

# Strengthening the National Industry Innovation Network (NIIN) Capability and Impact in Health and Aged Care

An Opportunity to Join the NIIN Health Alliance



## Purpose of this Document

The National Industry Innovation Network (NIIN) is a collaborative vehicle for digitally transforming industries and harnessing innovation to generate economic and societal impact at scale. Health and aged care are already a major area of focus for the NIIN, however, there are opportunities to elevate the role the NIIN plays in tackling some of the most pressing issues in healthcare. This paper:

- Profiles the assets that have already been assembled under the NIIN, providing a basis from which to build further
- Identifies specific opportunities where the application of innovation can substantially digitally transform the future health and aged care landscape
- Articulates strategies, initiatives and activities for harnessing the NIIN to increase the scale and impact of healthcare innovation, including specific programs that can be put in place to accelerate progress
- Tests ongoing assumptions and solicits interest in contributing to a NIIN Health Alliance.

There are a number of ‘asks’ of industry, government and university partners detailed in this document, ranging from:

- Expressions of interest from industry partners to contribute to the Alliance in exchange for a broad range of benefits
- Nomination of potential industry challenges that could be considered for funding
- A request for universities to formally join the NIIN Health Alliance.

## The Importance of Healthcare

The health and aged care sectors have been at the front line of the COVID-19 pandemic. The pandemic demonstrated the importance of a high-functioning health and aged care system and created a catalyst for change in models of care, operating models and funding decisions. One of the most tangible impacts of the pandemic was how technology adoption impacted care delivery. To cope with increased demand and complexity of operations, care systems were forced to harness digital solutions and to innovate to reduce inefficiencies, improve access, enhance patient experience, and maintain high-quality care. In Australia alone, AUD\$39B has been committed to hospital builds and upgrades over the next five years, with innovation and digital transformation expected to form a significant part of this spending.

Despite advances in technology adoption and innovation, the care sector continues to face challenges in meeting demand, filling workforce capability gaps and mitigating new and existing risks such as those posed by cyber attackers. Added to this, there is increasing pressure to adapt models of care to include community-based and in-home care, virtualised and hybrid care, and improve technology enablement in acute settings. These factors have caused a rethink about how healthcare is delivered, funded and supported.

Failing to innovate and embrace digital transformation could severely impact patient outcomes and system resiliency. Now, more than ever, it is essential for healthcare providers to take proactive measures that leverage innovation and digital technologies to improve existing models of care and healthcare delivery operations.

## The Role of the NIIN in Enabling Digital Transformation in Healthcare

The NIIN is a collective of industry and university partners committed to advancing the use of digital technology. Six innovation centres anchor the NIIN, with eight Research Chairs (including one focused solely on digital health), two health-focused labs and a number of specialised technology centres. The NIIN helps industry (including health agencies and hospital operators) to solve critical challenges using digital innovation in collaboration with researchers and students. Now is a crucial time for NIIN's focus on digital health, given the rapid technological advancements across healthcare. For example, artificial intelligence is poised to revolutionise healthcare, offering solutions ranging from enhanced diagnostics and personalised treatments to more efficient administrative processes. The increasing digitisation of healthcare is also making cybersecurity a growing challenge – with the number of hacking incidents reported in healthcare rising.

The NIIN is ideally positioned to drive advancements in healthcare. A considerable investment has already been made into building the NIIN's capacity, providing ready-to-access capability and an existing setup that presents a low-risk mechanism for health agencies and hospital operators to engage in innovation activities. The NIIN includes resources available to industry and government, such as:

- Dedicated assets and capability for driving healthcare innovation at scale, including the RMIT Health Transformation Lab, Cisco-Flinders Digital Health Design Lab, and a Digital Health Research Chair
- Specialist centres with an industry or technology focus, including Advanced Networking, Critical Infrastructure, IoT and AI, and Digital Transport
- General purpose innovation venues including innovation centres in Perth, Adelaide, Melbourne, Canberra, Sydney and Brisbane.





To date, the NIIN has delivered various instrumental projects relevant to healthcare. These range from white papers outlining opportunities to strengthen Australia’s healthcare system to in-field technology pilots addressing pressing healthcare challenges.

## RMIT – Health Transformation Lab

**Leads** - Prof Vishaal Kishore, Nithya Solomon

**Location** - Melbourne

**Year established** - 2020



- Health Robotics demonstrations to improve clinical and social outcomes. Demonstrations combine technical and social factors to identify ways robotics can be integrated into workflows.
- Aged care submission to the government, including relevant use cases (e.g. alarms for tripping hazards, fall detection, robotics in aged care, monitoring food consumption).
- Dynamic Healthcare Whitepaper, demonstrating how spaces need to be adaptable to changing demands and how to make health systems 'anti-fragile'.
- Social media monitoring in healthcare.

## Flinders University – Digital Health Research Centre

**Lead** - Prof Trish Williams  
(Cisco-Flinders Digital Health Research Chair)

**Location** - Tonsley Innovation District  
(South Australia)

**Year established** - 2020



- Flinders co-designed the INFRAM infrastructure maturity assessment methodology, which global standards body HIMSS later adopted. The approach measures five subdomains: mobility, security, collaboration, transport and data centre.
- Virtualised Care White Paper that outlines how systems can move from telehealth to virtualisation of a broad range of healthcare services (acute and in-home care).
- Safe Hospital Wireless Framework that minimises technology-related patient safety incidents.
- Flinders contributed to the healthcare chapter of Cisco's 'Securing Australia's Critical Infrastructure' report, which identified major cybersecurity threats challenging Australia's healthcare sector.

## Curtin University – Pilbara Health Challenge

**Lead** – Prof Timothy Carey, Chair Country Health Research and Innovation

**Location** – Pilbara

**Year established** – 2023



- Delivering advanced healthcare in the Pilbara is challenging. Patients often travel long distances to access primary and specialist medical services, leading to a lack of continuity of care and poorer health outcomes.
- Curtin University is developing virtual healthcare solutions, centred around patient needs, and using research, innovation, and AI to create a reliable and integrated virtual healthcare system that meets the unique healthcare needs of the Pilbara.

## La Trobe University – Digital Innovation Hub

**Lead** – Jeff Jones  
(Director, Digital Innovation Hub)

**Location** – Melbourne

**Year established** – 2021



- Experimentation with the use of holograms in healthcare, including access to one of five Cisco hologram units globally.
- La Trobe piloted a virtual ED to provide patients with access to virtual nursing and medical care, enabling a patient's condition to be managed at home, in an aged care facility or at the roadside (in the case of attending to an ambulance).

## Current Gaps in the NIIN Health Ecosystem

The need for better scaling of healthcare innovation is becoming increasingly apparent, especially in a rapidly changing and complex healthcare environment. Harnessing the NIIN healthcare ecosystem's full potential is crucial to this endeavour, necessitating a network of curated partners with relevant capabilities, projects, contributions and platforms. While the Singapore Health Summit (held in March 2023) showcased a wealth of expertise within the network, practical engagement at the project level remains nascent.

**There are four critical areas in which the NIIN can focus future efforts on:**

### 1. Strengthening systems for a coordinated effort

Systems within the NIIN currently lack the coordination needed to drive efficient healthcare innovation. There are opportunities to streamline processes and optimise resource use across the NIIN network to enable a more coordinated effort. Major areas to focus on include:

- Improving coordination across the NIIN network to create scale: Little central coordination exists to ensure healthcare activity across the NIIN is integrated and coordinated across sites and assets. Establishing a Health Alliance lead could enable optimisation of resources, knowledge sharing, and progress tracking across the network.
- Developing a clear MedTech strategy that engages start-ups and partners in the NIIN healthcare ecosystem: Currently, the role of MedTech within the NIIN is undefined. A strategic focus on MedTech could promote entrepreneurship, stimulate start-ups and facilitate research commercialisation, potentially driving the development of new groundbreaking innovations. By leveraging platforms like the MedTech Actuator, the NIIN can accelerate a new realm of solutions for healthcare challenges.
- Creating a project nomination and prioritisation mechanism: Project development follows an iterative process, with each project considered individually. Implementing a system for nominating and comparing projects could encourage holistic innovation, facilitate efficient resource allocation, and promote synergies between different initiatives.

## 2. Focusing on high-priority domain areas

Critical healthcare priorities that have not received sufficient attention to drive meaningful innovation include:

- **Technology Prototyping:** while thought leadership is abundant, the capacity to transform insights and ideas into working prototypes is limited. These prototypes are a crucial step in the innovation cycle, particularly for systems and health providers wanting to de-risk any large-scale implementations.
- **Smart Hospital Design and Builds:** AUD\$39B has been committed to hospital builds and upgrades in Australia over the next five years. There is a significant opportunity for fresh thinking about how this investment is spent to maximise health outcomes and system efficiencies. Innovation and digital transformation will be a major part of this, and includes innovations in adjacent domains (such as sustainability) which have relevance to hospital design and builds.
- **Aged Care:** Despite its importance, especially in light of the Royal Commission report on Aged Care Quality & Safety, Aged Care has not been a major focus within the NIIN. Given that the number of Australians aged 85 years and over is projected to increase from 515,700 in 2019-20 to more than 1.5 million by 2058, the sector presents a vast opportunity for innovative solutions.
- **Mental Health:** With an increasing proportion of health expenditure directed towards mental health, this is a growing area of concern. However, it has received limited focus, creating an innovation deficit that needs addressing.
- **Workforce and Skills Challenges:** The healthcare sector is grappling with significant challenges, such as skills shortages and high attrition rates in clinical and administrative roles. By 2025, anywhere from 20,000 to 40,000 nursing positions could be left unfilled in Australia, and an additional 35,000 aged care workers per year are needed to fill the growing skill shortages, especially around new and emerging technologies and technology-enabled modes of care. Few projects are currently addressing these workforce issues, which are universal across Australian states.

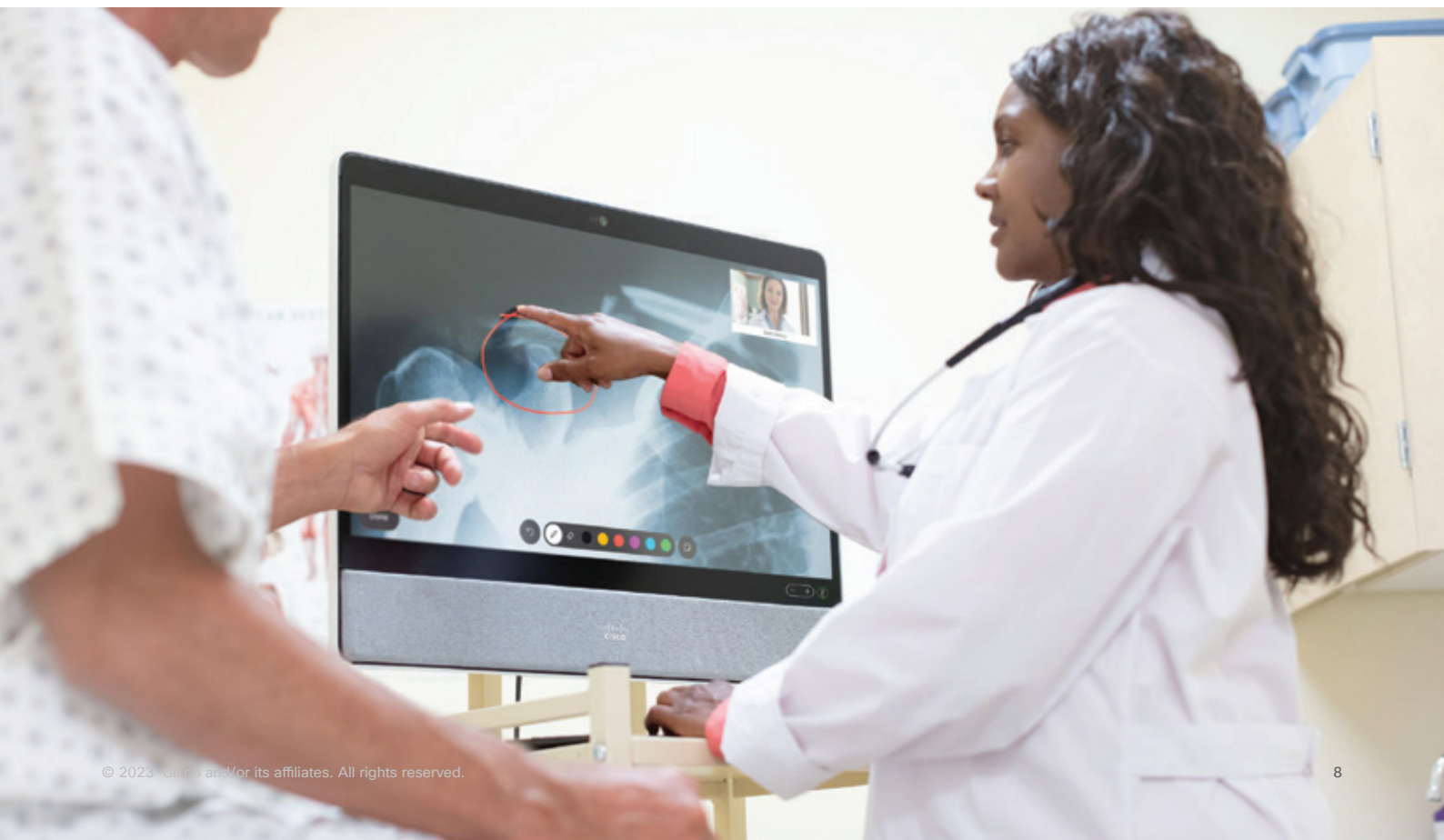


### 3. Broadening the geographic focus

To date, the majority of the NIIN's healthcare efforts have been largely on Australia. Geographically, the network lacks a regional anchor point in the Asia Pacific region, particularly in Singapore. Singapore is making significant healthcare investments and leading the way in MedTech. Establishing a regional presence could open up opportunities for collaboration, knowledge exchange, and partnership in tackling the complex challenges in healthcare. There are opportunities to connect NIIN health activities into Scandinavia, where partnerships have recently been established through the 2023 Higher Education study tour.

### 4. Enhancing Commercialisation Outcomes

The commercial success of healthcare innovations in Australia has been inconsistent. Start-ups, in particular, face numerous challenges, including capital constraints, regulatory complexities, and access to market, which ultimately hinder their growth and the commercialisation of innovative healthcare solutions. The situation is particularly acute in MedTech, which typically has high start-up costs and challenging pathways to scale. By bringing together the range of assets and capabilities within the NIIN ecosystem, there are opportunities to provide more structured support for undertaking and commercialising innovation.



## Opportunities to Strengthen Health and Aged Care

### Establishment of a NIIN Health Alliance

#### What NIIN is seeking / outcomes

The focus to date has been assembling large assets as part of the NIIN, anchored by two health-focused labs (in Victoria and South Australia) and a Digital Health Research Chair.

The opportunity now exists to expand the number of health-focused personnel involved in the NIIN with three purposes:

- To increase the breadth of innovation opportunities
- To create network effects and value from collaborative approaches
- To increase the scale of impact.

#### Current Status

Current and potential alliance members were asked to provide feedback on the agreed scope for the NIIN Health Alliance.

### Expansion into Aged Care

#### What NIIN is seeking / outcomes

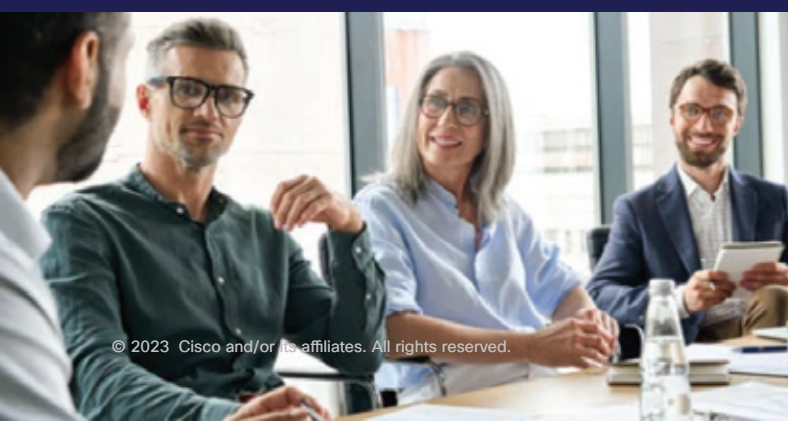
The aged care sector is a vital component of Australia's economic and social agenda. To date there has been limited focus on aged care within the NIIN (outside of an important report developed by RMIT in response to the Royal Commission report on Aged Care).

By expanding the focus into Aged Care in a more material way the NIIN will be able to ensure that the aged care sector:

- Is exposed to a range of technologies that can help to simultaneously improve outcomes and create operational efficiencies
- Can leverage the collective knowledge, experience and networks within the NIIN care community including relationships with health providers, policy-makers and funders.

#### Current Status

Cisco has agreed to co-fund an Aged Care Research Chair as part of the NIIN. Expressions of interest will be sought from interested universities to anchor the Chair based on a number of criteria including matched funds, agreed reporting and a compelling brief for potential projects. More details will be provided by Cisco.



## Appointment of a NIIN Health Alliance Lead

### What NIIN is seeking / outcomes

A lead will be appointed to coordinate and steer the NIIN Health Alliance. Specific roles for the lead will include:

- Identification of metrics (inputs, outputs and impact) to drive activity
- Establishment of light touch systems and processes that maximise opportunities for collaboration and to ensure activities focus on areas of highest priority and value to the country and members of the alliance
- Design and delivery of an annual program of events (including an annual health summit).

### Current Status

RMIT University has been identified as the preferred lead.

## Establishment of an Annual Health and Digital Trends Report

### What NIIN is seeking / outcomes

The report will discuss the challenges that matter and major priorities in healthcare, based on input from Alliance members. Priority will be given to challenges that are:

- High impact: The challenge should potentially affect a significant part of the Australian population
- Urgent: The challenge should have immediate or near-future implications on health outcomes or system efficiency
- Suitable for digital solutions: There should be a potential digital solution or strategy that could address the challenge
- Of interest to Alliance members: The challenge should be of interest or concern to a large number of Alliance members.

### Current Status

The NIIN Health Alliance lead has been given responsibility for soliciting input from Alliance members into the report which will be announced at the annual Health Summit.



## Creating Linkages into the MedTech Commercialisation Ecosystem Including Startups and Venture Capital

### What NIIN is seeking / outcomes

An important component of the NIIN Healthcare Network is a connection to the startup community and commercialisation activities. The Actuator is Australia's national medical technology accelerator with an expanding presence in Asia. The Actuator has a track record of accelerating health startups and creating a pathway to venture funding.

The outcomes NIIN is seeking from its partnership with the Actuator include:

- Catalysing innovation across borders to address market failures
- Ensuring great ideas and promising ventures are nurtured and value is maximised in Australia
- Expanding the range of services universities can be connected to
- Creating commercial pathways out of NIIN-generated innovation projects including attracting more early stage investments
- Expanding the number of MedTech Actuator partners to around 120.

### Current Status

The MedTech Actuator will form part of the NIIN and to finalise the scope of its partnership, including pursuit of specific opportunities, a program will be developed to identify how member universities can engage with the Actuator.

## A Regional and Global Presence

### What NIIN is seeking / outcomes

The NIIN was established as an Australian-focused vehicle to catalyse innovation. Given the major challenges and opportunities in healthcare are global in nature the focus has moved to Australia's closest neighbours in New Zealand and Asia. Specific opportunities for expansion were identified at the Singapore Health Summit, including some that were further abroad in Scandinavia.

Outcomes that would be delivered from a stronger presence in Asia and Europe include:

- Improving Australia's performance in commercialising innovation across medtech, healthtech and biotech
- Strengthening university connections in critical Asian markets such as Singapore, Japan, South Korea and Vietnam (all countries where the MedTech Actuator has a presence)
- Pursuing collaborative projects in both Oslo and Copenhagen, who hold a leadership position in terms of commercialisation broadly and health innovation specifically.
- Working closely with institutes of higher learning in Singapore on health innovation and workforce challenges.

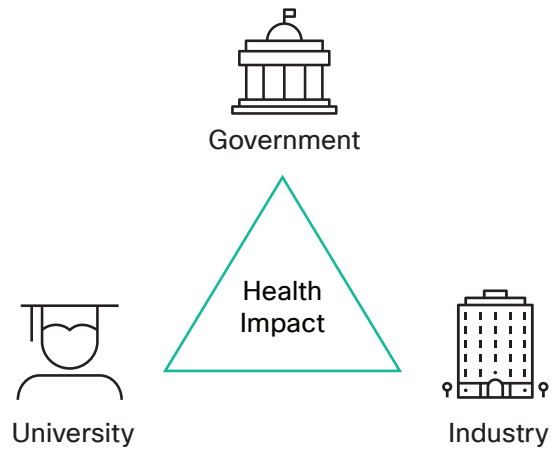
### Current Status

Regional focus: immediate priorities are to create stronger partnerships into the region, including potentially into Singapore. A resource focused on regional collaborations will be appointed to ensure projects are regionally-relevant and can scale.

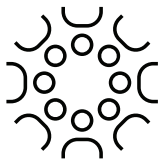
Global focus: short term global opportunities will be pursued with a focus on driving innovation through collaboration, including potentially through joint projects and student-focused activities and health exchanges.

## An approach grounded in triple-helix partnerships

Triple-helix partnerships that involve industry, universities and government collaboration will be at the heart of the NIIN Health Alliance. Triple-helix partnerships accelerate knowledge spillover and ensure that all levers are applied to addressing healthcare challenges by fostering a unique innovation ecosystem that connects government needs for new solutions with industry deep technology capabilities and universities' applied research expertise.



Triple-helix partnerships in healthcare need several elements to be assembled to be effective, which are reflected in the design of the NIIN Health Alliance:



### Led by agile vehicles

Collaboration mechanisms must have flexibility built in and be able to swiftly adapt to the constantly evolving healthcare landscape.



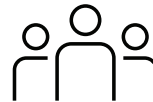
### Focused on delivering impact

Partnerships need to be squarely focused on improving health outcomes and enhancing system efficiencies.



### Grounded in open communication

A clear and continuous exchange of information among all partners is paramount.



### Guided by an ethos of shared responsibility

The focus needs to be on promoting the sharing of responsibilities across all partners, not relying on a single partner to shoulder all the responsibility.



### A clear but different role for government

As both a system leader and operator of hospitals, government needs to contribute challenges that can be solved with innovation.

## Case Study – Victorian Virtual Emergency Department

### Description

The Victorian Virtual ED (a Northern Health Initiative) and La Trobe partnered to use augmented reality, collaboration tech and AI to deliver emergency triage. The service can be provided direct to patients but initially focused on aged care nurses and paramedics at the roadside as a way to avoid physical ED presentations.

### Industry Challenge

Managing surge demand in physical emergency departments and trying to minimise presentations at ED where it is not required, either because:

- That person presents a risk to others (e.g. infection)
- That person can receive appropriate care in another setting.

### Outcomes

Since October 2020, the Victorian Virtual ED has supported more than 28,000 patients and achieved an emergency department diversion of around 71%.

- Victorian Virtual ED
- LaTrobe University
- Cisco
- QUT

### How individual projects/responses to challenges will be assessed

The Virtual Emergency Department project at La Trobe University (see above) is an example of the type of project that the NIIN Health Alliance wants to promote; it solves a compelling health need, involves ingenious use of technology and can be scaled beyond a single institution to the system level.

A health investment/prioritisation committee will be established to prioritise potential health innovation projects and identify which projects would benefit from NIIN funding. The criteria for awarding project funding will be refined but will be anchored by the following:

- Tackle a health challenge identified as a NIIN priority (i.e., addresses a health need that can be solved with digital technology). These health priorities will be reviewed annually and announced at Cisco Live with supporting commentary. An example of a priority might be the impact of automation on nursing care delivery, i.e. broad enough to create space for a range of innovation projects but specific enough to be a meaningful filter.

- Delivered by a team with a track record of innovation success (not just research success) and a clear plan to take an idea from concept to impact. Tracking of impact is a basic expectation for any funded project, and proponents of projects will be expected to formulate and capture the metrics that matter.
- Leverage funds from other sources. A fundamental expectation is matching funds but projects that leverage significant funds from government, industry and university partners will be prioritised.

The process for assessing projects will be designed by the Health Alliance Lead and endorsed by the investment committee and other relevant stakeholders. Examples of projects that have already been identified as worthy of funding include:

- Development of a patient experience impact tool for technology investments.
- Using automation to solve critical skills shortages in nursing.

## Call to action

### Joining the NIIN Health Alliance

The NIIN offers a seamless entry path for qualifying collaborators. The NIIN accommodates different ways of collaborating, underpinned by the principle that a university or industry partner's 'right to play in the NIIN' is based on what they are willing to put back in.

### Outcomes which the NIIN Health Alliance is seeking to achieve

There are three major outcomes the Health Alliance is focused on:

1. Leveraging Australia's – and the region's – collective health innovation capacity: collaborative innovation is proven more effective than isolated action. The Alliance will provide a low commitment mechanism to collaborate with peers they might not have otherwise met.
2. Building a critical mass of activity around health priorities: the Alliance would help Australia overcome the fragmentation of its health innovation effort and create scale around the problems that a) matter and b) Australia is well-positioned to solve.
3. Creating a forum for ideas exchange: the Alliance is not only about projects; it offers informal ways for those in the health ecosystem (including universities, industry, funders and regulators) to share practices and ideas about the future of the care economy.

### How to join the NIIN Health Alliance

The membership criteria reflect the desire for inclusiveness. Any member signing up to the Alliance will need to satisfy three primary conditions:

- A willingness to contribute to the operation of the Alliance, including hosting events and sharing content and insights with other members of the Alliance and sharing networks.
- Active participation in NIIN projects focused on health. The Health Alliance is a challenge network focused on identifying and solving the most pressing health challenges (bringing together siloed capabilities). Government has a vital role to play in contributing the challenges it faces as a system and hospital owner and operator. Industry and government members are expected to nominate potential challenges and provide input into collateral developed within the NIIN, such as white papers and thought leadership material. While not every member of the Alliance should contribute to every piece of content, regular contributions are expected.
- In-principle agreement to participate in flagship events, including the annual Health Summit.

A financial contribution is expected from industry and government members of the Health Alliance only, with the quantum of investment to be determined.



### Benefits of being a NIIN Health Alliance member

- Tap into emerging technologies and trends in healthcare.
- Expand networks and impact on health innovation activities.
- Attract expertise and capability to the problems you need solving.
- Improve chances of attracting funding from government and industry.

## How to find out more

Visit [cisco.com/au/niinhealthcare](https://cisco.com/au/niinhealthcare) for more information. Feedback and expressions of interest are also encouraged, or learn more about the alliance by emailing Marcus Lim [marcus.lim3@rmit.edu.au](mailto:marcus.lim3@rmit.edu.au)

