

# Discussion Paper

## Fixed Broadband – Australia’s Fifth Utility ?

*Past competition policies, the hopes of the mid 90’s and the situations in other countries can often be heard echoing in the discussion of Australia’s broadband future. But to make progress, we need a simple and shared view of what Australian broadband infrastructure might be in the near future, plus a practical framework that is acceptable to the major players in today’s business context.*

*This paper discusses the context within which the national broadband network will be built. It suggests that the combination of a limited set of objectives and a “utility” approach will allow earlier delivery of the network, greater competition at higher layers and faster development of a “networked economy” for Australia. A “utility approach” is one with more emphasis on shared public utility aspects and less on competition at the network layer.*

*Pay TV development in other countries has often set the stage for broadband network competition, but this has not been the case in Australia. Consumers, the industry and the Commonwealth would all benefit if we now skip this stage of industry development in favour of quickly reaching the end game.*

*This proposal is based on how business models are changing here and overseas and how this impacts the business cases of the major players. The business case for the Commonwealth is national productivity improvement from a “networked economy” where everybody and every organisation can readily interact and transact business. But the very transparency that helps this business case reduces the business case for network operators and network service providers. Consequently their business case depends on retention of existing customers and revenues plus operational savings for the network operator.*

*Broadband brings a seismic shift in the relationship between networks and the services that are delivered over them. Incumbent operators around the world are understandable cautious about embracing models that have considerable risk to even maintaining existing revenues and earnings.*

*None-the less, a positive outcome is possible and we will know that we have succeeded if little changes other than the deployment of a broadband network and having another utility that we all value, but can take for granted.*

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March 2008

### 1. Context

To be a little more specific about appropriate goals for “the National Broadband Network”, I suggest that we should be seeking to provide infrastructure for a “networked economy” and, as an element of that, a communications industry that is able to provide high speed connectivity over fixed broadband infrastructure in most parts of Australia. I do not see encouraging communications competition as a goal, but as a means to reach goals where competition occurs naturally.

In moving to “the National Broadband Network”, we are asking network operators to accept greater competition through reduced vertical integration around today’s generation of services (telephony, Pay TV and ISP) and even greater competition over time from “applications” accessible through a network that is fast, two way (relatively symmetrical), “always-on” and able to deliver tomorrows’ generation of

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applications without interference or further tolls. Moving away from vertical integration to the open models that broadband encourages will however force the industry to evolve quite significantly. Indeed, the moving of tectonic plates to create new continents might be a more fitting metaphor.

## **The Relationship between Networks, Services and Applications**

Early networks were indistinguishable from the application they supported – the early telephone networks could do nothing else and you couldn't conceive of making a telephone call without a telephone network.

Telephony began to be described as a service as the capabilities and features became less tightly integrated into a particular network and available over a range of network generations and technologies. The capability just kept being provided month after month – as a service. Telephony, Pay TV and ISP “services” today have some degree of integration with the networks that deliver them but this is changing.

Telephony (for example) is today increasingly described as an application because it can be delivered over any broadband network without any involvement of the network provider. Skype is a well known example where a “computer application” on my PC is part of a voice application delivered over networks rather than being built into them. The application in my PC communicates with a server somewhere in the world and I talk, but without the network

Our starting point in Australia is not favourable – the forces are not lined up where we want the plates to crack apart. We have:

- significant legacies of the monopoly telephony era – Telstra as the incumbent prior to reregulation has the majority of fixed network infrastructure, more fixed customers and still enjoys high revenues and margins for voice (and understandably doesn't choose to give any of these up)
- legacies from the Pay TV wars ( a small number of providers with long term content relationships to mention just one aspect).
- relatively limited competition in fixed access networks, unlike many other countries. We simply started too late with Pay TV and no one can make a good business case for widespread terrestrial deployment today.

Getting to a model with limited vertical integration will be challenging given that the incumbent, competitors and Pay TV providers all have much to lose and not a lot to gain (more on this later). Despite building pressures, we shouldn't expect smooth movement unless today's major players can be assured that it will only be a series of jolts rather than an earthquake and that they will still retain their assets, albeit on different plates.

If Australia just gets fixed broadband earlier and in more places we will have done well – and we are unlikely to get even this much if we attempt too many other changes.

## **2. (Modern) Wired Broadband is Naturally a Utility**

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Most Australian homes and businesses are served by four valued utilities – water, gas, sewerage and electricity. A broadband pipe to the home should be the fifth. For each utility we want a nice big pipe – providing adequate capacity while adding or subtracting as little as possible. We know intuitively that the costs of duplicating any one of these pipes will double the costs but add very little extra revenue potential.

This is a different vision to that of the 1990's. Many then envisaged that multiple networks to urban homes would each deliver competing "triple play" offers of telephony, pay TV and the Internet. A few networks were indeed built in different parts of Australia, but the economics haven't stacked up for wide spread deployment of even one wholly new network. There are simply not sufficient new revenues.

In competitive markets like Paris a triple play service costs just one Euro per day when delivered via DSL over an existing telephone service – less than the cost of a cup of coffee. This alone is not enough to justify building even one new network, and the new applications that might be not tied to the network. For this reason, and pending competition from wireless networks, the business case is worsening rather than getting better if judged 1990's style from a network owner's perspective.

Incumbents around the world don't see enough new revenue and must rely on a combination of operational savings, existing revenue protection, and regulated access fees. Competitors only have a good business case if they can take away existing revenues from the incumbent and get low enough access prices.

Competition does occur in markets where there are two network owners each, with significant revenues and customer bases (e.g. most of the USA where Cable TV and Telcos increasingly compete). Rationalising to a single network is still likely to occur, but not generally in this generation of competition.

But in Australia both sides are not equal and we do not start with competing networks of major scale. Each side sees the other giving something up to go forward. This has led to stalemate rather than progress. That "competition will drive investment and growth" is no longer true for fixed broadband in Australia. Now we need investment to either artificially sustain competition or to move to a model with less emphasis on competition and more on public utility.

The business case for a national broadband utility is that the whole economy benefits through productivity gains when anybody can connect with anybody else and any business without interference or tolls. The transparency of networks continues to increase owing to the combination of technology (e.g. IP protocol) customer behaviour (preferring IP to ISDN and ATM; preferring utility pricing to usage pricing e.g. rejecting timed broadband) and regulation ("open access", "network neutrality"). This desirable transparency does however shift some of the business case to the government's shoulders.

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If this view is accepted, the role of government is to 1) fund deployment beyond the easily reached urban areas providing true national infrastructure and 2) pay the price of moving from the previous view of communications competition to one which has a stronger utility flavour for fixed broadband access and 3) encourage real competition where it is naturally flourishing – primarily wireless networks and “applications” (the things done over networks, but independent of them). Indeed, just providing modern broadband infrastructure is just the beginning of creating a networked economy (a subject for other papers).

Telstra as “the incumbent” holder of most customer relationships and network assets is understandably (from a shareholder point of view) concerned at the limited returns on expensive assets (existing and future) and potential dramatic shifts in retail market share while competitors can see a market disappearing that they were encouraged to enter. No wonder it is hard to find an access formula that satisfies the incumbent operator (Telstra) and those seeking access.

To get to the end game expeditiously, we need to recognise that the game has changed and will continue to change in three major ways.

## 3. Changed Assumptions

### 3.1 Assumption 1: Network operator competition will drive investment and revenue growth

In the 90's many thought that network operators would automatically gain the

#### **Old truisms no longer work**

##### **Higher usage (e.g. of voice calls) will drive revenue growth**

This was true for well over 100 years – usage grew faster than unit prices fell. Apparently endless earnings growth of around 10% seemed to be possible, driven in roughly equal measure by falling operational costs and growing revenues. But for incumbents today, unit prices for services are falling at about the same rate that usage is growing, at best! Competitors are passing the benefits of lower costs on to the consumer to win market share, and are content with somewhat lower profit margins than those implicitly demanded by the share prices of leading incumbents.

The bottom line for usage is that incumbents need to be prepared to continue to deliver more from each network, but without charging more. The fixed carriage game has shifted to be a defensive game.

##### **New network services will drive growth**

This worked in the early days of data and mobility. The early days of data were characterized by high-margin boutique networks, tending towards one kind of data network per application or industry (security, banking, EFT, POS, etc.). Now, true broadband networks are allowing any service to be delivered with no incremental revenue to carriers. Like the bottle of Guinness with an endless flow provided by a leprechaun in one well known joke, one good fixed broadband connection is enough for most homes and business premises.

##### **Faster networks will command higher prices**

Perhaps surprisingly, history is strongly against this proposition when we look along the timeline. The communications industry in most countries has moved from narrowband to broadband without managing to raise revenues significantly. Analysis such as that by Lehman Brothers of the European fixed network operators (September 15, 2003, “Wireline Services – Fixed Business Vulnerability Overplayed”) suggests that the move to broadband was largely revenue neutral when falling telephony revenues are included. Further, competitors are packaging more every year at about the same or lower price. Much like the PC industry, higher speeds are increasingly about retaining revenue and market share, not about increasing either.

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profits of all the wonderful new uses of the network. They would do this through the protocols, the set top boxes and home gateways, and through billing and bundling services with the network. But the Internet and the associated IP protocol have changed all that. Anything that uses the network infrastructure ("applications" like telephony, email, downloading a podcast from the ABC etc) is no longer as tied to the network infrastructure as was the case. Excellent examples are that network operators don't share in Google's or Apple's profits. Keeping it that way is being fought out in the USA under the banner of "Network Neutrality". Carriers around the world have quite rationally wanted to charge more for better delivery ("Quality of Service") and sometimes delayed high volume but profitless carriage (e.g. file sharing). But between ever better technology, regulation, lobby groups and customer choices we are generally seeing continued separation of the applications from the networks. We are even seeing the reverse, operators being asked to share network revenues with Apple for the iPhone.

So year by year the revenue to justify the network operator building a new network is reducing. But this is evidence of success rather than failure – each new generation of network is better able to connect to anybody and anything without interference or further tolls. This success has a price – fixed broadband is becoming a utility with the additional benefit accruing to the nation rather than the network provider. The national benefit comes from a barriers being removed from telecommunications applications and just about every other national activity – things happen faster, cheaper and with greater competition.

Overall, we need to recognise that fixed networks are not poised for the next generation of growth in earnings and profits, but rather are making a difficult transition from being highly profitable drivers of growth to a stable utility. Making the transition quickly is likely to be to everybody's advantage.

## **3.2 Assumption 2: The competition for one fixed network is (or should be) another**

The second change is that the primary competition for fixed networks is not another fixed network, at least not in Australia where cable TV didn't grow up as an independent infrastructure. Some might wish to turn back the clock on that, but moving with the times will practically be easier and we could skip a stage with more wasteful duplication than innovative competition.

The primary competition in Australia for fixed networks is wireless today – mobile operators are succeeding in taking voice minutes and even connections from fixed networks. Mobile voice rather than VoIP or alternative fixed networks is the competitor –and a very effective competitor. So much so that fixed network telephony, while large and important, no longer powers the growth of operators.

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Mobile (cellular) data is not yet a replacement for fixed network connections except in the case of business email, and even there it is a complement. But 2008 is a turning point. Mobile data will be able to compete with (though not generally replace) fixed network data and perhaps even more importantly, we can now see how data connections to mobile phones (as opposed to houses and businesses) will become universal while remaining personal. In the same way that each member of my household has come to have their own mobile voice service today, each will have mobile data within 5 years. Today, 25% of my household (me) has broadband access wherever they go, within a few years everyone.

### **3.3 Assumption 3: Fixed Broadband is Essential**

The important lesson from mobile substitution for voice is that the new generation of users regard the mobile as the primary service and the fixed line as optional. This will apply to broadband as well in a few years and national wired broadband infrastructure might never develop if left to competitive forces – which would be a pity.

Wireless broadband will get better each year through the competitive dynamics of the market place and small (relative to national broadband) investments, while wired needs big decisions and investments. Consumer behaviour is driven by individual good and would lead to dominance of mobile broadband. Government behaviour may be driven by the common good and can lead to a balance.

Even though mobile data is evolving rapidly with technologies like HSPA and LTE, fixed broadband will for most remain the fastest and most reliable service. It can also be the cheapest and is more “open” (cost of data, user interfaces and the nature of the appliances keep mobiles behind fixed).

I want wired broadband at home and anywhere I sit down to live, work, or be entertained. I want it for VoIP, TV and data. I will buy it at every location so long as it is affordable compared to the data service on my mobile. But notice the two flips – 1) I once tested mobile data against fixed, now at an ever larger range of places fixed has to beat my existing mobile data service ( exactly like voice) and 2) telephony and TV are making the transition to being applications on my data service whether fixed or mobile.

Fixed and mobile aren't mutually exclusive alternatives. Rather, mobile data is a natural complement to fixed broadband and will be packaged that way by some. Having both puts much of the high volume traffic on fixed networks where it can be handled efficiently and allows mobile networks to handle the personal and itinerant applications.

Fixed broadband is a personal option, but a worthwhile national choice.

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## 4. Getting to the End Game

I've read that the end of the 19<sup>th</sup> century was the best time to start building metropolitan underground systems when balancing costs and revenues and I suspect that the end of the last century was the best time to start building national fixed broadband networks. Underground railways and fixed broadband are alike in that they are the kind of infrastructure we want to leave as our legacy for future generations.

The retailing of services on fixed broadband networks will inevitably be competitive; the need for shared broadband infrastructure seems to have been accepted, while vertical integration seems to have been largely rejected as a way to achieve national broadband. But when the dust settles after access prices and conditions are set, just retailing services delivered over this infrastructure will be about as exciting as retailing electricity.

This isn't to say there aren't great opportunities for people, businesses, network operators and even nations to profit from these networks. There are, but many of these opportunities exist because they can be delivered independent of the network as well as being built-in (and consequently can't be used to improve the business case for the network).

Even with light handed regulation, competition for applications or services occurs naturally on modern broadband networks – between fixed and mobile networks and between those who build things into the network infrastructure and those who deliver it independently.

Perhaps paradoxically, treating the fixed networks as a utility might well be the best way for Telcos to avoid becoming utility or commodity players – there is no choice but to develop models for profiting from the things people do over networks rather than just selling the network – I call this “customer networking” and it is a whole further subject. The alternative is slow degradation of the remaining vertical integration with energies expended trying to resist the inevitable separation.

If fixed broadband is becoming a utility, who should build the network? I suspect that even Telstra's competitors expect that Telstra will build it, at least in the majority of areas where it already has a modern network presence. Other options are conceivable, but realistically there is just too much change to accommodate with anything but a simple option and willing participants.

Two factors support this conclusion: the biggest single factor in the contemporary business case for network operators is the operational savings and these savings mostly fall with Telstra, driven not directly by the availability of a new network, but the changed organisations and processes implemented around the new network.

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Another factor is that the layout of the new network could be quite different to today's copper network – for example, we don't need thousands of telephone exchanges, or "wire centers" as they are more descriptively called in the USA. The number and location of these exchanges is based on the transmission capabilities of copper 100 years ago and much simpler topologies are possible. As we have seen with ADSL, competitors having access to elements of an access network locks in the earlier topology and risks significant stranding of assets whenever technologies and topologies change.

## **5. The End Game**

So for everyone's sake, let's get on and build an important piece of national infrastructure.

We will know that we have good policies, regulation and access pricing if little changes and we just see wired broadband in more places, earlier and more homogeneously.

We will know we have succeeded overall when we have a utility we can all take for granted.