

CCIF – Discussion Paper – Response

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Background

This paper has been produced in response to the Discussion Paper on the Coordinated Communication Infrastructure Fund. The reason for writing this response is that as I see it, there appears to be a severe lack of telecommunications engineering expertise remaining in Government / Opposition Departments and because of that a large number of what I would call “University” papers have been generated to call for information that has been the strength of the Australian Economy before the privatisation of our telecommunications infrastructure.

Some three decades ago we in Australia had one very well engineering based Government Business that provided very economical telecommunications requirements for our nation but it lacked a customer front. Predominantly USA based multinational business applied extreme pressures to our politicians of all persuasions, forcing the politicians to ‘introduce competition into telecommunications’ (or lose their political careers). [**Reference 1** spells this out.] Consequently, this very well engineered taxpayer funded network was initially ‘de-regulated’ then ‘liberated’ as multiple duplicate networks were installed and commissioned by ‘competing’ businesses. Now the Government / Opposition is in the process of selling off what the taxpayers and businesses have already paid for to what will become not Australian interests. Optus – a major network in Australia is now foreign owned and Telstra is in the process of going the same way. With Broadband an entirely new network is required, as the various telephony networks are inappropriate for this technology. [**Reference 2** demonstrates that not only does the telephony (narrowband) network find wanting in regional and remote areas, but a Broadband network does not exist outside metropolitan/CBD arrangements.]

Content, Coverage and Cost

The “three C’s” form the basis of infrastructure analysis, but as I understand it, in this case the CCIF is primarily concerned with Content, and this makes for a very lopsided argument to invest any funds as the infrastructure for Coverage is not in place and it is this that will blow out the Costs and make most non-urban Content approaches unworkable.

From that perspective, as the Coverage is not in place, it is therefore imperative is to engineer, install and commission a technology that will transport Broadband Internet (and Community Access TeleVision (CATV), telephony, fax and other data based services) to virtually all homes in Australia. This is of primary importance, as the Cost of Content will not be practical until there is a consistent broadband Coverage is in place in rural, remote, regional, urban and metropolitan areas.

The paper written to the Senate Environment Communication IT and the Arts References Committee in September 2003 [**Reference 3**] shows definitively that the current Customer Access Network (CAN) technology that Australia has in place (predominantly insulated twisted copper pair cables) is totally unsuitable to carriage Broadband, and that a new solution must be engineered and very soon. This Coverage issue is of prime importance as without the Coverage or Cost addressed then there is no way that Content can be honestly and openly addressed.

CCIF Allocation of Funds

Although well intentioned the approach of the Government allocating funds to proposals is seriously flawed, because of itself. As stated above currently there is no effective Regional and Remote Broadband Access Infrastructure, and the technology for this to be cost effective and practical leads to Optical Fibres to the Home (FTTH) [**Reference 4**] as being by far the cheapest and most energy efficient solution – as it can carry Broadband up to 70 km and that has the opportunity to radically simplify our Broadband infrastructure requirements.

Purpose:

- The CCIF will promote the social and economic benefits of broadband services in regional, rural and remote communities.

*It has already been shown globally that comparatively, Australians have one of the fastest take-up of technology in the world, [**Reference 5**] so our younger generation will be right on the ball doing the 'older generation educating'. As such, there is absolutely no reason to do any form of promotion, as any expense in this area is not the core for installing and commissioning the necessary Broadband Internet and CATV infrastructure is required to be provided.*

Seniors and Technology

Further to this argument, I have first hand expertise recently worked for more than a year as an active volunteer to teach seniors on how to use computers in their everyday lives. To add to this experience I later became the Development Manager for **ASCCA** (the **Australian Seniors Computer Clubs Association**) and while in this pivotal role for about 18 months, I rapidly extended my direct understanding on seniors (our older generations) computing and Internet requirements.

(**ASCCA** is a not-for-profit organisation that is the peak body for seniors and technology in Australia. There are more than 70 clubs as members of **ASCCA** and this membership extends to all states in Australia. More than 50,000 seniors have passed through these clubs, and there are about 260 as yet not associated volunteer clubs helping seniors to use and gain expertise in home based computing and Internet. [**Reference 6**] shows how these clubs can be established and run).

By direct association with these clubs and their numbers more than 200,000 senior Australians have learned to become computer / Internet literate, and government support has been almost non-existent – other than lip service at the Federal and State levels and support from some Local Governments in actively utilising Senior Citizens and Neighbourhood Houses / Centre. The flow-on effects from **ASCCA** and the learning passed on between seniors is a mushrooming effect and I believe that within a year or two, ***almost all seniors that have access to Internet infrastructure do or will have both computing and Internet experience and working knowledge.***

From my extensive first hand experience it was obvious to me that almost everyone in the 'older' generation has family and loves to keep in contact. The prime computing purpose for these people is to use Internet so that they can communicate with email with their families. It is that simple, but developing their computing skills to the level that they can use a computer effectively and use Internet takes usually between 3 and 9 months, with an hour or so of use every day. This is substantially longer than the nominal 4 hours provided by the Dr Nelson initiative to skill older Australians (to return to the workforce) [**Reference 7**]. Seniors require extensive repetition to develop their skills, taking several months, not just a day.

It was also proven while in **ASCCA** that TAFE like environments, and or Community Colleges are not at all suitable for seniors because these teaching environments are essentially business or pre-business based, and that is exactly what seniors do not want or require. TAFE and Community Colleges have to work to schedules and they have exams to 'prove' the knowledge and skill transfer. Seniors require 'flexible' training – that is – hands-on training that can be repeated as many times as it takes to gain proficiency and exams are a definite no-no. [Reference 8] is a typical example of a non-flexible training based committee, reporting on receiving funding – for ineffective synergies. It appears that the role of the CCIF and its funding approaches seem to have very similar groundings and that is very disturbing.

Seniors being successfully 'taught' by the younger generation is a major fallacy, as the younger generation usually lack the patience and understanding that is required, and most seniors are very easily embarrassed when being taught by the younger generation. Most seniors are still very racial and generally deeply avoid associating with any other than their immediate cultures. Seniors are easily offended by hurt dignity and because of the mental stresses described here – learning through the younger generation and/or mixed cultures is usually very unsuccessful.

It should now be very obvious that seniors respond very favourably to computer and Internet training through peer groups at their own pace in a friendly environment and that is exactly what **ASCCA** fosters. There is a standard sequence of skills learning and using the Internet is at the very end of the chain and not at the beginning, and that is why it takes in the order of 6 to 9 months spending a few hours every day for seniors to become proficient.

The problem was one of the so-called 'Digital Divide' will very soon be gone and will be replaced by what I would call a Technical Divide between the Metropolitan areas in Australians and any other – particularly the regional and remote areas and it will be these that will be the problem areas that cannot be serviced by Broadband and CATV infrastructure.

Floating a Business Case

No direct business based Business Case will carry this type of information as businesses are looking for a profit outcome – usually to pay the management and then shareholders in that order. In these case the areas that benefit are the government and financial institutions, as almost all customer based transactions or information requests can be now moved to an Internet base and shop-front (face-to-face) communications with customers/clients can be minimised – this is the saving!

The economic benefits are that everyone in non-metropolitan areas would then be facilitated with CATV and Broadband Internet and through this the everyday services that are available on Internet can be access from the home - Broadband style. Without the ample infrastructure already in place to carry Broadband (including CATV), then no end based (home, community, business or region) Business Case can be seen as rational, as the main factor is missing.

Living with Broadband

Living with Broadband is not the same as living with Narrowband. Our residence in suburban Sydney was extensively renovated in 1997, and during that time CATV was installed through an underground street feed to two locations in the home, and three (3) phone lines (one for the phone, one for fax and one for the Narrowband (dial-up) modem) were installed. Almost every room was also wired for Phone (Cat 3) and Local Area Network wiring (Cat 5) office wiring. [Reference 9] is a simple tutorial on structured category wiring.] Phones / modems were in rooms as desired and the Cat 5 (data) cable lay dormant.

In 1999 a Cable Modem was installed and the change /transformation in lifestyle was very dramatic. With a router / hub / switch installed in a peer network structure [**References 10 and 11**] are good examples of how it is done], multiple computers have concurrent access to each other, shared printers the Internet and Email and the home now serves as a small office with entertainment from the CATV / Broadband access network. Emails are automatically checked every minute and data services (read: Australian Stock Exchange live data) were readily available without issues to other users. Nobody 'waits' to connect to Internet and check the phone usage before connecting. The third (dial-up modem) line had then been removed as it has no use. Where Internet was before used sparingly with dial-up access, with Broadband access Internet is now used several hours per day – every day. Community Access Television (CATV) also has a high usage compared to the free to air channels.

The lessons to be learned from this arrangement is that in the lifestyle change of Internet from Narrowband to Broadband, there is an added infrastructure that is imperative to maximise the use of the application in a home or small business. (Large businesses simply cannot compete competitively without having Broadband.) With Broadband (including CATV) the options to view a wide range of television channels is made available, and with Broadband Internet access the uses of Internet change from a time limited and frustrating waiting game to a ready access and quick response information and entertainment system. In telephony terms it is like changing over from a magneto telephone connection with manual assisted connection through a transit voice band network to dual tone multi-frequency DTMF based dialling using STD/IDD with the choice of land line and mobile phone access, through a digitally based switched network with minimum network and switch congestion, in comparison to the manual days.

Merely connecting to Broadband is not nearly enough – the infrastructure must also be in place for the explosion of growth to be managed. This infrastructure must be constructed in the premises, businesses, Broadband access network and most importantly; the national switched network, as if the latter is not in place then nothing will function effectively.

Further, industries that have been traditionally tied down to CBD locations will no longer be tied there, and they could be distributed to work from any centre (or home) in Australia. With the advantage of much lower overhead costs of factory and office accommodation and a totally different lifestyle, the whole work ethic will take on a different dimension, and out of normal hours office work will become the normal.

Regional Broadband and CATV

Broadband services in rural, remote and regional areas: This is an oxymoron, as comparatively there I believe that there are no effective Broadband infrastructures in any but the major urban cities. For a start copper pairs that form the skeleton for our ADSL access cannot run on more than 3.5 km from any local telephone exchange, and further, to my knowledge, there are no 10 Gbit/s SDH/ATM rings servicing the rural and remote areas. This means that the infrastructure that is really required is not there so there is no way that major urban comparative Broadband services can be in rural, remote or regional areas. In my opinion and professional experience, ***satellite is both much too expensive and highly inappropriate for rural, remote or regional areas***. Radio does not have the customer bandwidth or coverage, and copper pairs have proved themselves as unsuitable for broadband access - even in urban areas. The experience with ACTEW is that using fibre to the curb (CTTC) and then extending to the home using Cat 5 or Cat 6 does work, but it is limited to only about 150 metres from the fibre terminals. [**Reference 12**] alludes to this] but this Broadband network solution must be seen only as a stopgap measure before FTTH is universally introduced in Australia. CATV with coax cable cannot go more than a few 100

metres without significant amplification and optical fibre has none of these problems. [Reference 13] covers these issues in broad detail.]

With these issues now tabled, it should be extremely obvious that any funds not spent on installing and commissioning an optical fibre based customer access and Internet Protocol Network is seriously wasting the very limited resources. Optical fibre is capable of carrying an immense payload and because it has an extremely low insertion loss, it can connect to customer premises up to 70 km from local exchange points. This would solve the problem of providing broadband access to rural, remote or regional areas, all households and businesses.

With a rural, remote and regional customer access structure such as this in place, there is a real need to install and commission a substantial Internet Protocol Network (IPN) in the rural, remote and regional areas – even before the access network is replaced by optical fibre.

- The CCIF will be used to encourage sectors, such as health and education, to work together in demand aggregation projects.

Both the health and education sectors require an excellent Broadband infrastructure before they should be encouraged to capitalise on this new technology, therefore it should be painfully obvious that wherever the necessary infrastructure; Broadband Internet and CATV, do not concurrently exist, then these centres are not to be encouraged. Truly, it does not take more than a few 30 minute brainstorming sessions with a set of competent people with a background in health and/or education to work out their immediate and future activities and therefore their immediate and future Broadband requirements, and these models can then be 'cookie cut' in all other somewhat similar hospitals, medical centres, Universities, TAFEs, Secondary and Primary schools. It is no use having Internet and CATV centres that cannot connect at Broadband connection speeds – this means that both the Access networks and IPNs need to be extensively developed nationally and not just in city CBD and major suburbs.

It is therefore in my opinion a blatant waste of resources to 'to encourage sectors, such as health and education, to work together in demand aggregation projects'. These funds would be far better used to directly install and commission an optical fibre based IPN utilising ATM/SDH with CATV encapsulated and an appropriate Optical Fibre based access networks.

In gathering the facts, it is imperative that every base (major regional) hospital requires a reliable multiple feed Broadband connection. For this to be realised, the cities that these hospitals are located in therefore require at least 622 Mb/s, if not 10 Gb/s SDH/ATM optical network ring connections to the other major cities. The complete hospital network must have Broadband access (with alternative back-up - hence the geographically close ring infrastructure connection) if it is to make patients data available with a minimum of delay, provide video feeds to and between hospitals and assist in remote surgery operations.

Similarly, it is already an imperative that all University campuses require at least 622 Mb/s, if not 10 Gb/s SDH/ATM optical network ring connections to the other major cities. These are the centres of our educational futures and are the locations where most of our future major business leaders will come through – before they get good industry experience.

All Technical and Further Education (TAFE) Colleges and all Secondary schools must have at least business level Broadband if they wish to be any way effective. This also means that each of these locations require at least 622 Mb/s, if not 10 Gb/s SDH/ATM optical network ring connections to the other major cities. These Colleges and schools are the centres of our

coming generations and the source for education before moving into and as part of the work force (which is highly Internet based).

All primary schools are now requiring broadband connections and community access television services. These Broadband network demands are much less than for secondary schools and Universities, but using a narrowband connection is a very poor choice in comparison to the time savings that are inherent in Broadband.

With these considerations in mind it would be an easy task to identify on a map the non capital city base hospitals, University campuses, Secondary Schools, TAFE Colleges, and primary schools. Having identified these and then estimated their immediate and future CATV / Broadband Internet requirements, based on their populations usages and courses, it would then show the national requirements visually. The problem then is to aggregate and then translate these Broadband network requirements into a finite network for the immediate future and the ensuing five and 10 years. Telecommunications network planning engineers are the recognised experts in aggregating the requirements to structure a minimum network with a maximum impact an optimisation of resources, and they are required to define the network that can be grown to match future growth requirements.

Going a little further, all Federal Government Departments, State Government Departments and Local Governments have communication infrastructure requirements. All major businesses have communication infrastructure requirements. State and Federal Police need to work very closely as does Social Services and Family Support departments. Most Roads and Transport Authorities have traffic monitoring (Safe-T-Cam) that now does not link to stolen vehicles (a Police issue, or insurance fraud (Business issue). Police based speed cameras do not report back on stolen vehicles or insurance issues. The synergies for brainstorming are astounding and as yet untouched as Broadband infrastructure is not in place.

- CCIF proposals should be adaptable as requirements change and technological developments occur.

In other words the Broadband network structures that are to be engineered need to consider growth and changes in technology. This is a very embarrassing statement as shows that those involved in developing the CCIF Discussion Paper are not aware that telecommunications network planing engineers do this role as a mater of course in their job, much like people breathe and eat etc. The problem here is that there are too many people involved in the politics of engineering the Broadband network, and while some political areas see the need to be congratulated for their unnecessary involvement, a large amount of time and money will be wasted – while the regional Broadband network could be well engineered, installed and commissioned to meet the immediate and future needs of regional Australia if the network planing engineers were given a chance to do their work – without continually referring to committees for petty approvals to develop the technology.

- The assessment of CCIF proposals will not favour particular technologies.

No! The CCIF must have a set of workable engineering and technical guidelines, and that will set the path for development. Simply saying that the CCIF will not favour particular technologies and not saying which is not favoured and why is a copout for not knowing what is favoured and this is hardly professional. The CCIF needs to employ a few competent telecommunications network planning engineers to set the base infrastructure rules in place so that the foundations for a wide range of Broadband technologies can be built on.

- CCIF proposals should seek to enhance the competitive environment for the supply of broadband.

It has been conclusively proven that a competitive environment is by far the most expensive method of establishing and maintaining any infrastructure. If there is any doubt then refer to [Reference 1]. Surely your committee would have been educated from the disaster in the nominal \$4 Bn wasted in a double infrastructure of CATV in the major urban cities, and re-educated from the disasters the multiple mobile networks costing at least a further \$5 Bn that together do much less than one well organised co-utilised network. It should also be very obvious from these financial disasters that any competitive environment is only good for those companies providing the equipment to be installed and commissioned. We now have no Australian based large-scale telecommunications manufacturers in Australia. Such an approach of a competitive environment will only further cripple our Balance of Payments – unless we manufacture all the equipment locally right down to and including the integrated circuits (and not just the ironwork for the frames and chassis).

- Proposals that are funded from a number of sources and maximise the total return on investment for all project partners will be favoured.

Business Cases (Proposals) that provide the highest ROI are naturally the most favoured, and spreading the sources out is the best way of minimising the chance of failure. This is the role of a bank or other financial / merchant investment company in managing funds and as such if these rules are followed then the banks and other financial institutions looking to grow their wealth will be impinged by Government Committee intervention.

In other words the CCIF is impinging on business investment, and surely this is not good for business investment institutions. Either the CCIF fully funds all the proposals, or it keeps out of the investment management arena and directs investment institutions to be fully involved. The CCIF cannot have it both ways!

- Proposals should seek to stimulate further investment in the delivery of services using broadband infrastructure, including in the key sectors of health, education and local government.

If the Broadband infrastructure is already there, then no stimulation of any form is required. That means no advertising, no pamphlets or need-to-know booklets, no dinners, trips or other junkets that waste the resources requiring investment in creating the Broadband infrastructure in less than major urban areas. The real issue here is misdirected spending very limited resources on advertising (stimulation), when these funds need to be directed into Broadband Internet infrastructure installation and commissioning – and nowhere else.

- The Australian Government will contribute no more than 50 percent of the total cost of projects.

No Australian Government funds should be allocated to any projects, because if their Business Cases are positive then they will have a positive ROI, if this takes time then this is the role of banks and other investment institutions. If the Business Cases are negative then they should never start, or another engineering approach be sought. The Australian Government should be entirely funding the Broadband Infrastructure and not anything else, after all the people and most small businesses have paid their taxes to have the infrastructure development and maintained by the Governing bodies, and not private enterprises.

- The wider community, including small and medium enterprises (SMEs), not for profit community service organisations and consumers should be able to access excess capacity on networks developed for the public sector.

Further, major businesses (as well as the public Sector – Local, State and Federal Governments and their Departments) will also have large uses for Broadband infrastructure. This infrastructure needs to be installed and commissioned, by the Australian Government through one highly coordinated Authority / Commission and these added major areas connecting through one major Broadband Infrastructure network then with the capacity use and only because of economy of scale, will there be adequate excess capacity to make the overall infrastructure economical (cheap enough) so that the wider community, including small and medium enterprises (SMEs), not for profit community service organisations and consumers can utilise the excess capacity.

- Assistance will only be provided to high quality projects that require seed funding to be implemented. Proposals will also be expected to provide a clear strategy to ensure ongoing viability.

This is the role of banks and other financial institutions, not a Government Department. It is obvious that the banks and financial institutions are the areas that need to be educated so that they can assist with developing business cases for their clients. Again educating the banks and financial organisations is the role of the Universities and not a Government Department.

Targeting

From the broad network requirements that was outlined earlier in this response paper, a few competent engineers are very capable of producing a national transmission and switching plan that can be extrapolated for two, five and 10 years. This plan does not have to have all the detail – just to overview of what should be required where and the expected growth plans. As stated before the major inputs would be from major businesses, and all Government departments – including schools, TAFEs, Universities and base hospitals, Police stations in regional areas, and Transport centres (all rail, bus and air government/businesses).

Timing

Reads well

Eligibility

Reads like a Bank proposal

Decision Making Process

Another Committee

Monitoring

Good business practice – well thought out!

Evaluation

Evaluating the CCIF after the event and monitoring the projects during the events is a lopsided approach. Surely both need to be continually monitored and if either fall from the initial strategies then they need to be reigned in immediately and/or closed.

National Broadband Strategy Linkages

A response [*Reference 16*] to the *Demand Aggregation Broker Program* has already been submitted. This response points out that the term “Broker” relates to a person that buys and sells commodities – through having a superficial knowledge of these products, though the expertise required for this role is very complex and it requires a large amount of telecommunications network planning engineering skills far beyond the level of broking – hence from this reasoning alone this *Demand Aggregation Broker Program* **has serious conceptual flaws through looking to have the people with the wrong skill-sets to perform the critical roles in this program.**

Appendix 5 of the NOIE Broadband Advisory Group’s Report to the Government gave a very ***optimistic picture of a Broking team (consisting mainly of Engineers at Universities)*** working on a large network where operating costs were falling. This simply ***does not relate or compare with regional Australia*** where the Broadband installation and commissioning costs are almost prohibitive and Broadband Access Infrastructure does not exist as yet. The example provided in that appendix is clearly misleading and those that signed off on this were either desperately scratching for an example, or were inept in thinking that this example relates to much smaller and regional structures without any CBD high usage infrastructure.

This serious flaw impacts on the credibility of the ***Higher Bandwidth Incentive Scheme (HBIS)*** and it indicates further that those involved in developing a national usage strategy have little conceptual knowledge of just how forward planning engineering is done and the avenues that forward planning engineers would as a matter of course investigate in developing a comprehensive well engineered national Broadband network.

In Closing [*Reference 14*] shows where the future if copper is not and Fibre is.

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