

# A CEDA Research Perspective – The State of Play on Broadband

A Submission to the Australian Government on Broadband Policy

Comments on issues raised in the Discussion Paper, *National Broadband Network: Regulatory Reform for 21st Century Broadband*, April 2009

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## Summary

In this submission, CEDA Research comments on the current state of play in the proposed broadband network and addresses in particular the following issues raised by the government's Discussion Paper: "*National Broadband Network: Regulatory Reform for 21st Century Broadband*". These issues are:

- the telecommunications competitive framework (Chapter 3)
- the separation arrangements for Telstra – vertical, horizontal (Chapter 3)
- spectrum allocation (Chapter 3)
- the bigger picture rapid technological change and the difficulty of regulatory frameworks to keep pace (Chapter 5)

One of the major lessons, perhaps *the* lesson, learned across the reform experience of many countries is that the economic structure of an industry is the critical issue in terms of delivering competitive and high quality services to customers, and value for money. **Regulatory reform cannot correct what the structure gets wrong.** The first task of government is thus to get the structure right or as pro-competitive as possible, and THEN to implement a suitable regulatory framework to deal with residual monopoly and related competition issues that arise because of remaining monopoly elements.

In this sense then, the Government's Discussion Paper is "putting the regulatory cart before the structural horse". It is constructing a regulatory platform for an NBN without careful and objective consideration of the dynamic developments within telecommunications technologies – the "Four Doors" of telecommunications competition (copper, wireless, HFC cable and fibre). Placing the NBN in government ownership, probably until 2023, also creates substantial and immediate conflicts of interest, with government being both owner and regulator of an entity that affects all telecommunications entities.

In the case of telecommunications, and particularly broadband, structural issues keep changing as new technology unfolds – usually creating competitive tension where it is allowed under prior regulatory arrangements. Over the last three decades there has been far more potential competition than has been allowed by regulation – the regulatory framework has been out of sync with technology. A competitive and dynamic structure not unduly restricted by government or regulation will best provide customers with the devices and platforms to meet their needs.

### **More centralised spending and regulation?**

The Australian Government has proposed government net spending of up to \$43 billion on the rollout of a centralised fibre optic network, eventually to deliver the laudable goal of very high speed digital connectivity across Australia. The public sector network is envisaged as providing access to broadband for a range of service providers, and there is to be a strengthening of the regulatory powers of the ACCC. To quote Minister Conroy, “This new super fast National Broadband Network, built in partnership with private sector, will be the single largest nation building infrastructure project in Australian history”.

### **An alternative and revenue-positive model**

This paper suggests a more sustainable, far cheaper, more competitive and faster pathway to the agreed goal of broad access to high speed broadband.

The key to policy in broadband – as in other industries and particularly infrastructure – is to get the structure right first, THEN consider what is needed by way of regulatory policies to create social and economic opportunities for all in the community.

The strategy is based around competitive usage of existing infrastructure and emerging technologies, and the facilitation of a sound private investment structure within a competitive and less regulated framework. The interdependencies between the various platforms (wired, wireless, fibre and cable) and the expanding variety of devices and platforms consumers use, suggests the sector is far too complex to depend on a government network or regulatory processes. Technical developments in each of the “Four Doors” of broadband services delivery (outlined below on pp 7–8), even over the last six months, emphatically support that conclusion. The lessons of the last three decades are all too clear – Australia needs more infrastructure competition and less central direction.

A private sector expansion of fibre optic networks reflective of the demands and local broadband capacities and opportunities can be financed privately, once the framework is clear, given the value customers see in the various information flows, devices and services. The Federal Government does not need to invest \$43 billion to establish the new network.

One of these opportunities is the new access to frequencies made redundant by the closure of analogue TV. There would be *positive* revenue from the auction of these redundant frequency bands to mobile broadband companies. Some of this revenue – of the order of \$2 billion to \$5 billion – could be used to fund backhaul fibre pipes to regions where there are currently “black holes” and a lack of commercial viability.

This would mean that for many more people the USB “dongle” and mobile phones will become doorways to fast broadband.<sup>1</sup> This is already happening but will be greatly intensified by the advent of expanded wireless frequencies after the auction of new frequency ranges.

### **Promoting infrastructure competition remains the key**

The key is to create real competition in the sector by opening up the “Four Doors” of digital competition (wired, wireless, HFC cable and fibre optic), and with wholly private sector ownership of physical assets.

If the government was to do nothing in terms of new public investment in telecommunications, other than provide a predictable policy and regulatory environment, the natural evolution of broadband in Australia would probably be along the following lines.

1. It would lead to dramatic increases in high speed connectivity and increases in revenue to the government (through frequency auctions).
2. Faster and more extensive broadband would be available through HFC cable, first through Telstra/Foxtel and then potentially Optus and other cable owners who can apply DOCSIS 3 which allows speeds of 100+Mbps to 2.5 million+ premises, as already announced by Telstra.
3. The extension of ADSL2+ and VDSL on existing copper connections and expanding fibre linkages to exchanges and nodes would offer substantially higher speeds to the premises via VDSL (50Mbps and higher). This would satisfy a substantial part of the market serviced by a wide range of broadband providers.
4. The evolution in wireless and mobile phones via NextG/3G to 4G and LTE (Long Term Evolution) to multiples of current speeds, delivered to mobile phones and USB dongle keys or via communications cards for laptops and PCs. The government will be able to deliver in excess of its mooted 12Mbps promise via mobile phones for about 98 per cent of the community. This expanding private sector range of wireless, copper and cable options should make the expansion of the fibre network a graduated and market-based process. The “Four Doors” are complementary to fast broadband service.

### **The Fibre Optic Network – an alternative model**

However, there is an alternative model to the Federal Government’s intention to rollout a fibre optic network through Australia. Figure 1 shows a schematic of this alternative.

To facilitate expansion of demand-driven fibre optic connectivity to the node or premise, a new privately owned entity (called NBNco, for example) would be formed.<sup>2</sup> Telstra would have the choice to continue as is (ie no further structural or

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<sup>1</sup> A dongle is a small key or broadband wireless adaptor that connects to a computer, phone or PDA via a USB port or other device.

<sup>2</sup> The governmental spur to this could be twofold – loan guarantees and/or grants to the initial \$2 NBNco to fund fibre and backhaul connections and attachments to areas that are deemed important, but are not yet commercial. By creating the private entity up front, and contracting to it for socially

other separation) or take significant equity in NBNco. If Telstra decides to take equity in NBNco, the government would allow this in exchange for two commitments:

1. Telstra would fold into NBNco the existing copper network and associated exchanges needed for the evolution from copper to an integrated copper/fibre optic Australian network. Other fibre assets would be folded in, including those funded by government (eg backhaul for black spots).
2. There would be required separation of Telstra's cable network assets and Foxtel into an independent cable corporation, as in many overseas countries. This company would be listed separately and compete for digital end-user customers with other broadband service providers and free-to-air and IPTV companies, for example.
3. Optus could also fold in fibre and other assets to NBNco in exchange for equity, and would also be required to divest HFC cable assets.
4. Other entities could subscribe capital and valued assets to NBNco, which would remain a wholesale supplier of fibre optic and copper-based services. Telstra, Optus and subsequent investors would be shareholders in NBNco, but the Telstra retail business would be a principal asset of NBNco.
5. In effect, digital communications companies could operate in up to three of the four broadband doors – but not both cable and fibre. This separation of copper/fibre and HFC cable is the real and new source of competitive tension needed by the Australian digital economy.
6. Other service providers would deliver internet and telephony services using the copper, fibre, cable and wireless assets.

Other suggested arrangements are:

7. NBNco would be a wholesaler of fibre optic access to service providers at posted prices requiring ACCC approval if it determines NBNco has significant market power under the Trade Practices Act 1974.
8. NBNco would not be vertically separated into a network and retail business; however Telstra shareholders would receive shares in the new NBNco and cable companies based on independent market valuations of assets folded in by Telstra and other parties.
9. There is significant benefit to be gained from maintaining a vertically integrated NBNco, particularly during the early evolution of an efficient network from copper to fibre optics. The entity responsible for the network should also have a market presence in retail telecommunications, not least to bring customer discipline to the fore, but also to ensure smooth functioning of the transitional technologies. Technical experts are very clear on this matter.
10. The network owner NBNco will face intense competition in retail services from wireless and cable businesses. Vertical separation within one supplier is a second order concern relative to achieving competition across and within the "Four Digital Doors".

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worthwhile fibre connections (to deal with 'black holes', the government avoids the subsequent privatization requirements – which in any case look implausibly far into the future).

11. NBNco would raise capital and issue shares in exchange for access to, or ownership of, other assets of value to the network (eg existing fibre systems).
12. The ACCC's role would be to prevent abuse of market power, as per the Trade Practices Act 1974. It is likely that because of increased competition, the ACCC would have less need to act (eg in relation to the price of wholesale services in metropolitan regions). In areas with more limited access to wireless or fibre, or less cable competition, there may be a more significant role for ACCC.
13. NBNco and the new cable company could have access to a government guarantee for initial debt issuance to an agreed ceiling, where there is need for subsidy; for example, to extend backhaul to areas where private demand is likely to be inadequate in the short run.
14. What must be avoided is a new regulatory structure and rules of engagement that overcompensates for the challenging economics of NBNco by penalising competition across the other three doors. The establishment of a new fibre monopoly with a heavy regulatory framework would be disastrous for competition and service delivery to customers.

### **Funding – creating new sources of revenue**

The government is justified in extending current funding for backhaul to certain areas that will otherwise face capacity or speed constraints. As recommended in *Growth 60: Australia's Broadband Future – Four doors to digital competition* (CEDA, December 2008), some of the committed \$4.7 billion could be spent on areas where backhaul is inadequate. This more focused approach to public sector investment would complement private investment in wireless technologies.

Given growing deficit concerns, the Government could reduce the deficit and raise substantial funds in 2010 by auctioning analogue television and other frequency ranges made redundant by digital technologies. Comprehensive studies confirm these redundant frequency bands are valued at many billions of dollars for mobile phone and other telecommunications entities. This would create a positive government revenue model for broadband evolution, in contrast to the Government's latest plans.

Predicted expanded use of wireless technologies for digital service delivery will affect demand for wired or fibre-based services, including increased need for backhaul. Investors will be attracted given the value the community places on services delivered through broadband, but those same investors require a predictable, commercial environment within a sound market structure – not a political model managed by government and regulators.

The cost of capital either increases or becomes prohibitive as the level of political interference and regulatory uncertainty increases; thus there is a major need for early convergence on a sound and stable model for the sector. A temporary resort to the "PMG"-style, or heavily-regulated model will reduce access to private capital. Any structure based on regulation will increase perceptions of risk and reduce the flow of investment – as in last three decades.

## Developments since December 2008

### The “Four Doors” Revisited

Much has happened in both broadband policy and the economy since December last year when CEDA released *Australia’s Broadband Future: Four doors to greater competition* (2008).

The first chapter of that report, “The ‘Four Digital Doors’ – A CEDA Research perspective on digital competition” set out a pro-competitive dynamic model of infrastructure competition. It outlined a policy and regulatory framework described as the “Four Digital Doors” to deliver competitive digital information services:

- Copper (ADSL, VDSL): 1 wholesale supplier, multiple retail providers and regulated access charges from ACCC
- Coaxial cable (HFC): 2 + wholesale suppliers, 1 urban retail service, plus some other opportunities (eg ACT, Tasmania, private add-ons)
- Fibre (FTTN-P): Multiple suppliers, potentially with one dominant government or private regulated player
- Wireless (mobiles, 3G 4G, Long Term Evolution – LTE), satellite and Wimax): 3+ suppliers.

These ideas were discussed favourably at a December 2008 Conference in Sydney, along with other contributions from industry, government (including the ACCC) and independent commentators.

### Important policy developments

There have been several important developments on the policy side in the last six months:

- Telstra’s elimination from the NBN tender list
- subsequent negative Expert Panel evaluation of all tenders for the proposed NBN
- withdrawal by the Government of the NBN RFT
- announcement by the Government in April 2009 of a new policy under which it would spend up to \$43 billion rolling out fibre cable to create a new high speed NBN<sup>3</sup>
- many institutional changes, including the Telstra Chairman, CEO and senior management team

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<sup>3</sup> The Rudd Government announced on 7 April, 2009, “the establishment of a new company to build and operate a new super fast National Broadband Network. This new super fast National Broadband Network, built in partnership with private sector, will be the single largest nation building infrastructure project in Australian history. This new National Broadband Network will:

- Connect 90 percent of all Australian homes, schools and workplaces with broadband services with speeds up to 100 megabits per second 100 times faster than those currently used by many households and businesses
- Connect all other premises in Australia with next generation wireless and satellite technologies that will deliver broadband speeds of 12 megabits per second

Directly support up to 25,000 local jobs every year, on average, over the 8 year life of the project.”

- ACCC approval for merger of Hutchison and Vodaphone mobiles, now in competition with Telstra and Optus (Singtel)
- a review of regulatory policy on telecommunications and an intention to privatise the new NBN as an independent wholesaler of broadband access, five years after completion (suggested as eight years from now, indicating privatisation in 2023!). The new broadband policy aims to deliver 100Mbps to 90 per cent of Australian homes, schools and workplaces.

### **Technical developments in each of the Four Doors**

On the technical side there have been a number of major developments.

- Cable:
  - Telstra announced a cable modem speed upgrade (to DOCSIS3) to 100+ Mbps, starting in Melbourne, for 2.5+ million homes with access to HFC cable – creating much needed supply side competitive tension in relation to broadband.
  - The capacity of HFC cable owners to provide high speed broadband options to customers using current cables is one of the “Doors” that needs to swing open as part of genuinely smart and pro-competitive broadband policy. Existing cable infrastructure has enormous capacity and potential speed under DOCSIS3 and emerging applications.<sup>4</sup>
- Wireless:
  - Wireless (or mobiles) has a Joker up the sleeve that will have an impact on the economic viability of the NBN. The imminent release of the frequencies now tied up by analogue television and other services will, when allocated (eg by auction) generate a next generation speed for mobile phones (4G or Long Term Evolution) which could be ready in 2010. 4G can deliver a very fast and portable platform for mobile phones and USB dongles for PCs and laptops.
  - The speed of broadband via 4G should exceed current ADSL2+ and in some cases VDSL speeds (eg 50+ Mbps). These wireless developments will satisfy a large part of the market where fibre is too expensive or unfeasible.
  - Convenient mobile phone platforms – enhanced by the success of NextG and 3G networks – raise the prospect of wireless delivering speeds that exceed those required under the Government’s new broadband policy.
- Copper
  - Copper is not dead as a fast broadband option.
  - Very high speed DSL – or VDSL – will transmit data in the 10Mbps to 100Mbps range (standards are evolving as new technology and software for suppressing interference improves). VDSL is useful over short distances, usually between 300 and 1500 meters of twisted pair copper wire, with speed diminishing with distance.

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<sup>4</sup> Virgin Media in the UK is testing 200Mbps internet, full HD broadband content and 3D delivered via DOCSIS 3.0

There is no dispute that fibre beats all competitors, thanks to the speed of light pulses on fibre optic cables. It is the 'Formula One' of telecommunications and broadband.

However, most customers who have recently upgraded to ADSL2+ (or 3G) connections have VDSL and cable speed offerings of up to or in excess of 100Mbps (or 4G for mobiles), without the proposed rollout of fibre optic cable. A BMW may suffice, even if it is no Ferrari or Formula One candidate!

This more graduated strategy built around optimising competition across all digital platforms means the Government can avoid digging up the streets yet again – streets that already are replete with grossly underused cables and wires.

These developments question the wisdom of the Government mandating a force-feeding of fibre when the other three "Doors" of broadband are available at increasingly faster speeds.

### **Learning from past policy failure**

What Australia needs now is not an expensive public sector rollout and regulatory expansion, but facilitation of the potential that literally lurks beneath the surface and in the skies.

The Government's desire to bring Australia to the forefront of broadband quality, to deliver the economic and social benefits that flow from high speed broadband systems, is a laudable aim.

However, the best way to meet this objective is to depart from all previous government policies and structure all four modes of broadband delivery (copper, HFC cable, wireless and fibre) to deliver customer competition between and within all forms of telecommunications infrastructure.

Policy failure in two respects has plagued telecommunications in Australia: firstly, enabling one dominant one player in all modes; and secondly, creating an uncertain regulatory environment for the telecommunications industry and, until recently, a mixed ownership model for Telstra. The government culture, a hangover from PMG days, has taken a long time to be replaced by a pro-competitive corporate culture.

A particular policy failure was allowing Telstra to own the HFC cable that should have been delivering competitive fast broadband in competition<sup>5</sup> to the "last mile" for more than a decade. This decision, against ACCC advice, has prevented a level of broadband competition in Australia seen in other countries. Subsequent and repeated standoffs between the ACCC and Telstra have not been helped by these poor structural decisions. There is a chance to clear the decks and gain a system in which all "Four Doors" are subject to competition.

While wireless or mobile phone platforms are competitive and starting to bring broadband competition, the benefit to customers is modest relative to what could have been delivered under horizontal separation of HFC cable and copper/fibre. Before the Government 'invests' tens of billions in a new rollout of fibre, it should get the policy right and deliver the full potential from existing broadband assets.

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<sup>5</sup> The competitor to Telstra cable, Optus, was successfully beaten off by aggressive follow-on tactics by Telstra which led both to duplication of much of the cable network and to a failure of the competitor network to offer either successful cable TV or broadband.



## **Market value of an NBN**

The market value of a fibre optic NBN is hard to assess. It may easily be negative given the cost of rollout and the scope for provision of competitive services via the other “Three Doors” of competitive broadband provision. To spend up to \$43 billion of community resources on an NBN defies sound economics in an era as challenging as the once faced in 2009. The Government should not improve its economics by limiting competition; particularly in view of its plan to sell the NBN back to the private sector in five years time.

What must be avoided is the establishment of a new regulatory structure and rules of engagement that overcompensate for challenging economics by penalising competition through the other “Three Doors”. The establishment of a new fibre monopoly with a heavy regulatory framework would be disastrous for competition and service delivery to customers. State and federal governments should not use their powers to force procurement of services from the NBN network.

Private parties should be free to invest in broadband of all kinds within a competitive framework.

## **Emerging developments**

Emerging developments include:

- new self-financing technology possibilities
- the flow on in frequency space of new revenue positive wireless options in broadband competition, due to auctioning of old TV and other redundant frequency ranges (eg as bodies such as the CFA belatedly go digital).

The value to be obtained from the new networks will mainly be by customers and content providers. Competition across service providers will – or should be – intense. Just as many great dot.com services made no money but were and still are fantastic and often free for customers, so too the investors in broadband may be losers. But that does not mean government needs to run the shop, or be the main or sole investor. There is also a need for caution in allocating frequency bands to the NBN, since that puts the NBN in the wireless and/or mobile phones business.

Multitudes of submissions have been made to government committees, and now more are called for, not least on broadband regulation. But the issue of competitive infrastructure policies and options seems to have been lost in the excitement over failed tenders, departing executives and policy slanging matches between regulatory bodies, service providers and interest groups.

Many opportunities are now forthcoming via broadband. The case has not been made for the Government to roll out tens of billions of dollars in the highly dynamic field of telecommunications – including fibre optics. While some Australians may live remotely and receive poor telecommunications services, wireless and satellite technologies have never been cheaper or more powerful. Residual needs for assistance are much less now than even two years ago. These arguments and associated evidence suggest broadband is not an area with a strong case for subsidy; indeed, many are revealing they barely use the capacity at their finger tips or doorways. With frequency auctions factored in, broadband should really be budget positive for the Government.

Figure 1: An Alternative Model for Broadband Competition

