & appropriate use of telehealth/telecare	✓	
Varying technology capability (digital literacy, readiness) – providers and/or consumers	✓	✓
Limited technology infrastructure – connectivity, hardware, software	✓	✓
Limited government funding (or related incentives for telehealth/telecare)	✓	
Difficulties integrating these technologies into daily workflows and operational processes	✓	✗
Standards that promote siloed services rather than interoperability	✓	✗
Standards that are inconsistent with everyday usage	✓	✗
Insufficient demand – providers and/or consumers	✓	✓
Limited consumer digital literacy and technology readiness	✗	✓

4. BUSINESS AND ADMINISTRATIVE SYSTEMS

BARRIERS EXPERIENCED WHEN IMPLEMENTING TECHNOLOGY-ENABLED BUSINESS SYSTEMS

Surveyed providers identified a range of barriers experienced when implementing technology-enabled business operations. The three most frequently identified barriers are associated with cost (36.8%), staff (21.05%) and appropriate supporting systems (19.3%).

TOP 3 BARRIERS



ACIITC (2020) CARE-IT Survey Barriers Implementing Business Technologies

CONSUMER-CENTRED CARE AND CONSUMER RECORD PROCESSES

CONSUMERS' RIGHT OF ACCESS TO THEIR OWN DATA

Aged care reforms have emphasised a shift to consumers as the centre of care, with enhanced levels of choice and control in their engagement with the formal aged care system. **However, the CARE-IT Provider Survey has found this focus to be not reflected in their power to access information about their own data.** In fact, of the ten possible sources with the power to access information from the consumer record, they are the second least likely to be able to do so, while their families or power of attorney representatives are the least likely. The same order of priority applies to having the power to add, write or modify information contained in consumer records.

ONLY
1 IN 3
HAVE HOLISTIC CONSUMER RECORDS

KEY DISCUSSION POINT

The growing accessibility of digital health, care and support is changing the point of care to encompass the individual and home settings - challenging traditional norms of service provision to move away from a total reliance on face to face delivery methods. This has become particularly apparent since the introduction of Medicare funded telehealth with the GP's surgery no longer the sole location for delivery of care.

INTEGRATION OF CONSUMER RECORDS - PERPETUATING SILOS

Ideally, aged care organisations should be utilising technology that supports the integration of different types of records into a single, holistic consumer record. At the time of surveying, approximately one-third of surveyed organisations (33%) have reached this level of digital maturity. This is an encouraging early benchmark and one that the sector can aspire to grow over the next few years. **However, at this stage, the norm is for separate consumer records to be held by financial, clinical, rostering and administration teams.** There is little likelihood of consumer records being able to integrate with external datasets, with 59.6% of surveyed organisations indicating that there is no such integration and highlighting a siloed management of consumer data that sits within aged care sector boundaries. This also raises concerns about the quality of data which in turn has implications for quality of care provision.

FLEXIBLE ROSTERING PRACTICES

Consumer preferences are taken into account in the rostering practices of 64.3% of organisations surveyed - being reflected in general rostering (45.9%) and in rostering that is automated (18.4% of organisations). By comparison, staff preferences shape the rostering of 41.3% of organisations. Shift bidding is provided by 18.4% while a further 30.3% provide none of these options. **It is hoped that more organisations move to automated rostering that reflects consumer preferences, but it is positive that more base their rostering on consumer requests than on staff preferences.**

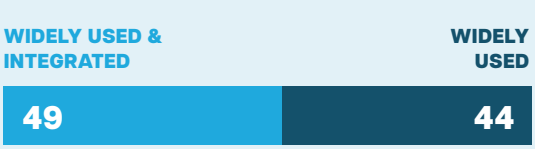
USE OF TECHNOLOGY-ENABLED BUSINESS SYSTEMS

KEY DISCUSSION POINT

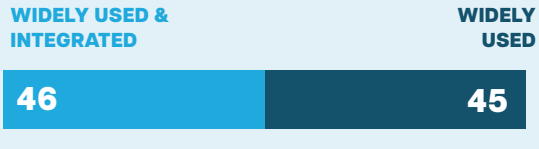
The two technology-enabled systems that have been most widely adopted by aged care organisations involve financial management. They are the Payroll system and the Financial Accounting system.

> **Those not using technology-enabled business systems are losing significant opportunities for cost-saving and efficiencies, as well as for offering better services.**

01. Payroll system



02. Financial Accounting system



The remaining technology-enabled business systems investigated reveal a clear Digital Maturity Divide between a) organisations who exhibit higher levels of digital maturity, using these systems either widely, or widely with integration into other systems, and b) those not using them at all. The latter group are losing significant opportunities for cost-saving and efficiencies, as well as for offering better services.

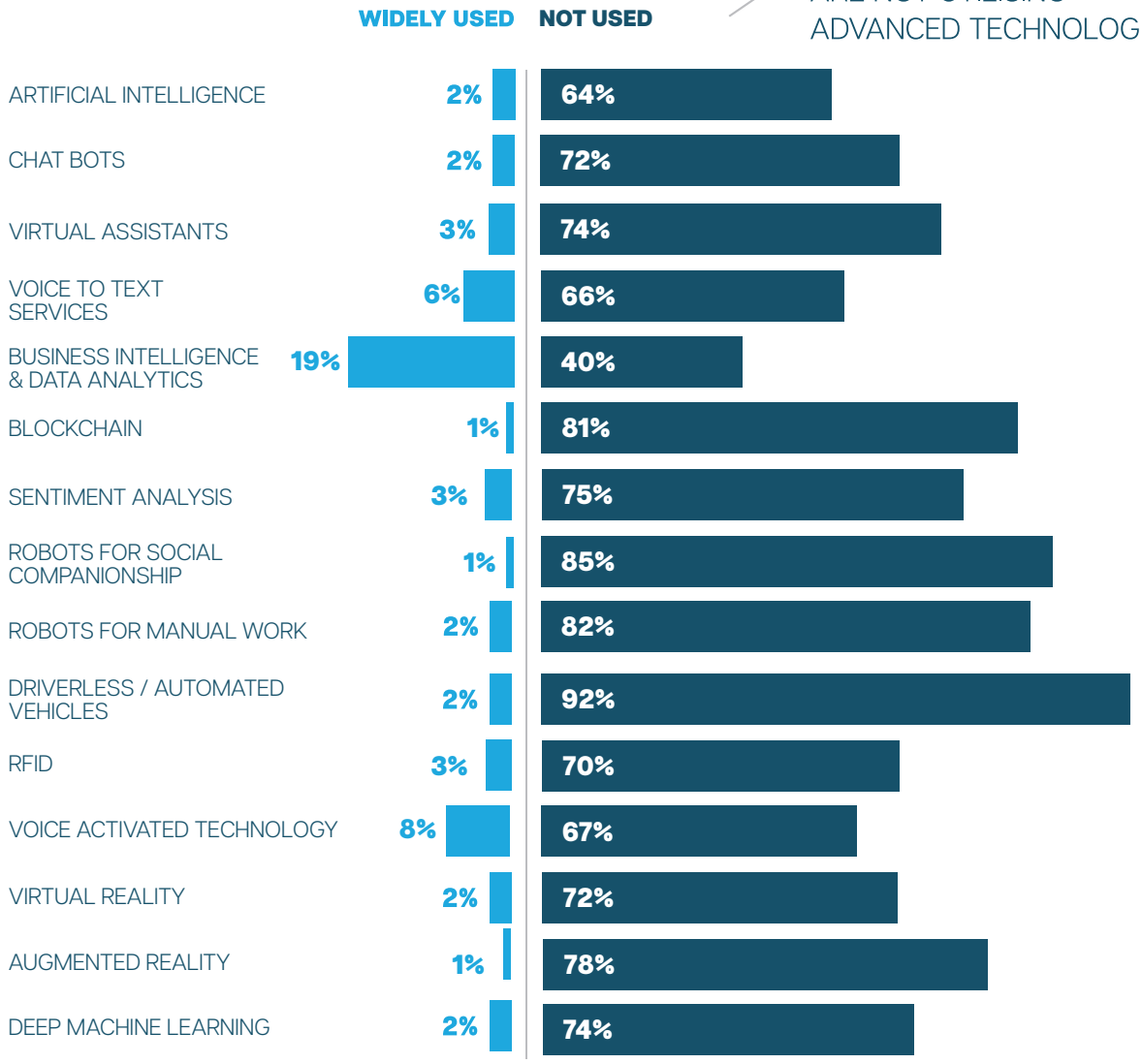
This Divide is evident in relation to all business systems except the two involving financial management. Most widely used (other than financial management) are e-learning software, CRM system, clinical governance system, planning and budget software, risk management software and asset management system. It will be important for aged care organisations to extend the use of digital business systems to all clinical service systems. This will also help to shift the balance from reactive to predictive underpinning operational systems.

ADVANCED TECHNOLOGY SOLUTIONS

Survey responses indicate a low level of engagement with advanced technology solutions, and where these were identified, they were most likely to involve business intelligence or data analytics (19%), followed by voice-activated technology (8%) and voice to text services (6.9%). It is hoped these levels will increase over time.

THE MAJORITY

ARE NOT UTILISING ADVANCED TECHNOLOGIES



CYBERSECURITY MANAGEMENT

Approximately one-third of surveyed organisations are regularly providing generic technology training and support and specific training in general risk-related issues but less in these specific cyber-risk issues - cybersecurity (22.9%), phishing and data sensitivity (18.4% each) and malware (14.7%). Of concern, 38.5% of organisations do not provide any training or support in these areas.

38.5%

DO NOT PROVIDE TRAINING OR SUPPORT IN CYBER RISK ISSUES

ACIITC (2020) CARE-IT Survey
Cyber Risk Issues Training

KEY DISCUSSION POINT

CARE-IT Provider Survey findings highlight an alarming percentage of organisations not using appropriate security and protection technology. These findings reveal a divide between less mature organisations being vulnerable to cybersecurity attack and organisations with reasonable technology-enabled protection and privacy systems, illustrating again the Digital Maturity Divide across the aged care sector as a whole. It is clear that education of the sector is needed urgently, and that this will lead to wider recognition of data and information as critical digital assets that need to be secured and protected.

DIGITAL DATA COLLECTION AND ANALYSIS

More than half of organisations surveyed are using these digital data collection technologies:

- electronic clinical systems which monitor consumers' clinical needs (59% of organisations)
- electronic care plans (67% of organisations)
- staff in 60% of surveyed organisations can access digital records at the point of care and in real time
- information captured during home care service provision is being uploaded automatically to consumer records in 58% of organisations.

However, there is significant scope for growth in relation to electronic medication management systems which are used by 39.4% and consumer information that is collected and recorded once, (to avoid data duplication) in less than half (46.5%) of organisations.

59%
USE **ELECTRONIC CLINICAL SYSTEMS**

67%
USE **ELECTRONIC CARE PLANS**

KEY DISCUSSION POINT

There are multiple benefits possible from the use of digital data collection and analysis, from planning, to the delivery of care, and its monitoring. Digital record keeping at the point of care, in real time, is not only resource-efficient (especially if recording leads to automatic uploading of information to consumer records) but avoids data duplication, supports richer data collection, reduces administrative burden and human error. It is also a critical component of quality aged and community care. The CARE-IT Provider Survey found encouraging signs of sector adoption of four these technologies.

CLINICAL DECISION SUPPORT

> **Technology can provide significant support for the decision-making associated with care provision.**

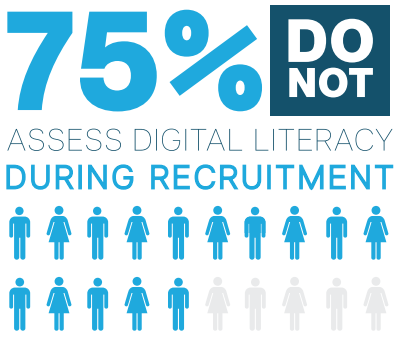
Technology can provide significant support for the decision-making associated with quality care provision, including by automatic prompts and alerts and enabling decisions to be made in real time. The organisations participating in the CARE-IT Aged Care Provider Survey vary in their use of such technologies but there are an encouraging number (albeit minority) of organisations who are early adopters and others who are exploring or in the early stages of incorporating decision support technologies into core operations. For each type of decision supporting technology studied, approximately one in three aged care providers are non-users. The clinical decision support strategies surveyed were:

- Real time notifications of consumer preferences
- Real time clinical alerts
- Real time alerts to staff regarding information about their consumers
- Automatic prompts for the next action required in multi-step care protocols
- Prompts to complete or remind consumers about overdue care actions and/or missing information
- Monitoring the overruling of decision support prompts and recording the reasons for this
- Remote work and telehealth/telecare technologies that support staff in making real time decisions

ACIITC notes that Clinical Decision Support is a relatively new concept to aged care and currently is applied mainly to high risk clients. Thus, there is low usage as well as very few tools available and those that do exist are quite expensive for everyday operation.

WORKFORCE TECHNOLOGY TRAINING

The majority of organisations surveyed (75.2%) do not assess potential workforce members for their digital literacy as part of their recruitment and selection process. However, 57.4% of these organisations believe that digital literacy training should be mandatory.



ACIITC (2020) CARE-IT Survey Digital Literacy Recruitment

KEY DISCUSSION POINT

Recent research and the experience of service providers working with older people (summarised in Case Studies undertaken for the CARE-IT Project) challenge the assumption that older people are the key impediment to the sector providing technology-enabled services because of an unwillingness to engage in technology (GCMA 2020; Scenna et al 2020). In fact, these findings have identified service providers as being more likely to be reluctant, even when consumers are seeking a technology-enabled service response such as, video-based telehealth (Outcome Health 2020 a,b,c; Feros Care 2014).

5. SMART AND SAFE HOMES

Smart Homes utilise a range of largely digital technologies designed to make everyday living easier and safer. Offering significant potential to support telecare and telehealth services, they have emerged from the smart living sector rather than the care sector, and this has the advantage of reducing any stigma associated with reliance on support or formal care (Scenna et al 2020).

The relevance of Smart Home technologies is growing as prices drop and products are becoming widely available and easily accessible (eg via hardware stores). The boundaries between care and independent living are blurring as more care providers embrace what they can offer, and more consumers live in homes that support technology.

KEY DISCUSSION POINT

Key to adoption of Smart Home technology is users' perception of the technology's compatibility, connectedness and reliability – all of which are strongly associated with its perceived usefulness. Technology automation, mobility and interoperability have been found to be facilitating factors of adoption, but consumers are also sceptical about the reliability of Smart Home products. Other barriers to adoption are financial - including the purchase price, and costs associated with installation, repair and maintenance (Marikyan et al 2019; Jacelon & Hanson 2013; Morris et al 2013).

A further concern is the ability of Smart Homes to collect and store a significant amount of private data which raises ethical concerns, such as privacy and security (Debaiyoti, Triyason & Funikul 2017; Morris et al 2013). It will be important for governments to address this through legislation and policy and for this to keep pace with evolving technologies.

The CARE-IT Provider Survey findings suggest an overall low level of engagement by aged care providers with Smart Home technology but also a Digital Maturity Divide that separates these from the minority of sector leaders who have integrated this technology into their care service programs.

- Most of the providers surveyed indicated that they are not installing or utilising Smart Home devices in the homes of their consumers while the 31.8% who have engaged with this technology are most likely to be working with 1-2 devices (21.7%) or 3-5 devices (7.3%).
- The top three technologies supplied by organisations to support consumers via a Smart Home configuration are personal or medical alarms (46.4%), tablets or mobile phones (33.3%) and mobile or GPS wearable alarm devices (31.9%).

KEY DISCUSSION POINT

There is a need for attention to be paid to the interface between care in the home and Smart Home technologies, incorporating both clinical and consumer tools, and finding ways for both to complement, even enhance, each other. It is noted that most Smart Home devices are not designed to be integrated outside their own ecosystem. ACIITC feels there is real opportunity for local developers to integrate but currently there is little financial incentive for them to do so.

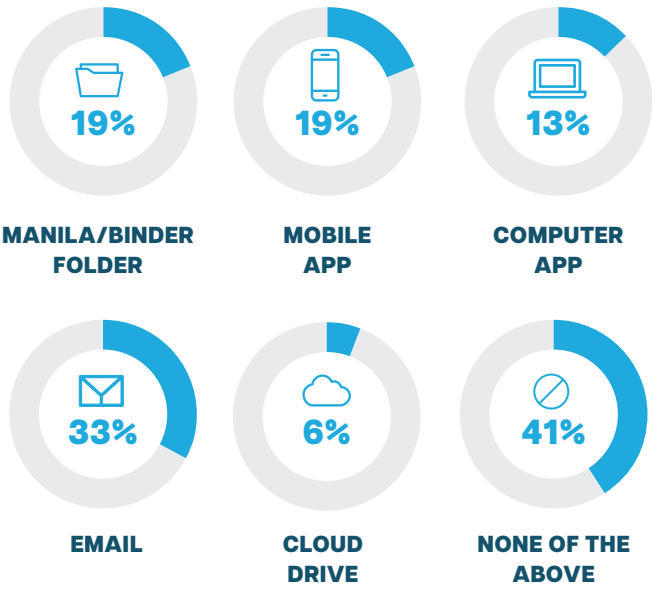
TOP 3 **SMART HOME DEVICES** USED

46% PERSONAL OR MEDICAL ALARMS

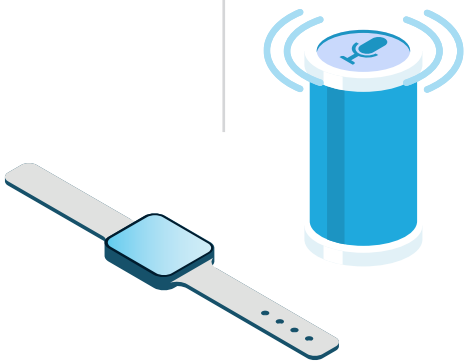
33% TABLETS OR MOBILE PHONES

32% MOBILE OR GPS ALARM WEARABLE DEVICES

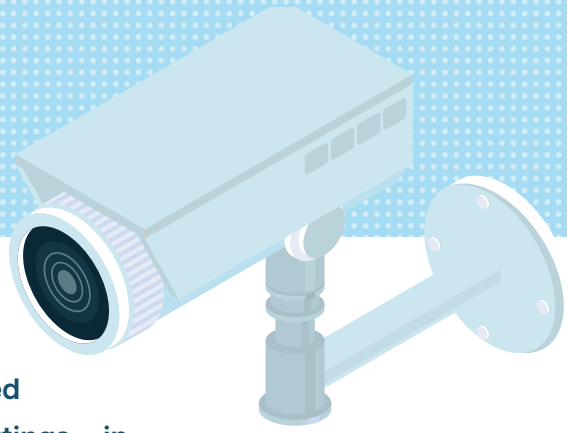
HOW CONSUMER DATA IS SHARED



45% HAVE **NO CONNECTED SMART HOME DEVICES** IN THEIR CONSUMERS HOMES



6. MONITORING AND SURVEILLANCE TECHNOLOGIES



A range of monitoring technologies enable care providers to determine health-related status virtually, and outside of clinical settings – in people's homes or whatever location they happen to be visiting. Not only does this create greater flexibility of care but it also enables data to be captured in 'real time'. Remote health monitoring and sensor technologies have been found to improve older people's safety, enhance their independence, and reduce their risk of accidents – especially falls (Barnett, Livingstone, Margelis, Tomlins & Young: 2019).

Increasingly sophisticated sensor-based monitoring technologies are embedded with machine learning technology in order to 'learn' usual patterns of behaviours in real-time, and automatically detect changes associated with health, safety or functional ability. As such they can not only generate safety-related alerts, but their predictive capacity can also support prevention and early intervention by service providers. This is part of a wider and growing trend to incorporate artificial intelligence with accompanying data analytics into health care programs (Barnett, Livingstone, Margelis et al 2019).

> **Although monitoring and surveillance technologies can enable older people to continue living in their own homes, this is likely to involve a trade-off for them between privacy and independence (and between the older person's desire for both versus the peace of mind of their supporters).**

There is a tension between these trade-offs which is evident in relation to the more intrusive monitoring technologies, in particular, video-based monitoring (Barnett, Livingstone, Margelis et al 2019; Hawley-Hague et al 2014).

KEY DISCUSSION POINT

Aged care providers engaging with technologies that support and monitor consumer safety and wellbeing in their home are most likely to be using unobtrusive sensor based devices for activity monitoring (17.4%), measuring the number of times someone gets in and out of bed and door reed switch devices (e.g. to measure the number of times a refrigerator door is opened (11.6%). Technology that supports social connection is the most frequently used (20.3%). The Digital Maturity Divide was also reflected in these responses with just under half (49.3%) not making use of these technologies.

AGED CARE PROVIDERS' USE OF MONITORING TECHNOLOGIES

MONITORING HEALTH AND WELLBEING

The Digital Maturity Divide was evident again in relation to providers' use of available technology to monitor the health of their community care consumers. Those who are using monitoring technologies in consumers' homes are most likely to be employing fall detection technology (21.7%), which is a positive finding, followed by passive (sensor-based) monitoring (13%), as well as medication management and blood pressure monitoring (7.3% each).

MONITORING AND SUPPORTING SAFETY IN THE HOME

There are a number of smart devices that can monitor and support safety in the home and those providers who are utilising them most frequently nominated smoke detectors (15.9%), electrical devices (11.6%), lighting (10.1%), security cameras (8.7%), electronic door locks and environmental control devices (7.3% each). However, the majority of these providers (58%) are not using any of these everyday technologies.

22%
MONITOR
FALL DETECTION

BLOOD PRESSURE	7%
WEIGHT	6%
PASSIVE MONITORING	13%
BLOOD GLUCOSE	4%
TEMPERATURE	4%
EPILEPSY	1%
MEDICATION MANAGEMENT	7%
OXYGEN SATURATION	1%
ECG	1%

17% responded 'I do not know' / 3% responded 'other'
52% responded 'none of the above'

AGED CARE PROVIDERS' USE OF VIDEO SURVEILLANCE

The CARE-IT Provider Survey explored the use of video surveillance by residential aged care organisations. It found that:

- The majority (64.4%) of organisations have external security surveillance video on their residential aged care premises.
- A slightly higher proportion of these organisations (66.1%) report that their organisation uses video surveillance in internal common areas.
- Video surveillance is being used in areas where groups of people congregate - reception (57.6%), lifestyle or activity areas (47.5%) and dining areas (42.2%). Less frequently, video surveillance is used in nurses' stations (32.3%), dementia-specific areas (28.8%), medical supply rooms (32%), other supply rooms (25.4%) and staff rooms (18.6%).

Approximately one-third are choosing to use video surveillance in individual consumer rooms (34%), with the majority probably not doing so because of ethical considerations affecting the privacy of residents and staff.

7. REPORTING TO GOVERNMENT

CARE-IT Project findings highlight the ongoing need for streamlined processes of reporting by the aged care sector to government in order to a) reduce duplication and burden on aged care providers, b) reduce silos between the two sectors and c) enhance integration between providers and government business systems.

Survey findings also identified the poor interface between My Health Record and My Aged Care, with a high percentage of providers (73.4%) not knowing the extent to which their consumers are interacting with My Health Record. Aged care organisations were asked to nominate the three items that would provide value and create operational efficiencies in their interaction with government portals.

The most consistent themes emerging from their feedback involved the need to:

- improve the ease of use
- develop appropriate resources for the sector including self-help training manuals
- streamline the ability to access and provide data
- provide opportunities for benchmarking and sharing of the data nationally and
- improve integration across all relevant platforms.

KEY DISCUSSION POINT

The providers surveyed expressed frustration with poor B2G (Business to Government) interfaces, and with the lack of API (Application Programming Interface). The goal is for information to be shared in open, transparent and publishable formats via accessible platforms, and for this outcome to be informed by a co-design process. ACIITC welcomes the planned involvement of the Australian Digital Health Authority (ADHA) with the aged care sector and the potential gains this will bring. Surveyed providers have identified that automated upload and download of data is key to positive interaction with Commonwealth government portals. The agency rated most highly for this is the Australian Taxation Office and its Single Touch Payroll system.

8. LEADERSHIP FOR TECHNOLOGY AND ASSOCIATED INNOVATION

ORGANISATIONAL RESPONSIBILITY FOR TECHNOLOGY AND INNOVATION

Responsibility for leading an organisation's digital strategy, and for providing regular updates about its progress, risk and compliance is most likely to rest with the Chief Executive Officer / Manager of Business (43.7%), Chief Information Officer / IT Manager / CTO (35%) and the Board (22.3%).

Organisations were divided about the need to have at least one Board member with specialist technology knowledge and experience, with approximately 43.7% pursuing this strategy and 32% not doing so. Providers are unlikely to rely on an external advisory committee for this purpose, with approximately one-third only favouring this approach and 43% avoiding this strategy

KEY RESPONSIBILITY FOR ORGANISATION'S DIGITAL STRATEGY

44%
CEO / BUSINESS MANAGER

35%
CIO / IT MANAGER / CTO

22%
THE BOARD

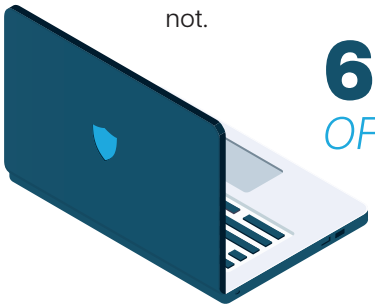
KEY DISCUSSION POINT

Just over half of surveyed providers link digital technology leadership with multiple roles across their organisations - encompassing Board, executive and management to clinical, service delivery and front-line staff. This is a very positive finding because engagement across an organisation reduces reliance on experts and is more likely to see technology embedded in operating and decision-making processes.

TECHNOLOGY GOVERNANCE

The CARE-IT Survey asked aged care providers to assess their organisation's project governance in respect to technology and innovation. This included governance structures to manage information and technology-related risks, having cyber insurance, using electronic continuous improvement solutions and electronic feedback solutions.

- 67% agree that their organisations have governance structures in place to manage key information and technology risks, including cyber threats, at Board level or reporting to the Board while only 12.1% do not believe that this applies to their organisation.
- Cyber insurance is used by 52.5% of organisations surveyed while 11% do not have this insurance – which is a concern given the risks associated with technology.
- 53.5% of organisations are using an electronic continuous improvement solution while 23.2% do not have this in place.
- 48.5% of organisations utilise an electronic feedback solution compared with 25.3% who do not.



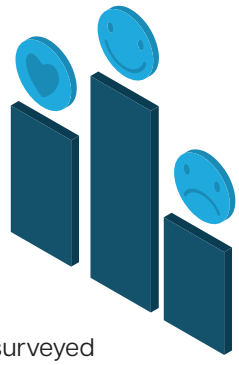
67%
OF ORGANISATIONS
HAVE GOVERNANCE STRUCTURES
TO MANAGE TECHNOLOGY **RISKS**

KEY DISCUSSION POINT

Findings indicate the need for improvements in technology governance and again, a Digital Maturity Divide is evident in relation to to governance systems for technology. Addressing this issue is likely to require education and awareness raising interventions at industry and Board level.

PLANNING AND MEASURING DIGITAL CAPABILITY

OVER HALF
BENCHMARK USING **CONSUMER SATISFACTION** INDICATORS.



- The majority of aged care organisations (57%) have a clearly defined Digital Strategic Plan that is aligned with their organisation's Strategic Plan, and this is encouraging. However, one in three lack such a Plan.
- Digital technology is perceived to enhance collaboration and coordination across an organisation by 69% of those surveyed, which is a very positive finding.
- Systems are in place to measure the effectiveness of the IT Helpdesk for 43.7% of surveyed organisations. This figure should be higher.
- Only 37.9% of organisations benchmark against industry clinical indicators but more (52.4%) are benchmarking using consumer satisfaction indicators.

- Only 27.2% of aged care organisations have a system to measure their digital maturity. Hopefully the ACIITC benchmarking CARE-IT findings will be able to assist them in building this capacity.

- Co-design is key to developing technologies that are fit for purpose and older people and service providers are the end users who need to be engaged in this process. Findings from the CARE-IT Survey identify that less than half of aged care organisations (42.7%) are engaged in co-designing digital care and support solutions.

KEY DISCUSSION POINT

A Digital Maturity Divide was evident in relation to aged care organisations' approach to measuring their digital capabilities, to having a clearly defined Digital Strategic Plan and to measuring their digital maturity. A minority are benchmarking against industry clinical indicators but just over half are benchmarking against consumer satisfaction indicators.

RETURN ON INVESTMENT IN TECHNOLOGY

In a resource-challenged sector, it is understandable that aged care providers will be reluctant to purchase technologies without a reasonable guarantee that such expenditure can be justified. There are many examples across the sector of technology being an investment rather than a cost, but the documented evidence of this is almost non-existent (at least in relation to aged care).

> **There is a need for action research that addresses the lack of documented evidence about the return on investment (ROI) that can be achieved by specific technologies.**

- Processes have been established by 55.3% to evaluate investment in digital technology through to implementation stage, which will inform findings about return on investment.

- However, only 36% are measuring the return on investment in technology and this is a concern for a resource-challenged sector that needs to operate in a digital environment.

KEY DISCUSSION POINT

There is an urgent for action research about the return on investment (ROI) that can be achieved by specific technologies, coupled with the need to see examples of how different technologies can be integrated into a) business operations and b) care models - and the benefits realised as a result. Findings from this research should be shared widely across the sector in an accessible form, such as, an online clearinghouse managed by a trusted and credible organisation.

I. APPENDIX ONE:
REFERENCES & READINGS

ACIITC (2017) Technology Roadmap for Aged Care, Aged Care Industry Information Technology Council. https://www.aciitc.com.au/roadmap/

Barnett K, Livingstone A, Margelis G, Tomlins G & Young R (2019) Aged and community sector technology and innovative practice: a report on what the research and evidence is indicating, Aged Care Information Technology Industry Council. December 2019. DOI: 10.13140/RG.2.2.36667.77608. Available at: https://www.aciitc.com.au/aged-care-industry-technology-council-releases-a-report-on-what-the-research-and-evidence-is-indicating-right-now-in-the-sector/

Berwick D (2020) Choices for the "New Normal", Journal of the American Medical Association, Opinion, Published online May 4th 2020. doi:10.1001/jama.2020.6949

Debaiyoti P, Triyason T & Funikul S (2017) Smart Homes and Quality of Life for the Elderly: A Systematic Review, IEEE International Symposium on Multimedia, December 11-13, 2017. DOI: 10.1109/ISM.2017.83

Feros Care (2014) Feros Care's My Health Clinic at Home Pilot: Final Report, Evaluation by Southern Cross University

Filev A (2020) COVID-19 Is A Before-and-After Moment in The Digital Transformation, Forbes, March 30th 2020.

Fisk M (2020) Forced Innovation: the digital transformation in aged and community care: the UK perspective, 3 June 2020. ACIITC Forced Innovation Industry Forum

Fisk M, Livingstone A, Pit S (2020) Telehealth in the Context of COVID-19: Changing Perspectives in Australia, the United Kingdom, and the United States, JI of Medical Internet Research, 22(6) e19264. DOI: 10.2196/19264

GCMA (2020) Telehealth here to stay: key insights from an expansive study into Australia's response to COVID-19, Global Centre for Modern Ageing, Adelaide. https://static1.squarespace.com/static/5ae17ed32971146319f879ca/t/5eeebc167250ac3a2ce07f1d/1592704027892/Telehealth+Here+to+Stay+GCMA+research+report.pdf

Hawley-Hague H, Boulton E, Hall A et al. (2014) Older adults' perceptions of technologies aimed at falls prevention, detection or monitoring: a systematic review, Int. J. Med. Inform, 83: 416–426. DOI: http://dx.doi.org/10.1016/j.ijmedinf.2014.03.002

Jacelon C & Hanson A (2013) Older adults' participation in the development of smart environments: An integrated review of the literature, Geriatric Nursing, 34(2) 116-121. http://dx.doi.org/10.1016/j.gerinurse.2012.11.001

Marikyan D, Papagiannidis S & Alamanos E (2019) A systematic review of the smart home literature: A user perspective, Technological Forecasting & Social Change, 138: 139-154. DOI: https://doi.org/10.1016/j.techfore.2018.08.015.

Marjanovic S (2020) The COVID-19 Crisis Has Sparked Innovation and Offers Lessons We Must Not Forget. The Rand Blog, April 1st 2020

Marr B (2020) How The COVID-19 Pandemic Is Fast-Tracking Digital Transformation In Companies, Forbes, March 17th 2020

Meskó B (2020) Life after COVID-19: What Will Change? LinkedIn, April 28, 2020.

Morris M, Adair B, Miller K et al. (2013) Smart-Home technologies to assist older people to live well at home, Journal of Aging Science, 1(1) 1-9. DOI: 10.4172/2329-8847.1000101. https://dro.deakin.edu.au/eserv/DU:30059059/pearce-smarthometechnologies-2013.pdf

Outcome Health (2020a) Report into COVID-19 and General Practice: Insights from the first few weeks, Primary Health Networks of Central & Eastern Sydney, South Western Sydney, Gippsland, Eastern Melbourne & South Eastern Melbourne, April 15th

Outcome Health (2020b) COVID-19 and General Practice: Insights Paper No 2 – a predictive impact model for the healthcare sector, Primary Health Networks of Central & Eastern Sydney, South Western Sydney, Gippsland, Eastern Melbourne & South Eastern Melbourne, April 23rd 2020

Outcome Health (2020c) Report into COVID-19 and Australian General Practice: a preliminary analysis of changes due to telehealth use Primary Health Networks of Central & Eastern Sydney, South Western Sydney, Gippsland, Eastern Melbourne & South Eastern Melbourne, May 5th 2020

Scenna R, Nixon L, Spencer J & Peterson (2020) The digital paradox for seniors: seniors' desire for digital inclusion is outpacing service providers' and community response, Your Link and PwC. Accessed at http://www.yourlink.com.au/digitalparadox

Smith A, Thomas E, Snoswell C et al (2020) Telehealth for global emergencies: Implications for coronavirus disease 2019 (COVID-19), Journal of Telemedicine & Telecare, (0) 0: 1-5. DOI: 10.1177/1357633X20916567.

II. APPENDIX TWO:
PROJECT GOVERNANCE

PROJECT EXPERT ADVISORY COMMITTEE

Dr George Margelis
ACIITC Chair and Project Expert Advisory Committee Chair

Professor Gregory Alexander PhD
Columbia University School of Nursing, New York

Dr Claire Mason
Principal Research Scientist, Data61, CSIRO

Mr Rod Young
Chair ACIITC ITAC Committee

INDUSTRY CO-DESIGN GROUP

Mr Jeff Carson
IT Governance & Cyber Security specialist

Mr Bruce Coller
Principal Consultant - IT Integrity Pty Ltd

Mr Nigel Faull
Director - Faull Consulting Group Pty Ltd

Ms Wendy Flavien
former Chief Integration Officer, Bolton Clarke QLD, NSW and VIC

Mr Matt Moore
General Manager Aged and Disability Services, Institute Urban Indigenous Health

Ms Lanna Ramsay
Head of Aged Care, Ozcare

Ms Glenys Webby
Director, Webby Advisory.

NATIONAL REPORTING AND BUSINESS SYSTEMS REFERENCE COMMITTEE

Mr Peter Newing
Chief Information Officer, Presbyterian Aged Care, NSW & ACT

Ms Kristina Walsh
Case Manager, RDNS-Silver Chain

Mr Daniel Pettman
Chief Information Officer - BaptistCare NSW & ACT

CASE STUDY CONTRIBUTORS

The ACIITC is indebted to the following people who provided their time and insights to inform the Case Studies:

Mr Dan Beeston
IT Manager, Juniper
Case Study 6

Ms Jenene Buckley
CEO, Feros Care
Case Study 4

Mr Glenn Payne
CIO Feros Care
Case Study 4

Ms Kristina Walsh
RDNS-Silver Chain
Case Study 3.

Mr Adam Jahnke
Umps Health
Case Study 5

Dr Sachin Patel
Aged Care GP
Case Study 1

Dr Amandeep Hansra
Digital Health Expert and General Practitioner
Case Study 2