



14 July 2015

Dr Bill Pender
Smart ICT Inquiry Secretary
Email: ic.reps@aph.go.au

Re: House of Representatives Standing Committee on Infrastructure and Communications – Smart ICT Inquiry

Dear Dr Pender

Please find the following submission by the **Australian Technology Network of Universities (ATN)** to the Smart ICT Inquiry. The ATN welcomes the opportunity to provide the following response, noting that individual ATN universities may also provide complementary submissions.

The ATN believes that smart ICT has the potential to better connect Australia as a knowledge-based economy and diversify areas where Australia has existing competitive advantage. The integration of smart ICT into infrastructure and communications has the ability to transform the productivity and efficiency of industries such as health, logistics, environment, security and smart cities. As such, the ATN welcomes this inquiry and is pleased to share a range of examples of best practice in the use of smart ICT which have significant productivity benefits and open up new horizons of capability in the design and operation of infrastructure.

Examples of smart ICT initiatives within the ATN

Recently, ATN member Curtin University partnered with Cisco in the Cisco *'Internet of Everything' Innovation Centre* to support markets in resources and mining, astronomy and big data. The Centre will house a state-of-the-art laboratory and a technological collaboration area to bring together start-up companies, industry experts, developers, researchers and academics to research the cloud, analytics, cyber security and Internet of Things network platforms. Cisco estimates that the Internet of Everything has the potential to contribute more than \$74 billion to the Australian Economy over the next 10 years.

An increasingly collaborative approach to developing smart ICT has also been adopted by the University of South Australia (UniSA), who are partnering with Hewlett-Packard and the South Australian Government to establish the *ICT Innovation and Collaboration Centre* to support and facilitate innovation, collaboration and co-creation across the South Australian ICT sector. Skills development and training are an integral part of the collaboration model, with internships and work placements included in a joint honours degree in IT, and business informatics operating out of the centre. This not only gives students access to world-class educational institutions, but also exposes them more broadly to the collective knowledge and expertise within the centre and its facilities. Enterprises such as this will be integral in creating new industries and moving towards a smart, globally connected economy.

ATN universities also have a number of examples of innovative technology used in the design and operation of infrastructure. The University of Technology Sydney's (UTS) Faculty of Engineering and IT (FEIT) building demonstrates cutting-edge green building technology. The FEIT Building is in essence a 'living laboratory' which collects real-time data on performance indicators such as room temperature, humidity, light levels, air quality, dust particles, energy and water use. This information is displayed on screens throughout the building and updated in real-time. As sensors are embedded into the building material (e.g. within concrete columns, beams, slabs and walls), the system can also measure how the building ages. This allows researchers to draw upon datasets to monitor the life of the building including saline levels in the concrete columns, concrete ion erosion, and the movement of the concrete over time.

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The ATN believes that smart ICT also has a key role in delivering world-class higher education. *'The Cube'* at the Queensland University of Technology (QUT) is one of the world's largest interactive and learning environments, spanning two stories and encompassing more than 40 multi-touch screens and 14 high-definition projectors. The facility is open to the public and regularly takes tours of high school students to explore a range of interactive digital projects aimed at engaging with science, technology, engineering, arts and mathematics in a high tech interactive environment. Researchers are also able to showcase their ideas and model and visualise big data sets.

The emergence of facilities which bring together research on big data reflects the growing importance of data analytics in moving towards a knowledge based economy. Researchers at the joint NICTA RMIT Data Analytics Lab are applying text, user and data analytics research to industry-driven projects that solve problems and provide efficiencies in areas such as health, logistics, smart cities, environment and security. For example, big data plays a role in managing public spaces and services by tracking behaviour and information from personal mobile devices in areas such as shopping malls, airports, and universities. Smart ICT can be used to increase public transport efficiencies, with real-time passenger data being used to optimise links between buses, trains, and trams in smart cities.

The *Microsoft QUT eResearch Centre* (MQUTeR) embodies a collaborative model of smart ICT, operating as a joint partnership between QUT and Microsoft Research, with funding from the Queensland State Government and project-level support from companies such as the Brisbane Airport Corporation and Telstra. Examples of the capability of smart ICT include adaptive sensor networks for observing and assessing environment and ecological systems; using 3G phones as communication hubs; and providing collaboration and graphic information for mobile computers.

Recommendations:

- Similar to the Commonwealth Government's (Department of Education and Training) National Collaborative Research Infrastructure Strategy (NCRIS), access to world-class ICT infrastructure should, where possible, be made available to Australian businesses, industry, and the research sector. This would ensure that investment in smart ICT is strategically scaled and supports collaborative approaches to innovation.
- Building new capabilities in smart ICT must integrally involve the higher education sector, with training elements forming an importance component of multi-partner initiatives.
- More can be done to capture the spill-over benefits of applying knowledge and data from existing smart ICT initiatives into related or new fields.
- As in other innovation activities, building effective connections between industry and the research sector, including universities, is paramount to success in the process of identifying, developing and delivering smart ICT initiatives.

If you have any queries or would like to discuss this submission further, please do not hesitate to call me on (08) 8302 9135 or via e-mail at renee.hindmarsh@atn.edu.au.

Yours sincerely

Renee Hindmarsh
ATN Executive Director