

## Appendix B

### Steering Australia's Telecommunications Future

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**Abstract:** In the last 40 years most people behind telecommunications restructuring have done so with a hidden agenda of international corporate greed, not an Australian community need, resulting in clumsy structures that have major internal conflicting issues, inherently preventing technology advances and/or good competitive practices.

This paper recommends a dramatic shift from the previous 'all or nothing' approaches and splits Telstra into two bodies; infrastructure/wholesale and reseller/retail, paving the way for a Federal Government Commission to efficiently manage the infrastructure area and the floated Telstra/Bigpond to operate as a competitive reseller/retailer. This approach removes most internal conflicts and the ensuing larger 'economies of scale' paves the way for other carriers to also reposition their inefficient competitive infrastructures into a fully cooperative infrastructure networks, also freeing these carriers to reposition themselves and be fully competitive in the reseller/retail market, not tied by infrastructure constraints.

With consolidation of the telecommunications infrastructure, timely technology advances like PON FTTP for the CAN to introduce FSN including proper Broadband Internet and CATV to all Australian residences, become highly probable in the very near future. Multi-duplicated urban Mobile Base Station access networks could be rationalised and their footprints substantially improved. Existing CATV access infrastructures could also be removed and replaced by PON in an ongoing engineering based capital works program that is not hindered by competing carrier infrastructures and their internal marketing/reselling conflicts.

The win-win argument here liberates the reselling/retail areas from infrastructure so they can proactively market products in a virtually even competitive terrain. Meanwhile the economies of scale created by the unfractured and cooperative infrastructure drives down wholesale prices, without continuing to compromise on engineering standards.

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# **Steering Australia's Telecommunications Future**

## **Current Status**

Australia has a very awkward telecommunications industrial current strategy in place, and this has gradually happened through a series of structural changes implemented through a succession of Federal Governments by law changes over the last 30 or so years. Very powerful multi-national business corporations are the driving forces and have agendas not in common with the Australian Governments, the Australian people, and/or Australian businesses at large. These multi-national business corporations are the instigators of these initiatives for structural changes for their own purposes. [1]

Telstra is the only full national telecommunications network, apparently half owned by the Government, and the other half apparently owned by the Australian public, and foreign investors. Optus is now foreign controlled, with substantial major urban network infrastructures. Australia now also has a range of alternate carriers of Australian and/or foreign ownership, all vying for a piece of the financial action in Australian telecommunications. To further complicate the issue, there are also service resellers having no network infrastructure, for example Crazy Johns; a range of State Government bodies with their own network infrastructures, for example Queensland Rail; some large corporations with their own network infrastructures, for example News Corp; and a base of Federal Government bureaucracies for example the Australian Government Department of Communications, Information Technology and the Arts to interface a wide range of Government, business and customer issues.

It takes some considerable experience and in-house knowledge to get a clear picture of all the stakeholders and their values. Even with this wisdom, the approaches to resolve structural simplifications so that the industry will not have bodies with internal conflicts of interests, be in the main part Australian owned, service all areas with equitable Broadband services, be fully competitive and highly responsive to all customer requirements is difficult, but not an impossible call. This brief identifies many of the main stakeholders and in that it identifies where and what the industrial problems are and how they can be avoided in the future.

Multi-national forces to introduce competition have inevitably resulted in foreign ownership of a sizable proportion of the Federal Australian Government's telecommunications infrastructure. This is exactly what the multi-national corporations intent was and still is. As various parts of the telecommunications infrastructure are 'opened to competition' they naturally become prize isolated acquisition targets and are swallowed up with the inevitable result that entire infrastructure revenues will be offshore owned, and permanently bleeding the Australian balance of payments (BOP), unless competition is politically removed from the engineering management of Australian telecommunications infrastructures.

## **Internal Conflicts of Interests**

Most Australian based major telecommunications based bodies have several internal conflicts of interests, and these heavily impede the industry as a whole to be highly responsive to customer requirements, as providing a new service of one special type will inevitably impinge on another product or service also being marketed by that same entity. The obvious solution for these bodies to be conservative and keep the status quo and through that smokescreen, suppress their internal conflicts of interests from being exposed.

On a worldwide basis, the telecommunications infrastructure is going through a dramatic change where the copper wire based customer access network (CAN) that has really not changed much in the last 150 or so years, is quickly being replaced by optical fibre to the

premises (FTTP) [2] as the choice bearer for future Broadband services as part of the full services access network (FSAN) [3]. Over the past decade several engineering structures have been trialled with the result that passive optical network (PON) technology is the proven cost-effective structure of choice.

Australian telecommunications infrastructure providers have conservatively avoided PON as they have already introduced the far less effective and much slower Asymmetric (directional data) Speed Digital Line (ADSL) technology running on existing copper pair CAN. With the immediate needs of Broadband customers requiring higher speeds and symmetrical data rates, ADSL technology barely fits into the lowest Broadband rung in the ladder of needs.

According to Mr Paul Budde at the Telecommunications Society Australia lecture in Sydney on 29-Oct-2004, the current minimum worldwide standard for Broadband is 1 Mbit/sec and the typical standard for ADSL in Australia is 0.256 Mbit/sec. This technology situation in Australia is clearly far from satisfactory, as in the next decade this minimum required access speed would move towards 10 Mbit/sec and stabilise there.

To compound the issue, ADSL is limited in its service footprints because of line length limitations keeping it generally less than 3.5 km from the Digital Service Line Access Module (DSLAM). Also, in complying with competitive forces to minimise costs through introducing Remote Integrated Multiplexer (RIM) this technology is incompatible with ADSL resulting in about 20% of current urban customer unable to have ADSL in any case [4]. The unfortunate option for the remaining customers in urban, rural and remote locations currently is to use satellite /analogue phone line as another poor solution for Broadband access.

## **Government Bodies**

More recently several alternate operators have been introducing another band-aid solution of local radio "Broadband" Internet, sponsored through another sub-Government body culminating from the Higher Bandwidth Incentive Scheme (HBIS), the Coordinated Communications Infrastructure Fund (CCIF), and the Demand Aggregation Broker Program (DABP) – all of which I feel have their place as a consolidated infrastructure, and not piece-meal partial solutions as they are now.

There have been several other earlier Government based attempts to identify and act on customer initiated telecommunications infrastructure requirements, including the Networking the Nation (NTN) 'initiative', which ultimately lead to a large number of people without telco engineering knowledge working in isolated committees to produce a huge number of business cases related to small telecommunications projects. These business cases were then sorted by another committee and then had to be coordinated into an overall engineering program that was ultimately in the mainstream managed by Telstra to engineer and implement as their Telstra engineers would have done without this serial of committee interventions.

In my professional opinion and experience, the enormous time and effort put in by the public in general may well have 'appeased the Indians' but because the public in general, lack the necessary engineering telecommunications wisdom and expertise, this would have resulted in at least a triplication of workload compared to leaving an infrastructure based body such as Telstra's Network Construction and Design (NDC) to do what they do best, and that is to install and commission telecommunications networks under a well organised and structured capital works engineering programme.

These projects would also have upset years of forward planning and diverted many engineers from their normal work of identifying forward network growth and implementing appropriate engineering specifications to be programmed into an ongoing telecommunications capital

works program. Instead, these same engineers would then have to interpret the content of these business cases and formally reply on how the planned capital works programme would be meeting these prioritised cases, and if not, then seek to change the programmed works to partially suit these requests, and respond on those lines.

Most State Governments have initiated business based telecommunications projects to introduce Internet and computer/office based services into selected country towns with the intent that these businesses will run along the same profit lines as CBD based businesses. An example is the New South Wales base Community Technology Centres (CTC). The flaw in this project is that the requirement is community based and not business based, and this raises a whole spectre of money poorly invested into Local Government Areas (LGAs) for geographically isolated community facilities. These facilities would be far more synergetic through co-locating community facilities in the same concept as a shopping mall – in other words as a community mall, and not separately housed facilities. That is separate issue.

Again, most State Governments have substantial internal telecommunications and information technology (C&IT) networks in their infrastructures, separate to (and therefore effectively financially opposing) the efficiencies of the national telecommunications infrastructure network. These C&IT networks inevitably interface and utilise major telecommunications infrastructure providers at several points.

One example is the Queensland Railroads Commission that has a substantial optical fibre telecommunications network because of extensive high voltage alternating current (AC) electrification of their immense rail network. This is a leading technology rail network in Australia and the electromagnetic interference (EMI) caused by this mode of high voltage AC powering would have made copper based transmission bearers alongside rail lines unworkable. No doubt Telstra and other telco infrastructure providers/resellers also have fibre optic networks base in Queensland too, and these networks could be collectively much cheaper to finance with the existing fibre being shared between entities and through that being much fuller utilised. This is economic rationale, not competitive stupidity.

Most large businesses have substantial communications and information technology (C&IT) based networks that in the main connect to, and through, the major telecommunications infrastructure providers, usually at more than one point. The comparative wholesale usage costs of the Australian telco infrastructure should be a large fraction of the operating costs of networks used for large businesses, as this is simply an economy of scale issue. Large businesses would have their own wholesale user requirements, making them effective purchasers of telco wholesale services, not retail level. In this situation these businesses would have to include within their C&IT structure, the complete reseller function to handle their (internal) client service and fault handling, metering and payments and engineering forecasting.

## **Customer Interface Bodies**

There are several Government bodies that interface customer concerns from a statutory point of view. Most of these bodies grew from the need to report on the status of the telco industry from an independent and unbiased position and as such these bodies are funded by Government revenue. Unless a vigilant check is / audit is held on these bodies, they have the opportunity to grow well beyond their 'use by' date and/or find new but useless work to do to keep in existence, and/or overlap in work reporting and functionality boundaries.

### ***Australian Telecommunications Authority (AUSTEL & ACA)***

AUSTEL (Australian Telecommunications Authority) was created in about 1988, primarily out of Telstra's HQ Regulatory Branch, and became the independent regulatory authority,

voiding Telstra from a strong conflict of interest in setting safety standards for and licensing alternative brands of customer equipment. In about 1990 its role was expanded to promote competition, report on the quality of service of all carriers. At about this time the name was changed to the Australian Communications Authority (ACA), and it took on national numbering management that was till then done by Telstra.

### **Spectrum Management Authority (SMA)**

The Spectrum Management Authority (SMA) was created largely out of Telstra's HQ Radio Branch to independently manage the electromagnetic spectrum used for unbounded media (radio) communications. The auctioning of various mobile radio spectrums in distributed geographic areas was a major financial bonanza for this authority and it crippled mobile telco competition, significantly drove up mobile call costs and forced incumbent infrastructure providers to reconsider extended geographic network coverage because of the immense spectrum licensing costs. In about June 1997 the SMA was merged into the ACA, as these functions were then effectively concurrent.

### **Australian Competition and Consumer Commission (ACCC)**

According to their Website <http://www.accc.gov.au> the "ACCC was formed in 1995 to administer the Trade Practices Act 1974 and the Prices Surveillance Act 1983. The ACCC promotes competition and fair trade in the market place to benefit consumers, business and the community. It also regulates national infrastructure services. Its primary responsibility is to ensure that individuals and businesses comply with the Commonwealth competition, fair-trading and consumer protection laws. The ACCC is the only national agency dealing generally with competition matters and the only agency with responsibility for enforcing the Trade Practices Act and the state/territory application legislation.

*The Trade Practices Act (TPA) purpose is to enhance the welfare of Australians through the promotion of competition and fair-trading and provision for consumer protection. The TPA deals with almost all aspects of the marketplace: the relationships between suppliers, wholesalers, retailers, competitors and customers. In broad terms the TPA covers unfair market practices, industry codes, mergers and acquisitions of companies, product safety, product labelling, price monitoring, and the regulation of industries such as telecommunications, gas, electricity and airports."*

Within the TPA, parts XIA and XIB are telecommunications specific, and obviously take up a large percentage of the ACCCs' activities as shown by the ACCC website content included in the above paragraphs. It seems that because telecommunications companies that have substantial infrastructure and a reselling function these company business have an internal conflict of interest and this results in pricing being irregularly 'distorted' in attempts to minimise competitive resellers from undercutting their own reselling operations wherever and whenever possible. By having the telecommunications infrastructure stripped from the resellers and having this infrastructure made commonly available to all resellers, then this action should very substantially reduce the role of the ACCC in this industry, as telecommunications product and service reselling would be from a common and stable infrastructure platform, void from internal business conflicts of interests.

## **Non-Government Bodies**

### **Australian Consumers Industry Forum (ACIF)**

From its own Website <http://www.acif.org.au/home> "ACIF is an industry owned, operated and resourced company established in 1997 by the telecommunications industry to implement and manage communications self-regulation within Australia. Its primary role is to develop and administer technical Standards and Industry Codes and provide Industry Facilitation

*services that promote both the long-term interests of end-users and the efficiency and international competitiveness of the Australian communications industry.”*

This forum followed on the normal work of Telstra’s “Network Performance” Branch and incorporated competing telcos to work in harmony with ‘service quality’ specifications previously drawn up from within Telstra. These documents set the technical standards and industry (fault reporting) codes for all telcos to agree to across the industry. I expect that with the advent of VoIP and Internet new technical standards and industry (fault reporting) codes will be drawn from sources in and beyond Telstra and be applied as industry standards. In my opinion the work done in the ACIF (apart from drawing on people from several sectors of the community) draws a very close parallel to work done in the ACA and in that case it should be part of the ACA if it is not already there.

### **Service Providers Industry Association (SPAN)**

This is an interesting body, which was called the Service Providers Action Network. As I remember, it originated with AUSTEL opening the Australian telecommunications market to a wide range of alternate operators, in about 1996 and this body formed out of the entrepreneurs that stepped in expecting to make a financial killing, based on Telstra’s’ annual accounting profit disclosures. My opinionated aspect of this organisation then was that very few if any of these people had any conception of the enormity in costs and engineering involved in establishing a network, interfacing it, managing it, and developing future products and services, beyond what was existing.

The Website address for SPAN is <http://www.span.net.au/> and the following is directly quoted the below *italic* paragraphs:

#### **“Mission Statement**

- *To foster open, effective and ethical competition in Australian telecommunications markets.*
- *To ensure all service providers obtain access to networks and facilities in a manner suitable for the provision of sustainable competition in services to end users.*
- *To ensure that members are committed to delivering the highest standards in customer service, innovative products and services and prices, which represent excellent value.*

#### **Objectives**

- *Provide an effective forum for all industry participants, including access providers and access seekers, to work co-operatively together to develop the overall market to their mutual benefit.*
- *Contribute constructively to the ongoing development of industry and regulatory policy; particularly through representation of members on self-regulatory industry bodies.*
- *Promote the highest standards of business ethics and behaviour.*
- *Provide information and other services valued by the membership.”*

The Mission Statement and Objectives are interesting to me because it seems that this group as come a long way in the learning curve from its inception, and yet these statements thinly veil self-regulatory problems with ethical business behaviour issues, and this smacks of conflict of issue problems impinging on resellers. This body has a long way to go on its learning curve. The terms “mutual benefit” and “self-regulatory” are in contradictory.

A classic example in the early 1990s, the development of CCS7 to transfer a customer full national number (FNN) to a database and through that, the customer could then be ‘Gateway’ switched through to their carrier of choice. It took several years of innovation; network development and implementation to further grow the CCS7 signalling protocol so that customer numbers could be first group related and then transported between network infrastructure carriers. This then lead to full number portability where in particular – mobile phone numbers (originally grouped by network infrastructure owners/carriers) could then be individually moved between carriers – at a cost to the customer, so that the customer could then have the infrastructure carrier of choice.

SPAN jumped on this bandwagon and rattled the sabre (to remove customers from Telstra) but SPAN members (basically other than Optus) didn't have the infrastructure in place to handle mobile customers, and didn't understand that this was a developing technology that had not matured, and Telstra was not in a hurry to mature this technology as their mobile market share would be under serious threat.

The conflict of interest in Telstra was painfully obvious and the technology 'matured' as Internet became to the fore. I have no doubt that the SPAN raised the profile of mobile full number portability, but in so doing, they openly demonstrated to me their collective amateur and superficial knowledge of telecommunications infrastructure and this industry as a whole. (A little knowledge is dangerous!)

### **Australian Telecommunications User Group (ATUG)**

This is another interesting body that seems to have its agenda fully occupied with disputing the spirit of the law in order to release the hold that Telstra has on the competitiveness of the telco market in Australia. It is worth reading the Vision/Mission/Strategic direction as provided directly from the ATUG Website [www.atug.com.au](http://www.atug.com.au) , so it is here in *italics* below:

#### ***“ATUG’s Vision***

*All Australian telecommunications users should have competitively priced, innovative, quality services benchmarked at world’s best practice, as measured by the OECD.*

#### ***Competition***

*ATUG supports strong competition between telecommunications service providers. Regulation, policies and funding programs should be designed to foster innovation and deliver pro-competitive outcomes for end users.*

#### ***Innovation***

*ATUG encourages the development and deployment of new technology and services as a way of fostering competition e.g., IP based services, WiMAX, WiFi. Policy, standards and regulation should assist the deployment of such services, eg, USO contributions should be directed to an industry infrastructure fund.*

#### ***Access***

*Any to any connectivity is critical to effective competition and, consequently, to end users. Access to competitors’ networks should be provided on cost-based and non-discriminatory price and non-price, terms and conditions.*

#### ***Anti-competitive behaviour***

*Market power should not be allowed to stifle competition. Regulatory authorities should try to prevent abuses of market power by using information gathering and reporting powers to keep markets informed. Where necessary, regulatory authorities should have the powers and resources to respond quickly to instances of abuse of market power.*

#### ***Broadband connectivity***

*All Australian users should have broadband access at speeds of 2Mbps or more. To maintain competitiveness, Australian users should have broadband availability, speed, data download and prices at world’s best practice. Government policy and funding programs should foster innovation and deliver pro-competitive outcomes for end-users.*

#### ***Mobiles***

*Mobile termination rates (domestic and international) are too high and should be reduced by regulatory intervention, including by international co-operation between regulators. Mandated price reductions must be passed through to end-users using regulatory tools if necessary.*

*National roaming between networks should be automatically mandated where network expansion has been supported by Government funds. If commercial negotiations on national roaming are not concluded by June 2005, regulation should be introduced to require roaming.*

#### ***Informed Choice***

*Suppliers should not be able to unilaterally change the prices, terms and conditions of customised or fixed-term contracts within the life of a contract. Customised contracts should be exempt from Part 23 of the Telecommunications Act.*

#### ***Regional Communications***

*Users of communications services in regional Australia should have access to the same range of services, at the same prices and same levels of service as metropolitan users.*

#### ***International***

*ATUG supports international regulatory and trade cooperation in the telecommunications sector. ATUG supports international agreements on any-to-any connectivity, cost based access pricing and transparent*



*regulation for telecommunications services. Such agreements should apply to all connectivity platforms, including IP-based and 3G networks. Co-operation between regulators should be increased, given increased supplier and user activity across borders.”*

This ‘users wish list’ is interesting in that it states what ATUG wants but not how to do it, what for, who would benefit and who would lose. Just like SPAN, ATUG is a self-interest group, and my guess is that both groups have a rather common membership – but two voices!

This group is very active in that it does hold seminars and shows involving many manufacturers and service providers, so it has what appears to be considerable power, but their fight is totally frustrated because Telstra (and now Optus and a few others) are internally bound to provide infrastructure, wholesale and retail services, and these businesses, in their present forms, having these self-conflicting products cannot move to suit the needs of ATUG.

### ***Understanding the Problem***

It should be clear that the problem needing to be understood is that when the Federal Governments of the days have instituted stages of ‘full competition’ they did so with blind innocence compared to the multi-national businesses that had more than a century of experience in undermining Governments on a grand scale. Reference 1 provides a very detailed litany of how deceitful and underhanded these multi-national businesses are and just how far these businesses will go to destabilise countries so that they can effectively steal infrastructures on a worldwide scale. For the last decade, Australia has been on the brink of having its telecommunications infrastructure stolen by multi-national corporations.

As stated before the fallacy is in believing that Government Business Enterprises (GBEs) are inherently inefficient, when in fact it has been several times proven that GBEs are far more efficient than private enterprises – especially when it comes to managing infrastructure. Again, Reference 1, details this situation with prominent examples.

Competition has its place in reselling, and that is where it flourishes. Competition has no place at all in infrastructure, as infrastructures are effectively ongoing engineering works programmes, and that is the subtle difference. Infrastructures provide the foundations for a stable and efficient economy, and in this position, infrastructures are in effect wholesale services and not a retail commodities.

If an infrastructure has a reselling / retailing sales and marketing body attached to it, then it has a natural conflict of interest, and that is where the problem lies. The examples below spell the pictures:

Telstra is the major telecommunications infrastructure provider and it is a major retailer, and reseller, and content provider through Foxtel. Optus is that it is also an infrastructure provider (major businesses only), and reseller and content provider – again through Foxtel. The alternate carriers are minor infrastructure providers and retailers. These self-conflicting businesses arms

To correct these problems a major rethink of all these bodies needs to be undertaken and the whole industry needs to be restructured so that existing bodies no longer have conflicting business interests, which are stifling the development of telecommunications in Australia.



## ***Proposed Solution***

### **Containing Competition**

The supposition that competition drives down costs is false and therefore is the core of the problem. Competition has been the calling card from multi-national corporations for several decades, as this calling card splinters infrastructure bodies that are themselves usually highly efficient but also usually lack the marketing arm to effectively interface their services to their clients/customers. A splintered infrastructure body is very easy prey for a multi-national to discredit, further isolate and acquire – in the name of competition.

It has been proven to be true that initial competitive approaches do reduce costs, but the longer-term consequences of competition have strangely been neglected in economics texts and university courses. What really happens is an ordered approach where community good infrastructure is replaced by bottom-line accounting, then consultants are commissioned to direct restructuring, lawyers/solicitors and accountants replace the existing engineering based management with a then much higher performance pay basis, the Government (public) owned infrastructure is then refinanced by investment houses / shareholders, sponsoring and advertising direct funds from the lost infrastructure are directed to covertly support this business, via political intervention from this business. Reference [1] details this.

What was running effectively and costing a moderate amount to the general public initially became cheaper with the first round of competition but from then, the consumer costs will continue to rise significantly, well above that of the previous infrastructure rates, and the quality of service significantly drops as short-term overhead costs are minimised, engineering planning is minimised and reactive maintenance is replaced by preventative maintenance.

### **Owning Infrastructures**

Competition has no place in infrastructure. The Australian Federal Government needs to be charged to manage the wholesale infrastructure of Australia – if it is not already. In that light, wholesale telecommunications, just like road, rail, electricity, land management and water are all wholesale infrastructure components for business and public to use as a service. These infrastructures are the foundations for a solid and ongoing strong national economy.

Telecommunications as an infrastructure is a wholesale provision, (not a retail service, regulatory body, advisory service or content provider) and that is the key solution to this very awkward strategic position that the Federal Government, Telstra, Optus, and a plethora of alternate operators and service providers are currently in.

To get out of this awkward strategic situation, several structural splits have to take place so that all self-conflicting bodies are initially separated. The immediate and present danger is that these now freshly split entities will be extremely vulnerable to take-over / consolidation by businesses that are not Australian based, and that must be avoided. Simultaneously it will be these freshly split entities that would be the ongoing primary buyers of these wholesale telecommunications supplies, and contractual clauses need to be in place to ensure continuity of business with the new wholesale telecommunications provider.

A national telecommunications infrastructure provider has sole focus on providing a high performance telecommunications infrastructure for now and the future, is not hampered by shareholder payouts, advertising, or sponsoring. It is self funded from the wholesale usage that is paid through resellers, and through that alone it is committed to perform.

This approach in no way cripples any organisation from having and/or operating their own communications and IT network. It does however set the benchmark for wholesale pricing in that because of economies of scale, the comparative user wholesale costs of the national telecommunications infrastructure should be significantly lower than any privately owned network. Dr Peter Gerrand [5] sees a very similar picture in that the fixed network “NetCo” should be the wholesale arm and “ServeCo” as the services arm, and this split would put the infrastructure in the Government / Commission control, and the Services (reselling) area into private (shareholder) ownership.

## **Creating Competitive Resellers**

Since 1975, Australia has come a long way in telecommunications, and it now has several corporate and smaller business bodies reselling telecommunications to the retail (Business, Commercial, Consumer, Country) and Government Department (Federal, State And Local) markets.

The range of products has dramatically increased well past the standard telephone/line rental and/or Sylvester (manual cord) switchboard that were literally the complete sales range of products in about 1975. Because the range of products are now so wide it is rare to find resellers that have the capability to provide all products, and so product reselling specialisation has further increased the number of retail resellers.

Through introducing the digitally based telephony network switching in 1980, this massive engineering works heralded a wide range of new switch-based products that was fostered by common channel signalling No. 7 (SS7 or SSC7) as it totally replaced the far more primitive channel associated signalling (CAS) used with the earlier analogue / mechanically switched inter-exchange network (IEN). It was not until 1994 that all Telstra’s IEN was fully digital that this wide range of switch-based products would then have a direct impact in consumer and commercial markets. Newer technologies for the consumer market have introduced fax, mobiles, CATV and Internet. Similarly newer technologies for the business/Government market include all those in the Consumer market and telex/tress, PABX, data, Call Centres, and Broadband Internet. Currently both Telstra and Optus are in another stage of massive network engineering programme where that are restructuring their inter-exchange networks to become IP protocol based, replacing the previously held connection approach for telephony with the highly cost effective voice over IP (VoIP) protocol. With the development of more innovations, technology will grow and be changed to match these needs and resellers are the first to hear about it from their client bases.

By having all resellers isolated from providing infrastructure, the resellers then have no internal conflict of interests between the equipment that they have in service, and the products and services that they can resell to the general public, businesses and Government bodies, and the infrastructures that they would be providing the services on. Further it gives the resellers the agility to focus in on their customer exacting requirements and matching these requirements with the existing and future infrastructures.

By having the resellers between the customers and the infrastructure providers, the resellers can then interpret customer demands and relay these in engineering terms that the telco infrastructure provider can recognise and provide. The telco infrastructure provider can reflect this back to the resellers as wholesale usage costs and a realistic implementation schedule managed by a now dynamic engineering works programme. This puts the onus onto the resellers to focus on their customers’ requirements and their wholesale network product requirements. It also isolates the telco infrastructure provider from conflicting products and services, and frees the telco infrastructure provider to introduce newer technologies far quicker than the current approach.

## Infrastructure Consolidation

By removing the infrastructure component from resellers, this will leave several infrastructure bodies to be amalgamated as a the wholesale telecommunications commission, and this body will then provide telecommunications services with common wholesale methods and rates to commercial service resellers and other government departments. As said before, there is no place for competition in an infrastructure. Informal consolidation is already taking place with Telstra hiring the 3 Access network from Hutchison, Optus hiring some of the Telstra access network and Telstra and Optus sharing their main network transmission grids. Conflict in rival sales competition is also killing these initiatives.

Currently, Telstra is apparently about 50% Government owned placing it in an ideal position so that the nominal 50% that is privately owned is to become the customer interface, sales and marketing Telstra/Bigpond with all its staff. This is a very logical split and it places the new Telstra/Bigpond in a commanding position with a very large client base providing a large ongoing cash flow, so the share price should not be negatively affected. Further as there would now be no conflict of interest in what services to be provided because of existing infrastructure situations, this reselling body can then be fully competitive.

The remaining nominal 50% that is Government owned becomes the base for the new Australian Telecommunications Infrastructure Commission (ATIC) along with the associated staff. This infrastructure is essentially managed as an ongoing engineering capital works program with a very large engineering network to be maintained and developed/grown. The directions for growth would then come from the resellers, engineering forecasts, and lifecycle management of the existing equipment.

Unfortunately with Telstra/Bigpond the infrastructure component is more like 70% and the retail/reselling component is more like 30% meaning that a 20% Government share buyback would align the infrastructure with 70% Government owned shares and the Telstra reselling/retailing component with 30% open market shares – making a the division between the two areas a bloodless issue.

Because of economies of scale, the ongoing operating costs of this (inter-) national network would inherently be very low, making it uneconomical to run telecommunication networks in competition. This would induce other telecommunications bodies to sell their networks to the ATIC, and become truly competitive telecommunications service resellers – without their own internal marketing restrictions.

Bodies that have their telecommunications infrastructure consolidated could alternatively be paid in kind and these funds used to cover the wholesale costs of network infrastructure usage for a specified period, based on the capital value of the consolidated network and the agreed payments for client usage of the network services. Alternatively the funds could be there to offset the agreed payments for client usage of network services providing these resellers with a financial advantage including a sunset clause to level the competition after several years.

There is no conflict of interest with an Australian wholesale Telecommunications Infrastructure Commission providing wholesale telecommunications services, to resellers, and the national savings should amount to well in excess of \$ 7 Billion per year, through the removal of duplicated and unnecessary networks, a massive reduction in unnecessary advertising and sponsoring and a solid future focus on building a proper broadband access network based on passive optical fibre network (PON) to all Australian homes.

## **Maintenance Processes**

The infrastructure provider is responsible for the service levels of the infrastructure and therefore all maintenance is to be managed by the national telecommunications infrastructure provider. In this light, a wholesale service level agreement (SLA) is to be struck between the national telecommunications infrastructure provider and each reseller, and each customer also sets up personal service level agreements with the resellers of their choice.

The wholesale SLA would be based on the combined number of client SLAs and the service levels that each reseller managed.

The fault management process would have a slight change from the current setup as the reseller would log the fault and manage the client, while the national telecommunications infrastructure provider would assign the workforce and equipment and report back to the reseller. This slight change is in accordance with standard practices of engineering management and customer ownership remains with the reseller not the infrastructure provider.

## **Billing and Data Processes**

This process is actually simplified as a unified billing process would distribute the appropriate wholesale Telephony, Data, Video, Internet, and Other Services to each reseller who would then de-aggregate the wholesale bills, add their percentage charges and bill their customers according to the service plans. The change in process is rather small from present, but it provides an excellent method for selected wholesale data to be used by third parties like Federal Police/ASIO and other criminal/fraud investigation bodies, Sensis/White Pages and other public information bodies, to quickly access customer details at the appropriate security levels and not be in conflict with any reseller as this data is sourced directly from the national telecommunications infrastructure provider as a wholesale service.

## **Service Standards**

Virtually nothing changes! The ACA is the body that the national telecommunications infrastructure provider and all resellers report to.

## **Complaints Handling**

Virtually nothing changes! In all cases customer requests are initially managed through the resellers customer interface for initial resolution and if not resolved then escalated to and managed by the national telecommunications infrastructure provider. Only then if the situation cannot be resolved it is then to be passed on to the Telecommunications Industry Ombudsman (TIO). The TIO is the body that the national telecommunications infrastructure provider and all resellers report to in cases that cannot be resolved. 'Ministerials' (customer complaints channelled through Ministers instead of the normal process) would continue to be sent to the infrastructure provider for direction and resolution.

## **Historical Background**

Historically, the incumbent Post Master General's Department (PMG) was initially split into several entities at about 1975 and one of these was Telecom Australia, which after several years later merged with the then Overseas Telecommunications Commission (OTC), then later changed to become Telstra. As Telstra had split from the PMG's Department, it also lost its customer interface in the Post Office, and it took several years for those then managing State offices to realise that the 'Telecom' customer interface was then severely deficient, as the technical staff informally did this role for decades. Also at that time, the range of products was very limited – primarily because of the limitations in available telecommunications technologies in that period were comparatively basic and requests beyond a standard telephone service for home/business or a Sylvester Switchboard for businesses were rare. Private Automatic Branch Exchanges (PABXs) were in their infancy,

the Public Switched Telephone Network (PSTN) was phasing out the manually connected Transit Switched Network and it was not till about 1990 till the PSTN digital switched network was far more digital than analogue. In the early 1980's the Dedicated Data Network (DDN) became the forerunner of virtual (digital) circuits (about 1990) switched through the Integrate Digital Network (IDN) and this was the forerunner of TCP/IP based Internet about (1998). It does not need much imagination to realise that the range and number of retail based communications bases products mushroomed with developments in digital technologies.

*What is not understood is that the range of wholesale products and services has changed very little, and most people incorrectly view wholesale products as the retail range but much cheaper, and nothing could be further from the truth. Wholesale products are based on a particular connectivity protocol for several thousand virtual end users over a specified time and service level agreement, and bulk billing arrangement. Retail products are based on individual billing arrangements providing a grouped set of connectivity protocols, based on individual usage requirements! That is why competitive reselling is the right place for competition and nowhere else!*

Within innocent and honest attempts to introduce true competition into the Australian telecommunications industry, the then Federal Governments have fostered the development of a complete competitive carrier (Optus) to take on Telstra, drive down call costs, speed up the introductions of new technologies and better address customer service standards. This was soon followed by Government rulings to generally open the telecommunications market to a wide range of alternate carriers to further increase competition for the same above reasons.

The competitive carrier (Optus) was virtually given Australia's then satellite network as an appetiser, along with Government enforced network rulings to ensure that there would be positive cash flow, and beyond the float, competitive community access television (CATV) networks were established in suburban areas of major capital cities only, competitive CBD optical fibre access loops were established in major CBDs only, and competitive GSM mobile network base station networks were established in major capital cities.

With the development of digitally based switching and transmission equipment and the introduction of optical fibre to economically replace coax cable, twisted copper pair and radio links, these technologies becoming effective by about 1990. ***It was not competition that dramatically drove down operating costs! It was these optical and digital technologies that drove the prices down***, primarily because scheduled daily maintenance was eliminated, digitally based equipment failure rates also fell by at least an order of magnitude because they were non-mechanical and far more tolerant than analogue based equipment. Mass produced construction techniques of digitally based equipment also drove down comparative capital expenditures. "The most expensive thing about optical fibre is digging the hole to put it in!"

Telecom/Telstra developed customer shopfronts, substantially boosted its sales and marketing workforce, and substantially dropped its engineering and technical workforce to match its new requirements, and restructured its business plan to provide content on its infrastructure. This was a forced issue as competitive forces had severely crippled the Telstra income stream, and Telstra had to replace old infrastructure with new, and provide new infrastructure for a growing mobile and later Internet market.

Optus now has a very substantial portion of the mobile market and has since inception built a solid second 'golden boomerang' (Brisbane – Sydney – Melbourne transmission link), and Optus was in dire straits with CATV overhead costs. Optus had also gone down the content path to boost its revenue stream. But it had also gone down a financial path with various

partners including Cable & Wireless and now Singtel (as an foreign controlling interest). So the multi-national corporations are finally getting their way in stripping the Australian Government of its assets as this saga continues. ***So there is the ugly proof: the fully competitive model has been proven not to drive down prices (it actually forces prices up) and worse still the infrastructure that once belonged to Australia is now foreign owned.***

There are a large number of Alternate Operators, but in general most of their networks are relatively small and there would be a strong initiative for these operators to move to the reselling/retail market and trade their infrastructures into a common operation.

Since Internet has emerged, another level of Alternate Operators (as Internet Service Providers) have again emerged, and these to a large degree already use common infrastructure, but built their added value software is usually on this existing infrastructure.

## Conclusion

The structural changes to the telecommunications industry, as a whole in Australia will provide for a series of competitive resellers that are focussed on customer products, market pricing, customer needs, and product development. These resellers will have specific target markets and because of that; their wholesale network requirements will be substantially different – depending on their clientele, and be substantially similar – in geographic boundaries.

These resellers inherently aggregate their wholesale requirements, and translate their customer base requirements as wholesale product requirements to the national telecommunications infrastructure provider. As a reseller there is no conflict of interest here, as they will resell any service that their customer wants – irrespective of the infrastructure required to provide it.

The Australian national Telecommunications Infrastructure Commission (ATIC) as a national provider inherently focuses on forward planning and well-programmed engineering to provide timely wholesale-based services to all resellers. There is no conflict of interest here, as there is no reason to delay or otherwise be conservative in providing new services – as the national telecommunications infrastructure provider is disinterested in which reseller wants to sell what service.

The ACA has little reason to change its role other than it will be working to the national telecommunications infrastructure provider and a whole range of Service Providers for service quality standards reports. Being independent very little changes in its role, as it appears to be well positioned for the future. The ACIF should be merged into the ACA.

With Internet there is a host of incestuous technology based products including and not limited to: email, web hosting, mobile small message signalling (SMS), call centres, customer relationship management (CRM) databases, home and office networks both now and on the market. As these technologies converge, translating of portions of signalling protocols will manage messaging between several different communications platforms, and this is really an infrastructure issue that can be far quicker engineered without competing product managers strategically delaying products to better suit the product life cycles.

The push is then for the infrastructure engineering works programme to be guided by the resellers' needs, and forward planing engineers. Both of these entities operate in the future mode and as there is little conflict there – other than the timing for decommissioning older equipment. This approach opens the technology gate to put Australia close to the world forefront of telecommunications and information technologies, instead of our very backward and conservative position.

In our current apparently full competitive mode, we now are heading for a situation of complete infrastructure duplication, and much of it foreign owned. As an Australian I see this approach as untenable as it is not fully competitive, nor is it good for the Australian economy.

The Australian share market and other financial industry entities should welcome this structural change as it provides a fully competitive market in resales of telecommunications and that opens up a wealth of other companies to be further floated on the ASX market. At the same time it does not detract from Telstra/Bigpond nor Optus from continuing to be major players and investment holdings on the market, as they would continue to have considerable cash flow just as any nationally established bank.

With the Telstra structural split, the size of the new Telstra/Bigpond (reseller) will be about half the financial size of the ATIC (infrastructure). To compensate; a Government partial share buyback, wholesale cost offset, share handout in splintered businesses (Foxtel and Sensis etc.) or a combination of all are credible business solutions to stabilise the ongoing and growth of the Telstra/Bigpond share price at and beyond the structural split.

## **Present and Future**

As the technology of Internet has come to the fore, a wide range of Internet Service Providers (ISP) has risen to the surface and are providing a mix of infrastructure in the form of Website hosting servers, and email servers. Some major ISPs are providing Website hosting services (Website management) and are also resellers for their own infrastructures and they strongly prefer their customers to use ISP services bundled with their infrastructures. Consequent allegiances between major ISPs (with infrastructures tied with them) to not charge for traffic between are seriously compromising free competition.

With the imminent future move in common access bearer medium from twin insulated copper pair wire to optical fibre, Australia could again be opened up to full competition at the access level again as it was for CATV and historically that was a financial and engineering disaster for the Australian economy and its telecommunications infrastructure. At tremendous financial and social /aesthetic expense CATV access was rushed in to most major urban cities, and it resulted in duplications of access in most areas. Because of the dominance of bottom line accounting, engineering corners were again cut resulting in most homes passed that were not street aligned were unable to be connected to CATV without exceptional extra expenses – making it totally uneconomic for an unacceptably high percentage of potential customers.

Passive network Optical Network (PON) is the technology access bearer of choice for the future, as it provides a very Broadband service capability and is not distance limited as copper pair is. The engineering in providing optical Fibre To The Premises (FTTP) is mature, and successful trials have happened worldwide – including Australia. If such an access network is to be rolled out, then it will be in direct conflict with the established copper pair and ADSL technologies currently in service and being resold through Telstra / Optus and other infrastructure providers/resellers. With the introduction of PON FTTP the universal services obligation (USO) millstone will also be dissolved as virtually every residence in Australia can then be connected to optical fibre – providing true broadband without the current metropolitan distance boundaries.

By splitting Telstra/Bigpond from ATIC, this also splits the business conflicts of interests, and provides clear paths for the ATIC to far quicker replace the access network nationally, and for Telstra/Bigpond, Optus and others to resell the new Broadband access networks as they are commissioned and fully utilised. As the ATIC would be driven through engineering future planning and not delayed or limited by existing and self conflicting market products,



the rollout of PON/FTTP would be considerably accelerated as would the removal of existing above and below ground CATV access wiring and access copper cabling. The bottom line accounting driven partial engineering solutions of Remote Integrated Multiplexers (RIMs), and ADSL would be replaced by a fully engineered solution of PON/FTTP as a priority.

Mobile access networks would be aggregated, greatly reducing the number of mobile base stations (antennae arrays) in urban areas and concurrent to that, significantly improving the network coverage and footprint sizes nationally. With the aggregation of existing optical fibre and radio based transmission networks, further savings would be forthcoming through the utilisation of existing 'dark fibre' (unused) optical routes through infrastructure sharing of State based infrastructures, for example; rail and electricity routes. The added expenses of having existing telecommunications exchange buildings internally divided to provide limited access to competitive carriers would be eliminated. Competitive switching networks can then be reconfigured to be cooperative switching networks and these national savings are massive.

### **The Issue of Annual Profit**

There is an accounting issue here in that the term 'Profit' is commonly understood by the general public to be the money left over after expenses and therefore the term 'Annual Profit' would naturally be the money left over after expenses over an annual/yearly period. For a small business wishing to remain small this concept may well hold true. The inconsistency is that with infrastructure, there really is no such thing as profit, as these funds are already factored into the ongoing engineering capital works programme and therefore the term 'Annual Profit' should be the remainder after the term 'Annual Reinvestment Capital', is taken out, leaving the then remaining term 'Annual Profit' as zero.

With the issue of annual profit reduced to a zero value, this takes away the interest of shareholders in infrastructure to seek a reward in terms of dividends or share growth. In any case, this infrastructure has already been paid for through the public and business paying their Federal taxes, and that is why Australian Government based infrastructure is not a sale item.

This accounting initiative removes all shareholders – other than the Federal Government as a Commission from infrastructure, and positions the shareholders in the competitive business of reselling – where they should be! This then would allow the resellers (Telstra, Optus and others) to work in a non-self-conflicting competitive market from a common wholesale telecommunications infrastructure supply, and honour their shareholders with dividends, as their Annual Reinvestments are much lower to that of the infrastructure side of the industry.

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## Biography

Malcolm Moore is an Electrical Engineer with more than 35 years experience in virtually every facet of telecommunications in Australia. Educated at The Kings School, trained as a Technician with the PMG, qualified as a Senior Technician in both Research and in the Radio Transmission domains, and later specialising line transmission equipment engineering and computing, and gaining a solid understanding of the engineering requirements for radio and TV broadcast and network transmission equipment. Concurrently he qualified in through Technical College with the Electronics and Communications Certificate and supervised/managed several technical engineering teams to develop and manufacture a very wide range of telecommunications monitoring and support equipment.

After qualifying as an Electrical Engineer through part time study at the NSW IT (now UTS), he progressed as an engineer in Telecom Australia, with a wealth of technical background. He gained experience in Switching Engineering through managing the augmentation, installation and commissioning of several switching exchanges, then moved to Forward Network Planning and structured part of the future outer Western Sydney network, and then developed an early PC based program that radically reduced the workload for computer data network modelling.

Later, in Network Planning he structured the initial Melbourne-Sydney optical fibre bearer utilisation plan to replace the ageing coax cable and then advanced to Line Transmission Support as a Senior Engineer, managing several project teams. He was integral in the consolidation of the many transmission equipment maintenance areas into a few per State then one Melbourne based entity. After being headhunted by Network Investigations to resolve customer service quality issues in NSW he involved several areas in HQ and all States, culminating in a national workshop affecting the Quality work practices of all technical staff in Telstra, the conformance of customer and network transmission engineering standards and introducing suitable test equipment to properly commission CAN and customer equipment. This resulted in a reliable platform for customer fax/modem equipment, and paved the way for workable dial-up Internet.

*In heading Service Quality Improvement, (a multi-State based engineering section) he authored two detailed Web manuals specifying all interface settings for transmission and switching equipment to minimise echo and stabilise / optimise service performance. In collaboration with OTC Research, he negotiated major changes to their computer-based, network transmission channel monitoring equipment. His engineering cells were developing cutting edge CCS7 monitoring and analysis techniques. He crossed these two technologies to pinpoint and resolve customer-affected network interfacing problems from live traffic. He then wrote and progressed the Business Case for the CCS7 Network Monitoring System and this became the national proactive fault analysis system for Telstra to capture and resolve intractable switching, transmission and metering/fraud problems.*

In Nortel he gained first hand experience of the New Zealand network through being a team engineer commissioning the South Island SDH/PDH/Video optical fibre loop from Wellington to Christchurch, then on the bid team for the Saturn CATV project in Wellington. As a Project Manager, he led the Ballarat based team that installed and commissioned the first working telephony on CATV network in Australia. As a Bid Manager he was involved in a large number of successful sales and marketing bids for a very wide range of alternate operator equipment requirements covering SDH, ATM, VoIP, Data, Call Centres, Mobile Access Networks, Radio, Optical Fibre, Internet; involving international negotiations with all levels of clientele, accounting, engineering and management.

Currently Malcolm is a Telecommunications Industry and Engineering Consultant, with more recent expertise in Web hosting, programming and network structuring.