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William J. Smart
Southern Cross University

George Coles
Southern Cross University

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"Bring on the Broadband:" The Case for Mid-North Eastern Regional Australia

William Smart
George Coles

Abstract: The need and processes of implementing broadband network into isolated communities and its economic, social and environmental impact for Australia are discussed in this paper. Results of Case Studies conducted to identify needs and challenges of the project are given to build a case for government support for the project. The benefits to communities in the region, Australia and worldwide are highlighted. Lessons for political agenda building and implementation of Government can be drawn from this article.

Keywords: National Broadband Network, Initiatives, Services, Australian Industry Group, Business Campaign, Policies , Efficiency, Rural, Regional, Remoteness, Research, Surveys, Eastern Regional Corridor, Enhanced Communications .

Introduction

The National Broadband Network (NBN) was proposed during 2007 as an election promise by the Labour party. Support for the NBN since its proposal has appeared to be strongest in rural and regional Australia. For example in 2008 a survey by the Australian Industry Group and Deloitte (2008), of Chief Executive Officers (CEOs) employing around 215,000 people, and reported that two thirds of all the CEOs Australia wide believed that their businesses would reap benefits from high-speed broadband.

> *"The overwhelming majority of Australian businesses now have some form of internet access, but the absence of an effective and truly national, high speed broadband network has meant that many have failed to take advantage of the new applications and 'next generation' services available. Business efficiencies, productivity gains and other commercial benefits have been lost as a result. "* (Australian Industry Group and Deloitte 2008)

This belief in the benefits of high-speed broadband increased to three quarters when only CEOs representing businesses in regional Australia were considered. The rural/regional support for the NBN was clearly demonstrated in the aftermath of the 2010 Federal election as the NBN became an important factor in winning the support of two of the three independent members of the parliament for the Gillard government. All three of the independents hold seats in rural/regional areas and see the NBN as critical to the future for their electorates. This theme is clear in the remarks of the Federal Member for New England Tony Windsor MP (2010) as he declared his support for the Gillard government: "*... the delivery of broadband services to regional Australians was also a key issue*" He also stated: "*I see the National Broadband Network as the railway of the 21st Century that will help country Australians overcome the disadvantages of distance, remoteness and smallness*"

Although Bob Katter MP, the independent Federal Member for Kennedy ultimately supported the Coalition he preferred the NBN to the Coalitions broadband proposal, stating: "*The NBN was a better option of the two broadband policies presented throughout the election campaign*"(Hutchinson, 2010) So why is there so much desire in the rural/regional Australia for the NBN?

This article first examines the history of the **'gobroadband'** initiative of Southern Cross University. The project was established to put forth a business case for the first mainland rollout of the NBN to be on the Mid North and Far North Coasts of NSW. On February 3rd 2010, prior to the Federal election Rob Oakeshott MP the independent Federal Member for Lyne (on the Mid North Coast of NSW) announced his support of the **'gobroadband'** initiative stating: "*The delivery of high-speed broadband to our region is arguably the most significant contribution government could make to supporting the future of our region and the sooner this happens, the better*"

After examining the **'gobroadband'** initiative, identified benefits of the NBN for the rural and regional Australia (in particular the Mid North and Far North Coasts of NSW) will explored in detail. Finally we will discuss the direction the **'gobroadband'** initiative will take in the future.

The Gobroadband Initiative

The ideas behind the '**gobroadband**' initiative was initiated by Federal Member for Page Janelle Saffin MP, Federal Minister for Broadband, Communications and The Digital Economy, Senator Stephen Conroy, and Southern Cross University's Professor of Information Technology, Professor Peter Croll at a meeting in Grafton on 30th of November 2009. The meeting discussed the Federal government's broadband plans. Senator Conroy invited the regional representatives to make a submission to his department on advantages and impact of bringing the NBN to the mid and north coast of New South Wales (NSW) would have for Australia.

Consequently, a meeting chaired by Professor Croll, was convened at Southern Cross University. In attendance at this meeting were representatives of education, industry, local and Federal government from across what has become referred to as the Eastern Regional Corridor (Regional Futures Institute, 2010). The meeting determined that Southern Cross University should take the lead in organising a submission to the Federal government putting forth the business case to have the first mainland roll-out of the NBN occur on the mid and north coast of NSW.

A website www.gobroadband.org.au was established to disseminate information about the NBN and, to gauge the level of interest from business, local government, education and residents of the mid and north coast of NSW in the NBN. Several surveys were undertaken to explore the interest in, and the potential uses that businesses and residents of the region foresaw with the NBN.

Results of the first survey of potential users (business and non-business) of the NBN were illuminating. When asked "*What do you consider to be the most important benefits from the rollout of the National Broadband Network?*" respondents identified and ranked the benefits in the following order:

1. assist in business expansion
2. improved options for telecommuting
3. attract new businesses to the region
4. increased business opportunities in the international marketplace
5. improved community connectivity
6. reduced social isolation

7. improved disaster response
8. ability to attract and retain staff
9. improved health outcomes

A second survey specifically targeting regional businesses was undertaken. When asked "*The National Broadband Network policy brochure identifies areas where Australia will benefit. Can you rank the importance in your opinion that the National Broadband Network will bring?*" Businesses ranked the listed benefits in the following order:

1. Regional business opportunities, including economic benefits;
2. Quality education for all, e.g. access to quality education and training facilities from business/home;
3. Access to healthcare services, e.g. remote consultations and diagnostics
4. Consumer and social networking, e.g. better connectivity with work colleagues and family, and
5. Environmental knowledge, e.g. better understanding of our environment and ability to handle disasters.

All business respondents were asked "*When will a connection to a high-speed broadband network become essential to your organisation?*" The result was surprising in that 62% of all respondents indicated that they wanted access immediately, 21% within this year and 13% within 1-2 years.

Using the surveys as a starting point, several regional industries were chosen in order to develop case studies for inclusion in the submission. The submission titled, "*The benefits of early adoption for the National Broadband Network spanning Australia's Eastern Regional Corridor*" was a collaborative effort of the Regional Futures Institute at Southern Cross University, 14 local councils and several businesses at the cutting edge of ICT. The report was submitted to the Federal Member for Page, Janelle Saffin MP on 29 January 2010 for lodgement with the Minister for Broadband, Communications and The Digital Economy, Senator Stephen Conroy.

Why Select the Eastern Regional Corridor?

The final submission highlighted the advantages of rolling the NBN out in the mid and north coast of NSW. The foremost advantage offered by the NBN to regional Australia is particularly for growth in the knowledge-based industries.

Australia has one of the highest population growth rates of the OECD and recent forecasts of Australia's population by 2050 are expected to reach 35 million, with some predicting increases up to 44 million (ABS, 2007). Imagine Sydney and Melbourne with a population of 10 to 15 million people is this the future desired? If this scenario is to be changed, the regional areas of Australia must be equipped to deal with growth and the NBN is a key part of the infrastructure that will allow for this transformational economic, social and cultural development.

The rollout of the NBN presents an opportunity for the Australian government to transform regional Australia and provide a viable answer to Australia's predicted population growth. According to the Regional Futures Institute submission (2010) , "*Bringing the NBN early to the Eastern Regional Corridor, with its good spread of regional and rural areas, will provide an exemplar for the way that business and communities can thrive while demonstrating to Australia and across the globe our eco-friendly 21st century living environments* " (Regional Futures Institute, 2010).

The Eastern Regional Corridor is ideally suited to lead the way in adoption of the infrastructure NBN provides. These sought after sea change areas present a low-risk, high-gain role model for regional Australia in demonstrating the development of knowledge industries to supplement the traditional industries of the regions in a series of digitally connected communities.

The Eastern Regional Corridor has a number of advantages: a healthy environment, climate, good education facilities, natural resources and a culture of diversity and creativity. A balance must be struck between the unique features of the region and future growth of the region. Growth of knowledge industries assisted by the infrastructure the NBN would provide is a good fit with the desire to maintain this balance.

To ensure the Eastern Regional Corridor is NBN ready, many of the local councils in the North Coast region, working collaboratively, have recently endorsed policies to assist many Small to Medium Enterprises (SMEs) in adopting the NBN. These policies should assist SMEs to improve productivity and incorporate creative and innovative solutions to existing and new opportunities, as well as maximising the benefits of high-speed broadband for everyone in the community.

In addition to preparations taking place in the mid and north coasts of New South Wales, the Gold Coast (South East Queensland) and the Hunter/Central Coast regions (of New South Wales) are also preparing their local businesses and populations to be NBN ready.

Identified Benefits of the NBN

Before examining the benefits, the NBN will bring to the Eastern Regional Corridor, high-speed broadband needs to be defined. Currently the general understanding of the term "*broadband*" in the community is the existing Asynchronous Digital Subscriber Line (ADSL) and ADSL2+ types of internet connection. It should be noted that availability of ADSL and ADSL2+ is limited in regional/rural Australia due to the constraints of the technology, as speed is dependent upon length of the copper exchange lines, with 5 Km being the maximum viable distance.

ADSL2+ offers the highest speed of the current connections available (20+ Mbps) but also has the greatest constraints on distance. The further the subscriber is from the exchange the greater the degradation to the connection speed. The NBN fibre rollout will be at 100 Mbps, many times faster than the current ADSL connections. When businesses on the mid and north coast were surveyed, the most common type of broadband connection in use was ADSL.

Following is a table comparing downloads at 56 Kbps (Dial-up), 2 Mbps (ADSL) and 100 Mbps (NBN) adapted from the United Nations Broadband Commission Report (2010):

Download Comparison

Download	56 kbps	2Mbps	100Mbps
Simple Web Page	23 sec.	.64 sec.	.01 sec.
5 MB music track	12 min.	20 sec.	.4 sec.
20 MB video clip	48 min.	1 min.	1.6 sec.
CD / low quality movie (700 MB)	28 hours	47 min.	56 sec.
DVD / high quality movie (4 GB)	1 week	4.5 hours	5 min.

Now that an understanding of the increase in speed of internet connection has been achieved, it becomes easier to see the implications for improvement in social, environmental and business within the Eastern Regional Corridor.

During the preparation of the submission to the Federal government benefits and opportunities were identified affecting many of the existing regional industries and providing scope for the development of new industries. Some of the benefits were shared regardless of the type of industry.

Enhanced Communications

The frustration of the '*World Wide Wait*', waiting for a large interactive, multimedia-based site to load or waiting for large email attachments to download will be reduced as the bandwidth the NBN provides will allow email and internet usage will be brought to a new level in Australia.

Currently many businesses have issues with downloading large data files, yet uploading them is even more of a problem. A standard ADSL connection at peak speed typically allows users 1.5 Mbps download and 256 Kbps upload, therefore sending large files takes considerably longer than downloading them. The NBN provides a 100Mbps duplex system, providing the complete bandwidth for both upload and download.

Access to high-speed internet access will allow regional/rural SMEs to avail themselves to new applications that were previously not viable due to bandwidth restrictions. For Example businesses could avail themselves to Cloud Computing, where software applications, storage on virtual servers, software development platforms are sourced (as a running applications) from the Internet (the Cloud), precluding the purchase of the software, the server platform and the cost of associated maintenance (Knorr & Gruman, 2009).

High definition video conferencing providing face-to-face communications in real time will become available over the NBN. This would reduce the need for business travel as meetings, training sessions and presentations could be conducted online. This will provide savings on travel time and accommodation allowing significant savings in salaries and subsequent increases in productivity.

The NBN also provides the opportunity to consolidate the use of Voice over Internet Protocol (VOIP), allowing for further competition in the telecommunications market.

Teleworking / Telecommuting

The NBN will provide greater opportunity for teleworking across a range of industries. Some of the potential benefits of teleworking identified by Access Economics (2010) in a report to the Department of Broadband, Communication and the Digital Economy are:

- Travel savings, primarily the cost (fuel, public transport and parking) and time taken to travel to and from work.
- Greater scope in employees choosing where to live. No longer, will there be a need to live in close proximity to the work location.
- Increased ability to recruit and retain staff. Individuals who do not live or have moved from close proximity to the business can be hired or retained if teleworking is available.
- Reduction in office expenses, an increase in teleworkers allows for a reduction in office space thereby providing savings in rent, utilities (air-conditioning, lighting etc.).
- Opportunity for relocation of businesses to regional locations is increased as the need to be centrally located near transportation hubs is reduced.

Reduced Carbon Footprint

Enhanced communications and telecommuting can individually or in combination offer a third benefit to businesses, which is a reduction in the businesses carbon footprint.

For example, enhanced communication allows for a savings in business travel, as meetings, presentations and training are instead conducted via high definition video conferencing. This reduction in travel directly contributes to the reduction of the businesses overall carbon footprint.

Similarly, a business that encourages staff to telecommute will reduce its carbon footprint due to the reduced demand for office space and the savings in lighting, air-conditioning etc. It should also be noted that the individual employee's carbon footprint will be reduced as travel to and from the workplace is reduced.

Case Studies

Case studies of specific regional industries were also examined as part of the research into the submission for the Federal government. Case studies for each of the following industries were developed for the submission.

- E-Health
- E-Creative Industries (Arts, Television, Audio/Visual etc.)
- E-Environmental Management
- E-Manufacturing
- E-Agribusiness
- E-Finance
- E-Tourism
- E-Local Government

- E-Emergency Management
- E-Learning

Each of these industries will experience productivity gains from the benefits already examined and others specific to the type of industry. However, two of the case studies warrant further investigation within the scope of this article as the impact of the NBN on these industries is socially economically related.

E-Health

The Northern Rivers University Department of Rural Health (NRUDRH) is funded by the Department of Health and Aging. The organisation is jointly operated by the University of Sydney and Southern Cross University in collaboration with the North Coast Area Health Service. With the rollout of the NBN, the advantages envisaged by the NRUDRH include:

- Ability for rural practitioners to consult via video with medical specialists on individual cases with remote parties being able to view procedure in real time.
- High definition video conferencing and video training systems to provide high quality medical education such as live medical procedure viewing for medical students and clinicians.
- Ability for rural and remote areas to participate in training and seminars at the same level as their city counterparts via video conferencing.
- Potential for medical procedures to be done by specialists from any location in the world bringing medical expertise to rural locations.
- Access to a large variety of technical systems hosted at partner Universities.

The advantages envisioned by the NRUDRH are supported by a recent report by the United Nations Broadband Commission (2010). The report "*Broadband: A Platform For Progress*" examined the bandwidth required to support a range of e-health applications. The following range of applications would be supported by a 100Mbps broadband network:

- Stethoscope, visual exams
- Basic cardiology, neurology, emergency room consultations
- Cineo-angiography echocardiograms
- Professional tele-education
- Gait analysis
- Advanced clinical decision support systems
- Tele-presence, Emergency room consultations
- Interactive 3D brain imaging

E-Learning

Southern Cross University (SCU) currently has over 16,000 students, with around 3,000 enrolled as external distance learning students. All units taught at the University have an online presence with many units making extensive use of videoconferencing, video, audio and other online tools to facilitate learning. Limitations of the current available bandwidth are restricting teaching innovations and students' access to the technologies.

SCU's '*Converged Delivery Project*' is currently designing and developing an innovative range of flexible learning and delivery designs that respond to the technical opportunities available. Many of the innovations being trialled would benefit significantly from greater bandwidth so that all students can effectively access and contribute to the learning activities. These innovations include:

- the use of virtual environments, for example virtual legal moot courts, online scenario based learning for health professionals and virtual hotels
- access to high resolution imaging and video facilitating new learning experiences in many subject areas, such as nursing, environmental science, visual arts and music
- effective collaboration with other students in Australia and overseas via web and video conferencing
- improved communications with researchers in other Universities, facilitating more collaborative research projects.
- Improved access to higher bandwidth would enable SCU to demonstrate how regional Australia can provide engaging learning experiences for all students, regardless of how, when and where they study.

The Next Steps in the Eastern Regional Corridor

In July 2010 it was announced that the submission by the Regional Futures Institute of Southern Cross University, had been successful in securing Coffs Harbour as one of the two NSW sites for the next round of the National Broadband Network rollout.

In response to direct requests and requests via the www.gobroadband.org.au website (with more than 100,000 hits) for more information regarding the implications of the NBN rollout for the Coffs Harbour region, Professor Peter Croll presented a seminar series "*Implications of the NBN*" in October 2010.

As part of the seminars consultation with the public and industry was undertaken to gauge demand for the establishment of an e-Demo Centre to promote the understanding and best usage of the NBN. The proposed e-Demo Centre, to be located in Coffs Harbour, will provide local, rural and regional communities and industry with best-practice advice, access to world-class ICT research and high-tech demonstrations. The facility will be staffed by well trained personnel who will provide an unbiased opinion on the benefits of the proposed technical applications and the opportunity for continuous connectivity provided by the NBN.

Summary and conclusion

The need and the process of implementing broadband network into isolated communities and its economic, social and environmental impact for a nation are evident in this paper. Case studies conducted to identify needs and challenges clearly demonstrate that the benefits outweigh the challenges to communities in the region. It is further evident that active and cooperative participation and ownership by multiple stakeholders in implementing government policies and projects are proven implementation strategies for successful government projects. The Eastern Regional Corridor is now prepared for the digital future.

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