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## La Trobe University Submission: National Broadband Network

La Trobe University welcomes the opportunity to provide a submission to the Inquiry into the National Broadband Network.

The University has confined its submission to commenting on the capacity of the NBN to contribute to:

- achieving health outcomes;
- improving the educational resources and training available for teachers and students;
- interaction with research and development and related innovation investments.

Queries regarding this submission should, in the first instance, be directed to:

Ms Robyn Harris
Director, Planning and Institutional Performance
Email:

Yours sincerely

**Professor Paul Johnson**
**Vice-Chancellor**

La Trobe University Submission on the National Broadband

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**(b) Achieving Health Outcomes**

*The NBN: vital infrastructure to improve rural and remote health services*

The health status of people in rural and remote Australia is worse than their urban counterparts on many indicators [1]. Although Indigenous people make up only 2.5% of the Australian population they make up a greater proportion of people living in rural areas and in many remote areas they are the majority [2]. Indigenous people have worse health status than non-Indigenous Australians in a large number of indicators. The ABS has estimated that an Indigenous man born between 2005-2008 will live 12 years less than their non-Indigenous counterpart and an Indigenous woman 10 years less [3].

There is very good evidence that health services to rural and remote areas suffer from a range of deficits based on population size and accessibility of patients to services and of service providers to people with health needs. The National Health and Hospitals Reform Commission (NHHRC) made three key recommendations that would improve access to health services in general and particularly improve access to specialist care for people in rural and remote areas. These recommendations were

- smart use of data and communications, namely the development of a national electronic health record, and expansion of telehealth services (which is providing care for patients at a distance using ICT technologies [4])
- improving health outcomes for Aboriginal and Torres Strait Islander people;
- support for people living in remote and rural areas [5].

Currently the there are many pilots being undertaken of the use of electronic health records and telehealth services. All Australian States and Territories are engaged in some way in establishing telehealth services, but their progress in providing reliable services to rural and remote areas where they are most needed is hampered by a lack of ICT infrastructure. The National Broadband Network (NBN) is designed to dramatically increase bandwidth and provide reliable access to all areas of Australia including rural and remote areas. The current system has been built as a patchwork of infrastructure that consist of some areas having excellent access and bandwidth using fibre to the curb; while other areas rely on satellite or wireless technologies with their inherent cost and high maintenance requirements and limited bandwidth. The proposed NBN will provide fibre to the curb across most of Australia, resulting in massively increased bandwidth. This will enable effective transfer of large amounts of data quickly (download speeds of 1000 megabits per second); which is the prerequisite to establishing effective telehealth services.

One of the National Reform priorities is to assist people to access services in places that best suit them. To address this priority, rural health services must be able to be supported by tertiary specialist services to provide high quality health care for a range of health conditions that come with ageing; the management of complex conditions; and acute trauma. This is ideally done by having reliable access to these tertiary service providers in a timely manner, without the need for either party to travel. The NBN will enable rural health services to increase the range of services they provide by enabling secure patient data transmission, including biometric data such as ECG and vital signs data; real-time video and radiography data; and still images and text in an integrated way to enable timely diagnosis and clinical support for rural practitioners and their patients. In NSW, as the NBN roles out, plans are well underway to pilot telehealth services to people at home with funding to the NSW government through the Digital Regions Initiative [6].

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4. American Academy of Ambulatory Care Nursing (AAACN). *Telehealth*. 2010 [cited 2010 13/7]; Available from: http://www.aaacn.org/cgi-bin/WebObjects/AAACNMain.

5. National Health and Hospitals Reform Commission, *A Healthier Future for all Australians- Final report of the National Health and Hospitals Reform Commission*. 2009: Canberra.

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## (c) Improving the educational resources and training available for teachers and students

The NBN will result in significantly improved capacity for online teaching and learning. This includes network-capable mobile computing devices and supporting the open content environment in the short term (1 year or so). Medium term implications include a shift toward electronic books and simple augmented reality (overlaying digital information onto the physical world easily and quickly). In the longer term the NBN will see the introduction into mainstream computing of gesture based computing for training and research and access to visual data analysis for analysis of very large data sets.

Links between tertiary and secondary and primary education providers will support a more closely connected education sector. The Institute for the Broadband Enabled Society, based at Melbourne University, is conducting research into a range of educational applications that would be made possible by high speed broadband. One such project is researching ways of connecting learners across diverse communities (e.g. primary schools in remote locations with urban school children; teachers and students from Victoria with schools elsewhere in the world). Another project is investigating how the NBN could benefit schools, families and health professionals associated with sick children, using technology to support continuation of education for students unable to physically attend a classroom.

## (g) Interaction with research and development and related innovation investments

With the NBN's promise of speeds up to 100 times faster than currently experienced, there are anticipated benefits across a broad range of research-related areas. These include benefits in being able to access data globally in a timely manner, and collaborate with industry, other researchers and the community more effectively.

The NBN is not envisaged to replace Australia's Academic and Research Network (AARNet), the major carrier for University and CSIRO network traffic. However, AARNet is restricted to servicing major education and research sites, leaving other institutions, companies and homes unconnected other than by gateways to slower networks. The NBN has the potential to provide a direct gateway to AARNet as well as allowing the speed of the remote network in Australia to keep pace with University requirements for the first time. The reasons for the initial development of AARNet (i.e. speed, capacity and connectivity) equally apply to the NBN.

La Trobe University currently directly connects with many different groups and individuals in the community. These connections are for research, teaching and learning, and community outreach activities. Greater capacity for data transfer between the University and its non-University partners would deliver increased benefits for such collaborations. Expansion of industry/University research and development efforts particularly with small enterprises and businesses in regional and remote locations served by La Trobe would also benefit from high speed broadband connections.

Importantly, high speed broadband connections will have implications for the transfer and storage of large data sets and impact on the way the University stores data. The NBN will create opportunities to store large amounts of data off-site while still allowing high speed access.

## Health research at La Trobe

La Trobe's Health Sciences Faculty has a number of research programs that extend the outreach and care of patients from the clinical setting into the home environment. This includes home-care nursing, at-home monitoring of key medical parameters, dealing with chronic conditions and training and diagnosing from central base hospitals to clinics and homes.

The technologies that NBN would make feasible includes high definition video-conferencing (including the broad field of telehealth), wireless/wired live and 24 hour monitoring from devices to central collectors attached to home networks and emergency notification via network through automated alarms.

Patients and interested parties will be able to access high-intensity (including high-resolution multimedia) advice call centres (nurse on call) as well as specific information gateways in Universities for syndromes and diseases under research.

Members of research studies can be monitored and interacted with remotely, including collecting information, performing activities that require observation but not intervention and help desk communication.

Ubiquitous high-speed connectivity appears to offer a large range of modern health benefits, many of which are currently being researched by the CSIRO.

### Ecology and sustainability

Research conducted in the field is challenging, with great risk to the data being collected as it is often not known if observations are valid until investigated at the home-base after the trip has concluded. A distributed network in remote areas (especially if combined with wireless and satellite broadband in remote areas) would allow instant ranging up to daily uploads of data, allowing checks on data as collected. Similarly, monitoring stations can send and receive far larger amounts of data, including video, and in real-time that is only possible with high bandwidth networks. Wireless broadband, touted variously as an alternative to the NBN actually relies on substantial landline transfers between wireless transmitters. The speed and capacity of these transmissions will be greatly enhanced by NBN technology.

### Links to government and quasi-government entities

The University's links with the following entities would also benefit from improved high-speed broadband - museums, cultural and historical collections, state and local government departments and research bodies and non-CSIRO federal government research groups.

### International collaboration and commercialisation

Industries and businesses working with the University sector would have enhanced capacity to collaborate with international research and development partners using the NBN, some of whom may be encouraged to commence or expand operations in Australia if they can more effectively connect with operations and headquarters elsewhere.

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