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Transforming Aged Care Supporting Use Cases

A collaboration between Cisco and RMIT University, the Health Transformation Lab's new research report, **Transforming Aged Care**, examines how digital technologies can support aged care providers and carers, and enhance respect for aged care recipients.

Read Report

Connection is key to treating elder Australians with respect, and digital technologies can connect residents with the community, carers to clients, spaces to systems, and practice to purpose. Key recommendations from the report include connection by design, a digital-first approach to optimising care and operations, and recognition that not all digital infrastructure is equal and that new models and spaces for experimentation are critical.

A showcase of new frontiers in digital innovation can be experienced at our RMIT and Cisco "Sandbox", a purpose-built, tech-enabled prototyping space to enable new models of multisector collaboration.

This document highlights a selection of technology demonstrations from the Sandbox that brings together the best health research and technology capabilities to support elderly Australians – inspiring new ways of leveraging digital infrastructure for multiple use cases, reimagining care providers' services, gaining greater value from investments, and bringing additional comfort measures to a resident's family.

Safety and protection – Fall detection

Report recommendation extract: Not all digital infrastructure is equal. "Smart sensors, connected devices, and the entire Internet of Things should combine seamlessly to create 'articulate spaces', but with robust security and privacy features. It is possible to design surveillance systems that track people anonymously as a way to balance safety and privacy".

Concept use case: Can augmenting the detection of falls in an aged care environment for at-risk residents provide families with additional assurance that these events are not missed, allow carers to respond quickly to health events, and reduce staff administrative tasks for compliance reporting?

Demonstrated use case	Event: A person falls down	A visual sensor captures the event	Machine learning model detects the fall	Response process is initiated
Technology capabilities		• Video sensor: Cisco® Meraki® MV22 camera • Digital infrastructure: Cisco Meraki MX68 secure gateway and Wi-Fi	• Edge compute platform • Customised machine learning model for fall detection • Cisco DevNet	• Visual alert: Nanoleaf light • Context notification: Mobile device SMS
Benefits	• Provides early awareness of a fall • Limits the worsening of a health condition	• Cyber resilient, agile, and automated digital infrastructure • Lean operating model to reduce dependency on technology skills	• Open platform for the addition of new health event detection • Reuse of existing investments • Option for additional care augmentation capabilities	• Early warning notification • Augmented compliance reporting • Automated response process (both human and technology action)

Safety and protection
– Behaviour risk detection

Report recommendation extract: Not all digital infrastructure is equal. "Smart sensors, connected devices, and the entire Internet of Things should combine seamlessly to create 'articulate spaces', but with robust security and privacy features. Surveillance systems that track people anonymously can balance safety and privacy".

Concept use case: Can augmenting the detection of behaviour escalation in an aged care environment reduce the escalation of an argumentative exchange, providing a safer workplace and a happier residential living environment?

Demonstrated use case	Event: Argumentative exchange in recreational area	A visual and audio sensor captures the event	Machine learning model detects the emotion	Response process is initiated
Technology capabilities		• Video sensor: Cisco® Meraki® MV22 camera • Digital infrastructure: Cisco Meraki MX68 secure gateway and Wi-Fi	• Edge compute platform • Customised machine learning model for behaviour triggers • Cisco DevNet	• Visual alert: Nanoleaf light • Context notification: Mobile device SMS
Benefits	• Identifies argument triggers early • Reduces the escalation of an argumentative exchange • Increases workplace and residential safety	• Cyber resilient, agile, and automated digital infrastructure • Lean operating model to reduce dependency on technology skills	• Open platform for the addition of new health event detection • Reuse of existing investments • Option for additional care augmentation capabilities	• Early warning notification • Augmented compliance reporting • Automated response process (both human and technology action)

Safety and protection – Physical hazard

Report recommendation extract: Not all digital infrastructure is equal. "Smart sensors, connected devices, and the entire Internet of Things should combine seamlessly to create 'articulate spaces', but with robust security and privacy features. Surveillance systems that track people anonymously can balance safety and privacy".

Concept use case: Can augmenting the detection of physical hazards in an aged care environment provide a safer workplace and residential living environment by the early detection and response to a physical hazard?

Demonstrated use case	Event: Plant knocked over in recreation space	A visual and audio sensor captures the event	Machine learning model detects the emotion	Response process is initiated
Technology capabilities		• Video sensor: Cisco® Meraki® MV22 camera • Digital infrastructure: Cisco Meraki MX68 secure gateway and Wi-Fi	• Edge compute platform • Customised machine learning model for behaviour triggers • Cisco DevNet	• Visual alert: Nanoleaf light • Context notification: Mobile device SMS
Benefits	• Identifies hazards to staff and residents • Increases workplace and residential safety	• Cyber resilient, agile, and automated digital infrastructure • Lean operating model to reduce dependency on technology skills	• Open platform for the addition of new health event detection • Reuse of existing investments • Option for additional care augmentation capabilities	• Early warning notification • Augmented compliance reporting • Automated response process (both human and technology action)

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Automation of data collection – Nurse profile recognition

Report recommendation extract: Digital-first approach to optimising care and operations. "Technology and digitisation offerings such as automation of manual tasks, meeting of mandated quality standards, and high-quality telehealth – that can simultaneously serve care-based outcomes and organisational efficiency – should be prioritised in the next phase of system reform".

Concept use case: By leveraging multiple sources, can we highlight possible ways of collecting nurse and resident time in the same space together (for reporting of minimum direct care-giving requirements)?

Demonstrated use case	Event: Nurse profile present	Video sensor and real-time location services capture profile presence	Micro counting captures duration	Response process is initiated
Technology capabilities		• Video sensor: Cisco® Meraki® MV22 camera • Digital infrastructure: Cisco Meraki MX68 secure gateway and Wi-Fi • RFID	• Edge compute platform • Video presence trigger • Customised counting logic • Cisco DevNet	• Data visualisation: Via a tablet • Visual alert: Nanoleaf Light • Context notification: Mobile device SMS
Benefits	• Identifies nurse and resident profiles • Removes dependency on nursing staff to manually log their direct care-giving time • Enables more time for care	• Cyber resilient, agile, and automated digital infrastructure • Lean operating model to reduce dependency on technology skills	• Open platform for the addition of new health event detection • Reuse of existing investments • Option for additional care augmentation capabilities	• Early warning notification • Augmented compliance reporting • Automated response process (both human and technology action)

Automation of data collection
– Authorised/unauthorised person detection

Report recommendation extract: Not all digital infrastructure is equal. "Smart sensors, connected devices, and the entire Internet of Things should combine seamlessly to create 'articulate spaces', but with robust security and privacy features. Surveillance systems that track people anonymously can balance safety and privacy".

Concept use case: Can we increase resident and workforce safety by capturing the presence of unknown persons in a consultation space and trigger a response process?

Demonstrated use case	Event: Unknown person enters consultation space	Video sensor and real-time location services capture profile presence	Machine learning model matches unknown person	Response process is initiated
Technology capabilities		• Video sensor: Cisco® Meraki® MV22 camera • Digital infrastructure: Cisco Meraki MX68 secure gateway and Wi-Fi • RFID	• Edge compute platform • Customised machine learning model for unknown person • Cisco DevNet	• Data visualisation: Via a tablet • Visual alert: Nanoleaf light • Context notification: Mobile device SMS
Benefits	• Scales the awareness of an unknown person • Increases safety for the workforce and residents • Reduces OHS risk and impact	• Cyber resilient, agile, and automated digital infrastructure • Lean operating model to reduce dependency on technology skills	• Open platform for the addition of new health event detection • Reuse of existing investments • Option for additional care augmentation capabilities	• Early warning notification • Augmented compliance reporting • Automated response process (both human and technology action)

Digital worlds – Connectivity

Report recommendation extract: Respect through connection; connection by "design". "A framework for technology and respect will be based on the power of connection across four dimensions: connecting older Australians to their community, connecting carers to recipients of aged care services, connecting aged care spaces to those who rely upon them, connecting practice to purpose".

Concept use case: Can enabling residents to be more self-sufficient, and to have greater connection and a personalised experience, increase their engagement with health services and social connections?

	Event: Resident enjoys using digital services for entertainment and connection to family	A common single interface for entertainment, social connection, and health consultations	Environmental and presence sensors aid residents' comfort	Response process is initiated
Demonstrated use case				
Technology capabilities		• Digital experience: Webex® Board • Digital infrastructure: Cisco® Meraki® MX68 secure gateway and Wi-Fi	• Built-in occupancy, temperature, CO2, and humidity sensors enable personalised adjustment of the residential facility • Cisco DevNet	• Visual device: Webex Board
Benefits	• Provides a personalised entertainment, social, and consultation experience • Enables connection with loved ones just by saying, "Call the family" • Enables residents to see a specialist earlier directly from their space	• Cyber resilient, agile, and automated digital infrastructure • Lean operating model to reduce dependency on technology skills	• Open platform for the addition of new health and entertainment services • Reuse of existing investments • Option for additional care augmentation capabilities	• Early warning notification • Augmented compliance reporting • Automated response process (both human and technology action)

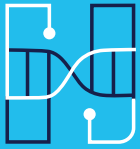# Digital worlds – Telehealth

Report recommendation extract: New models and spaces for experimentation are critical. "Technology-rich experimentation spaces can catalyse next-level partnered prototyping, trialling, and exploration; where technologists or designers can partner with a community of researchers and industry professionals, or where in-situ simulations can inspire real-time ideation and inter-connected product development".

Concept use case: Can virtual care be enhanced by triggering additional services that augment a telehealth experience from a remote specialist or family member?

Demonstrated use case	Event: Telehealth call established	Workflow logic determines when a service is needed	Additional systems are triggered that enhance the virtual care service	Response process is initiated
Technology capabilities		• Telehealth sensor: Webex® collaboration device • Digital infrastructure: Cisco® Meraki® MX68 secure gateway and Wi-Fi • RFID	• Edge compute platform • Customised service logic • Cisco DevNet	• Visual device: Webex Board • Visual alert: Nanoleaf light • Assistant: Boston Dynamics robotic dog
Benefits	• Enhances virtual care through adjacent technologies • Increases services to those using in-home care • Reduces exposure risk to the healthcare workforce and residents	• Cyber resilient, agile, and automated digital infrastructure • Lean operating model to reduce dependency on technology skills	• Open platform for the addition of new digital health processes • Reuse of existing investments • Option for additional care augmentation capabilities	• Enhanced care services through cross-system integration • Augmented compliance reporting • Automated response process (both human and technology action)

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design thinking workshop

http://healthlab.edu.au/

Step 2. Proof of value
See how Cisco can deliver value through
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Step 3 Production pilot
Realise value within your own organisation

Are you ready to transform
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