

To:	NT Government	From:	Lawrence Cram
Subject:	Discussion paper on digital strategy	Date:	15 October 2017

CDU welcomes the Discussion Paper on a digital strategy for the Northern Territory, and the opportunity to provide comments. We are eager to maintain an ongoing dialogue with the Government, since digital futures are so important for our respective and broadly overlapping stakeholder communities. CDU has provided a response in the requested format: this document provides additional suggestions and presents some explicit opportunities for partnership.

## **Additional comments on Discussion Paper on Digital Strategy**

### **The roles of CDU**

Internationally, no government would develop a digital strategy without addressing the involvement and potential contribution of its regional university. Universities, Government, Business and the Community have distinct but overlapping roles in critical societal matters such as the Digital Futures of the Territory:

- As a dual sector university, CDU is highly experienced in providing world-class education and training in the many aspects of ICT that impact on business, government and community.
- CDU plays an important role in preparing the Territory's residents for the digital future. The university would welcome greater involvement of the government in strengthening its links with the community and business, and in working together to identify and address education and training needs.
- CDU's researchers are digital experts. Approximately 50% of all research conducted by CDU draws on advanced ICT methods and facilities, encompassing instrumentation, analytics and the social impact of ICT.
- CDU is a centre of excellence in the application of digital technology to address academic and real-world societal problems. The university would welcome greater involvement of the government in strengthening its links with the community and business, and in working together to identify and address R&D needs and opportunities.
- CDU accepts its responsibilities as the Territory's university, and pursues the opportunities that this status brings. As the only university based in the Northern Territory, CDU has a unique partnership, and a strong alignment in focus, with the Northern Territory Government to provide the skills and knowledge the Territory needs to prosper.
- CDU asks governments, other education and research organisations, industry and the community to engage with it to form mutually beneficial partnerships and relationships so that we can continue to provide the best possible educational services and research outcomes for the people and regions we serve.

## The frame of the discussion paper

The discussion paper is framed around six organising headings:

1. Jobs
2. Children
3. Bush
4. Community
5. Trust
6. Digital Drivers

Information Technology and Communications (ICT) itself has its own organising principles that can be matched in a variety of ways to these societal organising principles. By such cross-matching, strategic priorities can be identified for the NTG's ICT digital strategy in terms that link government focal areas to development priorities for the NT ICT sector. One useful way to frame ICT opportunities is via a two-dime national framework that arranges sub-sectors in terms of a products <-> services dimension and a platform <-> content dimension:

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*J.W. Houghton / Telecommunications Policy 23 (1999) 689–699*

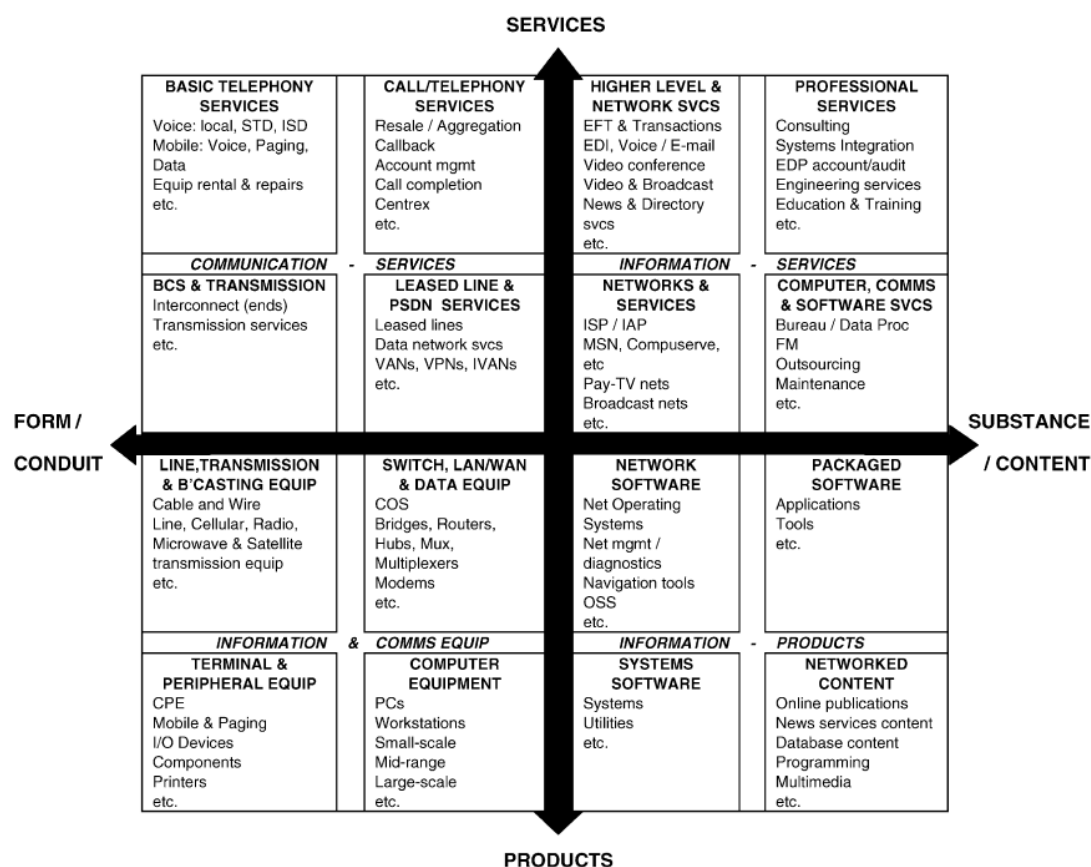


Fig. 1. The Australia Information Technology Map. Source: Adapted from Houghton, Pucar and Knox 1996a.

CDU suggests that the NTG's digital strategy for the Territory could usefully map the government's organising frame to this sector frame.

For example, in terms of Children, the mapping could well include as strategic priorities:

- Negotiating and delivering with a sense of urgency the link between (1) school/further education curriculum and teacher preparation on the one hand, and (2) the digital skills required across the ICT frame on the other.
- Clarification of STEM agendas in the light of the two dimensions of the IT framework, and how they can be developed to connect Children and ICT. This would necessarily include teaching and learning about people, service and design.
- Information literacy, including critical evaluation of information harvested from the internet, and the teaching of personal psychosocial capacities to stay safe in face of bullying, pornography, gambling and other challenges encountered in the online world.

### Three opportunities for the NTG-CDU partnership

CDU would like to explore with the NTG three ICT opportunities that appear to offer both economic comparative advantage, and societal engagement and benefit.

#### 1. Evaluation and implementation of a Territory-specific physical ICT layer.

Unlike much of the world, the Territory is an advanced economy in a place that is both large and empty. These characteristics may open opportunities for novel solutions to difficult challenges, such as the use of licenced radio spectrum in uniquely authorised ways. The hyper-commercial character of the global ICT sector means that technology development opportunities like this are likely to pass by or be second best for Territory users. Technology breakthroughs such as Multi-User, Multi-Input, Multi-Output (MU-MIMO) may offer the Territory an affordable, clean break from the current poor and/or expensive physical services provided by fibres, copper and satellite.

#### 2. Tier 2 node of the National Computational Infrastructure.

Under the auspices and with significant funding, the National Collaborative Research Infrastructure Strategy (NCRIS) maintains high-end IT services for research and development in the public and private sectors. The National Computational Infrastructure (NCI) is funded by NCRIS, CSIRO, BOM, ANU and the ARC to provide high performance computational and data analysis and presentation facilities and services. Notionally, CDU contributes around \$1M per annum for NCRIS facilities, but use is limited by distance and scale. It may be possible to locate a Tier 2 site on NCI in the Territory to provide hands-on access to high-end computation and data analysis services for researchers and other users in industry, government and research organisations.

#### 3. Digital Futures Institute

CDU is a major resource of digital expertise in the Territory. The expertise is made available primarily through CDU's education and training programs. CDU offers specific qualifications in many aspects of IT and at many levels. The expertise is also made available through collaborative R&D and the publication of findings based on CDU R&D. CDU is eager to explore with stakeholders including the NT government the potential value of forming a Digital Futures Institute (or similar organisation) to provide a focal point and meeting place where the university can engage with Territory ICT agendas. It is proposed that the Digital Futures Institute would serve the Territory through specific programs in highly relevant areas such as Digital Instrumentation & Measurement, Data Analytics and Presentation, and in Educational Technology.

# Towards a digital strategy

The Northern Territory Government is developing a Digital Territory Strategy to identify the objectives and priorities for digital services over the next five years and outline a roadmap of actions we can work towards together to achieve the objectives.

This survey seeks your views on these important opportunities and contribution to the development of the strategy.

You can complete some or all of the survey. This survey will take approximately 5 – 20 mins.

The discussion paper's priority areas:

1. Jobs
2. Children
3. Bush
4. Community
5. Trust
6. Digital Drivers

What do you think about:

- Preparing our workforce for the digital jobs of the future, addressing the shortage of workers with technical ICT skills and increasing digital literacy so that local jobs can be maximised and local people employed?
- Increasing employment in traditional industries, such as agriculture, mining, construction and tourism, through expanding the use of technology and improving digital capacity?
- Digitally enabling Aboriginal businesses and the creative, cultural and environmental industries to enhance their capabilities to develop new products and markets?
- Fostering innovation and adoption of new ideas and technologies in the public, private and social sectors?
- Encouraging digital service providers and the local ICT industry to help Territory businesses improve digital skills, develop digital solutions and create jobs that will support growth across all sectors of the economy?
- Training and skills development pathways that will upskill the Territory workforce and enable workers to maintain contemporary digital knowledge?

Provide your feedback on these questions submit your own ideas.

*Without a doubt, the digitisation of the modern world demands skills in analytics, digital literacy, digital social skills, and digital problem solving. School, VET, Degree, and Post- graduates require an ever-increasing set of skills to be competitive in the global workplace. It is essential that Territorians be skilled and proactive in equipping graduates of all levels of award to have appropriate levels of digital skills. In addition, Territorians should also be supported in life-long learning of digital skills throughout all stages to maintain a digitally literate population (e.g. from pre-school to senior citizens).*

## What do you think about:

- Best supporting Territory children in the digital age through education, opportunity and balance to stay happy and healthy in an increasingly online lifestyle?
- Encouraging young people, especially girls, to take-up STEM subjects and develop the digital skills required for the workforce of the future?
- Enabling children to have the confidence to be creators as well as consumers of digital content?
- Keeping kids safe online and helping them to make good decisions to be equipped to deal with issues they may encounter online?
- Helping parents and carers to help their kids get the most from the digital world?

Provide your feedback on these questions submit your own ideas.

*In an age of internet and digital omnipresence, the children of the Territory must be equipped to cope with the demand of modern online lifestyles. This involves sufficient digital literacy, to understand and triangulate conflicting sources of information, protecting online identities, and protection from cyber bullying and other forms of personal invasion. In particular, the impacts of online communication and constant connectivity on mental health should be paid particular attention.*

*As a compliment to approaches to directly encourage STEM subject uptake by girls, acknowledging the importance of complimentary skills (for example in data visualisation, social implications of data, facilitation, and knowledge brokering) which may be more appealing.*

*To support the pursuit of lifelong learning of digital skills, opportunities (e.g. sponsored coding programs) for children and adults should be easily available. In particular, support for parents who want to promote digital literacy in their children should be provided.*

## What do you think about:

- Helping to make our bush communities safe, connected and less isolated through digital technology?
- Digital tools that can best contribute to and drive economic development in the bush?
- Providing digital advances in the bush to assist existing and emerging businesses compete effectively in a global market?
- Partnering with community and business to improve access to digital services in the bush?
- Working to bridge the digital divide so that affordable and reliable ICT services can be delivered across the Territory?
- Delivering better government services digitally in the bush?

Provide your feedback on these questions submit your own ideas.

With a small population base and large land area, the Territory relies on reliable, affordable, and sustainable ICT infrastructure (e.g. broadband or satellite coverage) to remain connected. This is essential to support business and industry.

*Given the geographical challenges, the NTG could help support the Territory to become a leader in wireless communication. For example, CDU has expertise remote sensing and monitoring, digital instrumentation, measurement and control. In turn, this has many applications and settings, including environmental instrumentation, engineering measurement and control, human measurement and instrument calibration & maintenance. Potential end-uses of this expertise include environmental instrumentation for the national estate, mine-sites & agribusiness; digital monitoring for efficiency &*

*intelligent maintenance of plant & buildings; process automation in primary industries such as aquaculture & horticulture; and human physiological measurement to improve liveability and safety in the North.*

What do you think about:

- Using digital technology to make our communities across the Territory safe, vibrant and sustainable?
- Partnerships between the community, business and government to improve access to digital services for disadvantaged citizens?
- Sharing skills and knowledge of business and the ICT industry to deliver results for the community?
- Delivering better government services through digital channels?
- Engaging Territorians in policy development and program delivery?
- Improving citizens' awareness of cyber safety and readiness to deal with cyber-crime threats?
- Using technology to make our Territory lifestyle even better?

Provide your feedback on these questions submit your own ideas.

*Cybersecurity is an emerging threat to government and business and NTG has a responsibility to its citizens to protect personal information and provide reliable services, which in turn increases trust. This should be supported in accessible life-long learning of digital skills so that citizens are aware of potential threats.*

*The alignment between CDU strengths in ICT strengths and the needs of Territory stakeholders could be well served by having three "divisions" within a new Digital Futures Institute. The divisions would coordinate to deliver R&D, continuing education, consulting and commercialisation services alongside CDU's existing VET, HE and PhD courses delivered by the Schools and Colleges.*

*Division A: Instrumentation, measurement & control, Division B: Coding, Analytics, Cybersecurity, Product services (Service Science), Division C: Educational technology (EdTech).*

What do you think about:

- Restoring trust in government through better use of technology?
- Government datasets that should be open and publicly accessible?
- Making effective use of government datasets to solve community problems?
- Standardising digital services across government?
- Improving decision making through online interactions with citizens and consumers?
- Ensuring the privacy of personal and confidential information is protected in increasingly digital relationships?

Provide your feedback on these questions submit your own ideas.

*Australia is well advanced when it comes to the integration of Government services online. However, there is always room for improvement.*

*Analytics derived from big data offer improved efficiency and quality of service delivery for government and business. Well-conceived ICT-enabled services could lead to major innovations in the convenience and usefulness of service delivery into remote places. Reusing data in intelligent ways across agencies*

*to support service delivery is also important and when done successful, will build trust from the community.*

*For NTG to best support its citizens, its employees must be highly skilled in service science. With support from NTG, CDU could improve its course offerings in service science to fulfil the increasing demand for these skills. Service science includes studies in information & communication technology; computer science & robotics; and business & management as well as behavioral economics; psychology; sociology; law & regulation; and contemporary ethnography.*

What do you think about:

- The key digital elements that will drive the Digital Territory Strategy?
  - Other principles that could be used to underpin the Strategy?
  - Capturing a vision for the Territory's digital future (noting that a draft vision statement is presented on page 3)?
  - Any other matters not covered in the following sections that will be important in framing a digital strategy for the Northern Territory Government?
- .....

Recent digital trends (e.g. from <http://www.digitalinnovation.pwc.com.au/>) suggest the following:

- *Speed and sophistication of digitisation is on the rise (e.g. machine learning and internet of things)*
- *Data is increasing in value*
- *Citizens are more digitally savvy (e.g. 53% of Australians would see their doctor through a smartphone or computer).*
- *Crowd sourcing and large social networks are becoming increasingly important.*
- *Competitors are global*
- *Skills required in a digital world are changing*

*The current formulation of the strategy does not distinguish between the respective roles of the NTG versus other stakeholders in the Territory. Perhaps that could be articulated in an implementation plan.*