

## INTRODUCTION TO THE PROJECT

Communications are vital to the future development of Northern Australia, particularly with the ever-increasing role of digital technologies in all aspects of life and work. Being connected and making productive use of the internet, telecommunications and digital technologies is necessary for individuals, families, businesses and communities. However, those in the North are less digitally included than other Australians.

According to the [Australian Digital Inclusion Index](#), Northern Australians are at a significant disadvantage across its three indices: access, affordability and digital ability. Challenges to providing infrastructure and delivering services at a reasonable cost are somewhat acknowledged by authorities. Nonetheless, low levels of digital ability (literacy, skills, knowledge) are of particular concern in this project, as being connected is only the first step to digital inclusion.

This [project](#) brings together a consortium of university and industry partners to explore key issues of social and economic inclusion in the context of digital inclusion for developing Northern Australia. This consortium – led by QUT – has been commissioned by the Collaborative Research Centre for Developing Northern Australia ([CRCNA](#)) to undertake a broad scoping activity to assess the ‘state of play’ for digital inclusion in Northern Australia.

Through a co-design research approach involving knowledge transfer events and interviews with key stakeholders, the consortium will produce a detailed Directions Paper for digital inclusion research, practice, and policy development for Northern Australia. Our consortium partners are James Cook University, Charles Darwin University, Premise, Centre for Appropriate Technology and Regional Development Australia, Northern Territory.

## FORUM COMMUNIQUE

The purpose of this communique is to share insights from two forums we have organised in Cairns and Darwin to gain local understandings of the challenges and opportunities for digital inclusion in the North. Hosted by the Cairns Institute (JCU) and the Northern Institute (CDU) in August and November respectively, these forums were attended by over 60 leaders and stakeholders from various sectors (government, health, agriculture, tourism, Indigenous enterprise, not-for-profit) and geographic areas (North Queensland, Northern Territory and Western Australia).

This communique is an account of the collaboratively defined problems and solutions resulting from these forums. We also draw on insights from our other research activities, including an extensive literature and contextual review, one-on-one interviews with other stakeholders, and participation in events including the Developing Northern Australia Conference held in Karratha in July. We invite feedback on the ideas put forward in this communique to inform our Directions Paper due to be published in mid-2020.

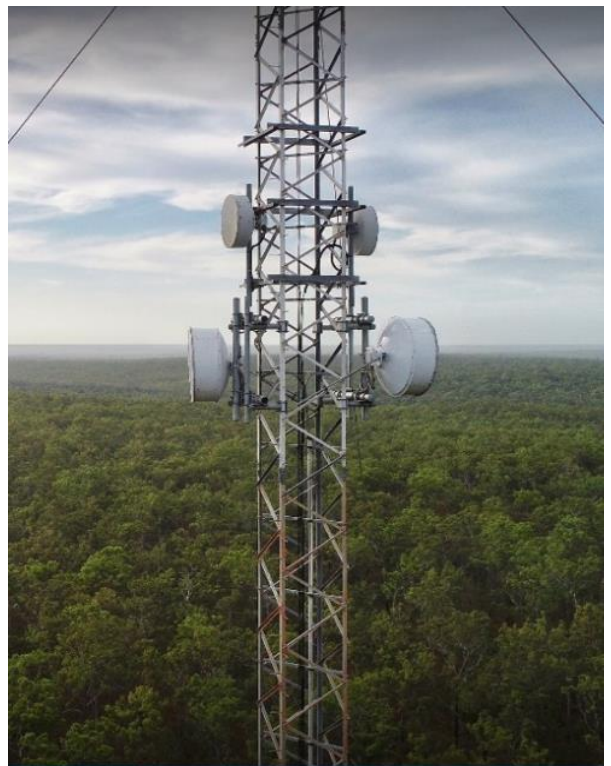


Provision of reliable broadband and mobile services is still lacking in many areas in Northern Australia (NA). In relation to broadband internet, the NBN solutions most prevalent in NA (fixed wireless and satellite) have connected many people to the internet for the first time. However, restrictions on these services mean they will not be adequate to meet future high-speed broadband and data needs of individuals, families, communities, businesses, governments and industries. Where mobile is concerned, Telstra, Optus and Vodafone continue to expand their 3G and 4G mobile networks in NA, but large parts of the North lack sufficient service and there are no current plans for 5G. This research has drawn an important distinction between 'no' service and 'under' service. For example, many remote towns and Indigenous communities now have 3/4G mobile coverage, however reliable access to the internet is hamstrung by over-crowding of the local network at peak times. Future investment in infrastructure, policy development, and market regulation must work towards affording all Northern Australians a threshold level of ubiquity, quality and reliability of mobile and internet connections.

There is a lack of whole-of-region strategy to achieve this digital connectivity through ubiquitous broadband and mobile service in Northern Australia. The Commonwealth government has little appetite to commit further significant funds to broadband infrastructure following completion of the NBN in 2020. Furthermore, it is unlikely that it will become viable for large telcos to build significantly more mobile infrastructure in sparsely populated areas (beyond that subsidised by government). Despite this, some gains are being made to better connect regional, rural and remote areas including: NBN investing in bespoke solutions for hard-to-reach end users; the Commonwealth government funding the Mobile Blackspot program (\$380 million committed so far); and market-led innovations providing new infrastructure that leverages/extends existing networks in remote areas, along with satellite and stratospheric balloon solutions (e.g. [Loon](#)). Key drivers for these investments include safety and emergency response, supply chain efficiencies, and health and social wellbeing.

Smaller market players are developing innovative ways to deliver mobile/internet products to consumers who otherwise would be under-served. Indeed, there are some excellent end-to-end, fit-for-purpose technologies and services being rolled out in pockets across NA, such as community hotspots. There is evidence, however, that this ad hoc, case-by-case approach may lead to duplication; solutions that may be applicable elsewhere are not readily shared between service providers, industries or governments. We see a need for knowledge sharing across all levels of government and industry sectors. There is also a need for larger players, who can afford to install their own telecommunications and broadband networks, to plan to share these assets (at a cost) with others, particularly remote local councils.

Affordability has also emerged as a major impediment to fair and equitable access to digital communications. The free market has failed to provide ubiquitous service in NA, whose residents and businesses generally pay more for less than Australians living in more populated areas. Recent incremental improvements have been made to the Universal Service Obligation ([USO](#)) and Customer Service Guarantee ([CSG](#)). NBN Co has also made welcome changes to wholesale pricing, enabling retail service providers (RSPs) to offer more appropriate products to consumers (e.g. unmetered essential tasks on NBN Sky Muster satellite). There is, however, a need for further reform in pricing structures, market regulation and corporate responsibility to ensure individuals and businesses in NA receive value for money from telecommunications and internet services. For example, RSPs could design mobile phone plans that cater for remote workers who may spend weeks or months out of range and then use significant amounts of data in short bursts. Finally, despite NA often being described broadly as part of 'regional Australia', Northern Queensland, the Northern Territory and Northern Western Australia are home to highly heterogeneous populations, and services need to be designed for their needs.



*Fixed wireless infrastructure in Weipa, Qld (Image: MarchNet)*

Social infrastructure – public and private institutions and programs that sustain communities – are essential to digital inclusion in NA. Our research has found that high expectations are placed on libraries, not-for-profits, local governments and community groups to provide knowledge and support to Northern Australians wishing to get connected and acquire necessary digital skills. However, these organisations are often under-resourced to meet these demands. Meanwhile, governments at all levels, large businesses and peak industry groups are contributing relatively little to the local social infrastructure ecosystems necessary to meaningfully progress digital inclusion in NA. One issue is that top-down approaches to distribution of grant funding, and rollout of national programs, often do not effectively ‘trickle down’ into rural and remote communities. Furthermore, models of service delivery relevant to digital inclusion – such as e-government – often do not cater for the specific contextual challenges of Northern Australians. For example, we heard many times that MyGov (and its associated services such as MyHealthRecord, Centrelink and Medicare) is inaccessible and/or unusable to many individuals and families. Furthermore, while telcos and other large corporates fund important national and state/territory-based digital inclusion initiatives, their impact in NA has been modest owing to the overall focus on the more populous southern areas of the country.

Another critical component of digital inclusion in NA is the need for digital knowledge and skills to be oriented towards, and taught in, local contexts. Northern Australians need greater exposure to the possibilities of being digitally connected and how digital technologies can be leveraged in all spheres of life, now and into the future. Digital skills training is also critical for workforce development and future-proofing the Northern Australian economy. Innovation and economic diversification in the North are transforming traditional ‘hands on’ industries such as mining, agriculture and manufacturing into workplaces that are increasingly demanding diverse STEM skills. Without investment in formal and informal training to upskill workers in the North, these industries will not be able to thrive in the digital age. Digital skills development in NA must be integrated into every stage of learning, including everyday digital participation (e.g. online banking), school programs (e.g. digital literacy), self-directed learning (e.g. online open access courses), vocational education (e.g. engineering, health professions) and highly specialised training (e.g. aerospace, cyber security).

A key way to bolster the capacity of social infrastructure for digital inclusion in NA is to break down silos between government departments, industries and sectors. Forum participants devised several pathways to develop this digital inclusion ecosystem across Northern Australia, including unified digital inclusion strategies (local, state/territory, national), face-to-face forums, and online repositories. Structural reform to the design and delivery of education programs to promote life-long digital skills development is also imperative. For example, digital skills could be embedded in economic development programs (e.g. employing and upskilling locals to build and administer ‘last mile’ digital connectivity solutions in their communities). Also, businesses could be further incentivised to carry out technological innovation in partnership with regional universities and TAFE. For example, there is great potential for educational institutions to partner with the North’s major industries such as defense and mining – and their service sectors – to foster the next generation of innovators, leaders, scientists and entrepreneurs to take NA forward.



*Online animal welfare module workshop held by Northern Gulf Resource Management Group at Almaden Pub, Far North Queensland (Image: Amber Marshall)*



The CRCNA has a mandate from the Commonwealth to focus on three specific areas of research: Agriculture, food, and aquaculture; Northern Australia health service delivery; and Traditional Owner-led business development. While our research is broader in scope, we now share insight from our investigation of these sectors.

### First Nations perspectives

Indigenous Australians, particularly those in remote communities, endure compounded social and economic disadvantage, exacerbated by low levels of digital inclusion. There are several initiatives in NA that aim to address this, particularly in relation to access. For example, the Centre for Appropriate Technology ([CfAT](#)) has installed mobile hotspots (one-user-at-a-time facility to extend mobile coverage in fringe areas with poor coverage) in 45 locations across the Northern Territory. As is the trend across NA, less attention has been paid to how affordability and digital ability could be improved for First Nations Australians. [First Nations Media](#) has sought to help address this deficit by proposing a Policy Action Plan to reiterate calls for Indigenous Digital Inclusion to be considered a Closing the Gap target. The six proposed strategies, which could be broadly adopted to improve digital inclusion across all sectors and communities in NA, are as follows.



Community hotspot in Yuelamu, NT (Image: CfAT)

- *Remote data* - Collect data to measure access, availability, affordability, and digital literacy.
- *Improve availability* - Prioritise roll-out of broadband and mobile coverage to communities with limited access.
- *Last-mile access* - Public Internet access through community-wide WiFi; community access computers.
- *Affordable access* - Unmetered access to all key online services; affordable pre-paid mobile options.
- *Digital literacy* – Culturally/language appropriate skills program, locally tailored to needs and level of knowledge/skill.
- *Digital mentors* - Programs to provide local jobs and peer-supported learning models.

### Agriculture

There are enormous opportunities for the NA agricultural sector to leverage digital technologies to improve existing, and initiate new, businesses and industries. Indeed, significant investment and gains have been made in precision farming, decision farming and smart farming across agriculture, aquaculture and horticulture. While governments and industry bodies often highlight Australia's successes and leadership in agtech innovation, this progression is largely being realised in concentrated, well-funded projects. We have observed contrasts between large, visible projects, and the practices and plans of everyday farmers in rural and remote NA.

A key challenge, therefore, is addressing the growing divide between those who can and do use digital technologies, and those who do not or cannot use them. Addressing this gap will require a holistic approach to enable farmers – regardless of the location, size and product of their operation – to acquire reliable, affordable and suitable connections. Farmers must also acquire digital knowledge and skills to drive interest in adopting agtech, and the wherewithal to choose, implement and maintain hardware and software. To this end, the National Farmers Federation helps lead the [Regional, Rural and Remote Communications Coalition](#). Other farmers have formed co-ops to invest in shared infrastructure. For example, [Wi-Sky](#) began as partnership between Richmond Shire Council and Olga Downs Station in Far North Queensland.

A deficit remains, however, in outreach programs to assist many farmers – usually those who are more physically and socially isolated – to embrace the digital age and all it has to offer. As well, the risks of developing a digitally connected agricultural industry need to be explored, understood and planned for. For example, big data is being collected by multi-national competitions through built-in IoT devices in machinery, without farmers necessarily knowing how and with whom their valuable data is shared, sold or applied. We see such ethical issues as an area of concern requiring more attention.



Feedlots in Barkly Tablelands in Qld/NT (Image: Beef Central)

## Health

The benefits of technology-mediated delivery of health services is well recognised in NA with its far-flung population. Cost savings associated with telehealth, such as reduced patient travel and less demand for remote infrastructure and supplies, are complemented by time savings that enable clinicians to 'see' more patients. ehealth, particularly the centralisation of patient medical records, has assisted individuals and their carers to 'keep track' of their health, and helped clinicians to provide treatment based on up-to-date information. National debates around privacy and security of health data are alive in NA; participants were aware of both the benefits (such as efficiencies for highly distributed health systems) and risks (such as data hacking). Furthermore, many NA-based health providers are leading innovation in digital health. For example, the Royal Flying Doctor Service recently [partnered](#) with Activ8Me to install NBN ground stations to remote airstrips frequented by the RFDS.

Uptake of telehealth in NA varies amongst clinicians and patients. Clinicians may resist video consultations for various reasons, including lack of financial incentives to do so and risks (perceived and real) in making diagnoses and prescribing treatments online. Here, there is scope for relatively low risk allied health services (e.g. speech pathology) to take a leadership role in normalising telehealth in the broader NA health sector. On the patient side, in the home context individuals and families could adopt their existing hardware (such as video for distance education) for health consultations, given that appropriate software can be installed.



Tele-optometry in Perth to Derby, WA (Image: Lions Outback Vision)

## FROM HERE

We have identified some opportunities and threats, and future directions, for achieving digital inclusion in NA, as per the table below. This is not exhaustive, but rather an indication of some themes emerging from our data that we will critique and add to in preparing the Directions Paper.

Opportunities and threats	Future directions
<ul style="list-style-type: none"><li>• Economic diversification enabled by digital connectivity is welcome, but many regions are hamstringed by lack of adequate physical and social infrastructure</li><li>• Optimisation of supply chains through technology should continue, and hardware/methods could be shared across sectors</li><li>• Regionally-based headquarters for big business and government should be encouraged, but this won't be realised at scale until whole-of-region connectivity solutions are considered</li><li>• Technology-related education must be embedded in economic development for future-proof workforces</li><li>• Focusing on solutions at the local level, driven by the local communities, is necessary e.g. address digital ability by deploying digital champions/mentors</li></ul>	<ul style="list-style-type: none"><li>• Advocate for broader acceptance that digital infrastructure is as essential as other infrastructure (power, water, roads)</li><li>• Ensure First Nations perspectives/solutions are at core of DI</li><li>• Suggest innovative models to deliver affordable, reliable, local, fit-for-purpose digital connectivity into remote areas</li><li>• Suggest new 'logics' for DI investment/decision-making in NA</li><li>• Suggest policy reform (local, state/territory, federal) in telecommunications regulation, major projects/grants, etc.</li><li>• Provide advice to industry and government to improve reach and effectiveness DI-related community programs</li><li>• Recommend ways to better quantify the cost of digital exclusion across sectors</li><li>• Identify ways to share hardware/methodologies across sectors (e.g. health and education)</li><li>• Explore NA-specific ethics and equity issues</li></ul>

Our Directions Paper will provide a 5-year road map for digital inclusion research, practice, and policy development for NA. Once completed, the CRCNA has several planned avenues to take the recommendations forward. These include exploring ways to progress the key policy recommendations and further research priorities.

Further activities to ensure this research has impact to be undertaken by the consortium include:

- sending press releases to major media outlets sharing issues identified in the Directions Paper;
- publishing our work in national public outlets, such as [The Conversation](#) and [Analysis and Policy Observatory](#) (APO); and
- sharing our work in our extensive social media networks to stimulate debate in the public discourse.

We are grateful for the generous input we have received from participants thus far and we welcome your further comments and feedback, which can be sent directly to our Project Manager at [amber.marshall@qut.edu.au](mailto:amber.marshall@qut.edu.au) until 20 December 2019.