

October 2026



**Home and
Community Care**
Centre of Excellence

National Environmental Scan and Research Report

This National Environmental Scan examines the evolving landscape of home and community care, demonstrating that while innovation across technology, service delivery, and models of care is well advanced, its translation into workforce capability remains inconsistent. It highlights the opportunity for the Centre of Excellence to bridge this gap by connecting innovation, training, and practice at scale.



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Abbreviations and acronyms

ACQSC:	Aged Care Quality and Safety Commission
AEHRC:	Australian e-Health Research Centre
AI:	Artificial Intelligence
ARIIA:	Aged Care Research and Industry Innovation Australia
CHSP:	Commonwealth Home Support Programme
CoE:	Centre of Excellence
CRC:	Cooperative Research Centre
DHCRC:	Digital Health Cooperative Research Centre
DoHAC:	Department of Health and Aged Care
HACC:	Home and Community Care
NCHA:	National Centre for Healthy Ageing
NDIS:	National Disability Insurance Scheme
RTO:	Registered Training Organisation
SHLL:	Smart Home Living Lab
VET:	Vocational Education and Training



Acknowledgement of Country

We acknowledge the Traditional Owners and Custodians of Country throughout Australia, and in particular the Wurundjeri, Bunurong and Taungurung peoples on whose lands Holmesglen's campuses stand. We pay our respects to Elders past, present and emerging, and extend that respect to all First Nations people.

Our work at Holmesglen is education, to share and pass knowledge on to those who seek to gain it and we recognise the long-standing tradition of teaching and learning that has played such a great part in over 60,000 years of Australian culture.

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Executive summary

Background

Holmesglen's Home and Community Care Centre of Excellence (CoE) was established in early 2026 in response to significant and growing workforce, capability and system challenges within Australia's home and community care sector. It is one of the 20 nationally networked TAFE Centres of Excellence and is a joint initiative of the Commonwealth and Victorian governments under the National Skills Agreement 2024 – 2028.

This National Environmental Scan is an early milestone in the planning phase of the CoE. It provides a foundation for the strategic development of the Centre and supports a coordinated, evidence-informed approach to workforce development, training innovation, and service transformation in home and community care.

The Scan highlights the growing demand for care delivered at home, driven by an ageing population, increasing complexity of care needs, workforce shortages, and ongoing policy reform. At the same time, it surfaces the sustained investment in digital health, assistive technologies, and new models of care delivered outside institutional settings across Australia and internationally.



About the Scan

This work was undertaken in two phases, providing both system-level insight and targeted guidance for applied research environments:

Phase 1: National scan

A qualitative, case-based analysis of current and emerging models of home and community care across Australia and selected international contexts. This phase examines service delivery models, workforce capability, learning and training systems, and the role of technology, living labs, and smart environments.

Phase 2: Desktop technology review

A targeted review to identify the technologies, systems, and capabilities needed to inform the design of the Smart Home Living Lab (SHLL) and Virtual Smart Home within the Centre of Excellence, guided by a question examining how these elements support care delivery and curriculum development.

Together, these phases provide an integrated evidence base linking both system needs with practical design, training, and implementation implications. The analysis considers both purpose-built and adaptive approaches, recognising that most care occurs in existing homes which will require ongoing adaptation to changing care needs, technologies, and service models. A temporal lens has been applied to identify trends over time and to highlight challenges relating to scalability, sustainability, workforce capability, and technology adoption.

The Scan provides a foundation for the need for strengthening collaboration across the sector, identifying partnerships between researchers, service providers, industry, consumers, and community stakeholders at all levels of home and community care. It also offers practical guidance to enable more coordinated, inclusive, and translational approaches to research, workforce development, and service delivery. Detailed supporting material for both phases is provided in the appendices.



Key findings

Technology-enabled care is already being applied across aged care, disability, and chronic disease management. Care delivery is increasingly distributed across physical and virtual environments, supported by telehealth, remote monitoring, and digital platforms. Living labs and co-design approaches are improving responsiveness to user needs, and hybrid models combining in-person and virtual care are becoming more common.

However, these developments are not consistently embedded in routine practice. Innovation is often developed and tested locally but is not systematically translated into workforce capability or implemented at scale.

Key system-level issues identified include:

- fragmentation between innovation, training, and practice
- limited scalability of pilot programs
- uneven integration of evidence into education systems.

Across both phases, the central gap identified is the **translation of innovation into workforce capability and everyday service delivery, highlighting the need for structured, practice-based learning environments** that connect innovation with implementation. Combined, these findings show that the key challenge is not the availability of technology or innovation, but the absence of coordinated systems linking research, service delivery, and workforce training. This reinforces the CoE role as the coordinated, applied environment that will bring these elements together.



Positioning of the Centre of Excellence

The CoE is positioned to support the sector in responding to increasing demand for home-based care, particularly in the context of workforce pressures and greater reliance on virtual care and emerging technologies.

Insights from both phases of the environmental scan directly inform the development of applied research environments, including the SHLL and Virtual Smart Home, ensuring alignment between real-world service delivery, technological capability, and curriculum design. The CoE will strengthen workforce capability in home-based, digital, and hybrid care delivery while supporting applied research, cross-sector collaboration, educator capability development, and national scaling of effective models and training approaches.

Implications for education and training

The findings highlight a need to align training with emerging home-based care models through greater integration of technology, simulation-based learning, and interdisciplinary approaches. Workforce capability must support practice in digitally enabled and continuously adaptable home environments, including use of monitoring systems, digital platforms, and hybrid care delivery. The SHLL and Virtual Smart Home environments enable this by providing integrated, realistic settings for learning, while supporting testing, evaluation, and refinement of technologies, care models, and training approaches aligned to evolving system needs.

Conclusion

This environmental scan identifies a clear need for stronger integration between innovation, service delivery, and workforce development. While Australia has a strong pipeline of innovation in home-based and technology-enabled care, its impact is constrained by limited translation into practice and training.

The CoE is therefore uniquely positioned to act as a national catalyst, aligning innovation, education, workforce capability, and partnership development to support a more coordinated, scalable, and sustainable future for home and community care in Australia.

1. Introduction

1.1 Background

Australia's care and support system is undergoing a significant structural transition as service delivery shifts from institutional settings toward models centred in the home and community. This transition is driven by demographic change, including an ageing population, increasing complexity of care needs, alongside consumer preferences to remain at home (Productivity Commission, 2015; AIHW, 2024a) and ongoing policy reform aimed at improving system sustainability, quality, and responsiveness (Schwabe et al., 2024).

Population projections indicate continued growth in older cohorts, contributing to increasing demand for services that can be delivered outside traditional aged care residential and hospital settings (Australian Government Treasury, 2023).

At the same time, expectations regarding accessibility, quality, and responsiveness of care are evolving, placing new demands on how services are designed, delivered, and supported. This trend is particularly evident in the home and community care sector, where demand is projected to reach 1.82 million people by 2044, while approximately 2.5 million older Australians are expected to require some form of care by 2050, compared with around 1.5 million today (Department of Health, Disability and Ageing, 2025; CEDA, 2025).

Meeting this demand presents substantial workforce challenges, with the sector currently employing more than 500,000 paid aged care workers across residential and home care settings and requiring up to 400,000 additional workers by 2050 to meet future demand and quality expectations (Australian Institute of Health and Welfare, 2024; CEDA, 2025).

Reflecting these pressures, Aged and Disability Carers are projected to be Australia's fastest-growing occupation over the coming decade (Jobs and Skills Australia, 2026; CEDA, 2025).

1.2 System context and drivers

Care in the home is increasingly positioned as the primary mode of future service delivery across aged care, health, and disability systems. Increasing numbers of older people are living with multiple chronic conditions, creating care needs that are difficult to address through traditional disease-specific models. Evidence suggests these approaches often result in fragmented care, poor coordination and services that are not aligned with individual priorities and functional goals (Ouellet et al., 2024).

This reflects a shift from episodic and task-based care towards more continuous, coordinated, and person-centred approaches. A central objective within this transition is supporting individuals to remain in their own homes while maintaining independence, safety, and participation in community life. International healthy ageing frameworks increasingly advocate for integrated, person-centred models that combine health, social care and community supports to maintain functional ability and wellbeing across the life course (Cesari et al., 2022).

Many older Australians prefer to remain in their own homes; however, this requires care models that operate effectively across home, community, and residential settings. Evidence

from Australia and New Zealand indicates that ageing in place is strongly associated with autonomy, independence, community participation, social connectedness and quality of life. Successful ageing in place depends not only on access to care services, but also on the suitability of the home environment, social networks and the availability of flexible support services (Rose et al., 2023). Evidence highlights that the success of these care models depends on coordinated, cross-setting models of care rather than isolated service delivery approaches (Inacio et al., 2025). Delivering care in home environments introduces complexity. In this scan, the term "home" refers to residential domestic environments where individuals live, including private dwellings and supported housing contexts, rather than institutional care settings. Housing conditions, tenure, accessibility, and location vary significantly, influencing how care can be delivered and the level of support required. Care in the home therefore operates at the intersection of service delivery, built environment, and social context, rather than as a standardised model.

This transition is reinforced by national reform agendas, including the Australian Government's response to the *Royal Commission into Aged Care Quality and Safety*¹, the *Support at Home* reform model, and the regulatory oversight of the Aged Care Quality and Safety Commission (ACQSC). It is further supported by assistive technology policies and operational frameworks within the National Disability Insurance Scheme, as well as broader initiatives such as the *National Digital Health Strategy 2023–2028*². Together, these frameworks support improved quality, greater consumer choice, and expanded delivery of care within home and community settings, underpinned by increasing emphasis on digital integration and coordinated care systems.

Applied research environments developed through the National Centre for Healthy Ageing (NCHA), including the Living Labs Research Program and facilities such as the Health Futures Hub, demonstrate the role of the built environment in shaping care delivery by integrating research, clinical services, simulation environments, and workforce capability development within a single, coordinated system context. These environments enable the testing of rehabilitation, ageing, and recovery models within real-world and simulated settings, highlighting the importance of integrating housing, health, and technology in home-based and community-based care.

This transition is occurring alongside increasing integration across aged care, health, disability, and housing systems. Care delivery is becoming more distributed, with services delivered across multiple physical and virtual environments rather than within a single institutional setting. In this context, the home operates as an adaptable home-based care environment that evolves over time in response to changing care needs, workforce practices, and service delivery models.

Technology plays a central role in enabling this shift. Telehealth, remote monitoring, shared digital health records, and integrated care platforms support coordination across providers and settings and enable care to be delivered across home, community, and clinical environments. These technologies are increasingly embedded within broader care models rather than operating as standalone tools.

Emerging frameworks, including the National Ageing Research Institute (NARI) *Enabling Technology Support Aged Care at Home*³ framework, highlight a transition toward more active, coordinated, and person-centred use of technology. Consistent

1 Royal Commission into Aged Care Quality and Safety. Final Report: Care, Dignity and Respect. Commonwealth of Australia; 2021. <http://nla.gov.au/nla.obj-2928215218>

2 Australian Digital Health Agency. National Digital Health Strategy 2023–2028 (Canberra: Australian Digital Health Agency, 2023); accessed June 9, 2026, digitalhealth.gov.au.

3 Batchelor F, Williams S, Kwan BPM, et al. A Framework for Enabling Technology Supported Aged Care at Home. National Ageing Research Institute; 2024:10.

with this, developments in technology-enabled care are moving from passive monitoring towards more proactive models, including health coaching, restorative care, and early intervention supported by continuous data and monitoring systems. Despite these advances, differences in housing conditions, digital infrastructure, service availability, and organisational capability result in variability in how models of care are implemented across regions and providers. Innovation is occurring across the system, but adoption and integration are not consistent. These changes have significant implications for workforce capability. Care roles increasingly require work across private homes, community settings, and virtual platforms. This requires a combination of clinical, digital, and interpersonal capabilities, including remote coordination, data interpretation, and delivery of person-centred care in variable environments.

Workforce capability development remains fragmented. Skills are often developed within organisational or program-specific contexts and are not consistently embedded within formal education and training. This creates a gap between emerging models of care and the preparedness of the workforce to operate within them.

1.3 Role of the CoE

The Holmesglen Home and Community Care CoE is positioned within this context as a national platform for skills, innovation, collaboration, and applied research that supports the ongoing transformation of home and community care. The CoE addresses the combined challenges of increasing demand, workforce pressures, and the need for new capabilities in home-based, community-based, and digitally enabled models of care.

The CoE will deliver innovative education and training in the health, allied health, and community services sectors. It will support the development of workforce capability in home-based and virtual care, including telehealth, digital systems, data-informed practice, and emerging technologies such as artificial intelligence that support independence, safety, and care coordination in home and community settings.

The CoE will leverage Holmesglen's established capabilities in simulation-based education, applied research, and industry collaboration. It will incorporate both physical and virtual learning environments, including a Smart Home Living Lab and Virtual Smart Home, designed to reflect real-world care settings and enable applied, practice-based learning. These environments will support experiential learning, technology demonstration, and applied research, and the evaluation of emerging care models within realistic home and community care contexts.

The role of the CoE is not to duplicate innovation activity, but to strengthen the connection between research, workforce development, service delivery, and technology adoption through structured training, applied research environments, and collaboration with industry and research partners. By providing a shared environment for learning, collaboration, testing, and translation, the CoE can support workforce capability development, contribute to sector-wide learning, and help build national capacity in home and community care. It is aligned with broader national priorities to sustain essential care services, support ageing well at home, and strengthen Australia's digital and technical capability.

1.4 Scan design overview

The environmental scan was undertaken in two phases.

Phase 1 consisted of a **national environmental scan** examining current and emerging models of home and community care, with a focus on service delivery, workforce capability, and

innovation. Building on this, **Phase 2** was undertaken as a **targeted desktop scoping** review to identify the technologies, systems, and capabilities required to assist with informing the design of the SHLL and Virtual Smart Home within the CoE. Together, these phases link system-level insights with practical design and training considerations.

1.5 Purpose of the Scan

The purpose of this Scan is to explore how care in the home is currently designed, delivered, and supported across research, service provision, innovation initiatives, and education and training systems.

The Scan focuses on identifying model types, system patterns, and workforce implications providing a structured evidence base to inform the design, development, and operation of the CoE.

The Scan will inform the establishment of a coordinated national partner network across industry, research, education, and service sectors by identifying key stakeholders, existing initiatives, areas of expertise, and opportunities for collaboration. This network will support the expansion of applied research, education and training, and technology development, while enabling broader industry and community impact. Through this network, the CoE will be positioned as a platform for collaboration, supporting stronger alignment between innovation, service delivery, workforce capability development, and curriculum design.

Specifically, the Scan:

- identifies programs, projects, research initiatives, and best practice guidelines relating to care in the home, living labs, and virtual care environments
- identifies applied research within SHLL and Virtual Smart Home environments, including testing, evaluation, and refinement of technologies, care models, and workforce practices in real-world and simulated context
- analyses trends over time to identify factors affecting sustainability and scalability of care models
- investigates how technologies such as remote monitoring, assistive systems, artificial intelligence, and digital platforms are integrated into service delivery and workforce practice
- informs the design of applied research environments through identification of technology, system, and capability requirements, including the SHLL and Virtual Smart Home
- identifies opportunities for collaboration with technology vendors, applied research organisations, and care providers to support testing, development, and implementation of the SHLL and digital care solutions
- examines how individuals (consumers, carers, and workforce) interact with technologies and home-based care environments to inform design, usability, and implementation

The Scan establishes a foundation for the CoE to operate as a coordinated platform for applied research, workforce development, and innovation in home and community care, supporting the translation of emerging models into scalable and sustainable practice. It also provides the evidence base to support this role by identifying current practices, system patterns, and capability gaps across research, service delivery, infrastructure, and training systems.

2. Methods

This section provides a high-level overview of the environmental scan and scoping review methodology, with detailed methods outlined in Appendix B1.

2.1 Overall scan design and approach

This scan was undertaken to identify current and emerging models of home and community care, with a focus on workforce development, curriculum and training systems, and opportunities for system improvement. Findings from the scan are intended to inform the design of the CoE, including the development of applied learning, curriculum, research, and technology-enabled environments such as the SHLL and Virtual Smart Home. The scan also identifies potential partners, existing initiatives, and collaboration opportunities to support the future establishment of a national partner network.

The work was conducted in two phases. Phase 1 comprised a national scan examining service delivery models, workforce capability, and system-level innovation. Phase 2 involved a targeted desktop technology scoping review to identify the technologies, systems, and capabilities required to inform the design of the SHLL and Virtual Smart Home and support curriculum development within the CoE.

In Phase 1, an environmental scanning and document review approach was adopted, drawing on policy documents, organisational reports, websites, published literature, and industry resources. Representative examples from research, service delivery, workforce development, and applied innovation contexts were identified to illustrate emerging practices and system trends. The analysis prioritised the identification of patterns, transferable insights, and areas of innovation rather than exhaustive mapping of all initiatives.

2.2 Phase 1: National environmental scan

Phase 1 involved a national environmental scan examining service delivery models, workforce capability, research and innovation activity, training systems, and system-level developments across home and community care.

Information was collected through targeted searches of policy documents, organisational reports, websites, grey literature, academic publications, and industry resources. Representative examples were selected to illustrate key trends, innovations, and approaches across the sector.

Analysis focused on identifying recurring themes, emerging practices, system enablers, constraints, and opportunities relevant to workforce development, curriculum design, applied research, and the future development of the CoE. This phase forms a baseline assessment of current system capability and will be updated as new evidence and initiatives emerge.

2.3 Phase 2: Desktop technology scoping review

Building on the findings from Phase 1, Phase 2 involved a targeted desktop scoping review to identify the technologies, systems, and capabilities required to inform the design of the SHLL and Virtual Smart Home and support curriculum development within the CoE. This phase was guided by a focused question examining how these technologies, systems, and capabilities support care delivery and curriculum development within the SHLL and Virtual Smart Home.

The review drew on academic and grey literature, industry reports, and technology documentation to identify relevant systems and applications across areas including remote monitoring, assistive technologies, digital health platforms, and smart home infrastructure. Emphasis was placed on identifying functional capabilities, integration requirements, and implications for applied learning and curriculum. Findings from this phase complement the national scan by linking system-level insights with practical design and curriculum considerations for technology-enabled training and simulation environments.

2.4 Scope and objectives

The Scan examines current and emerging approaches to home and community care across Victoria, broader Australian jurisdictions, and selected international contexts. It considers the interaction between technology, service delivery, built environments, workforce capability, curriculum development, and system integration, with a focus on how these factors collectively support care delivery in home and community settings. The analysis explores technologies that support home-based care, evolving care models and service delivery approaches, workforce capability requirements, and the education, training, and curriculum systems that underpin capability development. It also examines research and innovation activity, built environment approaches, system coordination mechanisms, and international examples of practice to identify emerging trends, gaps, and opportunities. Findings are intended to inform collaboration and partnership development while supporting the design of the CoE, including applied learning, research, curriculum, and technology-enabled environments such as the SHLL and Virtual Smart Home.

2.5 Analytical framework and questions

The Scan is guided by a set of analytical questions examining how emerging technologies and care models are applied in home and community care; what workforce capabilities are required; how these capabilities are developed within education, training, and curriculum systems; how research, service delivery, and training systems interact; and what factors influence adoption, scalability, and consistency across contexts. These questions ensure the analysis remains focused on the relationship between innovation, workforce capability, and curriculum development. This includes consideration of how technologies and care models can be tested, evaluated, and refined within applied environments, and how individuals (consumers, carers, and the workforce) interact with technologies and home-based care environments in practice to inform system design, usability, workforce capability, and implementation.

2.6. Limitations

The Scan is not exhaustive and is based on a curated selection of initiatives, relying primarily on publicly available information with variable levels of detail across sources. Many initiatives are at early stages of development, with limited outcome or longitudinal evaluation data, and differences in terminology and system contexts affect comparability across jurisdictions.

Workforce and curriculum development approaches are not consistently documented, and international models are included to inform understanding and adaptation rather than direct replication. Despite these limitations, the Scan provides a structured overview of current practice and identifies key trends, gaps, and opportunities for workforce development, curriculum innovation, and system improvement.

3. System and sector overview

Australia's home and community care system spans aged care, health, disability, housing, and community services, creating a complex and interconnected service environment. While policy and service delivery increasingly support care in the home, implementation remains fragmented across providers, sectors, and jurisdictions. Understanding how research, service delivery, workforce capability, technology, and training systems interact is critical to identifying opportunities for improved coordination, capability development, and system improvement.

3.1 Structure of the care system

Australia's care and support system operates across multiple, interrelated sectors, including aged care, health, disability, and community services. Historically, service delivery has been centred on institutional and episodic models of care (ACQS, 2021; Then & Bigby 2024). However, there is a clear shift toward more distributed models that prioritise care delivered in the home and community.

This shift reflects both system reform and changing consumer expectations. Care delivery is increasingly shared across providers and settings, requiring coordination between primary care, acute services, disability supports, and community-based services (Ambagtsheer et al., 2021). While the system is becoming more integrated in intent, it remains operationally fragmented, with variation in how services are aligned and delivered across jurisdictions and providers.

3.2 Demand and demographic trends

Demand for care services continues to increase due to population ageing, greater longevity, and the growing prevalence of chronic and complex conditions. These pressures are contributing to increased demand for services that support independence and enable individuals to remain connected to their homes and communities. The increasing complexity of care needs is reflected in populations experiencing multiple chronic conditions, cognitive decline, disability, and co-occurring social and environmental challenges (Then & Bigby, 2024; Ouellet et al., 2024).

At the same time, workforce shortages, variable digital capability, and uneven system integration continue to challenge service delivery and coordination. While technology-enabled services are expanding rapidly, differences in organisational capability, infrastructure, and implementation approaches mean that innovation is not consistently translated into routine practice. As a result, capability varies significantly across providers and regions, contributing to uneven service delivery and outcomes.

Within this context, the CoE has the potential to strengthen alignment between research, service delivery, and workforce development. Supported by the SHLL and Virtual Smart Home, it can provide an applied environment where technologies, workflows, and care models can be tested, evaluated, and integrated within realistic settings.

3.3 Models of care delivery

Models of care are evolving from institution-based delivery toward more flexible, person-centred approaches. Models of care that support ageing in place increasingly operate across multiple settings, requiring coordination between home-based services, community care, and clinical systems (Inacio et al., 2025). Care in the home is now a central mode of delivery across aged care, disability, and community health systems, where the home functions not only as a setting for care, but as an adaptable home-based care environment in which service delivery,

technology, and daily living continuously interact and evolve. Contemporary models increasingly combine in-person care with remote and virtual services delivered through digital platforms, supported by coordination across multiple providers. These hybrid models enable continuity of care across settings and support more responsive service delivery. Despite these developments, implementation remains uneven, with variability in access, capability, and system integration across regions and providers.

These developments have direct implications for consumers and carers, enabling greater independence, improved safety, and more personalised care within the home. Technology-enabled and adaptable home environments support continuity of care, reduce reliance on institutional settings, and enhance the ability of individuals to age in place.

3.4 Technology and digital transformation

Technology is a key enabler of emerging models of home-based care, including telehealth, remote monitoring systems, assistive and smart home technologies, and integrated digital platforms that support care coordination.

These technologies extend care beyond traditional settings and support more proactive and preventative approaches. Telehealth, monitoring systems, and digital platforms increasingly enable care to be delivered across homes, communities, and clinical environments. However, the primary challenge is not the availability of technology, but its integration into care systems, workforce practice, and service delivery models.

Adoption remains uneven due to infrastructure limitations, digital literacy, workforce capability, interoperability challenges, and variation in organisational readiness. Consequently, many technologies operate as standalone solutions rather than as components of coordinated systems that support continuity of care and informed decision-making.

3.5 Workforce and skills landscape

The transformation of care delivery is reshaping workforce roles and capability requirements. Workers are increasingly required to operate across private homes, community settings, and virtual environments, requiring a combination of clinical, digital, and interpersonal skills, as well as the ability to coordinate care across providers and systems.

Workforce shortages remain a persistent challenge within the aged care sector, driven by increasing demand, workforce supply constraints, and rising care complexity (Office of the Inspector-General of Aged Care, 2025). National workforce data and reform reports highlight variability in workforce capability, training, and skill mix across the sector, with ongoing gaps in digital capability and system readiness (AIHW, 2024b). Skills are frequently developed within organisational contexts and are not consistently embedded within formal curriculum frameworks or transferable across the broader system. This contributes to a gap between evolving service delivery models and workforce readiness.

3.6 System challenges and gaps

A number of recurring challenges are evident across the sector. These include fragmentation between research, service delivery, workforce development, and curriculum systems; variability in digital maturity and infrastructure; and limited mechanisms for translating innovation into routine practice. Measuring quality within integrated care systems remains challenging because outcomes are influenced not only by clinical interventions, but

also by responsiveness, continuity, trust, user experience, service coordination and broader organisational factors (Hanefeld et al., 2017).

Although substantial investment has been made in research, technology, and service innovation, many initiatives remain localised and are not consistently embedded within broader system structures. This limits scalability, reduces opportunities for shared learning, and contributes to variation in implementation across organisations and regions.

As a result, the sector demonstrates strong innovation activity but limited integration across research, service delivery, workforce development, and system design. The gap is increasingly not one of innovation generation but of innovation translation and coordinated implementation.

3.7 Implications for the Scan

This system context highlights the need for a structured examination of how innovation is translated into practice, workforce capability, and curriculum. The Scan therefore focuses

on how emerging models, technologies, and service approaches are applied across the system, where gaps in translation and integration occur, and which approaches demonstrate potential for broader adoption.

The findings also emphasise the importance of environments that bring together technology, service delivery, workforce development, and research. Within this context, the CoE is positioned as an enabling platform where these elements can be integrated through the SHLL and Virtual Smart Home. By supporting testing, evaluation, learning, and collaboration within realistic environments, the CoE can contribute to more coordinated, scalable, and practice-oriented approaches to home and community care.

These shifts are occurring simultaneously and at pace, creating a time-critical need for coordinated approaches to workforce development, technology adoption, and service delivery. Without intervention, fragmentation is likely to increase, limiting the effectiveness and scalability of emerging home-based care models.

Phase 1 – National Environmental Scan

4. Current structures, systems and environments

This section presents findings from the national environmental scan and examines the organisations, initiatives, and environments shaping home and community care across research, co-design environments, service delivery, training systems, and international models. The analysis focuses on how innovation is developed, tested, translated, and implemented, and where constraints remain. Detailed case descriptions supporting this analysis are provided in **Appendices A1 to A5**.

Across all components, innovation is well established and actively progressing. Technologies such as remote monitoring, telehealth, and assistive systems are already operational, and new models of care are being implemented across home, community, and clinical settings. However, there is no consistent pathway linking research, implementation, workforce development, and curriculum systems across the home and community care ecosystem. As a result, while innovation is occurring across multiple parts of the ecosystem, adoption remains uneven and capability varies significantly across organisations and regions.

4.1 Overview of findings

The environmental scan identified strong capability across research, service delivery, workforce development, technology innovation, and applied learning environments within the home and community care ecosystem. Innovation is well established across many parts of the ecosystem, with technologies such as remote monitoring, telehealth, and assistive systems already in use, and new models of care being implemented across home, community, and clinical settings.

Despite this progress, capability is distributed across multiple organisations and initiatives that operate with different mandates, priorities, and implementation approaches. While many examples demonstrate successful innovation and translation, there remains limited coordination between research, service delivery, workforce development, and curriculum systems. As a result, adoption remains uneven across organisations and regions, and there is no consistent pathway for translating

innovation into workforce capability and routine practice. The following analysis examines key areas of activity across the home and community care ecosystem, including research and applied research centres, service delivery models, workforce development initiatives, technology innovation, and international examples. Together, these areas provide insight into current strengths, emerging trends, and opportunities to strengthen coordination, capability development, and innovation translation.

4.2 Research and applied research centres

4.2.1 Australian research and applied research centres

Research and applied research centres play a critical role in shaping the future of the home and community care ecosystem by generating evidence, translating innovation into practical applications, and supporting the development of workforce capability. Across national organisations, universities, applied research environments, infrastructure facilities, and provider-led research programs (See **Appendix A1 – Research and applied research centres**), there is strong capability in digital health, remote monitoring, integrated care, housing, workforce innovation, and technology-enabled service delivery.

Organisations such as **CSIRO's Australian e-Health Research Centre (AEHRC)**, the **National Centre for Healthy Ageing (NCHA)**, the **Digital Health Cooperative Research Centre (DHCRC)**, infrastructure-focused environments such as the **RMIT-Cisco Health Transformation Lab (CHTL)**, coordination bodies such as **Aged Care Research and Industry Innovation Australia (ARIIA)**, and commercialisation pathways such as **ANDHealth** demonstrate that innovation is occurring across technology development, system integration, service delivery, housing, and market translation. Provider-led research organisations, including the **Bolton Clarke Research Institute (BCRI)**, extend this by embedding research activity within service delivery environments, enabling the testing and refinement of care models in practice.

The **Care Economy Cooperative Research Centre (CRC)** represents a significant expansion of this landscape, bringing

a coordinated, cross-sector focus to applied research spanning aged care, disability, health care, early childhood, and social services. The Centre brings together more than 50 partners across industry, research, and government to co-develop technology, data-driven solutions, and workforce innovation initiatives aimed at improving care quality, productivity, and outcomes across the care system.

Through its focus on technology, workforce innovation, and service reform, the Care Economy CRC contributes to the development of integrated models of care involving assistive technologies, remote monitoring, artificial intelligence, and digitally enabled care delivery. Its emphasis on workforce capability, skills development, and training pathways closely aligns with emerging sector needs, including digital literacy, new workforce roles, and system-level coordination capabilities.

Applied research environments developed through the **National Centre for Healthy Ageing (NCHA)**, including the **Living Labs Research Program** and facilities such as **Healthy Futures Hub**, demonstrate the role of the built environment in shaping care delivery by integrating research, clinical services, simulation environments, and workforce capability development within a coordinated system context. These environments support the testing of rehabilitation, ageing, and recovery models within real-world and simulated settings, highlighting the importance of integrating housing, health, and technology within home and community care.

Emerging applied research activity within the **TAFE Centre of Excellence in Health Care and Support** further highlights the growing emphasis on translating innovation into workforce capability and curriculum development. This reflects increasing recognition that research, education, training, and industry partnerships must work together to support the adoption of new technologies, service models, and approaches to care.

While capability is strong across these domains, innovation is progressing across multiple organisations and initiatives that operate with different mandates, funding arrangements, and delivery models. As a result, approaches to implementation, workforce development, knowledge translation, and adoption vary considerably across organisations and regions. While many initiatives demonstrate promising outcomes, there is no consistent mechanism for translating research outputs into workforce capability, curriculum development, or routine practice across the home and community care ecosystem.

A full list of organisations and associated research outputs is provided in **Appendix A1**.

4.2.2 National-level research and system coordination

At a national level, organisations such as AEHRC, DHCRC, and ARIIA operate across jurisdictions and sectors, shaping system-wide innovation and providing foundational capability for technology-enabled care.

The **AEHRC** focuses on integrating digital technologies into care systems through applied research and implementation, including data platforms, predictive analytics, and remote monitoring. Programs such as the **Smarter Safer Homes National Demonstrator Project** and **CareMonitor** demonstrate the feasibility of using passive sensors to capture behavioural patterns in the home. Evidence shows that data-driven monitoring improves intervention timing and quality-of-life outcomes when embedded within care delivery (Lu et al., 2025). However, workforce capability is not systematically embedded in these models, with variation in providers' ability to interpret and act on data limiting consistent translation into practice.

The **DHCRC** extends this work by focusing on interoperability and integration across care systems. Multi-partner programs such as **Precision Care, Connected Care, and Data Platform** initiatives demonstrate that coordinated care can be enabled through shared infrastructure and data systems. However, workforce capability development is largely project-based rather than standardised, leading to uneven capability across organisations.

ARIIA operates at a system coordination level, supporting innovation through funding, partnerships, and knowledge translation. Initiatives such as the **Collaborative Innovation Projects Program** enable testing and implementation of new technologies and service models within aged care. However, translation into practice depends on external providers, creating a structural separation between innovation and implementation that contributes to variability in uptake.

Across these national organisations, evaluation is primarily focused on feasibility and implementation, and proof-of-concept activities. While a growing evidence base is emerging, there remains comparatively less evidence regarding long-term outcomes, sustainability, and broader system-level impacts.

4.2.3 State-based and tertiary research institutes

State-based and tertiary institutes play a critical role in linking care delivery with population health and the built environment through applied and translational research. The **National Centre for Healthy Ageing (NCHA)**, in partnership with Monash University and Peninsula Health, examines the interaction between care delivery, environmental design, and ageing populations. Initiatives such as the **Rehabilitation, Ageing and Independent Living Research Program** and the **Independent Living Laboratory** support testing of assistive technologies and environmental interventions in home-like settings, enabling co-design and observation of how environmental factors influence safety, independence, and care needs.

This work demonstrates that housing conditions, layout, accessibility, and infrastructure directly shape care delivery and outcomes. However, these findings are not always integrated with digital health initiatives or service delivery models, creating potential misalignment between technological innovation and the environments in which care is delivered.

Housing and research exploring home adaption or environmental adjustments further highlight this gap. Programs from the **Monash Sustainable Development Institute and Australian Housing and Urban Research Institute (AHURI)** demonstrate that most care occurs in existing housing stock and that home adaptation are critical (Bridge et al., 2021). However, these findings are not consistently integrated with digital health or service delivery models, creating misalignment between technological innovation and real-world care environments.

Other tertiary initiatives, including the **La Trobe Care Economy Research Institute (CERI)** and the **University of the Sunshine Coast Healthy Ageing through Innovation in Regional Australia projects**, provide important insights into workforce capability, service design, and regional delivery. However, these remain program-specific and are not consistently integrated into national frameworks or scaled beyond local contexts. Across tertiary research, co-design and applied methodologies are strong, but mechanisms to translate these into standardised models or training systems are limited.

4.2.4 Industry and infrastructure-focused environments

Industry and infrastructure-focused environments provide the systems required to support digital care delivery, particularly in relation to connectivity, interoperability, and cybersecurity.

The **RMIT-CISCO Health Transformation Lab** focuses on the infrastructure required for connected care systems, including secure networks, cloud platforms, and Internet of Things integration. It also leads the National Industry Innovation Network (NIIN) Health Alliance, which brings together nine universities and cross-sector partners to pilot digital health technologies in real-world hospital and clinical environments. This demonstrates that effective digital care relies on robust system architecture, connectivity, interoperability, and cybersecurity, not just clinical models of care. These capabilities are increasingly important as home and community-based services adopt remote monitoring, virtual care, assistive technologies, and integrated digital care pathways. However, workforce capability in these enabling technologies is not consistently embedded within health, aged care, and community services education and training.

The **ANDHealth Digital Health Commercialisation Program** supports development and scaling of digital health technologies, indicating a continuous pipeline of innovation entering the care sector. However, workforce exposure to these technologies typically occurs after implementation, reinforcing a reactive approach to capability development. This highlights the need to establish stronger links between emerging technologies, industry adoption, and workforce preparation so that practitioners are equipped to effectively use and adapt to new digital tools before they become embedded in-service delivery. These environments demonstrate that infrastructure and innovation pathways are relatively mature, but alignment between technology development, workforce capability, and service transformation remains inconsistent.

4.2.5 Provider-based research organisations

Provider-based research organisations embed innovation directly within service delivery environments. The **Bolton Clarke Research Institute (BCRI)** conducts applied research across ageing in place, dementia care, and hospital-in-the-home models, demonstrating how care models are developed and evaluated in operational settings. Workforce capability in these contexts is developed through practice-based approaches rather than structured education, enabling rapid adaptation but limiting transferability. Models remain localised, with limited mechanisms to standardise or scale them across providers.

In addition, sector-wide platforms such as Ageing Australia's **InnovAGEING Hub** play a complementary role by connecting innovation across aged care. InnovAGEING brings together providers, researchers, and technology partners to share insights, showcase applied innovations, and support sector-level learning. This highlights an additional layer within the innovation ecosystem focused on connection and translation, alongside formal research and provider-led activity, and points to the value of mechanisms that support the broader uptake of innovation across the sector.

4.2.6 Research projects across the home and community care sector

Australian Government-funded projects

Australian Government-funded projects reflect a strong emphasis on building system capability through digital infrastructure, service delivery models, and data innovation. A range of initiatives focus on remote monitoring and smart environments, including the **REMi smart mattress** and the **Smarter Safer**

Homes platform, which demonstrate how sensor-based systems can capture continuous data on individual activity, behaviour, and health status. These projects highlight the role of non-intrusive monitoring technologies in reducing risk, supporting early intervention, and enabling more proactive care in both home and residential settings.

In parallel, government investment is supporting broader system transformation through programs such as the **Digital Transformation for the Aged Care Sector initiative** and telehealth infrastructure grants delivered through Primary Health Networks. These initiatives focus on strengthening digital readiness, expanding access to virtual care, and improving connectivity between providers and services. Complementary projects such as **End of Life Directions for Aged Care** further demonstrate the use of digital tools, platforms, and applications to support workforce capability and improve access to care resources across residential, home care, and primary care settings.

Data and analytics capability is also a central focus of government funded work. Initiatives led by the **Digital Health CRC (DHCRC)**, including the **Aged Care Data Compare project** and predictive analytics programs, aim to improve data sharing, develop interoperable systems, and support decision making through algorithm-driven insights. These efforts are reinforced by national frameworks such as the **Department of Health and Aged Care Data Strategy**, which provides overarching direction for the use of data to support evidence-based policy and service delivery. While these projects demonstrate strong progress in system capability, they also highlight challenges related to integration and consistency across providers.

Key Australian Government-funded initiatives are summarised in **Appendix A1**.

Registered research trials

Registered research trials provide insight into emerging innovations, and the future direction of technology enabled care. These trials explore a wide range of applications, including virtual reality, digital therapeutics, telehealth, and assistive technologies, often focusing on improving engagement, wellbeing, and care outcomes for older people. For example, immersive virtual reality programs are being tested to improve physical activity and psychosocial wellbeing in residential care, while smart devices such as digital toothbrushes are being evaluated to support clinical monitoring and improve daily care practices.

Several trials focus on digital interventions for dementia care and carer support, including multilingual digital platforms, virtual assistants, and music-based eHealth technologies. These initiatives aim to enhance quality of life, reduce behavioural symptoms, and improve the capacity of carers to manage care at home. Other projects are exploring telehealth-enabled models of care, including wound care delivery, physiotherapy interventions, and palliative care support, demonstrating the growing role of technology in extending access to services and enabling care in place.

In addition, a number of trials focus on data driven care and system integration, including projects such as the Registry of Senior Australians and national data exchange initiatives. These programs aim to improve care quality, enable benchmarking, and support system-wide monitoring through linked and interoperable data. While these trials demonstrate significant potential, most remain in evaluation phases, and their long-term impact depends on successful translation into scalable and sustainable service models.

Registered research trials and emerging interventions are summarised in **Appendix A1**.

Australian Government and industry co-funded projects

A third group of projects involves co-funded initiatives between government, industry, and research organisations, reflecting a collaborative approach to innovation. These projects often focus on advanced technologies such as artificial intelligence, predictive analytics, and smart sensing systems. For example, projects such as **HomeGuardian** and sensor-based triaging systems are exploring predictive approaches to risk identification, enabling earlier intervention and supporting preventative care. Similarly, innovations such as smart garments and AI-based monitoring technologies demonstrate emerging approaches to supporting independence and safety in the home.

Other initiatives focus on improving communication, engagement, and quality of life through digital solutions, including platforms designed to reduce social isolation, support virtual connection, and deliver immersive experiences for people living with dementia. Projects such as **CareWindow**, virtual reality programs, and community connection platforms highlight the growing role of consumer facing technologies in supporting both care delivery and social wellbeing. In addition, several projects focus on improving clinical quality and safety, including digitally enabled pharmacist services, medication management systems, and predictive dashboards that support decision making and monitoring of care quality.

Despite the diversity and innovation evident across these projects, common challenges are apparent. Many initiatives are implemented as pilots or demonstrations, with limited pathways for scaling and integration into routine practice. There is also a tendency for systems to be developed independently, resulting in fragmented solutions that are not easily integrated into broader care ecosystems. Variation in infrastructure, workforce capability, and organisational readiness further contributes to uneven adoption across the sector.

Across all categories, the research landscape demonstrates a strong and growing ecosystem of innovation, with significant investment in technologies that support monitoring, data use, and digitally enabled care delivery. However, a consistent pattern emerges in which innovation outpaces implementation, with limited translation of successful projects into system-wide adoption. This reinforces a broader gap between research and practice, particularly in relation to interoperability, scalability, and alignment with service models.

Addressing these challenges will require stronger coordination across the home and community care ecosystem, clearer pathways for scaling successful innovations, and greater integration between technologies, care models, workforce capability, and curriculum development. Without this alignment, the potential of these research projects to contribute to broader sector transformation is likely to remain constrained.

Government and industry co-funded innovation projects are summarised in **Appendix A1**.

4.3 Living lab environments

Detailed descriptions are provided in **Appendix A2**, with the synthesis below identifying key system-level patterns and implications. Living labs provide critical insight into how innovation in home and community care is developed and applied within real-world contexts. Models such as the **Swinburne Living Lab**, **Central Coast Living Lab**, **Hunter Ageing Alliance (HAA)**, **Northcott Supported Living Lab**, and **QUT Living Lab** demonstrate strong capability in co-design, contextual adaptation, and user-centred development of technologies and service

models. Across these environments, successful implementation is closely linked to alignment with user needs, lived experience, and daily routines, rather than technical performance alone. These environments provide critical insight into how individuals interact with technologies and home-based care environments in real-world contexts, informing usability, design, and implementation considerations.

Local context plays a significant role in shaping implementation outcomes. Place-based initiatives demonstrate how demographic, geographic, and service constraints influence both model design and adoption. Social factors, including trust and digital literacy, further shape uptake, particularly within community-based models such as **HACA**, where engagement and confidence directly affect participation and use. At the same time, embedding innovation within real service environments improves usability and integration into care delivery, as demonstrated by the **QUT Living Lab** led by Bolton Clarke, where direct involvement of workforce and consumers supports iterative refinement.

However, living lab activity remains largely localised and context specific. Workforce capability is typically developed through project participation rather than structured and transferable pathways, and insights are not consistently embedded into training systems or scaled across providers. This limits the broader system impact of these environments and reinforces fragmentation between innovation, service delivery, and workforce capability development.

4.4 Service providers and emerging care models

A detailed breakdown of service provider models is provided in **Appendix A3**, with the synthesis below identifying cross-cutting system patterns. Service providers demonstrate that hybrid, distributed, and digitally enabled care is already operational across the system.

Organisations such as **Silverchain**, **McLean Care – iAgeHealth**, and **Bolton Clarke**, supported by platforms such as **Telstra Health**, illustrate a shift beyond traditional home-based support toward integrated models combining in-person, virtual, and coordinated care. Care is increasingly delivered at higher acuity within home environments, including hospital-level services, demonstrating that home-based care now extends into broader health system functions.

Virtual care models are expanding workforce reach, particularly in regional and remote areas, as demonstrated by **iAgeHealth**, enabling centralised clinical support across multiple providers. At the same time, digital platforms support coordination across primary, community, and acute care systems, allowing services to operate across distributed environments. These developments are associated with more multidisciplinary and mobile workforce roles, requiring coordination across both physical and virtual settings.

These patterns align with system developments such as **Support at Home (CM5)** and international models including **Buurtzorg**, **Kaiser Permanente**, and **NHS Virtual Wards**, which reflect more mature, integrated approaches to decentralised care. However, workforce capability development remains largely organisation-specific, with training aligned to local models rather than structured, transferable systems. This limits scalability and creates variation in capability across providers, highlighting a gap between service delivery evolution and workforce preparation.

4.5 Vocational Education and Training

VET systems provide the primary infrastructure for workforce development and demonstrate strong capability in delivering foundational skills at scale through structured, competency-based models. Simulation environments are well established, enabling controlled and repeatable training aligned with regulatory and accreditation requirements. These systems effectively support workforce entry and build baseline competencies across aged care, disability, and community services. Institutions also have the capacity to deliver training at scale, supporting workforce supply across the sector.

However, alignment with emerging models of care remains uneven. Training environments continue to reflect institutional and facility-based care, with limited representation of dynamic home environments. Digital systems, including telehealth, remote monitoring, and integrated care platforms, are introduced but are not consistently embedded within applied, scenario-based training aligned to real-world workflows. Hybrid and distributed care models are also not systematically reflected in training packages, curriculum or simulation environments.

A comparative summary of simulation capability, digital integration, and alignment with home-based care models across selected public VET providers is presented in **Table 2**. This highlights variation in how training environments reflect emerging models of care and the extent to which digital systems are embedded in applied learning.

4.6 Learning and training models

Further detail is provided in Appendix A4, with representative examples summarised in Table 2. These examples highlight how learning models are evolving to respond to emerging workforce requirements in home and community care.

Learning approaches are increasingly flexible, modular, and practice-oriented, reflecting the need for ongoing capability development and alignment with changing service delivery models. This includes the use of credentialing frameworks, simulation-based learning environments, and industry-led training programs that support both initial workforce preparation and continuous professional development.

As shown in **Table 1**, learning models are shifting toward modular and applied approaches that allow for more targeted skill development. Frameworks such as the National Microcredentials Framework support flexible learning pathways, enabling learners to build competencies aligned with emerging roles and technologies. Simulation-based approaches, including those developed by Health Education England, support experiential learning and help bridge the gap between theoretical knowledge and practice.

Industry-led programs such as Altura Learning provide scalable and accessible training aligned with service delivery requirements. These models are effective in supporting ongoing workforce development, particularly in response to immediate operational needs.

However, despite this diversity, learning and training systems remain fragmented across providers and jurisdictions. As detailed in **Appendix A4**, capability development is often program-specific rather than coordinated at a system level. This limits the transferability of skills and contributes to variation in workforce capability across organisations and regions.

As a result, there remains a gap between evolving models of care and formal workforce preparation. While training approaches are adapting to support digital and hybrid care environments, they are not yet consistently aligned with broader system change. This highlights the need for stronger integration between training systems, service delivery models, and emerging technologies.

4.7 International models and systems

International examples (see detailed summaries in Appendix A5) provide insight into how care systems evolve when technology, housing, infrastructure, and service delivery are more closely aligned. Models such as Future Care Lab Japan, the Bremen Ambient Assisted Living Lab, and the European Network of Living Labs (ENoLL) demonstrate stronger integration between innovation and implementation pathways.

National frameworks, including Singapore’s Ageing-in-Place strategy and the Canadian Home and Community Care Framework, illustrate how coordinated policy and funding can support large-scale implementation of home-based care models. In these contexts, housing, technology, and service delivery are more closely aligned, enabling integrated approaches to ageing in place.

Despite these advancements, workforce capability is not consistently embedded at a system level. Training approaches remain program-based or organisation-specific, indicating that the translation gap between innovation and workforce capability persists even in more integrated systems.

Table 1: Representative learning and training models			
Model/program	Model type	Role in system	Workforce Implication
National Microcredentials Framework (2022)	Credentialing framework	Enables flexible, targeted workforce development through stackable credentials	Supports rapid upskilling in areas such as digital health and care coordination
Health Education England Simulation Frameworks	Training framework	Provides structured, experiential learning through simulation-based education	Strengthens applied skills and decision-making in complex care environments
Altura Learning Aged Care Modules	Industry training program	Supports ongoing training aligned to operational workforce needs	Improves access to training but varies in depth and standardisation

Table 2: Comparison of simulation capability, digital integration, and home care alignment across public VET providers

Institute and simulation capability		Digital integration (what this includes)	Home care alignment (what this means in practice)	Example systems	Key limitation
Holmesglen	Advanced and emerging smart home and applied simulation environments, including home-like education settings incorporating assistive technologies, monitoring devices, and simulated in-home care scenarios.	Moderate and expanding. Includes electronic care record systems, assistive technologies, and early smart home integration. Emerging exposure to remote monitoring platforms, telehealth systems (e.g. virtual consultation platforms), and integrated care coordination tools within simulated environments.	High. Training environments replicate home settings and begin to reflect real delivery conditions such as care in private dwellings, technology use in home environments, and interaction with assistive systems.	Smart home environments, remote monitoring simulations, telehealth consultations, assistive tech integration.	Capability exists but not fully embedded across all programs. Integration of technology and home-based scenarios is still developing rather than standardised.
Box Hill Institute	Advanced clinical and residential simulation environments, including ward-based scenarios and aged care simulations, with limited representation of technology-enabled home care workflows.	Limited. Includes exposure to electronic health records and some digital documentation systems. Minimal application of telehealth platforms, remote monitoring systems, or integrated care coordination environments.	Moderate. Some representation of aged care and community settings but largely aligned to institutional care environments rather than variable home contexts.	Hospital ward simulations, aged care scenarios, Electronic Health Record (EHR) documentation exercises.	Simulation strong but focused on hospitals and residential care. Does not reflect hybrid or technology-enabled home care delivery.
Kangan Institute	Broad access to simulation environments supporting aged care and disability training.	Low. Minimal integration of digital health systems beyond basic exposure. Limited interaction with real-world systems such as monitoring platforms or telehealth tools.	Low to moderate. Training focuses on foundational care tasks rather than care delivery in complex home environments. Limited representation of variability in housing or digital systems.	Basic care simulations, manual handling, entry-level care tasks.	Training prepares entry-level workforce but does not reflect current care models involving technology and distributed care.
TAFE NSW	Extensive network of simulation environments, including hospital, aged care, and community care settings.	Emerging but inconsistent. Some programs include telehealth exposure (e.g. video consultation tools), electronic records, and digital care systems, but integration varies across campuses and is not consistently embedded in applied scenarios.	Moderate and variable. Includes community care environments but with limited integration of real-world home conditions, technology use, or hybrid care delivery models.	Telehealth exposure, EHR usage, mixed simulation environments.	Scale is strong but consistency is weak. Digital and home-based care capability depends on location rather than system design.
South West TAFE	Mobile simulation and outreach training via the Mobile Skills Lab supporting delivery of health, aged care, disability, and community care training across regional locations. Enables practical skills development in realistic and community-based contexts.	Moderate to high. Includes exposure to digital health technologies, simulation equipment, mobile training resources, and technology-enabled care scenarios. Potential to support telehealth, remote monitoring, and digitally enabled care workflows in regional and community-based settings.	High. Brings training directly into regional and community contexts, enabling learners to experience care delivery closer to real-world home and community environments. Supports understanding of service delivery across diverse settings and populations.	Mobile simulation technologies, aged care and disability training equipment, digital care tools, community-based learning aenvironments	Strong focus on accessibility and outreach; however, delivery is dependent on mobile infrastructure and opportunities for highly integrated smart home simulation may be more limited than purpose-built facilities.
TAFE Queensland	Extensive simulation infrastructure across health, aged care, nursing, and community services. Includes purpose-built clinical and home-care simulation environments.	Moderate to high. Incorporates digital health systems, electronic records, telehealth platforms, and technology-enabled care training within selected programs.	Moderate to high. Community care and home support are represented, although integration varies across campuses and programs.	Clinical simulation wards, home-care environments, telehealth systems, electronic record platforms.	Strong capability, but consistency of technology integration can vary between facilities and programs.
Central Regional TAFE (WA)	Regional simulation facilities supporting health, aged care, disability, and community services training, often focused on rural workforce needs.	Moderate. Exposure to digital documentation, telehealth, and technology-enabled care practices adapted for regional service delivery.	High. Strong alignment with regional and community-based service delivery and the realities of providing care across dispersed populations.	Telehealth training, community care simulations, digital documentation systems.	Regional focus provides relevance but simulation infrastructure is less comprehensive than larger metropolitan centres.
TasTAFE	Health and community services simulation hubs supporting aged care, disability, nursing, and community care programs.	Moderate. Includes electronic documentation systems, digital health tools, and selected telehealth applications.	Moderate to high. Provides learning environments reflecting community-based care, particularly in regional and rural contexts.	Simulated aged care environments, electronic records, telehealth exercises, community care scenarios.	Limited visibility of advanced smart home and integrated technology ecosystems compared with leading simulation centres.

Table 1 provides selected examples of simulation and training environments identified through the environmental scan and is not intended to represent an exhaustive national inventory. Examples were selected to illustrate different approaches to simulation, digital integration, and home and community care capability development across the sector.

4.8 Partner network implications

The scan identifies strong capability across research, innovation environments, service delivery, and education systems, including organisations such as CSIRO (AEHRC), NCHA, DHCRC, ARIIA, and multiple living lab and service provider networks. Innovation is active across all components of the system, with evidence of applied research, real-world testing, and service-level implementation. Partnerships are evident across organisations; however, they are primarily project-based rather than structured at a system level.

This limits coordination and reduces the capacity to translate research into consistent practice. It highlights the need for a more coordinated partner network that connects system components and enables alignment between innovation, service delivery, and workforce development.

A full mapping of organisations is provided in **Appendix A9**.

4.9 Synthesis of sector patterns

Across the home and community care ecosystem, organisations perform distinct but interconnected functions. Research organisations generate new knowledge and identify what is possible, living labs test and refine innovations in real-world settings, service providers implement and scale models of care, infrastructure organisations enable coordination, and education and training systems build workforce capability. While each part

of the ecosystem demonstrates strong capability within its own domain, the connections between them are fragmented. There is no systematic pathway that translates research into applied innovation, service delivery, and workforce development.

As a result, innovation is validated but not consistently scaled, service models are operational but not standardised, and workforce capability develops unevenly rather than through coordinated systems. Training and education remains partially aligned to legacy models, limiting its ability to support emerging forms of care.

The core constraint is therefore not a lack of innovation, but the absence of mechanisms that integrate these components into coherent and scalable pathways. This fragmentation across research, service delivery, and workforce systems reinforces variation in capability and adoption across providers and regions.

5. Models, practices and innovations in home and community care

5.1 Overview

This section synthesises the models, practices, and innovations identified in Section 4. While Section 4 describes system components and case examples, this section draws out cross-cutting patterns and examines how these elements operate together in practice.

The focus is on how care is delivered, coordinated, and supported across home and community settings, and the implications for workforce capability, curriculum development, and system design. Supporting examples are drawn from **Appendix A6** and **Appendix A7**.

5.2 Model typology of home and community care

A model typology (**Appendix A6**) was developed to organise how different approaches function within the system. These include smart environments, living labs, community-based models, remote monitoring systems, hybrid care models, and digital integration platforms.

These model types represent distinct but interconnected functions. Some operate as **enabling environments** (such as living labs and simulation settings), others as **service delivery models** (such as hybrid care and community-based approaches), and others as **system infrastructure** (such as digital platforms and monitoring systems). In practice, these boundaries are increasingly blurred, with multiple model types operating within the same care system.

For example, a hybrid care model may incorporate remote monitoring technologies, rely on digital coordination platforms,

and be tested or refined within a living lab environment before implementation in service delivery. This reflects a shift toward integrated systems rather than discrete models. Despite this increasing convergence, implementation remains fragmented. There are limited structured pathways to align these model types across research, service delivery, and workforce training. As a result, integration occurs inconsistently and is often dependent on local capability rather than system design.

Across these models, the home increasingly operates as an adaptable home-based care environment, where multiple systems and services interact and evolve over time rather than functioning as fixed or isolated components.

5.3 Key practices across models

5.3.1 Technology-integrated care

Technology is now embedded within care delivery rather than operating as a separate or optional layer. Systems such as remote monitoring, telehealth, and digital care coordination platforms (**Appendix A6**) are increasingly integrated into routine workflows. These technologies enable continuous observation, timely intervention, and improved communication between providers. However, their effective use depends on workforce capability to interpret data, navigate multiple systems, and integrate digital information into care decisions. This capability is not consistently developed across organisations, resulting in variation in how these tools are applied in practice.

Housing conditions, accessibility, layout, and the capacity for ongoing adaptation influence how care can be delivered and

how environments respond to changing needs. In this context, the home becomes an adaptable home-based care environment shaped by the interaction between physical design, technologies, and care practices.

5.3.2 Hybrid and distributed care models

Care delivery is increasingly distributed across home, community, and clinical environments, combining in-person and virtual services (**Appendix A3**). These models support greater flexibility, improved access, and more efficient use of workforce resources, particularly in regional and remote contexts. This shift requires changes in how care is coordinated. Rather than relying on fixed service locations, care is delivered across networks of providers and settings. This introduces new requirements for coordination, communication, and decision-making across both physical and virtual environments. While these models are operational, workforce capability to function effectively in distributed and hybrid systems remains uneven.

5.3.3 Co-design and user-centred approaches

Co-design is widely used across living labs and community-based models (**Appendix A2**) to ensure that technologies and services align with user needs, preferences, and lived experiences. This involves direct engagement with consumers, carers, and workforce in the design and refinement of solutions.

These approaches improve usability, increase acceptance, and support more effective implementation. They also provide valuable insights into how services function in real-world contexts. However, co-design remains largely project-based and is not consistently embedded within system-level processes, policy frameworks, or workforce curriculum. This limits its ability to influence broader system design and capability development.

5.3.4 Built environment and data-driven care

Care in the home is shaped by the interaction between physical environments, technology, and service delivery (**see Appendix A1 and Appendix A3**). Research demonstrates that the home environment functions as more than a physical dwelling; it acts as a platform for social connection, autonomy, identity and independence. Housing suitability, home modifications, accessibility and neighbourhood connectedness are therefore critical enablers of ageing in place (Rose et al., 2023).

Housing conditions, accessibility, layout, and the capacity for ongoing adaptation directly influence how care can be delivered and how environments respond to changing needs over time. At the same time, data-driven approaches, including remote monitoring and predictive analytics, enable more proactive and preventative care. Emerging integrated care approaches increasingly rely on interoperable digital systems, shared care plans, virtual and hybrid models of care, and improved access to health information by consumers and carers to support coordination across complex care journeys (Ouellet et al., 2024). These systems can identify changes in behaviour or health status and support earlier intervention.

However, these two domains, the built environment and digital systems, are often developed separately. Housing adaption considerations are not consistently integrated with digital health initiatives or workforce training. Similarly, workforce capability to interpret and act on data generated in home environments is not systematically developed. This limits the potential to deliver fully integrated, environment-aware care models.

Community-based monitoring, proactive assessment and coordinated multidisciplinary responses have been identified

as critical mechanisms for supporting healthy ageing and maintaining independence in home environments (Cesari et al., 2022).

5.4 Enabling tools and frameworks

A wide range of tools and frameworks support the implementation of home and community care models (**see Appendix A6 and A7**). These include monitoring systems, digital platforms, telehealth technologies, assistive systems, and simulation-based learning environments.

These tools act as enabling mechanisms that translate innovation into operational capability. They support communication between providers, facilitate coordination of care, enable remote service delivery, and provide platforms for applied learning and workforce development.

However, the presence of tools does not ensure effective implementation. Their impact depends on how well they are integrated into service workflows, aligned with care models, and supported through workforce training. In many cases, systems are implemented at an organisational level without consistent alignment across providers or training systems, limiting interoperability and scalability.

5.5 Emerging education and training innovations

The findings highlight an opportunity to strengthen alignment between training systems and emerging models of care delivered in the home. Across the scan, care delivery is increasingly characterised by the integration of digital technologies, hybrid service models, and multidisciplinary coordination across health, aged care, disability, and housing sectors. These developments reflect a shift toward distributed, technology-enabled models of care delivered within adaptable home and community environments rather than fixed or standardised sites of service delivery.

At the same time, workforce education and training is delivered across multiple established pathways, including vocational education and training, continuing professional development, and higher education. These pathways operate through distinct teaching and learning models and are designed to meet different workforce and system requirements.

There is a growing requirement for workforce capability that supports the ongoing adaptation of home environments. This includes responding to changing care needs over time, integrating digital and assistive technologies, and coordinating care across multiple providers and service contexts. These capabilities are increasingly relevant to contemporary practice, particularly in home-based care settings where variability, autonomy, and system integration are key features of service delivery.

Examples of existing curriculum and training provision include foundational vocational education qualifications such as the Certificate III in Individual Support CHC33021 and Certificate IV in Ageing Support CHC43021, along with community services programs such as the Diploma of Community Services. Digital health capability is supported through programs such as **Australian Digital Health Agency** training modules and telehealth training delivered by **Primary Health Networks**. Additional provision includes microcredentials and higher education programs such as **RMIT Digital Health Microcredentials**, **Monash Digital Health** courses, and postgraduate qualifications including the Graduate Certificate in Digital Health delivered by the **Australian College of Nursing**. Continuing professional development is also

widely delivered through platforms such as **University of Tasmania Equip Aged Care** modules, **Ausmed Training Passport**, **Altura Learning**, and **Healthcare Australia workforce** training programs.

These programs demonstrate a broad and active training landscape across the sector. However, the scan indicates that they are delivered through diverse and largely separate teaching and learning models, each with different levels of integration with practice environments and technology-enabled care.

5.5.1 Training system structure and tiered model

To support analysis, the current system can be broadly understood across three tiers:

- **Tier 1:** Vocational education and training, focused on entry-level workforce preparation and competency development
- **Tier 2:** Continuing professional development and workforce upskilling, focused on ongoing skill development, compliance, and practice enhancement
- **Tier 3:** Higher education and advanced programs, focused on system-level knowledge, leadership, and digital capability

Each tier plays a distinct role in workforce development and contributes complementary strengths. However, learners may engage with these tiers as separate pathways rather than as an integrated capability development system.



Table 3 presents a structured comparison of teaching and learning models across the three primary training tiers, highlighting how differences in delivery, educator roles, and application to practice shape the development of workforce capability within the current system.

The variation across these models reflects the different roles each plays in workforce development. Vocational education provides structured preparation for workforce entry, continuing professional development enables ongoing learning and regulatory compliance, and higher education develops advanced knowledge and system-level capability. These approaches may be considered complementary but are often experienced as distinct and unconnected pathways.

5.5.2 Existing courses and microcredentials

In the vocational sector, training and education is delivered by many Registered Training Organisations, including all Technical and Further Education (TAFE) institutes across Australia. While there is a wide range of training available across vocational education and training, continuing professional development, and higher education sectors, the landscape reflects a mix of delivery models, audiences, and learning outcomes.

Table 4 provides a detailed overview of identified courses and microcredentials across the vocational, continuing professional development, and higher education sectors. While extensive, it represents a sample of a broader and evolving training landscape.



Dimension	Tier 1 Vocational Education and Training	Tier 2 Continuing professional development	Tier 3 Higher education and advanced programs	Observation
Learning structure	Competency-based and aligned to nationally endorsed training packages with clearly defined outcomes and assessment requirements	Modular, topic-based and often self-paced with a focus on flexibility and accessibility	Structured academic programs with sequenced learning and cumulative knowledge development	Each model is designed to meet different workforce and system requirements
Educator role	Instructor and assessor focused on supporting competency achievement and workplace readiness	Content developer and facilitator with varying levels of direct learner engagement	Academic educator supporting theoretical understanding, critical thinking, and research-informed learning	Educator roles vary depending on delivery context and intended learning outcomes
Teaching methods	Classroom delivery, simulation-based learning, and supervised workplace placement	Online modules, video-based learning, quizzes, and limited reflective tasks	Lectures, seminars, case studies, and applied projects where included	Teaching approaches reflect differences in scale, audience, and learning intent
Technology use	Learning Management Systems, simulation equipment, and variable exposure to workplace technologies	Digital learning platforms, mobile applications, and automated tracking systems	Advanced digital tools including data analytics platforms and collaborative technologies	Technology use increases in complexity across tiers, although application to practice varies
Application to practice	Strong integration through placements and simulated environments	Variable, with some modules incorporating case-based learning and others focused on knowledge transfer	Variable depending on course design, with some programs including applied projects	Integration of learning with practice differs across contexts and program types

Vocational Education and Training		
Program	Providers	Specific components (units, modules, subjects or short courses)
Certificate III in Individual Support CHC33021	On scope at 645 Registered Training Organisations	• CHCCCS031 Provide Individualised Support • CHCCCS040 Support Independence and Wellbeing • CHCHCS001 Provide Home and Community Support Services • CHCLEG001 Work Legally and Ethically • HLTAAP001 Recognise Healthy Body Systems
Certificate IV in Ageing Support CHC43015	On scope at 368 Registered Training Organisations	• CHCAGE007 Recognise and Report Risk of Falls • CHCCCS038 Facilitate Empowerment of People Receiving Support • CHCCCS034 Recognise Healthy Body Systems • CHCCCS011 Meet Personal Support Needs
Diploma of Community Services CHC52025	On scope at 388 Registered Training Organisations	• CHCCSM005 Develop, Facilitate and Review Service Programs • CHCCCS007 Develop and Implement Service Programs • CHCPRP003 Reflect on and Improve Own Professional Practice
Australian Government and national digital health training		
Program	Providers	Specific components (units, modules, subjects or short courses)
My Health Record eLearning Program	Australian Digital Health Agency	• Introduction to My Health Record • Accessing the My Health Record System • Uploading Shared Health Summaries • Privacy and Access Control Settings
Electronic Prescribing Training Program	Australian Digital Health Agency	• Electronic Prescription Workflow • Token-Based Prescribing • Active Script List Training
Secure Messaging and Interoperability Training	Australian Digital Health Agency	• Secure Messaging Standards • Interoperability Basics in Clinical Systems
Cyber Security Awareness Training for Healthcare Providers	Australian Digital Health Agency	• Cyber Threat Awareness • Protecting Patient Data • Secure Password and Identity Management

Table 4: Overview of courses and microcredentials across VET, continuing professional development and higher education providers (continued)

Primary health network telehealth training programs		
Program	Providers	Specific components (units, modules, subjects or short courses)
Telehealth Skills and Capability Program	Murray Primary Health Network	- Conducting Telehealth Consultations - Clinical Governance in Telehealth - Privacy, Consent and Documentation in Virtual Care - Technology Setup and Troubleshooting
Digital Health and Telehealth Readiness Program	Western Victoria Primary Health Network	- Digital Appointment Systems - Patient Engagement in Telehealth - Practice Workflow Redesign
Telehealth Capability Development Series	Brisbane North Primary Health Network	- Video Consultation Skills - Remote Patient Monitoring Introduction - Digital Documentation
Virtual Care and Telehealth Training Program	Northern Queensland Primary Health Network	- Telehealth in Rural and Remote Areas - Connectivity and Access Challenges - Safe Virtual Care Delivery
Post graduate qualifications		
Program	Providers	Specific components (units, modules, subjects or short courses)
Graduate Certificate in Digital Health	Australian College of Nursing	- Digital Health Leadership - Health Informatics and Analytics - Clinical Governance in Digital Systems
Master of Health Informatics	Monash University	- Health Information Systems - Data Governance - Clinical Decision Support Systems
Master of Digital Health	University of Melbourne	- Digital Transformation in Healthcare - Health Systems and Policy
Master of Health Data Science	University of New South Wales	- Data Analytics for Health - Machine Learning Applications
Continuing professional development platforms		
Platform	Type	Example Learning Areas
Ausmed	Online CPD platform	- Infection control - Medication administration - Clinical deterioration
Altura Learning	Workforce learning platform	- Falls prevention - Dementia care - Palliative care
Relias	Compliance and workforce learning platform	- Care planning - Patient safety - Infection control
University of Tasmania Equip Aged Care	Sector education platform	- Dementia - Palliative care - Quality standards
Dementia Training Australia	Specialist training provider	Dementia care and communication
Palliative Care Australia	Specialist training provider	- End-of-life care - Advance care planning
Workforce and employer led programs		
Platform	Type	Example Learning Areas
UnitingCare	Employer-led workforce development	- Digital systems - Induction - Workforce capability
Regis Aged Care	Employer-led training	- Clinical systems - Documentation
Bolton Clarke	Employer-led learning and development	- Home-care technologies - Remote care capability
Healthcare Australia	Workforce training provider	- Blended learning - Workforce capability

5.5.3 Role of applied research environments

The CoE's **applied research environments**, incorporating the **SHLL** and **Virtual Smart Home**, provide a mechanism to support closer integration between training, technology, and care delivery.

The **SHLL** will function as a realistic, fully integrated home environment where care delivery, assistive technologies, and environmental conditions are experienced together. It will enable learners to engage with care practices, technology use, and environmental variability simultaneously, reflecting the conditions of home-based care.

The **Virtual Smart Home** will extend this capability through scalable and immersive simulation. It will enable engagement with complex, dynamic scenarios and distributed systems that may not be feasible to replicate consistently in a physical environment.

Together, these applied research environments support:

- engagement with integrated technologies in realistic contexts
- development of decision-making capabilities in distributed care environments
- exploration of workflows involving telehealth, monitoring systems, and assistive technologies
- observation of how the workforce interacts with environments and systems in practice

They also provide a platform for testing, evaluation, and refinement of technologies, care models, and training approaches, supporting continuous improvement.

5.6 Key areas for further development

Based on the findings, three areas have been identified where further exploration may support alignment between training systems and emerging models of care.

5.6.1 Integration of technology-enabled and home-based care capabilities

Digital and technology-related capabilities are present across multiple parts of the system but are often delivered through separate programs or modules. This suggests an opportunity to explore how these capabilities may be more consistently integrated into core training pathways, particularly in home-based care contexts.

Potential impact context

Variation in how and when these capabilities are developed may influence workforce readiness and experience across different organisations.

5.6.2 Depth of applied learning in emerging care models

Topics such as telehealth, digital systems, and integrated care are included across programs, with variation in depth and application. This suggests potential value in strengthening opportunities for applied scenario-based learning that reflects real-world care delivery.

Potential impact context

Differences in applied learning opportunities may affect how learners transition from knowledge to practice.

5.6.3 Alignment between training/education models and service delivery contexts

Training and education continues to be delivered through a combination of classroom, workplace, and online models, while care delivery is increasingly home-based, hybrid, and digitally coordinated. This suggests an opportunity to explore how training environments can more closely reflect these conditions.

Potential impact context

Where differences exist between training, education and practice environments, additional workplace learning may be required to support adaptation.

5.7 Summary of emerging innovations

Across the system, innovation is active and increasingly embedded within practice. Technologies, service models, and training approaches are being implemented across a range of contexts.

The findings suggest that these developments are occurring across multiple parts of the system, often in parallel. There is an opportunity to further explore how training systems, workforce capability development, and innovation can be more closely connected through integrated pathways and applied research environments.

5.7.1 Link to Centre of Excellence outcomes

Within this context, a CoE can support alignment by:

- enabling integrated pathways across vocational education, continuing professional development, and higher education
- leveraging applied research environments, including the SHLL and Virtual Smart Home
- supporting capability development aligned to home-based, technology-enabled care
- supporting evaluation and continuous improvement across training and service delivery
- supporting consumer engagement, co-design, and digital confidence by enabling consumers, carers, and the workforce to interact with and evaluate technologies, care models, and home-based care environments

Successful implementation has the potential to support workforce capability, technology integration, and service coordination, while strengthening alignment between innovation, training/education, and practice across the sector.

Phase 2 – Technology desktop scoping review

6. Technology scoping review: Smart Home Living Lab and Virtual Smart Home

6.1 Introduction

The delivery of health and community care is undergoing sustained transformation, driven by demographic change, the increasing prevalence of chronic conditions, and rapid advances in digital technologies. Across Australia and internationally, care is shifting toward digitally enabled and continuously adaptable home environments, supported by telehealth, remote monitoring, smart home systems, and assistive technologies. This transition reflects both consumer preference to remain at home and the need for more sustainable and efficient care systems.

At the same time, the increasing complexity of care requires a workforce capable of operating within technology-enabled environments. Digital health platforms, data-driven care models, and emerging technologies such as artificial intelligence (AI) and robotics are reshaping care delivery and coordination. However, a persistent gap remains between technological capability and its effective implementation, driven by challenges in system integration, workforce readiness, and user interaction.

These challenges directly influence workforce capability, service delivery, and user experience outcomes, as identified in Section 5.5. Addressing them requires not only the adoption of technologies, but their integration within environments that reflect real-world care delivery and support practical application.

This desktop review forms Phase 2 of the broader National Scan and focuses on identifying the technologies, systems, and capabilities required to inform the design of the SHLL and Virtual Smart Home within the CoE. The analysis extends beyond individual technologies to examine how they function within integrated systems, and how these systems can be represented within simulation-based learning environments

Drawing on academic and grey literature, the review provides an evidence-informed foundation for designing environments that support care delivery, workforce capability development, and applied research. It positions the SHLL and Virtual Smart Home as integrated settings that reflect real-world service delivery, enabling testing, training, and evaluation of technologies and care models.

In this context, the SHLL and Virtual Smart Home environments will operate as applied research platforms, supporting ongoing testing, prototyping, and evaluation of technologies, care models, and learning approaches. They will enable continuous refinement through observation of practice, user interaction, and system performance, ensuring that technology, workforce capability, and service delivery evolve together in response to changing needs.

6.2 Thematic analysis

6.2.1 Overview of evidence and approach

The analysis draws on 54 sources, including 38 academic studies and 16 grey literature publications, integrating evidence on clinical outcomes, system implementation, and workforce capability. Academic studies provide detail on the effectiveness of specific technologies, while grey literature contributes insight into system-level constraints, infrastructure requirements,

and real-world adoption within Australian and international contexts (Digital Health CRC, 2022; CSIRO, 2022). Findings were synthesised using thematic analysis and technology-by-evidence mapping, allowing identification of patterns across technologies, levels of maturity, and implementation environments. The analysis considers not only whether technologies are effective, but how they operate within care systems, how they interact with workforce practices, and how they influence user experience. Across both evidence types, a consistent pattern emerges in which technology effectiveness depends less on individual device performance and more on how technologies are configured, connected, and applied within broader systems (Moyle et al., 2022; Digital Health CRC, 2022). These findings are further supported by analysis of system-level research and innovation initiatives outlined in **Appendix A5**.

The review of existing education and training resources for digital technologies further highlights that Australia has a well-developed but fragmented ecosystem supporting workforce capability in home and community care. This includes nationally recognised qualifications, digital health capability frameworks, government-led training programs, and provider-based short courses and microcredentials.

Key areas of training provision include telehealth delivery, remote monitoring, digital documentation, electronic health records, and cybersecurity in mobile and home-based settings. However, these offerings are not consistently integrated into applied research environments that reflect digitally enabled and continuously adaptable home-based care, particularly in relation to smart home systems and integrated technology platforms.

Theme 1: Variation in technology maturity and effectiveness

The evidence demonstrates a clear differentiation in the maturity and effectiveness of technologies used in home and community care. Telehealth and remote monitoring systems are consistently supported by strong evidence, with demonstrated improvements in access, continuity of care, and chronic disease management (Ambagtsheer et al., 2020; Colburn, 2024; Makeham et al., 2026; Moore et al., 2020). These systems are widely implemented and increasingly embedded within service delivery models, particularly when supported by coordination mechanisms and clinical oversight (Sapci & Sapci, 2019).

Remote monitoring technologies show the greatest value when they are integrated into care delivery processes rather than operating as standalone monitoring tools. Systems that connect physiological and behavioural data to alerts, dashboards, care providers, and defined response pathways enable earlier detection of deterioration and more timely intervention (Sapci & Sapci, 2019). In contrast, technologies that function primarily as passive data collection tools produce limited measurable impact when there are no clear mechanisms for interpreting and acting on the information generated.

Emerging technologies such as artificial intelligence and robotics demonstrate potential but remain less established. Evidence highlights their capacity to support predictive analytics and decision-making (Koopman et al., 2020), as well as engagement and wellbeing in specific populations such as dementia care (Moyle et al., 2021). However, these applications are typically

limited to small-scale or pilot studies, with inconsistent outcomes and reliance on supporting system infrastructure (Digital Health CRC, 2022).

Theme 2: Fragmentation in smart home systems

Smart home technologies represent a significant area of innovation within home-based care, encompassing sensors, assistive devices, environmental monitoring systems, and communication tools. Evidence shows that these technologies can support safety, independence, and daily living, particularly in ageing and disability contexts (Wang et al., 2023; Ma et al., 2022).

However, a consistent finding across both academic and grey literature is that these technologies are rarely implemented as integrated systems. Instead, many technologies operate as standalone tools, with limited interoperability or connection to care coordination platforms. Evidence from the DACS: Smarter Safer Homes evaluation suggests that the benefits of smart home monitoring are maximised when technologies are integrated into care models and service delivery workflows, enabling data to support proactive decision-making and coordinated care (Zhang et al., 2022; Duff et al., 2022)."

The consequence of this fragmentation is that valuable data generated within the home is not consistently translated into action. For example, studies demonstrate that while motion sensors can detect changes in activity patterns, their effectiveness depends on whether this data is linked to alerts or care responses (Wang et al., 2024; Cai et al., 2015). Without these connections, the functional capability of the technology does not translate into improved outcomes, while also raising considerations related to privacy, user experience, and the disruption of the home environment (Felber et al., 2025).

Theme 3: System integration and infrastructure constraints

The evidence consistently identifies system integration as a critical determinant of successful implementation. Technologies are often limited not by their functionality, but by the absence of infrastructure that enables them to operate as part of a coordinated system. Lack of interoperability between platforms, inconsistent data standards, and fragmented digital ecosystems are widely reported barriers (Moyle et al., 2022; Digital Health CRC, 2022).

Recent system-level reports reinforce that digital infrastructure and interoperability remain uneven across the sector (Australian Digital Health Agency, 2025; Austrade, 2025). Integration infrastructure includes components such as shared electronic health records, data aggregation platforms, and interoperable dashboards that enable information from multiple sources to be combined and used in decision-making. International evidence shows that when these systems are in place, care coordination improves and outcomes are strengthened through timely and informed decision-making (Koopman et al., 2020).

Grey literature reinforces that these structures remain underdeveloped in many Australian contexts, with variability in digital maturity and system capability across providers (ACIITC, 2023; Digital Health CRC, 2022). As a result, technologies are often implemented within organisational silos, limiting their broader impact.

Theme 4: Workforce capability and simulation requirements

Workforce capability emerges as a central factor influencing the effectiveness of technology-enabled care. The evidence indicates that required skills extend beyond basic digital literacy to include interpreting data, navigating multiple systems, managing telehealth interactions, and coordinating care across platforms (Sorwar et al., 2023; ARIIA, 2022).

Current training and education approaches often focus on individual competencies or discrete tasks, which does not reflect the complexity of real-world care delivery. As technologies become more integrated, workforce roles require a systems-level understanding of interactions between technologies and care processes.

Simulation-based learning is identified as an effective mechanism for developing these capabilities. Studies demonstrate that immersive and scenario-based simulation improves learners' ability to apply knowledge in complex environments (Peng et al., 2025). However, existing simulation approaches often focus on clinical tasks rather than integrated systems, limiting their ability to prepare the workforce for technology-enabled care contexts (ARIIA, 2022).

Theme 5: User experience, ethics, and adoption

User experience and acceptance are critical to the successful implementation of technology, and these vary significantly across systems. Technologies that are visible, user-initiated, and provide clear benefits, such as telehealth platforms, are generally well accepted (Ambagtsheer et al., 2020).

In contrast, systems involving continuous monitoring or automated decision-making raise concerns related to privacy, autonomy, and control. Studies highlight that users may be hesitant to adopt technologies where data collection is not transparent or where control is limited (Felber et al., 2023; Tian et al., 2025; Felber et al., 2025).

Grey literature reinforces the importance of digital literacy and user understanding in supporting adoption. Where individuals understand how technologies function and perceive clear benefits, acceptance increases significantly. Findings from the DACS: Smarter Safer Homes evaluation suggest that user engagement and perceived value are critical factors influencing adoption and ongoing use of smart home technologies (Zhang et al., 2022). These findings indicate that ethical and user-centred considerations must be integrated into both system design and workforce training.

These findings reinforce that user interaction is a critical determinant of effectiveness, and that understanding how consumers, carers, and the workforce engage with technologies is essential to informing design, usability, training, and implementation.

6.2.2 Integrated thematic summary

Across all themes, a consistent pattern is evident in which the effectiveness of technologies is shaped by the interaction between devices, systems, workforce capability, and user context. Technologies that are well supported by evidence can still produce limited outcomes if they are implemented in isolation or without appropriate integration, infrastructure, and training.

The synthesis reinforces that technology-enabled care must be understood as a system-level construct rather than a collection of tools. Integration, interoperability, workforce capability, and user-centred design are all interdependent components that determine whether technologies deliver meaningful outcomes.

This has direct implications for the design of the SHLL and Virtual Smart Home, which must function as an integrated environment that reflects these relationships. It should enable interaction between technologies, simulate real-world workflows, and support both training and applied research within a coordinated system.

6.3 Technology requirements for the Smart Home Living Lab and Virtual Smart Home

6.3.1 Translation of evidence into system requirements

The synthesis of academic and grey literature demonstrates that the effectiveness of technology-enabled home and community care depends on the interaction between technologies, system infrastructure, workforce capability, and user context. Across multiple studies, technologies such as telehealth platforms, remote monitoring systems, smart home sensors, and assistive devices demonstrate measurable outcomes, but only when embedded within coordinated systems (Ambagtsheer et al., 2020; Sapci & Sapci, 2019; Moyle et al., 2022). Supporting evidence mapping and methodological detail are provided in **Appendix B1**.

These findings indicate the importance of designing the SHLL and Virtual Smart Home as an integrated socio-technical environment that reflects a digitally enabled and continuously adaptable home environment. This requirement is further reinforced by analysis of the current training ecosystem (Table 5), which highlights fragmentation across digital health education and limited alignment with integrated, home-based care delivery. This requires inclusion of technologies supported by strong evidence, alongside infrastructure that enables interaction, coordination, and simulation of care processes. Relevant system-level tool categories and examples are outlined in **Appendix B3**.

These requirements align with the need to develop workforce capability through integrated training ecosystems, where technologies, data systems, and care workflows are experienced together rather than as separate components.

6.3.2 Care delivery technologies

Telehealth and remote monitoring systems represent the most mature and consistently validated technologies. Evidence shows that telehealth improves access, continuity, and chronic disease management, particularly when integrated with service coordination (Ambagtsheer et al., 2020; Jiang et al., 2023). Remote monitoring systems support early detection of deterioration when linked to clinical workflows and response mechanisms (Sapci & Sapci, 2019). Examples of these systems and their functions are further detailed in **Appendix B2**.

These technologies provide a strong evidence base for inclusion within the SHLL and Virtual Smart Home and include video consultation platforms, asynchronous communication systems, wearable devices, and in-home monitoring sensors. Importantly, they must be connected to simulated or real dashboards, alerts, and escalation pathways to reflect how data is interpreted and acted upon in practice.

6.3.3 Smart home and assistive systems

Smart home and assistive technologies play a critical role in supporting independence, safety, and daily living. Evidence demonstrates effectiveness in activity monitoring, environmental safety, medication adherence, and communication (Wang et al., 2024; Ma et al., 2022; Zhang et al., 2022; Moyle et al., 2021).

However, both academic and grey literature show that these technologies are often implemented in isolation, limiting overall impact. Evidence from the DACS: Smarter Safer Homes evaluation suggests that the effectiveness of smart home technologies depends on integration with care models and service delivery processes (Zhang et al., 2022; Bridge et al., 2021). System mapping in Appendix B3 further illustrates the fragmentation of these tools across care environments.

The findings indicate the importance of an integrated and adaptable home-based care environment in which sensors, assistive technologies, and communication systems operate together and contribute to coordinated monitoring and support aligned with service delivery models.

6.3.4 Integration infrastructure and interoperability

A critical requirement is the inclusion of infrastructure that enables integration across technologies. Evidence consistently identifies lack of interoperability and fragmented digital ecosystems as major barriers to effective implementation (Moyle et al., 2022; Digital Health CRC, 2022).

Integration infrastructure includes shared data platforms, interoperable dashboards, and systems that enable aggregation and use of information from multiple technologies. These systems support coordination across providers and care settings and enable monitoring data to inform care decisions (Koopman et al., 2020).

A recommendation is that the SHLL and Virtual Smart Home should include simulation of this infrastructure through data dashboards, integrated interfaces, and communication systems. Without this layer, it would be difficult to replicate real-world service delivery or support system-level workforce training. These findings are consistent with the thematic analysis outlined in Section 6.2, particularly in relation to challenges in integration, workforce capability, and real-world application of technologies across home and community care settings.

6.3.5 Simulation and virtual environments

Simulation is a central requirement for workforce capability development. Evidence demonstrates that immersive and scenario-based simulation improves learners' ability to apply knowledge in complex and integrated care settings (Peng et al., 2025).

Importantly, simulation should replicate integrated systems rather than individual tasks. This aligns with findings from the evidence synthesis (Appendix B3) and case analysis of workforce and training environments (Appendix A4), which show that workforce capability requires understanding of system interactions, not just technology operation (ARIIA, 2022).

These requirements align with the need to prepare learners to operate within digitally enabled and continuously adaptable home environments, as outlined in the curriculum and workforce capability findings.

Recommendation

The Smart Home should provide opportunities for physical interaction with technologies, allowing learners to engage directly with systems used in care delivery. The Virtual House should extend this through immersive environments that replicate home settings and system interactions, including monitoring alerts, telehealth consultations, and care coordination scenarios.

6.3.6 Emerging technologies including Artificial Intelligence and robotics

Emerging technologies such as artificial intelligence and robotics demonstrate potential but remain in early stages of adoption. Evidence shows applications in predictive analytics and engagement support, but highlights limitations related to data quality, integration, and scale (Koopman et al., 2020; Moyle et al., 2021). These technologies are typically implemented through pilot programs and applied research environments (see **Appendix A1 and Appendix A3**) and are not yet consistently embedded in routine care systems (Digital Health CRC, 2022).

Recommendation

The Smart Home to consider including AI and robotic technologies as part of an innovation layer, that supports testing and evaluation within integrated environments rather than treating them as core infrastructure.

6.3.7 User experience, ethics, and design considerations

User experience and ethical considerations are critical to technology adoption. Evidence indicates that systems involving passive monitoring or automated decision-making raise concerns related to privacy, autonomy, and control (Felber et al., 2023; Tian et al., 2025).

In contrast, more transparent and user-controlled technologies such as telehealth demonstrate higher acceptance (Ambagtsheer et al., 2020). Digital literacy, understanding of the technology, and perceived relevance to everyday care needs influence uptake and ongoing engagement with smart home technologies (Zhang et al., 2022). These design considerations are further supported by system-level analysis in **Appendix A7**.

The current training ecosystem for digital technologies in home and community care is characterised by a wide range of programs, frameworks, and initiatives with varying levels of alignment to workforce capability needs and service delivery models.

As summarised in Table 5, while a broad range of training programs and frameworks exist, they do not collectively provide an integrated platform linking technology, care delivery, and workforce capability within applied environments.

Recommendation

The Smart Home and Virtual Smart Home to consider incorporating user-centred design principles, including transparency, accessibility, and control. Ethical considerations should also be embedded in simulation and training scenarios, enabling learners to engage with real-world decision-making.

Category	Example of training and resources	Capabilities developed	Current gaps	Implications for CoE
National frameworks and capability models	- AIDH Digital Health Capability Framework - Nursing & Midwifery Digital Health Framework - National Digital Health Workforce & Education Roadmap	Defines core digital health competencies including data use, digital communication, clinical systems, and governance	Broad frameworks exist but are not consistently embedded into curriculum or linked to applied environments	Provides a foundation for alignment across CoE programs and for mapping capability development pathways
Formal qualifications	- Certificate III in Individual Support (CHC33021) - Certificate IV in Ageing Support (CHC43015) - Diploma of Nursing (HLT54121) - Digital units within ICT qualifications	Foundational digital literacy, documentation, communication, and basic system use	Digital capability is typically generic, fragmented, and not contextualised to home-based care or integrated workflows	Opportunity for CoE to embed digital capability within applied, simulation-based, and home-based care contexts
Government and national training programs	- ADHA training modules - Primary Health Network (PHN) telehealth programs - Aged Care Digital Transformation training	Telehealth delivery, My Health Record use, secure messaging, digital documentation, privacy, and cybersecurity	Training is modular and standalone, with limited integration into broader curriculum or workplace simulation	CoE can integrate these programs into structured learning pathways and applied training environments
Telehealth and Remote Care Training	- University of Queensland Centre for Online Health - ACRRM Telehealth Program - Torrens University telehealth courses	Virtual consultation skills, remote monitoring, digital triage, communication in hybrid care settings	Focused on specific tools or modalities rather than integrated care workflows across systems	CoE can simulate end-to-end care scenarios integrating telehealth, monitoring, and in-home care delivery
Workforce-specific training and microcredentials	- Digital literacy courses - Cyber safety training - Mobile clinical device training - Role-specific digital modules for aged care, nursing, allied health, disability	Role-specific digital practice including use of care management systems, remote monitoring devices, and assistive technologies	Provision is dispersed and lacks alignment across roles, sectors, and career pathways	CoE can create structured, stackable microcredentials aligned to integrated care models and workforce roles
Smart home and assistive technology training	- Limited structured training - Emerging short courses and pilots - Draft smart home microcredential models	Basic exposure to assistive technologies and smart devices (where available)	Significant gap in formalised training addressing integrated smart home systems, data flows, and care workflows	Core opportunity for CoE to lead development of training in digitally enabled and continuously adaptable home environments
Community digital literacy programs	- Be Connected - Good Things Foundation - SEE Program - ADHA community training	Basic digital literacy, use of online services, access to digital health tools	Not designed for workforce capability or integration into care delivery contexts	Supports parallel consumer capability, enabling better engagement with technology-enabled

6.4 Key findings and implications

The synthesis of academic and grey literature indicates that telehealth and remote monitoring technologies are the most mature and evidence-supported, demonstrating improvements in access, coordination, and health outcomes when integrated into care systems (Ambagtsheer et al., 2020; Sapci & Sapci, 2019).

Smart home and assistive technologies demonstrate strong potential but are limited by fragmented implementation. Evidence shows that these systems are often deployed without integration into broader care platforms, reducing effectiveness (CSIRO, 2022; Duff et al., 2022).

System integration and interoperability are critical constraints. Technologies require enabling infrastructure to support coordination and decision-making, as identified across both the thematic analysis and supporting evidence in **Appendix B2 and Appendix A7** (Digital Health CRC, 2022; Moyle et al., 2022).

Workforce capability is a key determinant of effective use. Required skills extend beyond digital literacy to include data interpretation and system navigation, which are not consistently developed through current training approaches (Sorwar et al., 2023; ARIIA, 2022).

Taken together, these findings reinforce that the core issue is not the availability of technology, but its integration into systems that align with care delivery, workforce capability, and user experience. The SHLL and Virtual Smart Home must therefore function as an applied and integrated environment that connects these components.

6.5 Recommendations

The findings indicate that the value of the SHLL and Virtual Smart Home lies not in individual technologies, but in its ability to connect technology, workforce capability, service delivery, and applied learning within an integrated home and community care environment.

1. Develop integrated workforce capability pathways

Embed digital health, remote monitoring, telehealth, data literacy, and home-based care capability within vocational education, higher education, microcredentials, and continuing professional development pathways. Training should support capability development across the continuum of care rather than focusing on individual technologies or tasks.

2. Establish applied learning through SHLL and Virtual Smart Home environments

Use SHLL and Virtual Smart Home environments to support simulation-based learning that reflects real-world care delivery. Learning experiences should enable interaction with technologies, data systems, care coordination processes, and home-based care workflows within integrated environments.

3. Align learning with hybrid and distributed models of care

Translate contemporary care models into learning design by embedding telehealth, remote monitoring, digital communication, and cross-provider coordination into training and assessment activities.

4. Create connected and flexible learning pathways

Develop stackable and integrated pathways that connect vocational education, microcredentials, continuing professional development, and higher education. These pathways should support progression across roles and recognise capability developed through workplace learning and applied experience.

5. Strengthen data capability and system integration skills

Embed data interpretation, digital decision making, interoperability, and system navigation into training programs using real-time and simulated data within applied learning environments.

6. Incorporate built environment and home-context capability

Ensure training reflects the realities of delivering care within home environments by incorporating housing conditions, environmental risks, accessibility considerations, and interactions between people, technologies, and environments.

7. Support workforce adaptation to emerging roles

Develop training that prepares the workforce for multidisciplinary, digitally enabled, and distributed models of care, including new and evolving roles associated with technology-enabled service delivery.

8. Support consumer and carer participation

Incorporate consumer and carer perspectives into training, simulation, and technology evaluation activities. This should include opportunities to explore usability, accessibility, digital confidence, co-design approaches, and the lived experience of technology-enabled care.

9. Strengthen ecosystem integration and partnerships

Use the Centre of Excellence as a mechanism to connect education providers, service organisations, researchers, technology developers, and industry partners. The SHLL and Virtual Smart Home should support testing, evaluation, knowledge exchange, and translation of innovation into workforce capability and service delivery.

6.6 Limitations

Several limitations should be considered in interpreting the findings. The strength of evidence varies across technologies, with telehealth and remote monitoring supported by strong outcome data, while smart home systems, artificial intelligence, and robotics are often based on early-stage or small-scale studies (Moyle et al., 2021; Digital Health CRC, 2022). There is limited availability of long-term and large-scale evaluations, with many studies focusing on short-term or pilot outcomes. This restricts understanding of sustained impacts and scalability.

The inclusion of grey literature, while essential for understanding implementation and system-level issues, introduces variability in methodological rigor. These sources provide important contextual insights, as outlined in **Appendix B2**, but should be interpreted alongside peer-reviewed evidence.

The rapid pace of technological development also means that evidence may not fully reflect current practice. Emerging technologies may evolve faster than evaluation frameworks can capture. Despite these limitations, the review provides a robust and applied synthesis of the technology landscape and supports evidence-informed design of the SHLL and Virtual Smart Home as an integrated environment for care, training, and research.

7. Discussion and conclusions

7.1 Overview and system transformation

The National Scan and Technology Scoping Review together demonstrate that home and community care is undergoing a sustained transformation in how services are delivered, coordinated, and experienced. Across research, service delivery, and technology development, care in the home is no longer emerging but is already operational. Technologies such as telehealth, remote monitoring, digital platforms, and assistive systems are widely used, and hybrid models of care are increasingly embedded across health, aged care, and community services.

At the same time, the findings show that while innovation is active and well established, its application remains uneven. Technologies, service models, and training systems are progressing at different rates and are not consistently aligned. As a result, capability varies across providers, regions, and sectors, and the benefits of innovation are not realised consistently at a system level.

This reflects a broader shift in the challenge facing the sector. The issue is no longer the development of new technologies or models, but the effective application and coordination of existing capability across service delivery, workforce systems, and training environments.

7.2 Integration, workforce, and system capability

Across both phases, a consistent system pattern emerges in which core components of the system are well developed but not structurally connected. Research and innovation define what is technically feasible and validate new approaches, while service providers demonstrate that these models can operate in practice. Technology systems enable monitoring, communication, and coordination, and training systems support workforce entry and foundational capability.

However, these elements operate largely in parallel. Quality in modern care systems should be understood as a multidimensional construct that includes clinical effectiveness, responsiveness, acceptability, trust and person-centred experiences across the continuum of care (Hanefeld et al., 2017). There is no consistent pathway linking research outputs, applied innovation, service delivery models, and workforce and curriculum development. As a result, innovation is validated but not systematically scaled, and workforce capability is developed unevenly across organisations rather than through coordinated systems.

The Scoping Review reinforces that this gap extends to digital infrastructure. Technologies such as telehealth and remote monitoring demonstrate strong outcomes when integrated into care workflows and supported by interoperable systems. Where integration is limited, the effectiveness of even well-evidenced technologies is reduced. This highlights that system integration, rather than technological availability, is the primary determinant of outcomes.

The implications for workforce capability are significant. Roles increasingly require the ability to work across home, community, and virtual environments and to engage with monitoring systems, digital platforms, and coordinated care models. However, current training approaches are not fully aligned with these requirements. Simulation environments and curriculum models do not consistently reflect integrated digital systems or the complexity of home-based care, resulting in a gap between workforce preparation and service delivery realities.

Addressing this gap requires a shift toward system-based approaches to training and curriculum development that integrate technology, service delivery, and environment, and that support development of higher-order capabilities such as data interpretation, system navigation, and cross-provider coordination.

Effective care for people with complex and multiple conditions requires multidisciplinary team-based approaches that coordinate health, social and community services while actively involving consumers and caregivers in decision-making processes (Ouellet et al., 2024).

7.3 Role of the Smart Home Living Lab and Virtual Smart Home and Centre of Excellence

The SHLL and Virtual Smart Home provides a mechanism to address the structural gaps identified across the system. Its value lies not in the individual technologies it contains, but in its ability to function as an integrated and applied environment that brings together research, service delivery, and workforce development.

By combining physical digitally enabled and continuously adaptable home environments with immersive virtual simulation, the SHLL and Virtual Smart Home enables technologies to be experienced within realistic care contexts. It supports workforce capability development through exposure to integrated systems

and real-world workflows, rather than isolated training tasks. These environments simulate digitally enabled and continuously adaptable home environments, allowing learners and researchers to engage with evolving care needs, technologies, and service models over time. It also provides a platform for testing, evaluation, and refinement of technologies within controlled but applied environments.

This positions the SHLL and Virtual Smart Home as a translation layer within the system, connecting innovation with practice and curriculum. It also enables continuous applied research, including prototyping, user testing, and evaluation of technologies and care models, ensuring that innovation is systematically refined and translated into scalable practice.

Within this context, the CoE is positioned to operate as a coordinating and enabling platform. Rather than duplicating existing activity, it supports alignment across system components by translating research, technology, and service models into workforce capability and curriculum. It provides a structured environment where innovation can be demonstrated, tested, and embedded within training and practice.

Through this role, the CoE supports more consistent and scalable capability development across the sector and strengthens the connection between innovation, service delivery, and workforce systems.

7.4 Conclusion

This work demonstrates that home and community care is supported by a strong and expanding base of innovation across technology, service delivery, and workforce development. Core technologies such as telehealth and remote monitoring are well established, while smart home systems, digital platforms, and emerging technologies continue to extend the scope and capability of care in the home. However, the central challenge is

not the availability of innovation, but its integration. Technologies, service models, and training systems are advancing, but not in a coordinated way, resulting in variation in capability, adoption, and outcomes across the system.

The SHLL and Virtual Smart Home, supported by the Centre of Excellence, provides a practical and strategic response to this challenge. By functioning as an integrated environment for care delivery, workforce training, and applied research, it enables the translation of innovation into consistent and scalable practice. In doing so, it supports improved alignment across system components, strengthens workforce readiness, and contributes to the ongoing transition toward home and community-based care. Ultimately, its value lies in enabling the system not only to innovate, but to apply innovation effectively and at scale. These findings align with evidence showing that older adults consistently express a strong preference to remain in their homes and communities, provided appropriate supports, services and environments are available (Rose et al., 2023).

Successful implementation of the CoE will result in a workforce that can deliver care within digitally enabled and continuously adaptable home environments, supported by integrated training pathways, applied research environments, and scalable models of care. It will also support more consistent adoption of technologies, improved system coordination, and stronger alignment between innovation, service delivery, and workforce development across the sector.



Phase 1 Appendices

Appendix A1 – Research and applied research centres

Table 6: Core research and system-level initiatives (RA1–RA10)

ID		Name of model or initiative	Initiative type	Organisation	Funding source
RA1		Smarter Safer Homes	Smart home platform (applied research and implementation)	CSIRO AEHRC	Government
Description	Key findings	Stakeholders	Target population	Outcomes (intended or evaluated)	Evidence strength
In-home ambient sensor system capturing activity, behaviour, and environment to enable early intervention and monitoring without cameras or audio	Enables earlier detection of risk and more responsive care; improves safety and independence	CSIRO AEHRC, Anglicare Southern Queensland, Integrated Living Australia, Griffith University, Queensland Government	Older people, aged care providers	Monitoring system, cloud platform, provider and family interfaces supporting proactive care	High
ID		Name of model or initiative	Initiative type	Organisation	Funding source
RA2		Living Labs Research Program	Multi-program applied research and system redesign	National Centre for Healthy Ageing	Government, research
Description	Key findings	Stakeholders	Target population	Outcomes (intended or evaluated)	Evidence strength
Integrated co-designed research spanning dementia, home care and system transformation	Highlights need for integrated system models, workforce upskilling, and co-design	Monash University, Peninsula Health, Curtin University, Pronia, MyVISTA, Carers WA	Older people	Policy, workforce and care model insights	High
ID		Name of model or initiative	Initiative type	Organisation	Funding source
RA3		Digital Health CRC Programs	Digital health research and system innovation	DHCRC	CRC
Description	Key findings	Stakeholders	Target population	Outcomes (intended or evaluated)	Evidence strength
National programs in telehealth, remote monitoring, and data-driven care models	Identifies need for interoperability and workforce capability	Department of Health and Aged Care, Telstra Health, CSIRO, Bupa Foundation, University of Queensland, aged care providers	Consumers, providers	Platforms, research outputs and training programs	High
ID		Name of model or initiative	Initiative type	Organisation	Funding source
RA4		DHCRC Remote Monitoring Projects	Applied implementation research	DHCRC	CRC
Description	Key findings	Stakeholders	Target population	Outcomes (intended or evaluated)	Evidence strength
Integration of remote monitoring technologies into care delivery environments	Demonstrates benefits but highlights workforce capability gaps in data use	Digital Health CRC partners, Telstra Health, aged care providers, health services	Older people	Data enabled care pathways	High
ID		Name of model or initiative	Initiative type	Organisation	Funding source
RA5		Health Transformation Lab	Workforce and digital innovation	RMIT, Cisco	Partnerships
Description	Key findings	Stakeholders	Target population	Outcomes (intended or evaluated)	Evidence strength
Co-design initiative combining research, infrastructure, and workforce development	Shows importance of cross-sector collaboration and infrastructure	RMIT University, Cisco, Peninsula Health, Grampians Health, digital health workforce	Workforce	Training, innovation programs	Emerging

Table 6: Core research and system-level initiatives (RA1–RA10) (Continued)

ID		Name of model or initiative	Initiative type	Organisation	Funding source
RA6		Health and Ageing Research Programs	Applied research	Care Economy CRC	Government
Description	Key findings	Stakeholders	Target population	Outcomes (intended or evaluated)	Evidence strength
Research and workforce programs spanning ageing and community care systems	Highlights workforce capability gaps and integrated care needs	La Trobe University, CERI and Care Economy CRC partners, aged care providers, government	Older people, workforce	Research outputs and training	Moderate
ID		Name of model or initiative	Initiative type	Organisation	Funding source
RA7		Sector Capability and Innovation Programs	Workforce capability and innovation	ARIIA	Government
Description	Key findings	Stakeholders	Target population	Outcomes (intended or evaluated)	Evidence strength
National organisation delivering workforce development and innovation support	Enables translation of innovation into practice	ARIIA, Department of Health and Aged Care, aged care providers, universities, peak bodies	Workforce	Tools, frameworks, funded projects	Moderate
ID		Name of model or initiative	Initiative type	Organisation	Funding source
RA8		Digital Health Commercialisation Program	Innovation translation	ANDHealth	MRFF
Description	Key findings	Stakeholders	Target population	Outcomes (intended or evaluated)	Evidence strength
Program supporting development and scaling of digital health solutions	Accelerates adoption and impact of technologies	ANDHealth, Monash University, Murdoch Children's Research Institute, Royal Melbourne Hospital, startups	Startups, providers	Accelerator programs and scale-up	Moderate
ID		Name of model or initiative	Initiative type	Organisation	Funding source
RA9		Bolton Clarke Research Institute	Embedded applied research	Bolton Clarke	Research grants
Description	Key findings	Stakeholders	Target population	Outcomes (intended or evaluated)	Evidence strength
Research embedded in service delivery to support translation into practice	Demonstrates value of co-designed care improving independence	Bolton Clarke, universities, Primary Health Networks, aged care providers	Older people	Models of care and training	High
ID		Name of model or initiative	Initiative type	Organisation	Funding source
RA10		Care Economy CRC Initiatives	System innovation research	Care Economy CRC	CRC
Description	Key findings	Stakeholders	Target population	Outcomes (intended or evaluated)	Evidence strength
National initiative linking workforce, service, and system innovation	Emphasises integrated system transformation	Department of Industry, universities, providers, workforce organisations	Workforce	Research and collaboration outputs	Emerging



Table 7: Australian research projects (RA11–RA20)

ID		Name of model or initiative	Initiative type	Organisation	Funding source
RA11		REMi Smart Mattress	Sensor-based monitoring applied research	RMIT University	CRC-P
Description	Key findings	Stakeholders	Target population	Outcomes (intended or evaluated)	Evidence strength
Smart mattress with embedded sensors monitoring presence and movement to reduce falls and support care planning	Demonstrates potential for non-intrusive monitoring and safety improvement	RMIT University, Monash University, Sleepite Mattress Company, Advanced Manufacturing Growth Centre	RAC residents	Real time monitoring, alerts, safety improvements	Emerging
ID		Name of model or initiative	Initiative type	Organisation	Funding source
RA12		AI in Aged Care Project	Artificial intelligence research	Monash University	ARC
Description	Key findings	Stakeholders	Target population	Outcomes (intended or evaluated)	Evidence strength
Research exploring adoption, risks, and effectiveness of AI in aged care	Highlights need for co-design, workforce readiness, and ethical considerations	Monash Data Futures Institute, aged care staff, residents, AI developers, researchers	Workforce, residents	Evidence base for AI implementation	Emerging
ID		Name of model or initiative	Initiative type	Organisation	Funding source
RA13		Smarter Safer Homes Expansion	Smart home monitoring	CSIRO AEHRC	Government
Description	Key findings	Stakeholders	Target population	Outcomes (intended or evaluated)	Evidence strength
Platform using ambient sensors and data analytics to track activities of daily living	Improves service responsiveness and early intervention	CSIRO, Queensland Government, aged care providers, family carers	Older people	Functional monitoring and independence	High
ID		Name of model or initiative	Initiative type	Organisation	Funding source
RA14		CHSP Smarter Safer Homes Trial	Service model innovation	CSIRO AEHRC	Government
Description	Key findings	Stakeholders	Target population	Outcomes (intended or evaluated)	Evidence strength
Consumer-centred, on-demand service model using monitoring data	Enables better alignment of services with needs	CSIRO AEHRC, Commonwealth Home Support Programme providers, participating aged care organisations	Older people	Functional monitoring and independence	Moderate
ID		Name of model or initiative	Initiative type	Organisation	Funding source
RA15		Telehealth Infrastructure Grants	Digital infrastructure program	Public Health Networks	Department of Health and Aged Care (Australia)
Description	Key findings	Stakeholders	Target population	Outcomes (intended or evaluated)	Evidence strength
Funding to improve telehealth capability in residential aged care facilities	Expands access to primary care and reduces avoidable hospitalisation	Primary Health Networks, Department of Health and Aged Care, RAC providers, general practitioners	RAC residents	Increased virtual consultations	Moderate
ID		Name of model or initiative	Initiative type	Organisation	Funding source
RA16		ELDAC Technology	Digital care platform and tools	QUT Consortium	DoHAC
Description	Key findings	Stakeholders	Target population	Outcomes (intended or evaluated)	Evidence strength
Development of dashboards, apps, and toolkits supporting palliative care delivery	Improves workforce capability and access to information	Queensland University of Technology, Flinders University, UTS, Palliative Care Australia, ACCPA, AHHA, Catholic Health Australia	Workforce, patients	Digital support tools and resources	Moderate

Table 7: Australian research projects (RA11–RA20) (Continued)

ID		Name of model or initiative	Initiative type	Organisation	Funding source
RA17		Aged Care Data Compare	Data mechanism research	DHCRC	Government
Description	Key findings	Stakeholders	Target population	Outcomes (intended or evaluated)	Evidence strength
Development of shared data standards and benchmarking systems	Highlights fragmentation and need for interoperability	Digital Health CRC, BUPA Health Foundation, Department of Health and Aged Care, University of Queensland	RAC providers	Data sharing systems and benchmarking	High
ID		Name of model or initiative	Initiative type	Organisation	Funding source
RA18		Predictive Deterioration Project	Predictive analytics research	DHCRC	Industry
Description	Key findings	Stakeholders	Target population	Outcomes (intended or evaluated)	Evidence strength
Algorithms identifying residents at risk of deterioration using care data	Supports proactive, early intervention models	Digital Health CRC, Telstra Health, RMIT University	Residents	Predictive risk detection tools	Emerging
ID		Name of model or initiative	Initiative type	Organisation	Funding source
RA19		AI and Sensor-Based Monitoring for Early Detection in Aged Care	Applied research project	Charles Sturt University	Artificial Intelligence and Cyber Futures Centre (university-based funding)
Description	Key findings	Stakeholders	Target population	Outcomes (intended or evaluated)	Evidence strength
Research project using non-intrusive sensors and machine learning to detect changes in daily activity and support early intervention in home care	Project ongoing. Aim to demonstrate potential for early risk detection, improved care targeting, and reduced workforce burden through integrated monitoring and analytics	CSU researchers, care providers, carers, older adults, AI and Cyber Futures Centre	Older adults in home and community care settings	Ongoing project; outcomes not yet established. Early findings indicate potential for improved monitoring and timely intervention	Emerging
ID		Name of model or initiative	Initiative type	Organisation	Funding source
RA20		Care Economy Cooperative Research Centre Programs	Cross-sector applied research and innovation program	Care Economy Cooperative Research Centre	Cooperative Research Centre Program (National)
Description	Key findings	Stakeholders	Target population	Outcomes (intended or evaluated)	Evidence strength
National collaborative research program focused on technology solutions, data innovation, and workforce development across the care economy including aged care, disability, health, and social services	Focuses on co-development of technology-enabled care models, workforce capability frameworks, and data-driven decision-support tools	Universities, care providers, technology companies, government partners, research institutes	Care workforce and care recipients across sectors	Early-stage development of digital tools, workforce capability models, and integrated care solutions	Early-stage / emerging

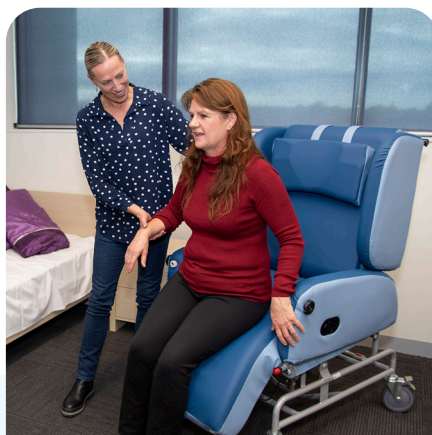


Table 8: Registered research trials (RA21–RA28)

ID		Name of model or initiative	Initiative type	Organisation	Funding source
RA21		VR Rehabilitation Trial	Digital intervention	University of Canberra	Research
Description	Key findings	Stakeholders	Target population	Outcomes (intended or evaluated)	Evidence strength
Immersive virtual reality programs promoting physical activity in aged care	Improves engagement, wellbeing, and participation	University of Canberra, Warrigal Care	Residents	Increased activity and psychosocial outcomes	Emerging
ID		Name of model or initiative	Initiative type	Organisation	Funding source
RA22		Smart Toothbrush Trial	Assistive monitoring technology	Monash Health	Research
Description	Key findings	Stakeholders	Target population	Outcomes (intended or evaluated)	Evidence strength
Device capturing oral hygiene performance data	Improves monitoring of routine care practices	Monash Health, Monash Health Dental Services, carers, aged care staff	Residents	Improved hygiene outcomes	Emerging
ID		Name of model or initiative	Initiative type	Organisation	Funding source
RA23		MATCH eHealth	Digital dementia intervention	University of Melbourne	Medical Research Future Fund (MRFF)
Description	Key findings	Stakeholders	Target population	Outcomes (intended or evaluated)	Evidence strength
Music-based adaptive eHealth platform supporting dementia care	Enhances engagement and reduces behavioural symptoms	University of Melbourne, carers, clinicians	Dementia patients	Improved wellbeing and behaviour	Emerging
ID		Name of model or initiative	Initiative type	Organisation	Funding source
RA24		Telehealth Wound Care	Digital care delivery model	Coviu	MRFF
Description	Key findings	Stakeholders	Target population	Outcomes (intended or evaluated)	Evidence strength
Telehealth with imaging, analytics, and decision support for wound care	Improves access and clinical outcomes	Coviu Global, clinicians, RAC providers	RAC residents	Improved wound care delivery	Moderate
ID		Name of model or initiative	Initiative type	Organisation	Funding source
RA25		iSupport Dementia Program	Digital support platform	Flinders University	MRFF
Description	Key findings	Stakeholders	Target population	Outcomes (intended or evaluated)	Evidence strength
Online program supporting carers in dementia care	Improves carer capability and reduces burden	Coviu Global, Flinders University, Dementia Australia, carers, service providers	Dementia carers	Improved care outcomes	Moderate
ID		Name of model or initiative	Initiative type	Organisation	Funding source
RA26		ROSA Data Platform	National data infrastructure	SAHMRI	MRFF
Description	Key findings	Stakeholders	Target population	Outcomes (intended or evaluated)	Evidence strength
Large-scale linked dataset for monitoring aged care outcomes	Enables system-level insights and policy development	SAHMRI, Department of Health and Aged Care, research institutions	Population	Evidence-based system improvement	High

Table 8: Registered research trials (RA21–RA28) (Continued)					
ID		Name of model or initiative	Initiative type	Organisation	Funding source
RA27		Data Exchange Project	Interoperability system	Monash University	MRFF
Description	Key findings	Stakeholders	Target population	Outcomes (intended or evaluated)	Evidence strength
Development of integrated data sharing system across care transitions	Improves continuity, safety, and system efficiency	Monash University, health services, policymakers	Residents	Improved transitions of care	Moderate
ID		Name of model or initiative	Initiative type	Organisation	Funding source
RA28		Tech-CBT	Digital mental health intervention	University of Queensland	MRFF
Description	Key findings	Stakeholders	Target population	Outcomes (intended or evaluated)	Evidence strength
Technology-supported psychotherapy for dementia-related anxiety	Improves quality of life and mental health outcomes	University of Queensland, carers, clinicians	Dementia patients	Reduced anxiety and improved outcomes	Emerging



Table 9: Government and industry co-funded projects (RA29–RA33)

ID		Name of model or initiative	Initiative type	Organisation	Funding source
RA29		ADEPT Project	Digital medication safety system	University of South Australia	ARIIA
Description	Key findings	Stakeholders	Target population	Outcomes (intended or evaluated)	Evidence strength
Digitally enabled pharmacist service detecting medication harms	Addresses key safety risks in aged care	University of South Australia, Pharmaceutical Society of Australia, aged care providers	Residents	Improved medication safety	Moderate
ID		Name of model or initiative	Initiative type	Organisation	Funding source
RA30		CareWindow	Assistive communication technology	Anglicare SA	ARIIA
Description	Key findings	Stakeholders	Target population	Outcomes (intended or evaluated)	Evidence strength
Simplified video communication device for older people	Reduces social isolation and improves accessibility	Anglicare SA, James Anthony Group, aged care staff	Older people	Improved communication and connection	Emerging
ID		Name of model or initiative	Initiative type	Organisation	Funding source
RA31		HomeGuardian	Predictive AI monitoring	HomeGuardian AI	Cooperative Research Centre Projects
Description	Key findings	Stakeholders	Target population	Outcomes (intended or evaluated)	Evidence strength
Technology identifying fall risk indicators before occurrence	Enables preventative care intervention	HomeGuardian AI, Deakin University, Villa Maria Catholic Homes	Older people	Reduced fall incidence	Emerging
ID		Name of model or initiative	Initiative type	Organisation	Funding source
RA32		Smart Triageing System	AI-enabled sensing system	Vlepis, RMIT	CRC-P
Description	Key findings	Stakeholders	Target population	Outcomes (intended or evaluated)	Evidence strength
Sensor-driven system for monitoring and prioritising care needs	Improves care prioritisation and efficiency	Vlepis Solutions, RMIT University, CareTeq, University of Technology Sydney, NSW Smart Sensing Network	At-risk populations	Enhanced triage and responsiveness	Emerging
ID		Name of model or initiative	Initiative type	Organisation	Funding source
RA33		VR Dementia Program	Digital wellbeing intervention	Deakin University	ARIIA
Description	Key findings	Stakeholders	Target population	Outcomes (intended or evaluated)	Evidence strength
Virtual reality program to support engagement and reduce isolation	Improves mood, engagement and quality of life	Deakin University, SiVR Adventures, Villa Maria Catholic Homes, Barwon Health	Dementia residents	Increased engagement and wellbeing	Moderate

Appendix A2 – Living labs

Table 10: Living labs (LL1–LL5)				
ID	Name of model or initiative	Initiative type	Organisation	Location
LL1	QUT Living Lab at Fernhill	Living Lab	Bolton Clarke	Queensland
Description				
The project focuses on the healthcare sector and demonstrates how heating and cooling, which account for around 22 per cent of electricity use, can be coordinated and controlled to respond more efficiently to demand. Technologies include adaptive glass that adjusts insulation and shading based on solar heat or electric charge, and smart software that learns building energy use and responds to weather forecasts.				
Key findings	Stakeholders	Target population	Outcomes (intended or evaluated)	Evidence strength
Real-world testing accelerates adoption and improves usability versus lab-based pilots	Australian Institute of Refrigeration, Air Conditioning and Heating (AIRAH), CSIRO, Queensland University of Technology (QUT), the University of Melbourne and the University of Wollongong	Residents, Staff and industry partners	The technologies are expected to improve resident comfort by more effectively protecting residents from, and actively responding to, external weather conditions, thereby potentially reducing energy consumption by 30 per cent.	High (Real-world testing accelerates adoption and improves usability versus lab-based pilots)
ID	Name of model or initiative	Initiative type	Organisation	Location
LL2	Swinburne Living Lab	Living Lab	Swinburne Centre for Design Innovation	Melbourne
Description				
University-based transdisciplinary lab focused on co-design, human-centred design, and rapid prototyping across health, technology and social domains.				
Key findings	Stakeholders	Target population	Outcomes (intended or evaluated)	Evidence strength
The living lab is an effective and cost-efficient method to improve health and wellbeing. Its approach increases adoption rates and reduces the risks associated with such innovation as it strongly emphasises co-creation, real-life settings, human-centred and emotion-led design to give users a strong voice in the process.	Access Health and Community, EdTech Evaluation, PsyLab, PerformIQ, City of Boroondara	Consumers, robotics industry	Better Visit App, co-design training for working with older adults, VR training for carers, publications, general goal to increase the quality of life and independence of older adults, people living with dementia, disabilities and culturally diverse groups	Medium (Strong design outcomes do not necessarily translate into widespread implementation)
ID	Name of model or initiative	Initiative type	Organisation	Location
LL3	Central Coast Health and Wellbeing Living Lab	Living Lab	Collaboration between Central Coast Local Health District and the University of Newcastle	New South Wales
Description				
The Living Lab brings together older people, caregivers, businesses, healthcare professionals, service providers and researchers to develop solutions that help people live fulfilling, connected lives as they age. The goal is to create innovative technologies, services, and support systems that empower older people to maintain their independence and continue to contribute to their communities.				
Key findings	Stakeholders	Target population	Outcomes (intended or evaluated)	Evidence strength
No key findings are available yet as this is still in the pilot stage. Preliminary findings include community insights into what older people need to live well and the creation of a platform to foster a greater sense of community.	CCLHD Carer Support Unit, Hunter Medical Research Institute	Consumers, carers, community organisations, aged care providers	User Experience Trials, Co-Discovery Workshops, Community Feedback session, Capability building in co-design, prototyping	Medium (Local success does not automatically translate across regions or systems)

Table 10: Living labs (LL1–LL5) (Continued)				
ID	Name of model or initiative	Initiative type	Organisation	Location
LL4	Healthy Ageing Community Alliance (HACA)	Community Alliance Project	University of the Sunshine Coast	Queensland
Description				
HACA was founded by researchers of the University of the Sunshine Coast. One part of the project is focused on research of 8 core areas such brain health, digital health, social wellbeing, assistive technologies, lifestyle interventions, women's health, nutrition and cardiovascular health. The other major project part are community projects such as Health Assistive Smart Home Solutions.				
Key findings	Stakeholders	Target population	Outcomes (intended or evaluated)	Evidence strength
Community trust, and co-design significantly impact adoption and health outcomes	ComLink Australia, University of the Sunshine Coast	Consumers	Collation of most widely used smart home and digital health assistive technology, public event discussing dying and grief, community science club, research projects and publications	High (Facilitates community adoption of technology-enabled ageing solutions)
ID	Name of model or initiative	Initiative type	Organisation	Location
LL5	Northcott Supported Living Lab	Living Lab	Northcott	New South Wales
Description				
Disability services provider trialling assistive technologies in supported living environments.				
Key findings	Stakeholders	Target population	Outcomes (intended or evaluated)	Evidence strength
Co-design leads to more meaningful and practical solutions, technology can expand independence, access and participation, autonomy and dignity through intentional design	Selected partners: Ability First Australia, Dementia Australia, National Disability Insurance Agency, Newcastle Health, University of Sydney, WeFlex, Western Sydney University	People with disability	Consulting businesses to be more inclusive, development of a home matching platform, 3D printing for orthotics, awareness campaigns	Medium (Implementation outcomes are organisation-specific and not widely disseminated)



Appendix A3 - Service providers and care models

Table 11: Service and care models (AU13-AU16, CM5-CM8)					
ID	Name of model or initiative	Initiative type	Organisation	Location	Funding source
AU13	Hospital in the Home Mode	Service delivery model (hybrid care)	Silverchain	Australia (WA, SA, national)	Public funding via state health systems and service contracts
Description	Key findings	Stakeholders	Target population	Outcomes (intended or evaluated)	Evidence strength
Provides acute and subacute care in private homes in partnership with state health systems	Demonstrates delivery of hospital-level services in home settings	State health services (WA Health, SA Health), hospitals, community providers	Patients requiring acute and subacute care in the home	Delivery of acute and subacute care in home settings in partnership with public hospitals; contributes to hospital substitution programs	Low-Moderate (program/organisational reporting)
ID	Name of model or initiative	Initiative type	Organisation	Location	Funding source
AU14	iAgeHealth Virtual Care Model	Service delivery model (virtual care)	McLean Care	Australia (QLD, national reach)	Government funding and provider investment
Description	Key findings	Stakeholders	Target population	Outcomes (intended or evaluated)	Evidence strength
Centralised clinical team provides telehealth consultations, triage, and escalation across aged care providers	Demonstrates use of centralised clinical expertise to support distributed care environments	Regional and remote aged care providers, residential facilities, clinicians	Older people in residential aged care, particularly in regional and remote areas	Program reports indicate provision of after-hours clinical support, triage services, and remote consultation across multiple aged care providers	Moderate (program-level reporting)
ID	Name of model or initiative	Initiative type	Organisation	Location	Funding source
AU15	Digital Health Platforms	Digital infrastructure / system integration	Telstra Health	Australia (National)	Government contracts, provider licensing, private investment
Description	Key findings	Stakeholders	Target population	Outcomes (intended or evaluated)	Evidence strength
Provides platforms for electronic health records, telehealth, and care coordination across services	Demonstrates infrastructure for digital connectivity across care providers	Health services, aged care providers, government programs, technology partners	Patients across health, aged care, and community care settings	Deployment of digital platforms enabling data exchange, telehealth services, and system integration across participating providers	Moderate (implementation evidence)
ID	Name of model or initiative	Initiative type	Organisation	Location	Funding source
AU16	Integrated Care Delivery Model	Service delivery model (integrated care)	Bolton Clarke	Australia (QLD, VIC, national)	Government aged care funding and organisational revenue
Description	Key findings	Stakeholders	Target population	Outcomes (intended or evaluated)	Evidence strength
Delivers mechanism services across home care, community care, and residential care settings	Demonstrates delivery of integrated services across multiple care settings	Community care providers, government programs, health system partners	Older people accessing home and community-based services	Delivery of coordinated care services across home, community, and residential environments at organisational scale	Low-Moderate (organisational reporting)

Table 11: Service and care models (AU13-AU16, CM5-CM8) (Continued)

ID	Name of model or initiative	Initiative type	Organisation	Location	Funding source
CM5	Support at Home Program	Policy / system reform	Department of Health and Aged Care (DoHAC)	Australia (National)	Commonwealth Government
Description	Key findings	Stakeholders	Target population	Outcomes (intended or evaluated)	Evidence strength
National program replacing Home Care Packages and CHSP, introducing unified funding and service structure	Demonstrates system-level consolidation of home care programs	Government, providers, care workforce	Older Australians eligible for home care services	Program design establishes a unified service model with revised funding, classification, and delivery structures; implementation in progress	Emerging (not yet evaluated)
ID	Name of model or initiative	Initiative type	Organisation	Location	Funding source
CM6	Buurtzorg Model	Community-based care model (self-managed teams)	Buurtzorg Nederland	Netherlands	Public and insurance-based funding
Description	Key findings	Stakeholders	Target population	Outcomes (intended or evaluated)	Evidence strength
Nurse-led, self-managed teams deliver holistic, community-based care with minimal hierarchy	Demonstrates operation of self-managed, nurse-led care teams	Nurses, insurers, government	Community-dwelling individuals requiring home nursing care	Reported outcomes include high patient satisfaction, reduced administrative overhead, and sustained delivery of community-based nursing services	High (evaluated model)
ID	Name of model or initiative	Initiative type	Organisation	Location	Funding source
CM7	Integrated Care Delivery System	Integrated care model	Kaiser Permanente	United States (multi-state)	Insurance-based (public/private mix)
Description	Key findings	Stakeholders	Target population	Outcomes (intended or evaluated)	Evidence strength
Combines insurance, hospital care, and community services within a single integrated system	Demonstrates coordination across funding, service delivery, and care systems	Health system, insurers, providers	Enrolled patients across the care continuum	Reported outcomes include coordinated care delivery across services, integrated clinical records, and system-wide service integration	High (system-level evaluation)
ID	Name of model or initiative	Initiative type	Organisation	Location	Funding source
CM8	NHS Virtual Wards Model	Service delivery model (virtual acute care)	NHS England	United Kingdom (England)	Public healthcare funding (NHS)
Description	Key findings	Stakeholders	Target population	Outcomes (intended or evaluated)	Evidence strength
Provides acute-level care at home through remote monitoring and escalation protocols	Demonstrates provision of hospital-level monitoring in home settings	NHS England, hospitals, community providers	Patients suitable for remote acute monitoring at home	Program reporting indicates delivery of remote monitoring, escalation pathways, and expanded capacity for acute care outside hospital settings	Moderate (emerging program evaluation)

Appendix A4 - Education and training systems

Table 12: Education and training systems (LT6 – LT8)					
ID	Name of model or initiative	Initiative type	Organisation	Location	Funding source
LT6	National Microcredentials Framework (2022)	Credential framework	Australian Government	Australia (National)	Commonwealth Government
Description	Key findings	Stakeholders	Target population	Outcomes (intended or evaluated)	Evidence strength
Framework supporting short-form, stackable credentials linked to specific skills	Demonstrates structuring of flexible credentialing linked to workforce needs	Government, RTOs, universities, industry	Learners and workers requiring targeted or incremental skill development	Establishment of a national framework enabling development and recognition of short-form, stackable credentials aligned to specific skill areas	Emerging (framework implementation)
ID	Name of model or initiative	Initiative type	Organisation	Location	Funding source
LT7	Simulation-Based Education Frameworks	Training framework	Health Education England	United Kingdom (UK)	Public healthcare funding (NHS / UK Government)
Description	Key findings	Stakeholders	Target population	Outcomes (intended or evaluated)	Evidence strength
National guidance supporting simulation-based education in health and care training, including use of immersive technologies such as virtual reality tools (e.g. Jasper VR scenarios) to support experiential learning.	Demonstrates standardisation of simulation approaches and the role of immersive learning in workforce capability development.	NHS, educators, training providers	Health and care workforce learners and professionals	Implementation of simulation-based training approaches, including structured scenarios and immersive learning environments within health education programs	Moderate (established framework use)
ID	Name of model or initiative	Initiative type	Organisation	Location	Funding source
LT8	Aged Care Training Modules	Industry training program	Altura Learning	Australia (National)	Subscription-based provider funding
Description	Key findings	Stakeholders	Target population	Outcomes (intended or evaluated)	Evidence strength
Provider-focused e-learning modules designed for aged care workforce development	Demonstrates delivery of accessible, provider-aligned workforce training	Aged care providers, training organisations	Aged care workforce (clinical and support roles)	Provision of online training modules supporting workforce development, compliance, and practical skill building across aged care providers	Low-Moderate (provider-level implementation)

Appendix A5 - International models

Table 13: International models (IBEN1 – IBEN6)					
ID	Name of model or initiative	Initiative type	Organisation	Location	Funding source
IBEN1	Future Care Lab Japan	Technology-integrated care model	Government / research partnerships	Japan	Government and research funding
Description	Key findings	Stakeholders	Target population	Outcomes (intended or evaluated)	Evidence strength
Applies robotics and advanced technologies within care delivery environments	Demonstrates integration of advanced technologies into care environments	Government, research institutions, providers	Older adults requiring care support in technology-enabled environments	Implementation of robotics and assistive technologies within care settings, including integration into workflows and service environments	Moderate (program implementation)
ID	Name of model or initiative	Initiative type	Organisation	Location	Funding source
IBEN2	Bremen Ambient Assisted Living Lab	Smart home / assisted living lab	Research institutions	Germany	Public research and innovation funding
Description	Key findings	Stakeholders	Target population	Outcomes (intended or evaluated)	Evidence strength
Demonstrates integrated home-based systems using sensors, automation, and communication technologies	Demonstrates how residential environments can support coordinated care through technology	Research institutions, technology providers	Older adults and individuals requiring assisted living solutions	Deployment of sensor networks, automation systems, and smart home technologies in controlled living lab environments	Moderate (demonstration environment)
ID	Name of model or initiative	Initiative type	Organisation	Location	Funding source
IBEN3	European Network of Living Labs (EnoLL)	Networked innovation model	EnoLL (network organisation)	Europe (multi-country)	Membership, EU funding, project-based funding
Description	Key findings	Stakeholders	Target population	Outcomes (intended or evaluated)	Evidence strength
Coordinates living labs across regions through shared methodologies and partnerships	Demonstrates coordination and scaling of innovation through networked approaches	Living labs, governments, innovation partners	Organisations involved in innovation, research, and service development	Establishment of a network of living labs enabling collaboration, knowledge exchange, and shared methodologies across regions	Moderate (network implementation)
ID	Name of model or initiative	Initiative type	Organisation	Location	Funding source
IBEN4	Ageing-in-Place Strategy	Integrated system model	Singapore Government	Singapore	Government funding
Description	Key findings	Stakeholders	Target population	Outcomes (intended or evaluated)	Evidence strength
Aligns housing, health, and social care through national ageing policy	Demonstrates coordinated system planning across housing and care sectors	Government, housing agencies, providers	Older adults living in community settings	Implementation of integrated housing, care, and community services, including development of smart-enabled housing and coordinated service infrastructure	Moderate-High (system implementation)
ID	Name of model or initiative	Initiative type	Organisation	Location	Funding source
IBEN5	Home and Community Care Framework	National reform framework	Federal and Provincial Governments	Canada	Federal and provincial mechanism funding
Description	Key findings	Stakeholders	Target population	Outcomes (intended or evaluated)	Evidence strength
Supports expansion and coordination of home and community care across jurisdictions	Demonstrates coordination of care delivery through national and provincial alignment	Federal and provincial governments, providers	Individuals requiring home and community-based care	Establishment of funding agreements and service expansion initiatives supporting home and community care delivery	Moderate (policy implementation)

Table 13: International models (IBEN1 – IBEN6) (Continued)

ID	Name of model or initiative	Initiative type	Organisation	Location	Funding source
IBEN6	Integrated Care Analysis and Guidance	Policy and system research	The King's Fund	United Kingdom (UK)	Independent funding, grants
Description	Key findings	Stakeholders	Target population	Outcomes (intended or evaluated)	Evidence strength
Provides research, analysis, and guidance on integrated care system implementation	Demonstrates system-level analysis and guidance to support integration	Policymakers, NHS, health system leaders	Health and care system stakeholders	Publication of reports, frameworks, and case studies supporting integrated care system implementation	Moderate (research and advisory outputs)
ID	Name of model or initiative	Initiative type	Organisation	Location	Funding source
-	Disabled Facilities Grant	Housing adaptation program	UK Government / Local Authorities	United Kingdom (UK)	Government funding (local and national)
Description	Key findings	Stakeholders	Target population	Outcomes (intended or evaluated)	Evidence strength
Provides funding for home modifications to support independent living	Demonstrates role of housing adaptation in enabling independent living	Local authorities, housing sector	Individuals requiring home mechanism due to disability or ageing	Provision of grants to fund home adaptations such as accessibility upgrades and safety modifications	Moderate (program implementation)
ID	Name of model or initiative	Initiative type	Organisation	Location	Funding source
-	KfW Housing Adaptation Program	Housing funding model	KfW Development Bank (Government-backed)	Germany	Government-backed financing
Description	Key findings	Stakeholders	Target population	Outcomes (intended or evaluated)	Evidence strength
Finances large-scale home adaptation and accessibility improvements	Demonstrates large-scale funding mechanism for housing adaptation	Government, housing sector, financial institutions	Homeowners and residents requiring accessibility improvements	Delivery of subsidised loans and grants to support home modifications and accessibility improvements	Moderate (program implementation)



Appendix A6 - Model typology of home and community care

Model type	Description	Primary function	Purpose	Typical setting	Population of interest	Scope	Example initiatives / organisations
Smart Home and Simulation Environments	Applied (controlled) environments used to test technologies and simulate care delivery in domestic contexts	Testing, demonstration, training	To support testing, validation, and training in realistic home-like environments	Simulation facilities	Learners, researchers, care providers, technology developers	Facility and program-level	National Centre for Healthy Ageing; Holmesglen Smart House (proposed); Future Care Lab (Japan); MIT AgeLab
Living Labs and Co-design Environments	Participatory environments where users shape and test solutions in real or simulated contexts	User-centred design and adoption	To involve users and stakeholders in design and implementation of solutions	Lab and community settings	Consumers, community members, providers, researchers	Project and network-level	Swinburne Living Lab; EnoLL; Design Factory Network; local co-design initiatives.
Community-based and Place-based Models	Innovation embedded within specific communities and geographic populations	Contextual implementation	To tailor solutions to local population needs and service environments	Local communities	Community-dwelling populations, service users, local providers	Local and regional level	Regional aged care initiatives; Indigenous community-led programs
Remote Monitoring and Sensor-based Care	Systems collecting behavioural and environmental data in the home	Monitoring and early intervention	To identify changes in condition and enable timely intervention	Private dwellings	Older adults, people with chronic conditions, individuals living alone	Individual / home-level	CSIRO Smarter Safer Homes; home monitoring pilots
Assistive and Smart Home Environments	Technology-enabled homes supporting independence, accessibility, and daily living	Enablement and support	To support independence and safe daily functioning in the home	Adapted or supported housing	Older adults, people with disability	Individual and housing-level	Homeable; smart home providers; assistive technology deployments
Hybrid Care Models	Integration of in-person and virtual service delivery across settings	Service delivery	To enable flexible care delivery across physical and virtual environments	Home and clinical interface	Patients receiving ongoing or complex care; care providers	Service and system-level	Silverchain (hospital in the home); McLean Care (iAgeHealth); integrated care providers
Digital Care Platforms and Integration Systems	Systems enabling coordination, communication, and data sharing across services	System integration	To enable connected care delivery across providers and settings	Multi-setting (home, community, clinical)	Patients across care systems; healthcare providers	System-level	Telstra Health; My Health Record; Epic Systems

Appendix A7 - Key tools, frameworks and technology systems

Tool/framework	Description	Primary function	Purpose	Typical setting	Population of interest	Scope	Example initiatives / organisations
Smarter Safer Homes Monitoring System	Passive sensor system capturing movement, activity, and behavioural patterns in the home	Monitoring and early intervention	To detect changes in behaviour and support early identification of risk	Private homes	Older adults living independently	Individual / home-level	CSIRO Australian e-Health Research Centre; Smarter Safer Homes Australia; TAC Smart Home trials (VIC)
Integrated Digital Care Platforms	Platforms enabling communication, care coordination, and data sharing across providers	System integration and coordination	To support coordination and information flow across care providers	Multi-setting (home, community, clinical)	Patients across multiple providers; care workforce	System-level	Telstra Health; Epic Systems; Cerner/ Oracle Health; Philips HealthSuite
Predictive Analytics and Behavioural Monitoring Tools	Data-driven systems analysing patterns to identify risk or deterioration	Decision support and prevention	To support proactive care planning and early response	Home and clinical interface	Individuals with complex or chronic conditions; providers	Service and system-level	CSIRO AEHRC; Digital Health CRC; NHS AI Lab; IBM Watson Health
Telehealth and Virtual Care Systems	Platforms enabling remote consultation, triage, and care delivery	Service delivery and workforce extension	To extend access to care across geographic locations	Home, aged care, regional and remote settings	Patients in remote/ underserved areas; clinicians	Service and system-level	McLean Care (iAgeHealth); Healthdirect Australia; NHS Virtual Care; Kaiser Permanente Telehealth
My Health Record	National digital health record enabling sharing of patient information across providers	Information continuity and coordination	To provide shared patient data across the care continuum	Multi-setting (home, primary, hospital)	General population; healthcare providers	National / system-level	Australian Digital Health Agency; My Health Record system; state-based integrations
Remote Patient Monitoring Systems	Devices and dashboards supporting continuous monitoring of health status	Monitoring and early intervention	To support ongoing observation and escalation of care outside hospitals	Private homes	Patients with chronic or complex conditions	Individual and service-level	NSW Health Virtual Care; Victorian Virtual ED (VVED); Philips RPM; Telstra Health RPM
Environmental Assessment Tool – Acute Care (EAT-Acute Care)	Framework assessing care environments to optimise stimulation and reduce distress	Environmental assessment and design improvement	To evaluate and improve care environments for wellbeing and safety	Health and aged care environments	Patients in clinical and aged care settings	Facility-level	University of Wollongong; dementia-friendly design research programs
National Aged Care Design Principles and Guidelines (2024)	National framework guiding accessible, home-like care environments	Design standardisation and quality assurance	To support consistent, person-centred facility design	Aged care and housing environments	Older people in residential and supported housing	National / system-level	Australian Government (DoHAC); aged care infrastructure guidelines
Independent Living Laboratory Environments	Simulated home environments for testing technologies and models	Applied testing and co-design	To trial technologies and care models in realistic settings	Lab-based home simulation	Researchers, providers, technology developers, users	Project and program-level	National Centre for Healthy Ageing; MIT AgeLab; Future Care Lab (Japan); Sheffield Home Lab
Person-Centred Digital Enablement Frameworks	Frameworks guiding integration of digital tools into care delivery	Clinical consistency and integration	To support appropriate use of technology in person-centred care	Health and aged care services	Care providers and technology users	Service and system-level	National Ageing Research Institute; NARI frameworks; WHO digital health frameworks; NHS digital frameworks
Housing Retrofit and Modification Programs (DFG, KfW)	Funding and design systems supporting home adaptation	Enablement and ageing in place	To support safe, independent living through environmental modification	Private housing	Older adults; people with disability	National / program-level	UK Disabled Facilities Grant; Germany KfW program; My Aged Care modifications; Liveable Housing Australia
Smart Home and Assistive Technology Solutions	Integrated technologies supporting independence in daily living	Enablement and deployment	To assist with daily tasks and safety in the home	Home environments	Individuals requiring support for independence	Individual / home-level	Homeable; Samsung SmartThings; Google Nest / Alexa; Philips Lifeline
Co-design and Living Lab Toolkits	Participatory methods enabling user-led design and innovation	User-centred design	To involve users in development and testing of solutions	Community and lab environments	Consumers, providers, researchers	Project and network-level	Swinburne Living Lab; EnoLL; MIT Living Labs; Design Factory Network
Innovation Translation and Funding Mechanisms	Systems supporting scaling and adoption of innovation	Coordination and translation	To move innovation from pilot to implementation	System-wide	Researchers, providers, industry partners	System-level	ARIAA; Medical Research Future Fund (MRFF); CRC Program; Horizon Europe

Appendix A8 - Search strategy and methodology detail

Search structure and terms

Searches were conducted across three thematic domains aligned to the objectives of the Scan: built environment, technology, and workforce and service models. These domains were operationalised using a Boolean framework.

The search approach combined:

- technology and environment terms
- population and care context terms
- workforce, policy, and outcomes terms.

Final search logic followed the structure:

(Component 1) AND (Component 2) AND (Component 3)

Data sources

Data were drawn from multiple sources to support triangulation, including:

- Grey literature and policy sources (AIHW, ARIIA, Summer Foundation, Department of Health and Aged Care, NDIS)
- Academic databases (CINAHL, Medline)
- Vocational education sources (VOCEDplus, Training.gov.au, Victorian Skills Authority)
- Industry and applied research organisations (CRC initiatives, living labs, innovation hubs)
- Organisational websites, program documentation, and demonstration environment

Table 16: Search topics and example search terms

Search topic	Search terms
Built Environment & Smart Homes	("smart home*" OR "home automation" OR "assistive technolog*" OR "housing" OR "living environment" OR "retrofit*" OR "home modification*" OR "housing adaptation*" OR "accessible housing") AND ("disability" OR "ageing" OR "home care" OR "independent living") AND ("innovation" OR "design" OR "universal design" OR "best practice") AND ("supported" OR "integrated" OR "community" OR "personalised")
Technology & Digital Care	("telehealth" OR "remote monitoring" OR "IoT" OR "internet of things" OR "artificial intelligence" OR "predictive analytics" OR "digital health") AND ("home care" OR "disability" OR "aged care" OR "community care") AND ("innovation" OR "service delivery" OR "implementation") AND ("technology" OR "monitoring" OR "systems")
Workforce & Support Models	("workforce development" OR "training" OR "VET" OR "support workers" OR "care models" OR "service delivery") AND ("home care" OR "disability" OR "aged care") AND ("innovation" OR "best practice" OR "system change") AND ("skills" OR "capability" OR "education" OR "qualification")



Appendix A9 - Partner network mapping

Organisation	Category	Role in system	Specific contribution/opportunity
CSIRO Australian e-Health Research Centre (AEHRC)	Research	Digital health innovation and data systems	Development of remote monitoring, AI, and data platforms that can be applied and demonstrated in Smart House environments
National Centre for Healthy Ageing (NCHA)	Research / Health System	Integrated ageing and care research	Application of hospital-to-home models, data integration, and clinical research within home-based simulation and training environments
National Ageing Research Institute (NARI)	Research	Ageing and workforce research	Translation of ageing research, dementia care, and workforce models into training and applied practice
Digital Health Cooperative Research Centre (DHCRC)	Research	Digital health systems and interoperability	Testing and application of integrated digital platforms within training and care simulation environments
Monash University	University / Applied Research Environment	Research and clinical integration Built environment and health research	Partnership through NCHA, linking clinical research, training, and applied care models Provides applied research infrastructure for rehabilitation, recovery, and ageing in real-world environments, supporting integration of housing, health, and care models and enabling testing of technologies and care approaches in context
University of Melbourne	University	Ageing research and policy	Contribution through NARI and health system research, informing training and system design
La Trobe University	University	Health and ageing research	Workforce and care model research applied to community and aged care contexts Care Economy Research Institute (CERI) provides system-level research and evidence to inform care models, workforce development, and policy. Care Economy Research Centre (CRC) supports applied research, industry collaboration, and the translation of innovation into practice at scale.
Queensland University of Technology (QUT)	University / Living Lab	Innovation and co-design	Operation of living labs and co-design environments, supporting translation of research into practice
Swinburne University of Technology	University / Living Lab	Applied design and innovation	Development of living labs and technology testing environments linked to user-centred design
University of the Sunshine Coast (HACA)	University / Community	Community-based research translation	Co-design of solutions with communities, particularly in regional ageing and care contexts
Deakin University	University	Health systems and digital research	Contribution to digital health, workforce, and integrated care models
QUT Living Lab	Living Lab	Co-design and applied testing	Real-world testing of technologies with users, supporting adoption and usability
Swinburne Living Lab	Living Lab	Design and innovation testing	Demonstration and refinement of smart home and care technologies
Healthy Ageing Community Alliance (HACA)	Community / Living Lab	Community-led innovation	Translation of research into locally relevant care solutions and adoption strategies
Silverchain	Service Provider	Large-scale home care delivery	Implementation of hospital-in-the-home and complex home care models
McLean Care (iAgeHealth)	Service Provider	Virtual and hybrid care delivery	Provision of remote clinical support and virtual care models that can be replicated and trained
Bolton Clarke	Service Provider	Integrated aged and community care	Delivery of national home care services with integrated care approaches
Community Health Services	Service Provider	Primary and community care delivery	Localised service models across diverse populations and regions
Telstra Health	Technology Provider	Digital care platforms	Provision of integrated care platforms and coordination systems
Philips Australia	Technology Provider	Monitoring and care systems	Deployment of remote patient monitoring and assistive technologies
Homeable	Technology Provider	Smart home solutions	Development of accessible and affordable smart home systems for care
Holmesglen Institute	Training Provider	Applied workforce development	Delivery of VET programs and Smart House training environments aligned with real care models
TAFE Network (Victoria and National)	Training Provider	Workforce training at scale	Delivery of qualifications and skills across aged care, disability, and community services
Altura Learning	Training Provider	Digital workforce training	Provision of online and simulation-based training aligned to care delivery
Department of Health and Aged Care (DoHAC)	Government	Policy and system leadership	Development of national policy, funding frameworks, and reform programs
Aged Care Quality and Safety Commission (ACQSC)	Government	Regulation and standards	Oversight of quality and safety in aged care delivery
Australian Institute of Health and Welfare (AIHW)	Government	Data and system reporting	Provision of national data and evidence to inform system planning
National Disability Insurance Agency (NDIA)	Government	Disability system management	Implementation and coordination of NDIS services and funding
ARIIA	Industry Network	Innovation translation and scaling	Supporting adoption of research through industry partnerships and programs
Cooperative Research Centre (CRC Program)	Industry Network	Research collaboration and funding	Enabling partnerships between research, industry, and government

Phase 2 Appendices

Appendix B1 – Desktop Review Methodology

Core question

This desktop review was guided by the following question: What technologies, systems, and capabilities must be included in the Smart and Virtual House to support care delivery and curriculum development within the Holmesglen Home and Community Care Centre of Excellence.

Methods overview

This review was conducted as a structured environmental scan informed by rapid evidence review methods. Systematic search, screening, and evidence synthesis techniques were used to improve rigour and transparency; however, the review was undertaken as an applied planning and design exercise rather than a formal systematic review.

The review examined academic literature, government publications, policy documents, industry reports, program evaluations, and other relevant evidence sources. It forms part of a broader national environmental scan exploring the role of technology in home and community care.

The purpose of the review was to identify technologies, implementation approaches, workforce capability requirements, and infrastructure considerations relevant to the design and operation of the Holmesglen Moorabbin Smart and Virtual House. Findings were analysed using evidence appraisal, thematic categorisation, and technology-to-evidence mapping to identify patterns, evidence gaps, and emerging opportunities.

Scope and source inclusion criteria

Eligibility criteria were established to ensure that included sources provided meaningful insight into technology enabled care in home and community settings and were relevant to the design and function of the Smart and Virtual House.

Materials published, completed, or commenced between 2015 and 2026 and available in English were considered. The review deliberately adopted a broad definition of evidence to reflect the applied and practice-oriented nature of the field. This included peer-reviewed academic publications, government and policy reports, consultancy and industry reports, and applied research outputs from community service providers, industry organisations, TAFE and vocational education providers, and research centres.

Population (care recipients and workforce)

Included studies involved individuals receiving care in home or community-based settings in Australia, including older adults, people with disability, and individuals with chronic conditions receiving care at home. Studies involving informal and formal carers were included where relevant to technology use. Workforce and education studies were included where they examined workforce capability in relation to technology enabled care delivery or digital systems.

Studies were excluded where they did not involve home or community-based populations, focused exclusively on hospital or acute care, or examined workforce or educators without a clear link to technology use in care delivery.

Technology, system or service model

Eligible studies described a specific technology, system, or implementation relevant to home or community care. This included telehealth and remote monitoring, smart home and assisted living technologies, assistive technologies, wearable devices, artificial intelligence, robotics, and Internet of Things enabled systems, as

well as technology enabled service delivery models and smart home environments.

Technologies were required to be implemented, trialled, or used in practice. Studies describing system level platforms, infrastructure, or integrated digital ecosystems were included where they provided insight into real world use or implementation.

Studies were excluded if they did not describe a specific technology, system, or application, were not applied to home or community contexts, or were purely conceptual or hypothetical.

Comparators were not required for inclusion. Studies with or without comparators were eligible, consistent with the scoping and applied nature of the review.

Outcomes

Studies were required to report outcomes or provide meaningful implementation, system, or design insights. Eligible outcomes included clinical outcomes such as health status or hospitalisation, functional outcomes such as independence and activities of daily living, user outcomes such as usability and satisfaction, workforce outcomes such as efficiency or capability, system outcomes such as access and coordination, and implementation outcomes such as feasibility, adoption, or scalability.

Studies were excluded where they reported no outcomes, no implementation insight, or insufficient detail regarding the impact, usability, feasibility, or application of the technology.

Source characteristics

Included sources comprised academic studies using qualitative, quantitative, or mixed methods, program evaluations, pilot studies, applied research, and grey literature including government, consultancy, industry, and provider reports.

Excluded sources included opinion pieces, editorials, and purely theoretical work without applied or empirical content, and studies lacking sufficient detail on intervention design, implementation, or outcomes.

Setting

Studies conducted in private homes, community care settings, home based service models, or simulated home environments relevant to care or training were included. Studies conducted exclusively in hospital or acute care settings were excluded.

Geographic scope

The review prioritised Australian evidence to ensure alignment with service delivery and policy context. International studies were included where they provided transferable insights, addressed gaps in the Australian evidence base, or contributed to understanding emerging technologies, ethics, or system design. International studies were excluded where they were not relevant to home or community care or did not provide transferable value.

Search strategy

A structured and multi-source search strategy was used to identify relevant academic and grey literature.

Academic searches were conducted using MEDLINE, PubMed, EBSCO, ProQuest, and Business Source Complete. Search strings combined terms relating to home and community care, technology types, and the Australian context, including digital health, smart homes, assistive technology, telehealth, Internet of Things, and artificial intelligence.

Grey literature was identified through targeted searches of government and agency websites, research organisations, industry reports, and community sector publications. Sources were also identified through institutional repositories, program documentation, and reference list screening.

This combined strategy enabled capture of both peer reviewed evidence and applied innovations relevant to real world practice and system implementation.

Data extraction and management

Data were extracted using a structured template that captured key characteristics of each source, including technology category and type, population, care setting, intervention description, study design, evaluation type, outcomes, and key findings. Organisational context, geographic location, and funding information were also recorded where available.

Each source was assigned a unique identifier to support linkage between the dataset, narrative analysis, and summary tables within the report.

Classification framework

Technologies were categorised using a project specific typology aligned to the development of the Smart and Virtual House. Categories included care delivery technologies such as telehealth and remote monitoring, smart home and assistive technologies, sensor-based monitoring systems, emerging technologies such as artificial intelligence and robotics, and simulation or training environments. This framework supported consistent comparison across studies and alignment between technology use, evidence strength, and application to system design and curriculum development.

Evidence appraisal approach

A structured evidence appraisal framework was used to assess the nature, relevance, and strength of available evidence. Evaluations were classified according to purpose as formative, process, output, outcome, or impact evaluations. Outcome and impact studies were assessed using the TAXUD framework. This involved evaluating the quality of study design, the reliability of data, the rigor of analysis, the credibility of findings, and the validity of conclusions. Each component was scored on a scale from zero to five, with scores averaged to produce an overall rating. During synthesis, greater weight was given to evaluations demonstrating stronger methodological quality and more robust outcome evidence. Studies providing stronger evidence were prioritised in synthesis. Emerging and under evaluated technologies were retained to support identification of innovation areas, implementation patterns, and evidence gaps.

Evidence synthesis

Findings were synthesised using thematic categorisation and technology-to-evidence mapping to support both descriptive and interpretive analysis.

Findings were organised into key domains relevant to the Smart and Virtual House, including technology effectiveness, smart home environments, implementation and system integration, workforce capability and training, and ethics and user experience. This enabled identification of recurring patterns, convergence across different types of evidence, and areas where findings were consistent or divergent.

In addition to thematic grouping, a technology by evidence mapping approach was applied. Each technology category was mapped against the type and strength of available evidence and the outcomes reported. This enabled differentiation between technologies supported by stronger outcome and impact evidence, those that are widely implemented but under evaluated, and those that represent emerging or experimental innovations.

At a system level, the body of evidence was assessed in terms of maturity. Technologies were classified as established, promising, emerging, or under evaluated, based on the strength and consistency of available evidence. This classification supported identification of technologies suitable for inclusion in the Smart House, those requiring further validation or applied testing, and areas where additional research or evaluation is needed. The synthesis also considered alignment between technological capability and real-world implementation. Emphasis was placed on identifying gaps between technical performance and usability, integration challenges, workforce readiness, and ethical constraints. This strengthened the relevance of the synthesis to system design and curriculum development.

Alignment to SHLL and Virtual Smart Home development

A central purpose of this desktop review was to inform the design and functionality of the Smart House and Virtual House. All included sources were analysed in relation to their relevance to smart home environments, virtual care systems, workforce training, and living laboratory models. This included consideration of interoperability, usability, scalability, ethical design, and the capacity of technologies to support both care delivery and training scenarios.

Limitations

Several limitations of the desktop review should be acknowledged.

First, the quality and robustness of evidence varied considerably across technologies and domains. While some areas, particularly telehealth and remote monitoring, are supported by relatively strong outcome-based evidence, many smart home, artificial intelligence,

Table 18: Database search strings	
Search topic	Search terms
Broad technology in home and community care	("home care" OR "community care" OR "aged care" OR "disability care" OR "care in the home") AND (technology OR "digital health" OR "smart home" OR "assistive technology" OR telehealth OR "remote monitoring" OR IoT OR AI) AND (Australia OR Australian)
Intervention and evaluation focus	("home care" OR "community care") AND (technology OR telehealth OR "smart home" OR "assistive technology") AND (intervention OR program OR implementation) AND (evaluation OR outcomes OR impact) AND Australia
Smart home and assisted living	("smart home" OR "assisted living" OR "ambient assisted living" OR "living lab") AND (care OR health OR "community care") AND (Australia OR Australian)
Workforce and training implications	("home care" OR "community care") AND (technology OR "digital health") AND (workforce OR training OR education OR curriculum OR simulation) AND Australia
Emerging technologies	("home care" OR "community care") AND ("artificial intelligence" OR robotics OR sensors OR IoT OR "wearable devices") AND (Australia OR Australian)

and assistive technology interventions remain in early stages of development or evaluation. As a result, the evidence base is uneven, with a predominance of pilot studies, feasibility studies, and small-scale implementations.

Second, there is a limited availability of longitudinal and impact level evaluations. Most studies focus on short term outcomes, technical performance, or user experience, with relatively few examining sustained impacts on health outcomes, cost effectiveness, or system level transformation over time. This limits the ability to draw firm conclusions about long term effectiveness and scalability.

Third, the inclusion of grey literature, while necessary to capture real world practice and emerging innovation, introduces variability in methodological rigour. Many grey literature sources are descriptive, policy oriented, or based on program reporting rather than formal evaluation. Although efforts were made to classify and interpret these sources systematically, findings from grey literature should be interpreted with appropriate caution.

Fourth, selection bias may be present due to the prioritisation of Australian studies and availability of accessible sources. While international studies were included to supplement gaps, it is possible that relevant evidence from other jurisdictions was not captured if it was not readily transferable or accessible.

Fifth, the applied nature of the review means that the inclusion criteria were intentionally broad to capture a diverse range of technologies and evidence types. While this strengthens relevance to system design and innovation, it reduces comparability between studies and limits the ability to conduct formal quantitative synthesis.

Finally, the rapid pace of technological development means that practice and innovation may evolve more quickly than the evidence base. Technologies currently considered emerging may mature rapidly, and new innovations may not yet be reflected in the literature. This reinforces the need for ongoing evaluation and iterative development of the evidence base, particularly through living laboratory approaches such as the SHLL and Virtual Smart Home.

The review was designed to support planning and design decisions for the Smart and Virtual House rather than provide a comprehensive assessment of all available evidence.

PRISMA Statement

PRISMA-informed principles were applied to support transparency, consistency, and traceability in the identification, screening, and selection of sources. However, this review should be regarded as a structured environmental scan informed by evidence review methods rather than a formal systematic review. The inclusion of academic literature, grey literature, policy documents, industry reports, and applied practice evidence reflects the broader purpose of informing Smart and Virtual House design, workforce development, and innovation planning.

Future methods

Future stages of the environmental scan may include stakeholder consultation, expert validation, and applied research within the Smart and Virtual House. There is also significant potential to extend the evidence base through living lab-based evaluation, including longitudinal and outcome focused studies of technology enabled care and workforce training.

Appendix B2 – Evidence base and technology mapping

This appendix provides a structured overview of the studies and sources included in the Technology Scoping Review, along with a tabulated analysis of technologies, evidence strength, and system implications. These tables support the thematic findings presented in Section 6 and provide transparency in the evidence synthesis process.

Table 19: Summary of included grey literature

Organisation/source	Year	Focus area	Type of source	Key insights
Digital Health CRC	2022	Digital health systems and integration	Industry research report	Identifies fragmentation and lack of interoperability as key barriers; highlights need for integrated data platforms across care settings
CSIRO	2022	Smart home and digital health	Applied research and system report	Demonstrates feasibility of sensor-based monitoring and data-driven care; identifies importance of integration and user acceptance
AHURI	2023	Housing and care systems	Policy and research report	Highlights importance of housing conditions in supporting ageing in place; identifies fragmentation between housing and care systems
ARIIA	2022	Workforce capability in aged care	Sector report	Identifies digital literacy gaps and need for workforce training aligned to emerging technologies
Australian Commission on Safety and Quality in Health Care (ACSQHC)	2021	Digital health standards and safety	Policy framework	Emphasises need for safe integration of digital systems and data governance frameworks
Australian Institute of Health and Welfare (AIHW)	2023	Health system performance and aged care	National statistical report	Reports increasing demand for home and community care and shift away from institutional care
Aged Care Industry Information Technology Council (ACIITC)	2023	Digital maturity in aged care	Industry report	Identifies variability in digital capability across providers and lack of standardised systems
Department of Health and Aged Care (Australia)	2023	Aged care reform (Support at Home)	Policy and reform documentation	Outlines shift toward home-based, consumer-directed care and need for integrated service delivery
Healthdirect Australia	2022	Telehealth and virtual care	Government-supported service report	Demonstrates scalability of telehealth and its role in improving access to care
Telstra Health	2022	Digital care platforms	Industry report	Demonstrates role of digital platforms in coordinating care across providers and settings

Table 20: Summary of academic literature

Author(s)	Year	Focus area	Study type	Key outcomes	Relevance to study
Ambagtsheer et al.	2020	Telehealth in aged care	Systematic review	Demonstrated improved access, continuity of care, and patient satisfaction in home settings, with reduced reliance on in-person services	Provides strong evidence that telehealth is a mature and effective component of home-based care and should be embedded within integrated care models
Sapci & Sapci	2019	Telemonitoring and remote monitoring	Meta-analysis	Identified significant reductions in mortality and hospital admissions when monitoring is integrated with care coordination	Reinforces that monitoring technologies are most effective when embedded within coordinated clinical workflows
Jiang et al.	2023	Telehealth integration in community care	Quantitative evaluation	Demonstrated reduced hospital utilisation and improved care coordination when telehealth is embedded in service delivery	Highlights that outcomes are driven by integration into service systems rather than technology use alone
Lu et al.	2025	Smart home monitoring	Randomised controlled trial	Demonstrated improved quality of life and health outcomes through continuous monitoring and early intervention	Provides high-quality evidence supporting integrated smart home systems in real-world home environments
Wang et al.	2023	Ambient sensor-based monitoring	Literature review	Identified that abnormal patterns in activities of daily living may indicate health conditions, cognitive decline, or hazardous incidents.	Supports the use of ambient sensor monitoring for risk detection and early intervention
Ma et al.	2022	Medication technologies	Applied intervention study	Demonstrated improved adherence and reduction in medication errors	Shows the practical value of assistive technologies in reducing risk in home environments
Zhang et al.	2022	Communication technologies	Evaluation study	Improved access to care and reduced social isolation through video communication	Reinforces the dual clinical and social role of communication technologies in home care
Moyle et al.	2021	Assistive robotics	Pilot and experimental	Improved engagement and wellbeing in dementia care, with limitations in scale and duration	Demonstrates potential of robotics while reinforcing need for testing and validation before wider deployment
Koopman et al. 2020	2020	AEHRC/CSIRO report focused on artificial intelligence in health systems	Multi-case analysis	Identified improvements in care delivery and system performance when AI is integrated into health systems, contingent on governance, interoperability, and workforce capability	Reinforces that AI effectiveness is dependent on system-level integration and supports the role of the CoE in testing and implementation
Tian et al.	2025	AI ethics and trust	Analytical review	Highlighted issues of transparency, accountability, and trust in AI systems	Emphasises ethical considerations and trust as key constraints in technology adoption
Felber et al.	2023	Monitoring systems and user acceptance	Qualitative and mixed method	Identified concerns about privacy, autonomy, and surveillance, particularly where users lack control	Highlights the need for transparency and ethical design in technology-enabled care
Felber et al.	2024	Technology acceptance	Qualitative study	Identified usability, perceived usefulness, and trust as key drivers of technology acceptance among older adults and caregivers	Reinforces that adoption depends on alignment with user needs, supporting user-centred design in CoE models
Holthe et al.	2018	Technology usability and acceptability	Systematic review	Found that usability, cognition, and accessibility strongly influence adoption among older adults	Strengthens the evidence that usability and accessibility are critical determinants of technology success
Rai et al.	2020	Co-design in dementia technology	Narrative synthesis	Demonstrated that involving users in design improves relevance, usability, and uptake of technologies	Supports co-design approaches and strengthens the case for industry and user involvement in CoE development
van Gemert-Pijnen et al.	2011	eHealth implementation frameworks	Conceptual and empirical framework	Established a holistic framework linking technology design, user needs, implementation, and system context	Reinforces the importance of system-level integration and supports the CoE as a coordinating and implementation-focused entity
Sorwar et al.	2023	Workforce digital capability	Workforce study	Identified gaps in digital literacy, confidence, and system navigation among care workers	Highlights workforce capability as a critical enabler of technology implementation
Peng et al.	2025	Simulation-based learning	Experimental education study	Demonstrated improved decision making and applied skills through immersive simulation	Supports simulation as a key mechanism for developing workforce capability in complex care environments

Table 21: Technology by evidence mapping

Technology type	Evidence strength	Maturity level	System role	Key limitation
Telehealth	Strong, consistent outcomes	Established	Core care delivery	Requires integration with workflows
Remote Monitoring	Strong when integrated	Established	Early detection and intervention	Limited impact if standalone
Smart Home Sensors	Moderate	Developing	Safety and behaviour monitoring	Fragmented implementation
Assistive Technologies	Moderate	Developing	Support independence	Often not system-integrated
Artificial Intelligence	Emerging	Early-stage	Predictive analytics and decision support	Dependent on data quality and integration
Robotics	Limited evidence	Experimental	Support engagement and mobility	Small-scale and inconsistent outcomes

Table 22: Technology, outcomes and workforce implications

Technology type	Key outcomes	Workforce implication	Integration requirement
Telehealth	Improved access and continuity	Requires remote communication skills	Integration with care coordination systems
Remote Monitoring	Early detection, reduced hospitalisation	Requires data interpretation capability	Linked dashboards and alert systems
Smart Home Systems	Improved safety and independence	Awareness of environmental systems	Integration with monitoring platforms
AI and Analytics	Predictive insights	Advanced decision-making skills	High-level data integration
Simulation Technologies	Improved capability development	Enables applied learning	Integration across systems and scenarios

Summary of evidence base

The evidence demonstrates that technologies with the strongest outcomes, including telehealth and remote monitoring, are those that are most embedded within care systems. Emerging and developing technologies show potential but require further testing and integration. Across all categories, effectiveness depends on system-level coordination, workforce capability, and alignment with service delivery models rather than individual technical performance.



Appendix B3 – Technology evidence mapping

The table below demonstrates how technologies identified in the review are supported by specific academic and grey literature and how they informed the thematic analysis. This provides transparency and demonstrates that findings are derived from the full dataset.

Technology type	Specific technologies identified	Sources	Evidence summary	Implications for SHLL and Virtual Smart Home
Telehealth systems	Video consultations, asynchronous messaging platforms, virtual care systems, virtual hospital models	Ambagtsheer et al. (2020); Jiang et al. (2023); Sapci & Sapci (2019); Makeham et al. (2026); Moore et al. (2020)	Strong evidence of improved access, reduced hospitalisation, and improved coordination when integrated into care pathways; effectiveness depends on workflow integration and system support	Must form core infrastructure; include real-world platforms, hybrid care models, and full consultation workflows
Remote monitoring	Wearables, vital sign monitoring devices, home-based sensors, monitoring dashboards, fall detection systems	Sapci & Sapci (2019); Digital Health CRC (2022); Gettel et al. (2021); Maher et al. (2024); Boutellaa et al. (2019)	Effective for early detection, fall prevention, and chronic condition monitoring when linked to clinical response systems; performance varies by sensor quality and integration	Must include devices, dashboards, and alert systems linked to care response mechanisms
Smart home sensors	Motion sensors, bed sensors, environmental sensors, camera-based monitoring systems	Wang et al. (2023); Cai et al. (2015); Zhang et al. (2022); De Miguel et al. (2017); Gutiérrez et al. (2021); Felber et al. (2025)	Enable detection of behavioural and environmental risks; improved monitoring but raise ethical, privacy, and “home experience” considerations	Must integrate monitoring with care response while addressing privacy, ethics, and user acceptance
Assistive technologies	Medication dispensers, reminder systems, communication devices, cognitive support tools, therapeutic robots	Ma et al. (2022); Moyle et al. (2021); Zhang et al. (2022); Australian Healthcare Associates (2020); Chen et al. (2024)	Improve adherence, independence, and engagement; robotic systems show psychosocial benefits but adoption is variable	Must be embedded within a connected ecosystem and aligned with user capability and acceptance
Integration infrastructure	Data platforms, dashboards, interoperability systems, electronic records, national digital health systems	Moyle et al. (2022); Digital Health CRC (2022); ACITTIC (2023); Australian Digital Health Agency (2025); Austrade (2025)	Major barrier remains lack of interoperability, consistent data standards, and integration across systems and providers	Must include backend systems, data flows, interoperability layers, and shared dashboards
Simulation technologies	Virtual reality, augmented reality, scenario-based simulation platforms	Peng et al. (2025); ARIIA (2022)	Immersive simulation improves workforce capability and experiential learning; current models often lack system-level integration	Must support whole-of-system simulation, not only task-based training
Artificial intelligence	Predictive analytics, decision support systems, sound-based detection systems	Tian et al. (2025); Maher et al. (2024)	Promising for prediction and decision support but dependent on data quality, governance, and system integration; limited large-scale real-world evidence	Should be included as an innovation and testing layer integrated with data systems
Robotics	Assistive robots, social robots, therapeutic robots	Moyle et al. (2021); Chen et al. (2024)	Mixed evidence; improves engagement and psychosocial outcomes in dementia care but low adoption and cost barriers	Should be included for targeted testing and simulation rather than core infrastructure
User interface and ethics	User dashboards, consent systems, transparency tools, digital trust frameworks	Felber et al. (2023); Tian et al. (2024); Zhang et al. (2022); Felber et al. (2025)	Acceptance depends on usability, transparency, privacy, and perceived benefit; technologies can disrupt sense of home if poorly designed	Must incorporate user-centred design, ethics, transparency, and trust-building mechanisms

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The Home and Community Care Centre of Excellence is a joint initiative between the Australian Government and Victorian Government.

RTO: 0416. IHE: PRV12129. CRICOS Provider Code: 00012G.

B2820926 HCCCoE Environmental Scan Report