Submission to the

Government's Paper on the Future Directions of the Digital Economy

Strategies for the Digital Economy

For the
Digital Economy Future Directions Paper

February 2009

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1. EXECUTIVE SUMMARY

In this submission I would like to address the government and industry strategies that are needed to maximise the benefits that can be gained from stimulating the growth of the digital economy in Australia – in general terms as well as through the funds that the government has indicated it will make available for this purpose.

The digital economy calls for a fundamental change in policies. The digital infrastructure the government is funding through the NBN needs to be developed so that it can provide a multiplier effect to developments in healthcare, education, smart grids and e-commerce, as well as in Internet and digital media services. This can only be achieved on an open underlying infrastructure.

At the same time the government and the industry will need to adopt a new way of thinking. A trans-sectoral vision is required to achieve the multiplier effect the NBN has to offer. At the same time trans-sectoral thinking is required on an infrastructure level, looking at synergistic opportunities between various infrastructure projects (telecoms, electricity, roads, sewerage, etc).

The concept of trans-sectoral thinking is referred to in more detail in chapter 4.2.

Open Access Principles presented below have been made available to government below but are for clarity also included again in this report (chapter 5).

I have also been leading an international team that has provided informal advice to the Obama Transition Team and this report, while written specifically for the US market, has relevance to the Australian situation also. It will be made available to the Department as well.

Multiple networks should, and can, be developed independently of each other over one single open fibre-based infrastructure. This will be an enormous boost to economic development; it can spearhead new economic activity in multiple sectors of the economy, rather than just in telecommunications.

A move to open networks and trans-sectoral thinking will result in different business models being generated, models based on functionalities rather than on vertical integration.

Trans-sectoral thinking is also essential to maximise the social benefits available via the digital economy. Government departments and industry regulators need to remove the barriers that have sprung up – based on the old, now obsolete, models – in order to align their departments with the digital economy. A few examples are provided below.

Open networks in a digital economy allow for maximum user participation, interactive and personal. They enable everybody to maintain and improve lifestyles that suit them, rather than being forced into the boxes dictated by the vertical structures that currently exist in government. Perhaps we should have a trans-sectoral Minister looking at synergy opportunities between the various Departments. The telecommunications sector is the essential backbone of the digital economy and one of the major barriers to maximising the potential benefits is its vertically-integrated structure.

In countries like Australia the maximum benefits of the digital economy can only be achieved through cooperation.

We are already seeking such cooperation through the Digital Economy Industry Workgroup (140 companies, 200 people), and have been very pleased with the positive responses from Ministers Conroy, Gillard, Ferguson and Tanner (still waiting for Minister Roxon). We hope to discuss with them our views on open networks, trans-sectoral models and multiplying the benefits of the NBN.

We would be more than happy to offer the government this cooperative platform from which to further pursue cooperation and input into the development of the digital economy.

In Europe it has been estimated that open networks and trans-sectoral development can increase overall GDP by 1%-2%. As a very rough calculation, based on US data used for their Economic Stimulus package, at least 100,000 new jobs could be created in Australia.

2. TELECOMS FOR ECONOMIC STIMULUS

Most developed nations are now revisiting their telecoms policies with a view to using telecoms infrastructure as a tool to revive the economy.

And when exploring this it quickly becomes clear that open networks are necessary if we are to achieve the economic benefits that the digital economy has to offer.

The multiplier effect of open infrastructure is obvious. It stimulates developments in healthcare, education, energy, media and Internet – this in stark contrast to the closed (vertically-integrated) networks that are currently operated by most incumbent telcos around the world.

There are several ways to achieve open networks, depending on local circumstances. Some countries have been able to use existing regulations to move in that direction, while others have introduced structural and functional separation. More positive approaches are also possible, depending on the participation of the incumbents in the process. Empowering local communities to develop their own networks would be one of the preferred options.

And, of course, there are combinations of the above.

However, in most situations some sort of regulation is required to get the market moving towards open networks – particularly in countries where there are strong vertically-integrated incumbents. In those cases I have not seen any solution other than separation (regulated or voluntary). This certainly is not the end game but it would be quite an achievement to be able to separate the operation of the infrastructure and the services, especially with such powerful players. Separation would certainly eliminate monopolies or duopolies (telco/cable), as these would no longer make sense. Instead new business models would evolve around functionalities (infrastructure, network management facilities, services, content, and distribution).

3. INFRASTRUCTURE ESSENTIAL FOR THE DIGITAL ECONOMY

Assisted by the reality of the financial crisis, countries have begun to understand that broadband transmission infrastructure is not merely important for the direct social and economic use of citizens, but that it is equally important for the digital economy and includes critical sectors such as healthcare, education and smart grids. In addition, because broadband infrastructure enables tele-work and simply makes day-to-day living more convenient for residents, there are clear indications that property values are positively affected by the presence of such infrastructure.

Several countries (Norway, Netherlands) have established initiatives that enable home owners to become the owners of the fibre tail that ends in their homes.

The International Telecommunications User Group (INTUG) commented that encouraging the ubiquitous supply of high-speed broadband infrastructure supporting competitively provided services and content will contribute significantly to growth, productivity and jobs. A study in which INTUG participated in 2008 showed that this would add 1.6%-2.0% GDP in the EU within ten years.

Once these social and economic values of the digital economy are recognised the issue of network separation arises – either formal structural separation or voluntary or regulatory separation – because of a systemic divergence between:

- the interest of a network owner/operator in maintaining scarcity in transmission capacity to maximise its returns (both in selling access to its network and in propping up the retail price of services that depend on the artificially scarce bandwidth)

and

- the interest of society as a whole in deploying abundant transmission capacity as widely as possible and at both the lowest cost and the lowest retail price feasible. Indeed, if we are correct that there are large positive externalities to the widespread deployment of such capacity this would support providing it on a subsidised basis in order to internalise those externalities to the price facing the end-user.

At a minimum, socially critical services such as healthcare, education and smart grids need to be provided at the lowest possible cost, and their ROI models therefore need to be grounded in utilities-based costing. Otherwise, achieving the national goals associated with those services will require, in effect, the payment of a tax to network operators whose ability to assess the tax – in the form of high payments for cheap-to-provide connectivity – arises entirely from their occupation of the public rights-of-way to reach consumers and businesses plus their own economic motivation to benefit from ensuring that the supply of bandwidth is limited.

It is hard to see the policy logic that would support granting rights to use the public right-of-way in order to achieve important public policy goals and then economically impairing the nation's ability to reach those same goals by permitting pricing at rates above the (very low) utility-based economic costs of doing so.

In situations where it is effective, competition – including full facilities-based competition – is definitely preferable to regulation. But where the market is dominated by a monopoly or a duopoly, either due to economies of scale or entry barriers (both of which appear to exist in local broadband infrastructure) it makes no sense to simply say that those who wish to compete can do so. Pursuit of competition as an end in itself, and a blind faith that it can and will develop regardless of the actual economic and engineering realities on the ground, is a critically ill-informed cop-out. The sheer dominance of the incumbents under the current regulatory and economic circumstances makes facilities-based competition impossible in the long run and, in any event, economically unviable.

The main reason why some countries have fallen behind in digital economy developments is a lack of affordable high-speed broadband access. The private interest of the network operators in minimising capital expenditures and maximising the returns they earn on the capital they do expend conflicts directly with the public interest in true broadband connectivity to all citizens and businesses.

I believe that there is no rational basis to think that within the framework of current regulatory philosophy existing network operators have now, or will ever have, the incentive to deploy the kind of ubiquitous broadband connectivity – required to underpin the digital economy – that other nations have achieved.

4. CO-DEVELOPMENT OF FIBRE AND THE DIGITAL ECONOMY

While there are bold plans to roll out FttH networks, and indeed such rollouts are already taking place around the world, the question is: are we ready for it?

If we want to do this properly then every FttH plan will need to be hand-in-hand with sound plans for the development of digital economy services such as e-health, tele-education, smart grids and e-media.

And this cannot happen without very strong government leadership.

Several countries are reasonably well-positioned to operate coordinated plans, but to date there are no sound FttH investment plans that work parallel with digital economy plans.

Without good digital services the uptake of FttH will be low, but without FttH these digital services cannot be developed.

In other words, the infrastructure is needed before the digital economy can develop. Because only when that has been done to at least some degree will others (healthcare, etc) begin to develop national e-health services, which need to be made available to everybody – not just the fortunate few who can afford the initial FttH access.

4.1 INFRASTRUCTURE COMES BEFORE SERVICES (UNFORTUNATELY)

Unless we develop these two plans (infrastructure and services) in side by side, FttH investments could have a disastrous end.

Government leadership is again required here, to ensure that investors in FttH receive the correct signals to encourage them. This requires good policies rather than subsidies. Money is not a problem; the health, education and energy budgets are huge, as are their forward-looking investments. If the government develops good digital economy policies, backed by sound regulations, the rest will follow with relatively little further government intervention.

The entire new infrastructure could be funded by the savings that can be made by these agencies alone.

According to our BuddeComm analyses, e-health and tele-education could constitute 25% of all FttH services. Smart grid/green broadband services could comprise another 10%-15%. Only if the business case of a fibre rollout is based on revenue streams that can be obtained from such services can a national FttH network be made economically viable. Juggling these two vastly different issues is not easy and it has not yet been done successfully anywhere in the world.

So there are very important lessons to be learned.

Because of the difficulties involved the uptake of FttH services remains rather low – anywhere between 10% and 20%, which is well below the 45% to 50% that is needed to make these networks economically workable. This indicates the investment risk if such infrastructure investments are not accompanied by sound digital economy policies to stimulate e-health, etc.

4.2 TRANS-SECTORAL APPROACH IS ESSENTIAL

The most critical element for the development of a successful digital economy is the necessity for a whole-of-government approach.

Unfortunately this is the single most difficult outcome to achieve.

Key government departments that need to be involved here include: Energy (smart grids), Healthcare (e-health), Education (tele-education), Environment (green broadband) and Economic Development.

The key application is two-way video communication for the monitoring of older citizens and early hospital release monitoring at home, tele-diagnostics, doctor-patient consultation, teaching, other health and inter-agency consultations, on-line training and so on.

So far these departments and their agencies have shown a lacklustre (and in some cases rather hostile) response to suggestions of collaboration, either between themselves or with the infrastructure providers.

Perhaps one glimmer of hope can be seen in the Smart Grid Alliances in the USA, Europe and Australia. These are collaborations between the utilities, the industry and the government, but it is very early days and, again, without strong government policies it could take a decade or more to get these collaboration and convergence models off the ground.

While most of these agencies and companies have invested heavily over the last decade in back-office ICT structures, to date they have not moved to make these applications open to the market at large. Most work is done in isolation, and most don't look much further than their own activities. Only if the infrastructure is used for the Internet and communications and e-health and tele-education and smart grids and e-media will we see viable economic models arriving in the market place.

4.3 NO DIGITAL ECONOMY WITHOUT OPEN NETWORKS

On the infrastructure side, the major stumbling block is the lack of open networks that would enable these agencies and organisations to develop their own health, smart grid, media services, education systems and other end-user services (controlled end-to-end by these agencies, not by the telco). The telecoms industry structure is not aimed at the economic and social benefits the infrastructure has to offer; it operates around monopolies, vertical integration and associated short-term greed.

5. OPEN ACCESS PRINCIPLES

In 2008 the following principles were agreed to by the Australian telco industry (with the exception of the incumbent Telstra) and these will underpin negotiations and commercial arrangements between access providers and access seekers in respect of the supply of wholesale access and interconnection services provided by means of telecommunications networks (Services).

These principles will apply to Services whether or not they are regulated under the telecommunications access regime in the *Trade Practices Act* 1974.

- Access to Services will be provided on fair and reasonable terms in the spirit of industry co-operation with the aim of promoting the long-term interests of end-users of telecommunications services, namely the promotion of competition, achieving any-to-any connectivity and encouraging the economically efficient use of, and investment in, the infrastructure by which services are provided.

- Access providers will act in a non-discriminatory manner and provide Services to access seekers on equivalent terms to that which the access provides to its own retail operations: access providers will ensure that the price and non-price terms on which it supplies Services to access seekers is equivalent to that which the access provider provides to itself. There shall be accounting transparency for access pricing; and access providers will ensure that ancillary terms on which it supplies Services to access seekers, including in respect of billing, technical and operational quality, fault detection, handling and rectification, ordering, provisioning and customer and service migration, are equivalent to that which the access provider provides to itself.

- Access providers will not unduly discriminate between access seekers in the provision of access to Services.

- The terms on which access is provided to Services shall be commercially negotiated by access providers and access seekers in good faith.

- Negotiations and contractual arrangements between access providers and access seekers shall be treated as commercial-in-confidence.

- Access providers will take a flexible approach in points of aggregation and interconnection given technical, commercial and practical considerations.

- Access providers and access seekers will include provisions in commercial arrangements that protect an access seeker's confidential information and relationship with its end-users while allowing access provider to engage in fair marketing in the same manner as its competitors.

- Access providers and access seekers will in good faith endeavour to resolve access disputes (including billing and non-billing disputes) between themselves in a timely manner. Simple, flexible, quick and inexpensive dispute resolution procedures will be included in commercial arrangements between parties that involve an escalating resolution process, including face-to-face discussion between the parties before recourse to mediation and arbitration.

These principles have been presented to both the Regulator and the Australian Government.

6. BROADBANDING LOCAL COMMUNITIES

Back in 2000 I organised a National Broadband Summit to explore how local communities could take a leadership role in the broadbanding of their local communities. Some countries have proved to be better at this than others.

Again the initiatives taken have been based on a lack of action on the part of the incumbents. America took an early lead and Telstra's CEO Sol Trujillo, at that time functioning as CEO of USWest, sued

more municipalities than any other telco, in an effort to prevent these communities from escaping from his company's stranglehold.

Nevertheless muni-networks as they are called in the US are increasingly making inroads. We have reported on many of the problems they have been facing but it appears that the 'movement' has turned the corner.

So it could be that a major step towards progress might be to look at further empowering grassroots developments and removing (legal – state regulations) obstacles that prevent these local councils from moving forward.

Rather than fighting the 'system' (separation) I am discussing with an industry group of experts in the USA whether we should try to build as much local loop (fibre and wireless if needed) as possible, independent of the incumbents. So, for example, if government money is used it can't be used by the incumbents. But, unlike Australia, in the USA independent local loop infrastructure can be connected rather easily and cheaply to existing competitive backbones, so there is no real problem that the incumbents can try and block such access through pricing, conditions – or, as it is sometimes termed in Australia, by the 'lost keys' of the exchanges.

If we could create enough local loop mass in this way we could bypass the incumbent's stranglehold.

This approach makes sense.

However, for how long will the incumbents accept developments like this? In general, they are happy to 'lose' 10% market share before they unleash their counterattack.

This brings me back to the studies we have done, which indicate that investing in these solutions can still be undermined by the incumbents – perhaps not immediately but if they remain unchecked they will hit back. Regulatory arrangements will need to be initiated to support such a local loop build-out.

With this security in place New Zealand is now also looking at muni-networks. This country doesn't have a state level of government so municipalities are much more powerful and independent regarding, for instance, fibre infrastructure. I have advised both Auckland and Wellington (New Zealand's two largest cities) on the development of muni-networks.

7. INVOLVEMENT OF THE INCUMBENTS

Another conclusion arrived at in Australia, as well as in Europe and Asia, was that we couldn't do this in any serious way (nationally) without the incumbents.

While slow progress could be made in 10% of the market the other 90% would be heavily defended by the incumbent, leaving most people still in the grip of those monopolies. Actually Telstra was considering giving up 40% of its (rural and regional) access if it could maintain its monopoly in metro Australia, but this was rejected by the government.

Several countries have now bitten the bullet and are forcing the cooperation of the incumbents through separation. In all of those countries, however, this was driven by government policies recognising the social and economic benefits for the communities – the decision was not taken simply for the sake of broadband.

It took some time but these governments eventually realised that infrastructure and services were different, that infrastructure should be treated as a utility and that full attention should be given to ensure that the services needed for the digital economy were able to flow freely over that infrastructure.

Without the full government support referred to above separation is suicide.

Amsterdam has perhaps gone the furthest of all cities. Through the national government they have secured a nationwide open network policy. Furthermore they are rolling out one of the world's most successful FttH muni-networks.

Interestingly, with all of this now in place and nowhere else for it to go, the incumbent has come back in Amsterdam and is now an active provider of open access FttH networks (open access to FttH from E13 per connection per month).

There is nothing wrong with the incumbent being the network owner, as long as the arrangement is based on open access policies. As a matter of fact, given that they have the scale, the technology etc, in the right situation I would actually prefer them to be the utility providers.

8. RELATED REPORTS

Global - Analysis - The Financial Crisis and Economic Stimulus Packages
Australia - Digital Economy Industry Working Group
Australia - Municipality Broadband
Global - Investing in the Communications Revolution
Global - Smart Grids - Grid IT - where energy meet communications
Global - Smart Grids and the communications revolution
Global - Digital Media - E-education
Global - Digital Media - E-Government
Global - Digital Media - E-health