

Comments on the TOR Response
Australian Metropolitan and Major Regional Areas
High Speed Broadband Network Infrastructure
Commercial High Speed Open Access
Assessment Process

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1. Background and Context

1.1 No Comment

- 1.2 The prime purpose of all levels of Governments in Australia is to finance and manage a wide range of infrastructures, so that competitive businesses can flourish and pay taxes.

The USA has an alternative approach where in the mid-late 1800's, 'Industrialists' took control of the majority of essential services, deeming them to be Utilities, then financed all available Economics texts / courses to remove the notion of infrastructures being efficient – to falsely claim that competitive business is always good. Reference: PowerPlay, Dr S Beder, Scribe Publications, Melbourne, 2003; ISBN 0-908011-97-0

Paragraph 1.2 should altered to include the italic and bold wording and read:

As a key part of this initiative, the Australian Government committed to an open and transparent process for the assessment of proposals for the roll-out of new, open access, high speed broadband network infrastructure and services in capital cities and major regional centres, *possibly* without the need for Government funding *from consolidated revenue*. The Australian Government also indicated that it would introduce legislation into Parliament to *fund this assessment process to prevent competitive telecommunications infrastructures from being introduced*.

- 1.3 I am concerned that this so-called Expert Taskforce does not appear to have any Professional Telecommunications Engineers in its team. In consideration that this Guideline is entirely about evaluating telecommunications engineering business proposals for new and existing Telecommunications Infrastructure, I would have expected the great majority of people in this Expert Taskforce to have several years experience in Professional Telecommunications Engineering as an absolutely base essential qualification for admission.

This may well be an Expert Taskforce, but the qualifications and experience as shown in the biographies tells me that their collective expertise is not related to telecommunications infrastructure business engineering. From the biographies, the strengths of this Expert Taskforce appears to be: commercial oil and gas reselling, secretarial economics, treasury economics, secretarial treasury, ACMA policy dispute resolution, and ACCC regulatory affairs.

This taskforce appears to have expertise in the economics and tax implications of oil and gas reselling – but it would be imperative that this Expert Taskforce must have professional engineering expertise in business policy decisions relating to appropriate telecommunications infrastructures to aid Australia's economic future! People that do not have several years experience in a particular area (eg. telecommunications infrastructure) cannot be considered to be 'Experts' as experts have a wealth of knowledge from which they create wisdom, and it is that wisdom that makes good policy decisions – not the other way around.

Can the people in this Expert Taskforce be immediately replaced by people with relevant professional business engineering expertise in telecommunications infrastructure?

- 1.4 Dot Points 3 and 4 are of concern: The Expertise of the “Expert Taskforce” should be such that consultation with proponents or others should be an absolute minimum because the Expert Taskforce should be the ‘peak body’, not the ‘base body’.
- 1.5 This paragraph appears to be a longwinded convoluted oxymoron over the several points provided and I have provided comments in italics for each point:

In preparing its reports, the Taskforce is to have particular regard to:

- the Government’s strong ongoing commitment to robust competition and the long term interests of end-users;

I believe that this “strong ongoing commitment to robust competition” is very seriously flawed in several areas: “Robust Competition” is a euphemism for ‘war’ and the cost of war is extremely expensive. Here is a recent classic example in Australian telecommunications and the lesson was not learned:

It is very common knowledge that duplicated infrastructure is extremely wasteful, and we only have to look at the Hybrid Fibre Coax (HFC) that was raced into service in 1992 around Australian state capital cities. This competitive infrastructure cost the Australian taxpayers about \$7.2 Bn. If it was done as an Infrastructure Business approach the CAN infrastructure would not have been duplicated, and would have cost about \$2.4 Bn (and provided the same or better grade of service).

What is being discussed is a “High Speed Broadband Network Infrastructure” and this implies Infrastructure Business – not a Competitive Business. These two types of businesses have diametrically opposing measures and ethics, and a short outline is on the [Web](#) to explain in a little more detail. The prime focus of a Competitive Business is to minimise services and maximise internal profits, while the prime focus of an Infrastructure Business is to maximise services and maximise external profits.

This consideration to have a commitment to robust competition is clearly not in the interests of long-term end-users, as [war] will drive the user price up, and minimise the service standards – in both cases to maximise competitive/investor profit.

- the Government’s strong ongoing commitment that all people in Australia have access to quality telecommunications services at affordable prices, underpinned by legislation where necessary;

In a Competitive Business environment, having “access to quality telecommunications services at affordable prices” is not any part of the Competitive Business work ethic – hence the need to legislation to force the issue. In an Infrastructure Business environment, having “access to quality telecommunications services at affordable prices” is everything that an Infrastructure Business would strive for, and therefore legislation to force the issue would be totally unnecessary and inappropriate.

This consideration to use legislation to underpin quality telecommunications services at affordable prices is totally redundant in an Infrastructure Business Model, and this shows that a Competitive Business Model is the totally wrong economic business model for this purpose.

Legislation to finance the cost of this Assessment would be acceptable – providing the assessment prevents duplication of telecommunications infrastructure.

Remember well the analogy teachings from Cinderella, where her competitive (gold digging) ugly sisters tried in vain to force the glass slipper onto their feet. If it is necessary to force on legislation, then it should be obvious that the wrong economic business model has been applied. To fix this ugly situation, firstly apply the correct economic business model and then the legislation will be synergetic and not enforced!

- the need for investors in a high speed broadband network to earn returns on their investment commensurate with the cost of their investment and their risks;

Private telecommunications investors need to comprehend that there is a very high entry margin to enter this infrastructure, and that it may be more than five years before there is any ROI, and that the ROI should be in the order of 5% to 6% pa from that point until the equipment becomes obsolete in about 25 to 30 years.

This is wholesale infrastructure engineering – not competitive reselling. If investors wish to sink their capital into telecommunications then they should be encouraged to focus on telecommunications retail reselling – because this is where the higher margins are (along with investment risk to match the higher margins). This is the powerful reasoning point to [structurally separate Telstra](#) (into BigPond – the retail reselling arm) and Telstra (the infrastructure manager).

- the Government's objective to encourage efficient investment in communications infrastructure;

This statement is a true oxymoron or possibly the words have been intentionally interchanged to be self-confusing.

Maybe this should read as follows: “the Government should be encouraged to invest in efficient communications infrastructure.” (and the private sector should be encouraged to invest in telecommunications reselling).

- the Government's view that investment to provide high speed broadband services, particularly in urban areas, can and should be funded by the private sector; and

This view is now somewhat outdated in the a large number of countries that in the 1980's privatised their telecommunications infrastructures to 'improve efficiencies' later found out that the improved efficiencies did not come from 'competition' but instead came from global technology advances (particularly in electronics). Worse still, the extra costs of advertising, multiple managements and multi-duplicated networks forced the operating prices well above the savings made by introducing newer technologies. These countries have now seen the errors of their ways and are actively nationalising their telecommunications infrastructures! Wake up, Australia!

If the private sector decides to invest funds into Broadband telecommunications, then it should focus on reselling the wholesale infrastructure services as retail, and not the infrastructure equipment – which should be Government funded for maximum business efficiency.

- Australia's international trade commitments relating to telecommunications.

The partial privatisation of Telecom as Optus was to prove that privatisation would drive user costs down. Technology dramatically brought the prices down but privatisation pushed the prices considerably higher – so this was a lose-lose situation. The Optus experiment to privatise part of Australia's telecommunications network has proven to be an utterly complete failure for Australia, with Optus running at a loss, and finally being sold out to Singapore Telecom – so not only is Optus now foreign owned; its revenue stream is out of Australia, and a significant portion of the total telecommunications infrastructure in Australia is now not even in Australian hands.

If we are to consider the equipment to be used for Broadband Multimedia Services (BMS), then consider that the Universal Broadband Routers (uBRs) that send Internet on HFC are Cisco (USA), the routers that feed them in the local exchanges are Cisco (USA), the Optical Fibre that connects them to the central Internet core is Pirelli /Prysmian (Italy/Belgium/USA), the Core Network is Cisco (USA) and Nortel Networks (USA/Canada) and Alcatel (Belgium / France/ UK/ USA); the transmission links are Marconi (UK/France/USA) and Siemens (Germany).

It doesn't take too much brain-power to realise that there are very strong international pressures (including the WTO) pushing very hard to ensure that Australia puts in a highly inefficient multi-duplicated (competitive) network; where one well-engineered Broadband Network infrastructure would be significantly more cost-effective to operate and be in the best interests of Australian end-users (including the private sector).

- 1.6 Having seen the current make-up of the so-called Broadband Telecommunications Infrastructure "Expert Taskforce", I have little doubt that this taskforce collectively has virtually zero professional business/engineering expertise in Australian telecommunications infrastructure. I am therefore offering my 35+ years of experience, knowledge and wisdom in this expert field be part of this Expert Taskforce.

From my previous professional experience in the telecommunications industry, as a professional Electrical Engineer specialising in telecommunications equipment and network engineering, I have identified that each new technology takes about five years to implement, and about 10 years to mature, and the mature lifespan can run from about five to 40 years before it is obsolete. This has been well documented by me some years ago and the document "Australia's [Converging Network Technologies](#)", was presented to the Senate Hearing to Telecommunications in 2004 and a copy of this is on my Website at www.moore.org.au

For those that may find "Australia's Converging Networks Technologies" a little dated, here as an updated and simplified table that shows the Australian Inter-Exchange Switching and Transmission technologies in a table form:

Inter-Exchange Technology	Implemented	Effective	Matured	Obsolete
Crossbar Mechanical Switching	1960	1965	1970	1995
10C Analogue Switching SPC	1970	1975	1980	1985
AXE Digital Switching	1980	1985	1993	2005
DMS Digital Switching	1985	1990	1995	2000
S12 Digital Switching	1990	1995	2000	2010
IP Switching / Routing	1995	2000	2005	2040
FDM on pair/quad cable	1935	1940	1950	1980
FDM on Coax Cable	1950	1955	1960	1985
FDM on Point-to-Point Radio	1960	1975	1985	1990
PDH on Pair Cable	1980	1985	1990	2005
PDH on Coax Cable	1980	1985	1990	1995
PDH on Point-to-Point Radio	1985	1990	1990	1995
PDH on Optical Fibre	1985	1990	2000	2005
SDH on Point-to-Point Radio	1990	1995	2005	2015
SDH on Optical Fibre	1990	1995	2005	2040
ATM on Point-to-Point Radio	1990	1995	2000	2005
ATM on Optical Fibre	1990	1995	2000	2005
MPLS on Point-to-Point Radio	1995	2000	2005	2040
MPLS on Optical Fibre	1995	2000	2005	2040
Optical Fibre – Single Mode	1985	1990	1995	2040
Optical Fibre – DWDM	2000	2005	2010	2040
Optical Fibre – CWDM	2000	2005	2010	2050

Table 1 Switching and Transmission Technologies in the IEN - Time

This table clearly shows that as from 2005, the only technologies in the IEN that will not be obsolete or very near obsolescence will be IP switching; and for transmission; Optical Fibre and point-to-point Radio.

Note: I believe that all members of the Expert Taskforce would have an intricate knowledge of all the synergetic and necessary associated Network Management structures that are essential for the cost-effective and efficient operation, management, metering, maintenance, signalling and support of these various switching and transmission infrastructure technologies. Consequently I have not included detail on these essential networks in these comments.

The table below follows on directly from the above table, but looks at the combination of Broadband IP with Pay TV (Multimedia) and Radio/TV Programme distribution networks. This table of particular significance as it links bearer physics to traffic utilisation to a lifetime.

IEN (Tx) Application	Implemented	Effective	Matured	Obsolete
Programme Distribution Coax	1945	1950	1975	1985
Programme Distribution p-p Radio	1960	1965	1975	1990
Programme Distribution Satellite	1980	1985	1990	2000
Programme Distribution Optic Fibre	1990	1995	2000	2030
Programme Distribution OF Systems	2005	2010	2015	2040
Telephony – Open Wire	1850	1855	1920	1930
Telephony – Loaded Cable	1920	1925	1955	1985
Telephony – Coax Cable	1950	1955	1960	1985
Telephony – Point-to-point Radio FDM	1960	1975	1985	1990
Telephony – Optical Fibre PDH	1985	1990	2000	2005
Telephony – Point-to-point Radio PDH	1980	1985	1990	1995
Telephony – Optical Fibre SDH	1990	1995	2005	2040
Telephony – Point-to-point Radio SDH	1990	1995	2005	2040
Telephony – Optical Fibre IP/MPLS	1995	2000	2005	2040
Telephony – Point-to-point Radio IP/MPLS	1960	1975	1985	1990
DDN – Loaded Cable	1965	1970	1975	1985
DDN – Coax Cable	1965	1970	1975	1985
DDN – Point-to-point Radio FDM	1965	1970	1985	1990
DDN – Optical Fibre PDH	1985	1990	2000	2005
DDN – Point-to-point Radio PDH	1980	1985	1990	1995
DDN/Internet – Optical Fibre SDH	1990	1995	2005	2040
DDN/Internet – Point-to-point Radio SDH	1990	1995	2005	2040
Internet – Optical Fibre IP/MPLS	1995	2000	2005	2040
Internet – Point-to-point Radio IP/MPLS	1995	2000	2005	2040
Pay TV Centralised Optical Fibre	1992	1995	2000	2005
Broadband Multimedia Centralised OF	1995	2000	2005	2005
Broadband Multimedia Remote OF	2005	2010	2015	2030
Broadband Multimedia 10G+ OF Systems	2010	2015	2020	2040

Table 2 IEN Wholesale Application over Time and Technology

All of these IEN Transmission Applications have high bandwidth requirements, but each network structure is significantly different – and each network structure is optimally engineered for efficient distance-related and capacity-related transport.

It is obvious that each incremental system grows on the backs of the previous technologies, and this is one of the integrated synergies that brings in higher speed networks at ‘competitive prices’

(Explanation: “Competitive Prices” in this text specifically means prices that are commensurate with existing prices for similar service standards, and costing proportionately more for increased service standards. “Competitive Prices” in this text specifically does not mean prices that are moved by marketing and advertising strategies to fight/battle/war for a larger portion of the available market.)

In just the same way that the Inter-Exchange Network has technologically morphed over several decades, the Customer Access Network (CAN) has also technologically morphed over several decades, and this too was described in Australia's [Converging Network Technologies](#).

Again I have produced a rather simple table that takes the various CAN technologies through their life cycles, and this should set the scene for sensible CAN forward network planning / engineering.

Customer Access Technology	Implemented	Effective	Matured	Obsolete
Open Wire Line	<1900	1900	1900	1970
Twisted Pair Cable	1940	1950	1980	2000
PGS Loaded Pair Cable	1940	1950	1970	1990
PGS VFHA – Pair Cable	1985	1990	1995	2005
PGS Remote Line Mux	1985	1990	1995	2000
PGS Remote Int Mux	1990	1995	2000	2005
PGS DDN 64 kb/s	1980	1985	1990	2000
PGS MegaLink 2 Mb/s	1980	1985	1990	2005
PGS ISDN 2 Mb/s	1980	1985	1990	2005
PGS Frame Relay 2 Mb/s	1980	1985	1990	2005
PGS Frame Relay 155 Mb/s	2005	2010	2010	2010
PGS Analogue Radio Conc. Sys.	1975	1980	1985	1990
PGS Digital RCS	1980	1985	1990	1995
PGS HCRC	1985	1990	2000	2010
Hybrid Fibre Coax (HFC)	1992	1995	2000	2010
HFC Analogue TV	1992	1995	2000	2005
HFC Digital TV	2005	2010	2010	2010
HFC IP/Internet	1995	2000	2005	2010
PGS ADSL DSLAM (IP)	1995	2000	2005	2010
PGS ADSL 2 / 2+	2005	2010	2010	2010
PGS ADSL on p-p Radio	2005	2010	2010	2015
Mobile – Analogue	1980	1985	1990	1995
Mobile – Digital GSM	1990	1995	2000	2005
Mobile – CDMA	1995	2000	2005	2010
Mobile – WCDMA (3GSM / IP)	2000	2005	2010	2030
Broadband – FTTNode 2 Mb/s (ADSL)	1990	1995	2000	2000
Broadband – FTTN 155 Mb/s (ADSL)	1995	2000	2005	2010
Broadband – FTTPremises 30 Mb/s	2000	2005	2010	2040
Broadband – FTTP 155 Mb/s	2005	2010	2015	2040
Broadband – FTTP 1 Gb/s	2015	2020	2025	2040
Broadband – FTTPBusiness 2 Mb/s	1990	1995	2000	2005
Broadband – FTTP 155 Mb/s	2000	2005	2010	2020
Broadband – FTTP 1 Gb/s	2010	2015	2020	2040
Broadband – CWDM	2000	2010	2015	2050

Table 3 CAN Technologies over Time

This list of CAN transmission technologies is non-exhaustive, but it does show that just like its' diametrical associate (the IEN) the bearer technologies are also moving towards optical fibre (OF) and radio, and the CAN data rate speeds will only increase when the IEN and inter-continent networks have sufficient data speed capacity.

It is truly unfortunate that the ACCC (and I believe the DCITA) both use the same and severely outdated "[PSTN / Mobile / ISDN / Internet](#)" Connectivity Model, which I believe does not align with the Australian telecommunication network structures. One consequence of this incorrect Connectivity Model is that the Telecommunications Report provided to the ACCC makes a range of grossly incorrect determinations and conclusions. It further amazes me that after all these years, nobody in the DCITA, ACMA or ACCC have spoken up and actively questioned the validity of this very outdated PSTN Connectivity Model, which has glaring structural errors.

This Telecommunications Report to the ACCC uses this "PSTN Connectivity model" and it shows the PSTN (which was reality is a combination of the IEN and the fixed wire CAN), the Mobile (which in reality is a combination of the IEN and the mobile radio CAN), the ISDN (which is in reality a combination of the IEN and part of the fixed wire CAN), Internet (which in reality is the IEN in combination with most CAN technologies), HFC (which is the CAN part of cable Internet and Pay TV (HFC) – and the IEN part is not mentioned), etc. The "PSTN / Mobile / ISDN / Internet" Connectivity Model even fails to show how and where these network structures interconnect, and how and where competitive networks connect.

- 1.6.2 If "network losses" in rural and remote areas refers to IEN transmission attenuation, and/or IEN transmission congestion, and/or IEN Switch/Router congestion, then these issues should be synergetic with 3GSM. If the "network losses" refers to CAN attenuation then the **CAN OF Replacement Program** should address that issue in 98% of all cases.
- 1.6.3 Duplicate networks are extremely uneconomic and I have pointed this out several times over many years – but unfortunately legislative and regulatory measures are extremely heavily biased towards full competition of infrastructures – and refuse the see and admit the "Captain Obvious" flaw in their rationale.
- 1.6.4 No comment

2. Opportunity

- 2.1 No comment
- 2.2 This paragraph is embarrassing: The Australian citizens have for several decades ploughed considerable taxed funds into building a national telecommunications structure, and the then successive Federal Governments have squandered part of this valuable Telstra infrastructure and given it to Optus which has then sold out to Singapore Telecom.

I believe that Telstra is in the throes of building a considerable 3G IEN network that covers the rural and remote areas with a large number of (CAN) 3G mobile base

stations. The IEN that is directly and synergetically associated, will have a considerable rural and remote component not just for the rural and remote but as a backup IEN for major metropolitan centres, and for high speed Internet traffic between all major centres.

This Telstra rural and remote IEN will be the wholesale platform for other (economically inefficient) carriers to connect their networks – (or for the more brilliant) – will be the wholesale platform for competitive resellers to price their retail products.

The necessary legislation would repeal most of the ACCC portions referring to the Trade Practices Act, and that is why the paragraph is so embarrassing.

2.3 No comment

2.4 No comment

3. Objectives

Objectives

3.1.a Please refer to my schedule of technology advances versus time in 5 year lots; above Table 1 and Table 3, as these technology advances will be the determining factor, not privatisation and definitely not competition (both of which have been shown to slow the introduction of new technology – because funds are squandered off for war-chest advertising and service standards are minimised to maximise internal profit).

In ‘providing higher quality and faster wholesale and retail broadband services to those now generally available in these areas’, there are a few major technology issues that need to be understood;

- (A) “Higher Quality” infers more reliable and less likely to suffer system failures. This only comes about by not running any part of any system less close to physical boundaries, and *this means minimising commercial profit, and no truly competitive business will ever act to actively minimise the internal profit.*
- (B) “Faster Wholesale...services” only comes about by having a much more resilient network, and that means that the current IEN needs to be ‘hardened’ or built thicker and with faster systems that can more safely carry a much higher throughput. *No truly competitive business will ever do that unless they are forced to do so as it impinges on maximising profits (which come first).*
- (C) “Faster Retail...services” comes from not throttling the particular customer service agreement, but having sufficient Wholesale Broadband Bandwidth available. The second partial answer is that if the CAN technology is insufficient to provide the Broadband service then this is not a Retail (competitive business) issue but an infrastructure business issue. The competitive business Retail service approach is to commercially price the Broadband service such that profits are maximised while ‘lip-servicing’ the

customer complaint level. *These competitive business actions do not provide faster retail services.*

Paragraph 3.2 (a) (i) needs to be rewritten as follows

- (i) provides a higher Quality and faster Wholesale Broadband service than what is currently available in those areas.**

Paragraph 3.2. (a) (ii) is exceedingly insulting to any professional telecommunications engineer / business analyst – because that is EXACTLY what they strive to do every day of their working life, and that paragraph clearly shows that the people that wrote this draft have no concept of what is being required of the people that actually do this work professionally.

3.1.b This should read:

An industry environment characterised by sustainable robust competition between **retail reselling** market participants, ~~supported by open, non-discriminatory network access arrangements.~~

Technologically ‘open and non-discriminatory network access’ was possible with fixed access (copper wire) telephony and ADSL because the bandwidth requirements were exclusive to each other, and it was commercially viable to ‘patch in’ DSLAM equipment in the same manner as Pair Gain Systems. With FTTP ‘open and non-discriminatory network access’ presents major technical difficulties and major engineering expenses, because the OF CAN is far more highly system integrated than copper pairs used for telephony. One analogy is to consider a working DVD and then cut a vinyl record player track on the reading surface of that DVD and expect the GVG to work with both technologies! It can’t!

It has already been explained by me that duplicate physical networks in competition are horrendously uneconomic. It therefore points to wholesale selling of network services on an infrastructure basis (minimum short-term profit) and competitive reselling to the retail market as the correct business approach to have non-discriminatory network access.

This statement 3.1 (b) (iii) implies that the Expert Taskforce has the in-house professional telecommunications engineering knowledge and wisdom to fully comprehend the impact of each proposal and exactly how the proposed new infrastructure will synergetically connect at component level with the existing telecommunications infrastructure to provide the capabilities and long-term goals.

I do not believe that the current make-up of the Expert Taskforce has the in-house professional telecommunications engineering knowledge and wisdom to do the assessment – without calling on extensive outside assistance – and that defeats the purpose and use of this Expert Taskforce.

Sub Paragraph 3.1 (b) (iv) This is a “Captain Obvious” statement – which is therefore totally unnecessary.

Sub Paragraph 3.1. (b) (v) Australia’s international trade obligations relating to telecommunications need urgent and serious reviewing (which is political code for instant repealing).

3.2 (i) No comment

(ii) No comment

(iii) No comment

3.3 Proposals will firstly need to be assessed by Professional Telecommunications Engineers (that should already be in the Expert Taskforce) to make sure that the proposals are synergetic with the existing infrastructure right down to component level for hardware, and system levels for metering, management, remote control, and circuit connectivity; and cost level for purchase arrangements, install, commissioning an ongoing maintenance throughout the whole life cycle of this equipment.

Life Cycle Management is the big expense ticket that seems to have been missed in the Draft document, and this is a major engineering operations issue. It seems to me that the Expert Taskforce has deliberately omitted several business-engineering areas in this Draft Document and these issues are imperative mandatory topics.

3.4 No comment

3.5 No comment

New High Speed Broadband Network Infrastructure

3.6 No comment

3.7 **FTTN is a mature to obsolete technology** (check Table 3), and should not be encouraged – and the Expert Taskforce should have been aware of this. The Expert Taskforce should know that the new high Speed Broadband Network Infrastructure has two systematic components: the IEN and the CAN.

FTTN is actually a copper pair technology that had limited use with ADSL, and this combined technology has already been outdated by Fibre to the Premises/Home (FTTP / FTTH), which is the emerging CAN technology that will now become very cheap since there was a recent patent given that created a very cheap connection between a planar chip and an Optical Fibre – but again the Expert Taskforce should know this!

The Draft document should remove references of FTTN and replace that with FTTP

3.8 The Expert Taskforce should know that telecommunication infrastructure is totally 'industry grade' not 'commercial grade' and as such this paragraph is an insult to the professional telecommunications engineers, and it spells out incompetence in whoever drafted this document. The paragraph below spells it out:

In keeping with all major telecommunications installations in Australia, the new High Speed Broadband Network Infrastructure shall also be of industrial grade components and equipment to provide a very low maintenance requirement over the whole life cycle of the infrastructure, and this life cycle shall exceed 35 years.

There is confusion here with Retail Services, signalling / transmission protocols and Service Standards. To un-confuse this mess: Customer Service Standards are set by network infrastructure reliability and signalling / transmission compatibility. Retail Service is competition in customer lip service.

- 3.9 This is what experienced Professional Telecommunications Engineers do in their traffic engineering studies. It appears that the Expert Taskforce wishes to check the work of experienced Professional Engineers when it seems that the Expert Taskforce has not professional expertise in this area.

Basic Engineering Traffic Theory tells us that you cannot get more than 1 Erlang per channel, and switching networks (the IEN) cannot provide High Speed Broadband to the CAN if the grading is too low – and that comes back to CAN traffic density knowledge, which then determines the grading necessary in the IEN.

- 3.10 This paragraph is a political statement that is fundamentally incredible (without credit), as one very major telecommunications company has already began a considerable buildout that will take about 2 to 5 years to complete from about 2005. For more detail check my comments regarding 1.6 as that basically says it all. If the Expert Taskforce wants a much faster rollout, then it will cost a lot more than it currently is now and that may not be commercially sensible / viable (unless the Government is prepared to directly fund the accelerated rollout).

Remember the debacle with competitive rollout of the HFC, which in 1992 cost Australia about \$7.2 Bn (and wasted about \$4.8 Bn of the \$7.2 Bn). Considering 2.5% inflation p.a. from 1992 to 2007, repeating this same infrastructure mistake again will cost the Australian taxpayer (private sector superannuation funds etc) about \$10 Bn and waste about \$6.95 Bn of real money.

- 3.11 I am seriously doubting that the Expert Taskforce has the collective in-house professional telecommunications engineering expertise and knowledge that is required for Voiceband telecommunications together with IP, and the requirements for VoIP, and the IEN and CAN requirements for 3GSM. With this in mind, I cannot see why any proponents need to respond to this paragraph

Beneficial Outcomes for Customers

- 3.12 The paragraphs 3.12 – 3.16 are the basis for the Infrastructure Business Case, so ***these benefits need to be ‘externally’ quantified*** in terms of: increased profits for competitive businesses that would be utilising these services in these areas, the ability for new competitive businesses to emerge in these areas as a consequence of having this infrastructure implemented, the decrease in social costs (faster medical analysis, reduced alternative information transport costs), reduced need of expensive alternate Government based infrastructure services per human, etc..

This analysis should have been completed before this draft document was prepared, and because of that, these paragraphs really should have no relevance here.

3.12 Technology advances will address this issue – see the technology growth tables earlier in the comments in this response for the very obvious answers.

3.14 Consumers are the retail end of the competitive market, not in the infrastructure (wholesale) end of the market – that is where Competitive Business is, and it is Competitive Business that then sells to the Customers.

With telecommunications reselling opened up to the competitive private sector market, while the telecommunications infrastructure market was closed down from the private sector, then these goals of lowest possible retail prices would be met, along with a naturally much higher Quality of Service.

3.15 Rural and remote is an infrastructure business. Since the [Davidson Report](#) in 1981-1982 incorrectly pushed the rural and remote infrastructure into the competitive business world, it has been necessary to have a USO to ensure that these services are maintained. Unfortunately the (incorrect) competitive based internal accounting system views rural and remote telecommunications as a big loss, hence the USO initiative.

It is this necessary telecommunications infrastructure that makes mining, farming and grazing profitable on a world's basis. So in using the (correct) externally based infrastructure accounting system, it becomes obvious that this paragraph should read:

The rural and remote telecommunications infrastructure is an extremely valuable national asset and Government revenue will be directly funding this asset to its' fullest extent from consolidated revenue.

3.16 This paragraph relates to competitive sales and marketing hype and is for the telecomms resellers to utilise – not the infrastructure providers. The guideline document is supposed to be focussed on what infrastructure is to be engineered and constructed of what span of time. The infrastructure business cost-benefit analysis should have been the pre-cursor to the engineering design phase, and “demonstrating beneficial outcomes for customers...” really has no place here – so paragraph 3.16 should be removed.

Open Access, Competition and Efficient Investment

3.17 Unlike telephony/ADSL CAN technology using FTTN; The newer FTTH / FTTP is a highly integrated network structure that does not allow for competitive infrastructure providers to ad-hoc connect at the CAN-IEN interface, or in the CAN structure itself.

It is imperative that the Expert Taskforce must know that competitive infrastructure is the most inefficient form of investment (and that is why competitive businesses strive to annihilate competitive infrastructure to create maximised profits through monopolies). *The word 'monopoly' is not in the repertoire of an infrastructure business as all infrastructure businesses seek to minimise internal profits and maximise external profits and services.*

3.18 The “total cost” should include all management overheads including executive managers and directors, all marketing and advertising expenses, alternate carrier connection and usage costs, legal expenses including salaries wages etc., all contractors

costs and overheads, power, environment, safety, accommodation and travelling expenses, as well as all equipment purchases, hiring and rent expenses.

3.19 In the understanding as per 3.17, competitive reselling of the wholesale product is a very simple procedure that will not interfere with the highly integrated FTTP network structure, and the (software) metering and service interconnection can be well within the IEN/IPN, making an open and non-discriminatory far more functional than the rather clumsy and ill-structured FTTN - ADSL/Analogue Copper CAN model. As such there is no reason to physically 'un-bundle' the FTTP CAN as it was with FTTN-ADSL.

3.20 Refer to 3.19

3.21 Not true – refer to 3.19.

3.22 Interconnection will occur at the Gateway Switching interface in the IEN – not in the IEN-FTTN-CAN interface as with DSLAMs. Alternate ISPs and Alternate TSPs need to connect in the same manner as alternate Mobile phone networks interconnect, and as ISPs should interconnect – through the [Gateway Exchange / Router level of the IEN](#).

There are gross competitive infrastructure inefficiencies in connecting through the Gateway Exchanges including long tromboning of circuits, causing multiples of adjacent circuits to be occupied by the one connection path – resulting in network congestion. Connecting at lower points in the IEN creates incredible signalling issues that expose competitive infrastructures to extreme network fraud/theft and customer records being violated.

The obvious reason for connecting through a Gateway Exchange level is to calculate metering. The not so obvious reason for connecting through a Gateway Exchange level is to intercept aggressive signalling and massive Spam like traffic. This evil behaviour is very common between competing carriers and competing software companies.

3.23 No comment

Return On Investment

3.24 No comment

3.25 No comment

Private Funding

3.26 In my opinion, the Federal Government, in directing the Private Sector to fund infrastructure, is derelict in its duty in avoiding to provide necessary telecomm's infrastructure. The prime purpose of citizens and competitive businesses in paying taxes to the Federal Government is so that the Federal Government would be trusted to allocate these funds to provide infrastructure. Government Trust Funds are part of consolidated revenue – to directly fund infrastructure business. Private Sector

Superannuation Funds are Government Trust Funds in private sector hands to fund competitive business.

With the Federal Government funding the Broadband initiative infrastructure, this provides a maximised Internet and 3G facility to rural and remote areas, and opens up a wide range of non-metropolitan business opportunities that could not be resolved (and relieve a huge problem in the excessive costs of over-urbanisation).

International Trade Obligations

- 3.27 The only type of commitment that can be applied here to prevent anti-competitive conduct, and promote independent, transparent, technologically neutral regulation of the sector will only come about with the removal of competitive business being involved with managing any infrastructure.

Unfortunately that fact flies in the face of the WTO, which for decades has been gouging out efficient Government infrastructures into inefficient squabbling competitive businesses that then require legislation to force the quasi-settlement of fights to maximise profits for these private sector businesses. ***The WTO agreement needs to be urgently reviewed, as it does not assist Australia.***

- 3.28 Refer to 3.27

Legislative and other Regulatory Changes, Risk and Compensation of Affected Parties

- 3.29 Refer to 3.27

- 3.30 Provisions Part XIB and XIC of the Trade Practices Act were, I believe brought in because the Federal Government had earlier moved to privatise Telecom Australia, which changed it from being an infrastructure business into a competitive business. The direct outcome from that was that senior management / directors / board within Telecom Australia then restructured that business to maximise internal profit and minimise service; and with incumbent telecommunication technology advances, Telecom Australia / Telstra began to show competitive business efficiencies.

The other competitive businesses were / are so inefficient, that they bleated “MONOPOLY” to the ACCC; instead of getting their competitive acts together – and so we have heavily biased Trade Practices legislation that has all but crippled Australia’s telecommunications infrastructure.

The problem now is how to retreat from this unholy mess, and several people including me have all come up with a relatively simple solution – but there are too many egos in Parliament to swallow the intelligence pill and realise that Telstra (and Optus and a few other telcos in Australia) are really both competitive businesses for reselling and infrastructure businesses for operating. The solution has stared the polities in the face for years – and that is [to split these businesses into two each, nationalise the infrastructure, and set up multi competitive businesses to do the reselling.](#)

This proposal would make the extensions of the Trade Practices Act redundant and free up many souls in the ACC to do real work. The new Broadband infrastructure would go in without a legal stoush and the ASX would have several cash cow Telco resellers to sink their funds into. The losers would be the lawyers – but their opportunity costs could be used to increase the infrastructure and services!

3.31 See 3.30 para 2

3.32 No comment

3.33 See 3.30

3.34 See 3.30 and this proposal will virtually remove all risks, making compensation etc a non-event.

Geographic Coverage

3.35 The geographic coverage is limited by the ability to finance and install / commission suitable equipment, but this equipment is in late development stages. The Table that I produced above shows the realistic timetable for rollout. The ‘Expert Taskforce’ should have the professional engineering expertise and experience to know this.

3.36 The information requested here is highly confidential as it is Intellectual Property owned by competitive businesses. The subject would be a very different matter if the infrastructure was owned and managed by an infrastructure business. In any case, I believe that you are looking for an Australian Network plan, and I have provided the basis for the [general concept](#) of the [Inter-Exchange Network](#) and the [Customer Access Network](#) on comprehensive Web pages, and some years ago provided a forward network transmission plan for Australia, but the ‘Expert Taskforce’ should have the professional engineering expertise and experience to know this.

4. Assessment Criteria

No Comment at this time.

Conclusion

Having read and commented on up Section 4 in the Draft Guidelines for (the introduction of) High Speed Broadband Network Infrastructure Proposals – Invitation to Comment; it appears to me that the Government Department of Communications, Information Technology and the Arts (DCITA) has finally realised that telecommunications infrastructure is the future lifeblood of the Australian Economy.

The reason for this Draft Guidelines document appear confusing as that document clearly states that the Government will not be funding this telecommunications infrastructure, but a so called “Expert Taskforce” has been created to evaluate proposals for telecommunications infrastructure funding – and this funding would be coming from the Federal Government.

In a step that appears equally confusing is that the Minister of DCITA has had a special working group formed that is at least an “arms’ length” from the DCITA called the Expert Taskforce, and this working group has been given a mandate to assess various proposals for new Broadband infrastructure. This must be extremely insulting to people in the DCITA because I would expect that the DCITA would have been staffed with people having this expertise for this exact purpose.

The naming of the working group as an “Expert Taskforce” seems to me to be a misnomer, as the expertise of this Taskforce does not appear to be in telecommunications, but in commercial oil and gas reselling, secretarial economics, treasury economics, secretarial treasury, ACMA policy dispute resolution, and ACCC regulatory affairs; and consequently this expertise seems to me to be in the wrong area, and / or they have been politically chosen – but not chosen for their expertise in making infrastructure business decisions with an in-depth knowledge and experience of Australian telecommunications technologies.

In regards to telecommunications technologies, it appears that whoever wrote this Draft Guideline do not understand that it takes about two to three years to implement a telecommunications technology into Australia, and it takes about five years for this technology to become effective. To support this fact, I have produced three tables that spell out the changes in Australian telecommunications technology that have happened over the past 50 or so years, and the lifespan of various technologies.

It should be obvious from these tables that it is not competition that drives changes in technologies but Quality practices that are always continuing to improve service standards while driving down overhead costs. The fact that telecommunications service costs have not dropped in line with technology improvements over the last 25 years is because the costs of competition (multiple managements, advertising, marketing, sponsoring, contracting / outsourcing) have combined to lower service standards and raise end user costs well above the advantages heralded by the WTO and other competitive business biased organisations.

The partial split-off and privatisation of part of Telstra as Optus proved to be an utter failure even with Optus been given every possible opportunity to rout profitable markets through ACCC biased support through extensions of the Trade Practices Act. Optus is now a privately owned business – part of SingTel (or is that foreign Government owned), and Optus is encumbered with exactly the same type of legacy equipment that is also with Telstra, and the competition war for a finite market is squandering infrastructure funds on advertising etc.

Further it has been demonstrated in my response with the HFC debacle, that ‘rushed in’ competitive infrastructures are the greatest waste of funds for the least outcome. This lesson needs to be fully comprehended and never repeated.

So now it comes to the real purpose of this so-called “Expert Taskforce”. From what I can see the purpose of this so called “Expert Taskforce” is to assess various private sector telecommunications proposals and rubber-stamp Government funding to the private sector to introduce duplicated (competitive) networks in the hope to fast-track Broadband telecommunications infrastructure into various politically sensitive locations in Australia!

The Expert Taskforce needs to know that many of the technologies that will be proposed are already obsolete including Fibre to the Node (FTTN), which is an euphemism for extending the implementation of what is now obsolete ADSL, ADSL2, and ADSL 2+. Further, Hybrid Fibre Coax (HFC) technology as currently used for Pay TV has also reached its’ use-by date and this also should never be funded.

Both of these CAN technologies have a very limited distance factor making them entirely useless for anything except higher density urban dwellings. Fibre to the Premises (FTTP) is the ideal fixed access CAN technology of the future as it can extend to 60 km and has a bandwidth capability exceeding 1 Gb/s, and with currently emerging technologies, FTTP will be far more cost-effective than FTTN/ADSL and HFC, and copper pair, and many current point-to-point customer radio systems.

I have a [Website](#) that carries a series of basic tutorials on the [Australian telecommunications infrastructure](#) including the breakdown of the very obsolete [PSTN Connectivity Model](#) and the development of the [IEN Connectivity Model](#), and this is essential knowledge for everyone involved with any of this field of engineering / business. This Website also shows how various telecommunication technologies work together and concludes that the [CAN will be FTTP and 3G Radio/Wireless in the near future](#) – and any proposals that vary from this theme need to be discarded immediately.

This Website also gives and outline of the existing and proposed [Inter-Exchange Network \(IEN\)](#) and [Customer Access Network \(CAN\)](#) structures, which will be essential for increased speed Broadband services to customer in the future. I am available to consult on all business related telecommunication topics.

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