Facilitating the Digital Economy – Regional Equity

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This paper

As part of the Centre for Innovative Industry Economic Research Inc (CIIER) commitment to more effective understanding of ICT issues, a portion of all CIIER research revenue is allocated to new research to address emerging concerns. This paper looks at some of the implications of a vastly improved Broadband facility, and some of the mechanisms to ensure that regional equity is effectively achieved. Tasmania has been the focus of this paper, since it is the first location in which these issues will need to be addressed.

The authors of the paper, Roy Pallett, Reg Coutts, and Ian Dennis, have extensive experience in telecommunications, ICT industry development, economic evaluation and measurement, and regional issues.

Introduction

Broadband networks are of dubious value on their own. You cannot justify high speed Internet service as infrastructure if all that happens is improvements in Internet speed. Broadband is much more than the wires and equipment. The justification for infrastructure investment must be new Internet services and applications, more employment opportunities, social and service benefits for people in cities, towns and more remote areas.

It is here that the Government has a real opportunity to reform things under its control and to allow services to develop possibly under new delivery business models as complements to its proposed infrastructure investment.

The good feature of the NBN is that it will take fibre to areas that may simply not have a business driver to connect less populated regions without Government support. But for those people who can get it, i.e. the bulk of Tasmania's population, fibre will enable new Internet applications[i].

People will inevitably find a use for the extra bandwidth promised on NBN's fibre optic network in addition to the existing applications videoconferencing, video-based training and tele-working which will all benefit from faster bandwidth.

The NBN is cited as a means to address some basic social needs[ii], especially in smaller more remote areas, but very little is said about monitoring the social impact of the new technology..

Issues such as how to guarantee and maintain the technical capacity within the communities, how to obtain incremental benefits from each new connection, how to make effective the change for "real" sustainable development, and how to expand the interest in networking must be some of the concerns that require monitoring.

For the bigger companies now circling to make a 'kill', these issues are not of major concern and will not be addressed. They are concerned with profit and technical issues and prefer a central model for obtaining large contracts. There will be greater long term societal gains from a decentralized model using local regions or municipalities to monitor the social and economic impact in their own communities. At this level at times social concerns may be more important than 'fibre' concerns. Much of this paper is based on the notion of a greater involvement of such regions in the new fibre optics revolution.

Background

As reported in "The Age" on Nov 14, 2008, the Cutler review of the national innovation system devoted much of its commentary on societal and government issues. It lists broadband applications as a targeted area; proclaiming that the "Government needs to start with itself" the review argues: "Australia needs to ensure that the relevant applications — specific to local needs — are developed to leverage the infrastructure for

the purpose of government policy."
These would include "applications in open democracy, database and privacy standards for health information, tools to facilitate educational use of broadband, traffic systems and standards, and national collections of information and knowledge".
So far much of the NBN discussion by Tasmanian ICT businesses and Government centres on technical concerns[iii], on the cost of fibre to the premises (FTTP) and other issues of connectivity expansion. The troubles expressed relate mostly to physical, technical, or technological barriers such as bandwidth, improved phone-line or satellite connections, more computer availability and access, better security, and other "wire-related" concerns.
For many others, technical concerns are not the central issue and appear to be easier to solve than determining in advance the social impacts and the likely usage patterns for the new technology.

Many are looking at an open infrastructure to create a market to enable local entrepreneurs to offer their services to stimulate the local economy. The services themselves will lead to improvements in community and social life. For others the value of the fibre optics infrastructure will lie in the ability of local entrepreneurs to create a local demand for enhanced online services. Businesses and the public sector should cooperate in local "smart" partnerships and funding program to create opportunities for local business enterprise.
The Government can fill market gaps and directly increase the value of broadband to consumers. By doing that, it can help make the case for public investment in the infrastructure and also reduce the level of investment required as consumers will be more willing to pay for their own service.

Regional Business Issues

As a starting point, the CIIER developed Tasmanian ICT Industry Roadmap Report 2009, written for TasICT, the Tasmanian ICT Industry Association, as part of an Intelligent Island project, suggested three key factors for the long term success of the ICT Industry in a regional environment. These are the same factors that will affect the new fibre optics rollout:

> ➢ *Sovereignty* - Strategic control vested in the local community and industry

> ➢ *Engagement* - Consultation and involvement at all levels

> ➢ *Synergy* - Maximising critical mass wherever possible

Additional factors that will need to be addressed by businesses and industry sectors are Strategy; Positioning; Focus; Infrastructure; Funding; Critical Mass; and Skills.
Synergy will be developed as the industry grows, but initially the two key factors are Sovereignty and Engagement.

Sovereignty

The Report stated "We consider that, for the same reasons, an industry must include a significant measure of technical and managerial sovereignty in order to be sustainable, that is, it must be capable of controlling its own destiny, and that control includes decisions to invest, conduct research, employ and develop, and the technical and financial capacity to implement such decisions, within the context of a global industry."

The term 'sovereignty' implies the quality or authority of being independent and in charge of the conditions under which you live. Small areas or municipalities need to feel that they have authority, not to restrict trade as suggested by some, but rather to act

responsibly and with integrity in deploying new technology so their communities will reap some benefits.

The recent recession has demonstrated how important the issue of sovereignty can be to businesses in Tasmania, with multi-national and interstate based companies the first to shed staff and to succumb to the international financial crisis. The issue of sovereignty is probably more important for a major infrastructure project than it is for normal business trading. Sovereignty is a very important at the local level where even alienation from the state government can be a concern.

Already some trans-nationals have appeared on the scene in Tasmania and are seeking gain a significant amount of the business generated by the initiative. If they have the greatest control over the resource, this essentially means that Tasmania will continue to be at the end of the consumer chain and therefore less likely to either further develop expertise and experience in, or to become a significant exporter of, broadband based goods and services.

Engagement

Regarding 'Engagement', the Roadmap Report states – "Experience has shown that the most successful industry development programmes have included a significant level of stakeholder engagement, but, conversely, less successful programmes have occurred when such engagement is allowed to be unduly influenced by a limited number of representatives, some of whom may either have vested interests to protect, or who may have a more limited view of what is beneficial to the industry."

The Report also states – "Tasmania has a limited ICT industry, it is small, undercapitalised, and lacks critical skills mass in many areas. But it is not insignificant, and it does have the capacity to grow."

It is argued that this "capacity to grow" could be greater with greater involvement in the Fibre Optics project at the municipal and village level. Concern was expressed in 'The Australian' (17 August 2009) that the initial take-up rate for the 200,000 Tasmanian target premises is likely to be 17%. This is totally unacceptable and Tasmania will gain little from the Project if this is the case. Past President of TasICT, Peter Gartlan is quoted as saying "Even a take-up rate of 20-40% would not make a big enough difference."

This indicates a crying need for engagement at the local level and a move a way from the traditional centralized approach using big companies from outside the state. Tasmanian and other regional ICT companies need to be involved in the generation of content and ideas, rather than being the end of the line customer; we need to be the first inline generator of ideas and content.

Central or Local Control
Fibre optics technology is seen by some as the greatest example of social engineering or forcing people to change since the introduction of the railroad. At that time no one was entirely sure of what demographic and social changes would evolve, but it was more than just about mode of transport. Similarly fibre optics is about more than just communications.

Despite some sceptics, there is a lot of support for government to build a truly universal fibre optics communications infrastructure that will reach out into rural areas and permeate every building, even if that means wireless access for some remote places. However, determining the best way to administer the system locally or state wide has yet to be clearly enunciated.

It is very difficult in NBN literature to find reference to the best business models for the new fibre optics infrastructure. However, it appears likely that one body will control, if not complete the roll-out of the cables throughout the state.

Other literature suggests that more diversity and innovation is generated in small, even competing groups, than happens in larger organizations, so it is worthwhile using the broadband trial to test different operational models. Contrary to claims made in 'The Australian' Higher Education Supplement 10th August 2009, that big cities are the drivers

of innovation, there is enough evidence in Tasmania to show that rural areas are inventive and could play a significant role in innovation based on the fibre optics network. The innovations will be different from those based in cities.

We would suggest that the Australian Government should sanction the Tasmanian rollout to test, not just the technology, but also new community and business models to generate greater local involvement and to encourage different centres of endeavour. Tasmanian regions are defined by telephone codes. The proposal would be to have the roll-out in the 62 phone area (southern Tasmania with nearly half the state's population) as a centralized rollout done by Aurora or similar body, allowing larger companies to compete for business in a region that is used to this type of business activity. For the smaller centres in the 63 and 64 phone areas the aim should be for Aurora or other traditional cable companies to bring the fibre to a central point (node) in each municipality and use the Council's local knowledge to determine who and how the rollout is to be done in their area. This will mean that greater expertise is gained by the local technicians for installation, repairs, and maintenance and greater self reliance in the future and increased job opportunities. It would also enable local groups to become involved in determining how the fibre could best benefit their communities and also have a profound effect on local education and training.

The question is, would it not be preferable for councils to do this and provide a new revenue stream for them but also have the ability to encourage new skill sets in their communities with the aim of creating jobs to retain more young people in the district? This model could provide an opportunity to change or reverse social and employment trends in rural areas. The point of caution is that some municipalities have a poor record in providing traditional services and may need extra assistance to operate a broadband franchise.

The Municipal Model

The local government approach often called Municipal fibre (muni fibre) nodes is not unprecedented[iv]. It used in many US cities and in Sweden, France and Germany to name a few. The difference is that their schemes are funded locally by ratepayers and not by the Federal Government NBN Project. The initial size of the ratepayer pool for funding by municipalities has a profound influence on the success of the venture; something that won't be experienced in Tasmania or in other parts of Australia.

The aspiration for many is to create conditions for Tasmanians to compete with other parts of the country in the area of services, both of access as well as of content, to the benefit of the consumer–user based on the availability of open optical fibre infrastructures in a cost-oriented way. By using local municipalities in this manner provides an unprecedented opportunity for local improvements.

High-bandwidth broadband is widely-recognized a key driver of future economic competitiveness, and is also regarded as a facilitator of political discourse and activity – the most important medium for communication and expression of political ideas since the advent of television[v].

In this context municipal FTTP (fibre to the premises) will rank Australia among the world's most far-sighted states -- by creating an infrastructure asset with a lifetime of decades that is almost endlessly upgradeable and capable of supporting any number of public or private sector communications initiatives. For example, it can:

> Promote private sector competition – by providing a platform for numerous competitors to quickly and inexpensively enter regional markets and offer competing, differentiated broadband services and access.

- ➢
  Municipal franchises would enable Tasmania and other regions to create open, *standards-based Internet platforms for all comers* independent of the entrenched major cable and phone companies with closed network models that preclude competitive access to the networks.
- ➢
  Enhance digital inclusion by facilitating affordable access to this incomparable enabling resource for community groups, students, the elderly, and communities of need.

- ➢ Facilitate economic development by:
  - o
    Enabling small business creation and growth
  - o
    Enabling job creation and the enhanced, multiplied economic activity that accompanies it
  - o
    Supporting businesses with very high bandwidth needs, such as digital media and software development
  - o
    Attracting and retaining businesses of all sizes
  - o
    Enabling workforce education
  - o
    Enabling tele-work and distributed work
  - o
    Stimulating economic activity
  - o
    Enhancing Australia's reputation for visionary and pioneering projects
  - o
    Promoting major development initiatives
  - o
    Provide a highly-reliable, resilient backbone for existing and future wireless initiatives—improving performance and capacity through fibre "backhaul."
  - o
    Support current and future public safety and communications systems—both saving unending telephony costs and simultaneously providing a higher-quality, higher capacity, more reliable, more reliable service for law enforcement, fire, emergency management, and public health.
  - o
    Providing opportunities for local input into the deployment of the technology and to develop new products and services.

The success of a broadband project has to be evaluated on its objectives and not necessarily on its financial profitability. A private firm requires profits quickly to invest but Government appears to have quite different views and expectations from its broadband infrastructure. Only if an investment is pursued to spur economic activity should it be judged purely on financial terms. Otherwise, it must be evaluated achieving its goals (e.g. increase awareness, encourage innovation, open market to outsiders etc). Broadband is only a small part of the Information Society, however, its impact to inter-sectoral economic activity and growth will be so immense as it is almost impossible today to accurately estimate and measure.
Adoption rates and benefits are almost impossible to forecast, especially when

innovation provides a boost and creates an economic and social ecosystem that we will all take for granted in a few years when the benefits associated with social inclusion, and the right of people for equal opportunities are assessed. Municipalities can be the best way to achieve these goals.

The attitude expressed by Tasmanian Premier David Bartlett in '*The Australian*' (17/08/2009) is reassuring for the short and medium term future of the NBN Project. "I'm not making predictions about what the initial take-up will be and in lots of ways it doesn't matter. .... It's small minded to consider this project only in terms of who might get a faster Internet out of it and when they may take that up."

Similarly a spokesman for Federal Communications Minister, Senator Stephen Conroy said it was inappropriate to reveal take-up projections because a business model was still the subject of negotiations with the Tasmanian Government.

In this context the Muni-fibre, local government franchise model is apposite.

The Franchise Model

As far as municipalities are concerned, they will be receiving dark fibre. Additional construction and installation of fibre optic cable and connection to telecommunications equipment will be necessary to initiate use of the fibre. The long term aim of the municipalities must be the delivery the greatest variety of broadband services to the largest number of consumers within the shortest period of time. Any contracts let within the municipality must emphasise this aim.

If the cabling is only 'fibre to the curb' rather than 'fibre to the home' connections there may be a set of challenges that:

➢ on the positive side offers local contractors the ability to develop new skills and a new source of income;

➢ may mean that the additional cost to connect to the house is too high for many and that they will not make the connections until they can either afford it or find the reason for connecting so overwhelming that they cannot refuse.

It may also end up like the gas reticulation network, with a low connection rate subsidising the connections and the hardware that goes with it, remembering that of the total cost 70% will be for hardware and 30% for cabling.

The Government paper "Fibre-to-the-Premises In Greenfield Estates"[vi] Consultation Paper 29th May 2009, suggests the Federal Government is considering working with local municipalities under some circumstances. This may mean that they could consider extending this involvement at least for a municipal trial to test the franchise notion for the 63 and 64 regions.

For a preliminary business plan, a municipal franchise or "open access" model will offer the best balance of technology advancement, infrastructure, future proofing, and encouragement for local private sector innovation. Specifically:

The model is likely to stimulate private efforts to offer diverse, cost-competitive services to residents and businesses.

The model is practical and entails less political risk as well as less financial risk. If one municipality fails to deliver it will have less impact on the whole network than would a central failure.

This strategy also fits well with the technical model. It suggests that robust fibre architecture can be managed and maintained by the municipality with local, state or national service providers leasing capacity on the fibre and contributing to the municipality's revenue.

With NBN, the municipality franchisee/wholesale model could mean a relatively smaller

capital investment and for maintenance is likely to generate enough revenue to meet its own annual expenses. However, no empirical data exists that demonstrates that a municipality can expect a guaranteed level of revenue.

Enabling municipalities in the trial area, i.e. the 63 and 64 phone areas, to act as franchisees will eventually mean the payment of a franchise fee, usually based on a percentage of the municipality's gross receipts for broadband services sold in that area. There will need to be a check on legislation and guidelines that would govern local government franchise authority.

Local government would make the decision as to whether the cable would be delivered below or above ground. Once the fibre arrives at a site it then becomes a matter for the premises owner to decide what equipment to use within the premises. Because there is a central node in each council area it should be possible for councils to bill users in there area or to earn revenue from the traffic generated through the fibre system.

Specialist Consulting Services

From their Web promotion, most consulting firms concentrate on providing technical consulting services to manufacturers and installers, but few provide consulting services to customer organizations to improve their services.

Private industry Technical Support Consultants may be needed for municipalities to offer advice for the setting up phase with individuals and businesses for the most efficient, cost effective usage of the technology within each municipality. The consultants will collect data to evaluate each phase of the implementation of the Project.

Consultants could offer a fibre optics consulting service based on providing a completely objective assessment of a municipality's current and future fibre optics needs. This could include domestic and business consulting within the whole municipality or within selected centres. Consultants should have no ties to any service provider, so that clients can be confident of getting the best advice to help them make the right decisions.

CIIER and Whitehorse have jointly established such a facility, further information may be obtained by contacting any of the authors, or by contacting us by email at admin@whitehorsestrategic.com.

The Next Step

Whilst all regional areas share some characteristics, each is unique, and each has its own particular needs and aspirations. A one-size-fits-all approach is therefore not likely to deliver a best-case result. For this reason alone, using the Tasmanian 63 and 64 phone districts to test different municipality models, including municipal franchises, in small and large areas will provide a sound basis for the effective rollout of NBN fibre optics cables in mainland states.

We would recommend that Pilot studies be undertaken in a number of selected regional locations to establish a framework and proto-business case for each. These pilot studies would be unlikely to cost more than $40-50,000 per region, and could be funded by NBN Co, by Government, by the regions concerned through the local councils, or by a combination of all three.

About the Authors

Roy Pallett has had extensive experience in education and in the Information Technology industry. After 15 years as a teacher he was promoted to the position of Supervisor of Science for the Education Department of Tasmania with state-wide responsibility for science education, facilities and equipment manufacturing in the Science Equipment Centre. He served on state and national curriculum committees and was an official Australian delegate to the UNESCO Science Education Conference in Bangalore, India in 1986.

After 13 years as Supervisor of Science he left the Education Department and became managing director of the EIC Computer Training Centre for 5 years. He then became founding and managing director of Global Online Marketing (initially *On Tasmania* P/L) for 11 years, with responsibility for management and marketing.

Roy has a strong management background and has been involved in a range of different marketing campaigns, both in politics and business. Roy has lectured at the University of Tasmania and has conducted numerous courses for adult learners. He has a strong course writing background and a sound knowledge of survey procedures and of project management. With his sound knowledge of the state's ICT industry, in 2008-2009 he was engaged by TasICT as the Project Officer for the Tasmanian ICT Industry Survey, working with CIIER

He is a Past President of the Rotary Club of Hobart and was a board member of Tas ICT (Tasmanian Information Technology Telecommunication Industry Development Association) for 11 years serving a President from 2002-2004.

Reg Coutts is the owner and director of Coutts Communications Pty Ltd (www.couttscommunications.com) which provides strategic advice to government and industry both in Australia and overseas, and is Professor Emeritus of the University of Adelaide. Until 2003, Reg Coutts was Professor of Telecommunications at the University of Adelaide for ten years where he built the industry sponsored Centre CTIN. Reg came to the University in 1993 having had seventeen years experience with Telstra in Melbourne including research and business management.

Reg Coutts was a member of the Expert Panel for the Australian National Broadband Network tender, and is a member of the Australian Computer Society NBN Task-Force. The breadth and scope of his experience across the industry, government policy, legal disputation, research and technical innovation domains have given him management experience together with the acquisition of interpersonal and political skills very useful in isolating areas of disputation and building consensus. Professor Reg Coutts has developed extensive contacts within the Australian and International industry, with regulators and government departments, and brings to the table expertise on government policies, grants and the necessary linkages to leverage business development whether as an investor, operator, new entrant, vendor or groups establishing an innovation vehicle.

He also applies his expert knowledge to the judiciary as an expert witness, whilst staying abreast of the telecommunication industry through applied research and consultancy services.

Reg holds a BSc, BE (Hons) and PhD degrees from the University of Adelaide and is a Fellow of the Australian Institute of Engineers (IEAust) and a Senior Member of the American Institute of Electrical and Electronic Engineering (SMIEEE), a Fellow of the Australian Computer Society (FACS) and has recently completed the Australian Institute of Company Directors (AICD) course.

Ian Dennis is Chairman of the Centre for Innovative Industry Economic Research Inc and of Whitehorse Strategic Group Limited, a consulting company specialising in IT and innovative industry policy and strategy.

Ian is a member of the ICT Sector Advisory Committee of Innovation and Business Skills Australia (IBSA); listed on the UN Roster of Experts in Technical Consultancy Services; is a United Nations approved International Trade consultant (UNCTAD/GATT) International Trade Centre; and a Registered Expert in Information Technology, Research Directorate DGXII, European Commission. He is "Gateway" accredited by the Victorian and Australian Governments to conduct evaluations and reviews of major Government projects.
He was awarded an Australian Design Award for software in 1987 and was made a Life Member of the Software and Services Industry Federation in 1989 for his services to industry. He has served on the Boards of IT industry trade bodies (AIIA, ASHA, SSIFA), for longer than any other Australian, and is the only person to have been elected Chairman of two of these industry associations. He is currently a National Director of the Australian Computer Society, immediate past Chairman of ACS Victoria, and a member of the ACS NBN Task-Force.
From 1995 to 1997 Ian developed and implemented the Victorian Government Ballarat IT2010 Industry development strategy. From 1995, he assisted in the Australian participation in the EU ESPRIT Fourth Framework. He was a Founder of the ASOCIO Asia-Pacific Regional IT trade association and a prime mover in gaining Australian membership of the World Information Technology Services Association.
Since 2000 Ian has lead Whitehorse and CIIER teams conducting studies on Public Sector ICT Research and Development (R&D) an eLearning Industry Survey and Report for Multimedia Victoria; the economic and operational implications of outsourcing for the Australian Computer Society; ICT industry studies for the Tasmanian and NSW Governments; inwards investment decision processes for the Victorian Department of Infrastructure; statistical profile of the Victorian ICT Industry for the Department of Treasury; the "ICT Skills Snapshot" evaluation and analysis of ICT employment trends for MMV, a major review of the Australian Software Industry for the Federal Government (DCITA, and led a number of CIIER project teams including the ongoing ICT Skills Forecasting project, in-depth surveys of ICT in NT and Tasmania, and various studies for the Australian Computer Society.

About CIIER

CIIER is an Asia-Pacific Centre, formed to create a facility, repository, and think-tank for consistent, competently researched, up-to-date, and analysed data on employment, markets, revenue streams, R&D, processes and management methods, specifically focused on high technology, innovative, and emerging industries. CIIER produces the 'Top 250' ICT Industry Research Reports, widely recognised as a leading creditable indicator of trends in the Australian ICT industry, and conducts detailed analysis and reporting on Information Technology, and other high technology industries.
CIIER and Whitehorse reports may be downloaded from the publications tab at
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[i] http://www.computerweekly.com/Articles/2008/07/18/231531/what-will-be-the-impact-of-bts-fibre-optic-network.htm

[ii] http://www.isoc.org/inet99/proceedings/3i/3i_2.htm

[iii] http://www.isoc.org/inet99/proceedings/3i/3i_2.htm

[iv] http://www.fiberevolution.com/muni_fiber/index.html

[v] http://www.sfgov.org/site/uploadedfiles/dtis/tech_connect/SFFibreFeasibility.pdf

[vi] www.tomw.net.au/blog/2009/05/fibre-to-premises-in-greenfield-estates.html