



Digital Economy Future Directions Consultation Paper

Alcatel-Lucent Australia Response

16th February, 2009

Overview

The following document provides Alcatel-Lucent's response to the Department of Broadband, Communications and the Digital Economy consultation draft on the future directions of Australia's Digital Economy.

As an organisation with more than 100 years of operation in Australia, we are pleased to offer our perspective on the development of a digital future and how this in turn will benefit Australian productivity and efficiency. We look forward to extending our support for this Federal Government initiative and wishes to continue to play a leading role in improving Australia's economic outlook and standard of living by ensuring that the community has access to a rich variety of broadband services, wherever they live.

The paper shares Alcatel-Lucent's views on the opportunities and challenges posed by building a Digital Economy and the roles of Government, industry and other stakeholders therein. It was authored by members of our senior Australian executive team who are available for further contribution as and when required.

Executive Summary

The telecoms, media and entertainment industries are currently reshaping in response to technological evolution. The realisation of Digital Economy benefits will very much depend upon the development of synergies and stronger relationships between organisations within the Information, Communications and Technology (ICT) industry as well as between the ICT and non-ICT industries. In order to realise the market potential of the digital communications revolution, we, as an industry, must achieve more open and trusting relationships, removing barriers to innovation and investment, better leveraging Network Services Providers' tangible and intangible assets.

Asymmetric (non-technology neutral) regulation and legislation will impede the growth of online content offerings and the Digital Economy. Content, services, competition and copyright policies should be guided by contemporary capabilities and usage, not partitioned according to traditional technologies or industry structures or former capabilities and usage.

The pace and effectiveness of change will be significantly influenced by future policy and legislative reform, however these reforms will require more than a piecemeal revision of existing legislation. A coordinated approach across several currently independent areas of law and regulation is urgently needed to remove inconsistencies and to facilitate efficient and consistent regulation of the Digital Economy. We envisage review and reform processes will be scheduled more frequently in the future than in the past, and that reviews will simultaneously examine all aspects of legislation impinging upon the Digital Economy.

As more organisations begin to understand and support remote working, Australian teleworkers should be assured equivalent career and development opportunities as non-teleworkers. Operational Health and Safety (OH&S) obligations and requirements should be reviewed to appropriately accommodate the differences between office and teleworking environments.

Relevant metrics of the impacts of technology upon the Digital Economy are essential for mapping and managing Australia's economic and social progress. Current statistics fall short. This should be done by tracking technology intensity and industry collaboration against key economic indicators such as productivity and growth.

*What markers of success can government, industry and other stakeholders establish?
How will we know when we have maximised the potential of Australia's participation in the
Digital Economy?*

This section responds to Section B ('What does success look like?')

In order to measure Australia's success, we need to be clear about what kind of industry and stakeholder environment will emerge as a result of a successful Digital Economy transformation.

Degree of Convergence and Inter Industry Cooperation as Markers of Success

Today the telecommunications industry provides fixed and mobile voice services, a range of business data services, Internet access and other value added services based on these core networks. Meanwhile using its own traditional infrastructure, the media and entertainment sectors provide video and audio broadcasting, cinema and print services. Increasingly, these two sectors are now turning to the Internet as a medium for reaching their target audience.

The Internet has therefore provided a point of intersection for these historically separate industries¹ and is the foundation for the Digital Economy. In the future, we consider it inevitable that the communications, media and entertainment industries will merge into a single "Media Comms" services oriented industry, thus reducing cost and leveraging new relationships to deliver new and compelling consumer services. The question the government and industry stakeholders should be asking themselves is not 'if', but 'how' and 'how quickly' can we ring in the change.

In order to realise the market potential of this digital communications revolution, we must enable a more open and trusting relationship that removes barriers to innovation and investment that leverages Network Service Providers' tangible and intangible assets. A model, which benefits both network service providers as well as application and content providers and creates a more stable and sustainable industry model – we refer to this as 'Application Enablement.'

Application enablement is based on the combination of the best of both the Network Service Provider and over-the-top (OTT) operating models. OTT providers bring strong ecosystems of hundreds of thousands of application developers, who innovate and develop new services very quickly, to the table. They roll out new services and capabilities first to the consumer end user and then through the consumer to the enterprise. They are a best in class example of quick and open innovation.

The pace with which the telecoms, media and entertainment industries can and will reshape themselves will be significantly influenced by government policy and legislative reform.

¹ Elsewhere in this submission, we assert that the infrastructure component today's ICT sector should be treated independently and separately from the other components. The evolution of technology compels us to adopt this mindset as elements of these industries converge. The laws and regulations of 'broadcasting', 'telecommunications' and ICT are rooted upon historical technologies that no longer exist or are at their ends of their lives and historical concepts of sector independence.

We similarly anticipate the future will be characterised by the development of synergies and stronger relationships between organisations within the ICT industry² as well as ICT and non ICT industries. This too will accelerate the development of new online content and applications which will benefit all Australians.

For example, closer cooperation between the ICT and health industries will improve services and patient outcomes while at the same time helping to reduce costs. Closer cooperation between ICT and education industry players will enable more Australians to undertake tertiary study, to reskill and change careers or to maintain the currency of their education. Tele-education might also be developed into an Australian export, and tactically defend our educational institutions from similar tele-education competition from overseas.

We anticipate that the current economic situation will stimulate the development of new business models from traditional media, telecommunications and other ICT players – as all sectors seek to maintain market share and revenues. Inter-industry cooperation and the emergence of new business models will therefore be fundamental indicators of success in the Digital Economy.

New categories of organisation have emerged outside the traditional sphere of carriage service providers, providing consumer access to content that is now often published exclusively online. Australia's corporate workplaces, internet cafes, educational institutions and anybody that provides ad-hoc network access are clear examples. So too are the organisations which facilitate online public discussion and other forms of information exchange. By comparison, this new category is far larger than the number of traditional carriage service providers, offering a strong indication of the growth opportunity and future success of the Digital Economy.

New applications and forms of online content should continue to emerge in a successful Digital Economy. Policy should therefore encourage the ongoing creation of innovative non-traditional online content providers and assure them of the appropriate support and protection frameworks necessary to thrive in the new environment.

Industry debate continues to revolve around the 'what is the killer application' question. Perhaps the focus should really be directed towards 'what is the killer information environment?' Whilst Alcatel-Lucent wholeheartedly supports the requirement for an ubiquitous high speed national IP network, it is essential that wireless and fixed communications infrastructure be evolved harmoniously in a manner complementary to each other. In this way, online content will be available more uniformly and at lower cost than would be possible with a piecemeal information environment. The responsibility for assuring the outcome of next generation infrastructure coherency rests squarely on policy-makers' shoulders. Failure to engender coherency will propagate digital divides and industry dysfunction.

2009 is likely to see the commencement of early trialing of Long Term Evolution (LTE or '4G') technologies. The drivers for LTE investments will depend upon business and consumer demand and needs. The migration towards 4G technologies and applications will help underpin the success of numerous emerging Australian industries.

² In this context, we are referring to the online-content (or applications) segment of the traditional ICT industry – as opposed to infrastructure and other components.

Ongoing investment in both fixed and wireless broadband is crucial. Australia requires a homogeneous and intelligent network infrastructure that will efficiently deliver and support the applications and online content generated by many other industries. Examples include:

- Smart Metering/Smart Grid – enabling electricity grid providers to monitor and manage power usage more effectively and to provide consumers and businesses with the knowledge and tools required to achieve greater energy efficiency.
- eHealth – enabling more efficient hospitals and care on-site, whilst offering better patient outcomes out in the community. Reduced demand for hospital beds, improved community aged and chronically ill patient care, better regional access to specialists and specialist facilities and substantially reduced health related travel will result in lower public costs.

A healthy Digital Economy operating at its peak potential will deliver more capacity, more coverage, more connected devices and drive real future services such as those listed above that support people's needs without being aware of it. Central to achieving this is a cooperative industry eco-system.

Are there possible barriers preventing a strong online retail experience in Australia? What can industry and other stakeholders do to address these?

What evidence shows the possible barriers preventing greater online content offerings? What can be done to address these?

Should the existing copyright safe harbour scheme for carriage service providers be broadened?

Does Australia's copyright law unreasonably inhibit the operation of basic and important internet services? If so, what are the nature of such problems and practical consequences?

How should these be overcome?

Is there non-copyright legislation that is directly relevant to Digital Economy businesses that create uncertainty or barriers?

This section responds to Sections C2 ('Digital confidence') and C4 ('Ensuring Australia's regulatory framework enables the Digital Economy')

The tremendous attractions offered by contemporary digital and online technologies include flexibility, convenience, durability, and availability anytime and anywhere. Consumers are motivated by innovative services and applications, 'cool' devices, ease of use and utility. When offered at the right price and availability, online services displaying these characteristics stand the greatest chance of success.

Copyright (and indeed all legislation and regulation impinging upon the Digital Economy) should appropriately protect rights owners while at the same time, ensuring the attributes that make online content an exciting retail prospect are encouraged, not stifled. Currently, this is not being achieved as well as it could be.

A supportive environment will encourage the development and release of content in forms appropriate for online delivery; it will encourage the investments necessary to establish the appropriate online infrastructure; it will provide sufficient and appropriate protection to online 'retailers' (including providers of free-of-charge online services and content) to indemnify them from the potentially unlawful actions of consumers or users.

With appropriate support, online retail services, online content and Australians accessing the Digital Economy will continue to grow because it makes economic sense and because as they grow, consumers and the nation will enjoy greater benefits. The economic basis for this claim rests upon the following concepts:

- The benefit of a large network scales either exponentially with the number of users (Reed's Law³), and,
- The utility of networks such as the Internet grow in proportion to the square of the number of businesses and consumers that interconnect (Metcalfe's law⁴) or in proportion to $n\log(n)$ ⁵;

³ David P. Reed, The Law of the Pack, Harvard Business Review, February 2001, pp 23-4;

http://en.wikipedia.org/wiki/Reed's_Law

⁴ http://en.wikipedia.org/wiki/Metcalfe's_Law

⁵ Bob Briscoe, Andrew Odlyzko, Benjamin Tilly, Metcalfe's Law is Wrong, IEEE Spectrum, July 2006,

<http://www.spectrum.ieee.org/jul06/4109>

Barriers to growth of next generation networks are in fact barriers to growth in the online marketplace, online retailing and the online availability of content.

The precursors of success

There is no point in contemplating a strong online retail industry without the necessary infrastructure to support it. This includes but goes far beyond the deployment of next generation access.

The critical precursors for greater online content offerings.

1. Ubiquity of broadband access. Both wireless and wireline modes are equally important; the former for mobility and the latter for reliability. Throughput rates and the capacity to deliver and sustain an increased aggregate data volume to more consumers are both important.
2. Bandwidth of connectivity, both upstream and downstream. The degree of required symmetry will vary from consumer to consumer, especially as online content evolves, but it is certain that today's typical services inadequately provide for upstream transmission and will need to evolve significantly as the Digital Economy progresses.
3. Penetration of a rich variety of hardware devices capable of connecting to or benefiting from the availability of online content. Frequently, focus here is inappropriately directed towards household PC penetration rather than towards network-enabled devices of all forms. Alcatel-Lucent believes that non-PC based devices will become a cornerstone of the expansion of value of the Digital Economy.
4. Appropriate in-home networks capable of distributing online content with the required reliability and quality to permit the online service to be a viable alternative to its traditional counterpart. Although we are seeing a large proliferation of exclusively wireless home networks, we believe that home networks should be founded upon at least a cabled backbone in order to assure the reliability and throughput required by the most demanding online applications and assure immunity from interference and degradation induced from neighbouring home networks.
5. Innovation and competition of retailers themselves and of the developers of the products to be retailed. Each drives the other. Unwieldy, uncertain and non-neutral regulation impedes innovation and competition as do technical incompatibilities between networks and devices and differences in the implementation of networks and services in different parts of the country.

Several of these precursors are already broadly recognised, others are not. As such Alcatel-Lucent encourages the development and evolution of all the above precursors otherwise efforts to support online retailers and establish a vibrant online marketplace will be in vain. In this context, there is a more significant barrier and impediment to the ongoing development of online content and the Digital Economy.

Confusion of concepts within existing policy, regulation and legislation

Ongoing confusion around Digital Economy concepts and its inconsistent regulation will impede the growth of online content offerings and the Digital Economy. The mantra of 'technology neutrality' is frequently referred to yet existing legislation and regulation are riddled with technology, application, online content and industry specific presumptions and biases. As technologies continue to evolve, additional non-neutralities become apparent.

It is important to strive for neutrality in all aspects (not just technology) of ICT, media and Digital Economy regulation. To encourage and accelerate the benefits of convergence, Digital Economy initiatives should first and foremost differentiate between the concepts of 'physical infrastructure' and 'online content'. Telephone cables, wireless towers, DSLAMs and transmitters are examples of physical infrastructure. Web access, video sharing, email, games, telephony, television, movies, radio, remote health, teleworking are examples of online content and in the Digital Economy, two different and virtually independent types of organisation supply infrastructure and online content.

Concepts that apply to infrastructure and physical devices are fundamentally distinct from concepts applying to online content.

- Is there a practical difference between circumstances where content is viewed on a television (having been broadcast using free-to-air technologies) and where it has been streamed to the same television using a point to point Internet connection?
- What if the content is viewed on a mobile handset in circumstances where the consumer remains unaware of whether it is broadcast free-to-air or streamed through a wireless data network?
- What if the content is instead downloaded and stored on a set top box and then transferred onto an iPod? What if it is a PC instead of a set top box or the PC contains a television or set top box functionality?
- What if the consumer prefers a competitor's set top box or media player that is only capable of accessing the same content if it is in a supported format?
- If the consumer's original choice of media device is withdrawn from the market or becomes obsolete, should the consumer be permitted to upgrade to a new type of media device and to process their legally obtained content into a new format?

Industry discussion has been simmering as to whether the protections afforded to limit the liability of Carriage Service Providers against the actions of their subscribers should be appropriately extended towards all organisations offering online services. Alcatel-Lucent shares some of the concerns and urges for the matter to be resolved by removing industry and technology specific biases to extend the reach of the protections offered.

Frequent review of ICT and online content legislation should be anticipated

Considerable and careful thought was directed towards the establishment of legislation such as the Telecommunications Act, The Broadcasting Services Act, the Trade Practices Act and the Copyright Act and subsequent review and amendment has endeavoured to address ongoing issues. Nevertheless, many of the fundamental concepts are founded upon presumptions about technology, industry structures, competitive models and usage that no longer hold true or are on their way towards obsolescence thanks to technology advancement.

Technology, industry structures and consumer expectations about the usage of services and information evolve. In many respects, traditional policy and legislation fail to:

- Consistently differentiate between access, infrastructure, online content and the independent organisational functions that are responsible;
- Consistently deal with similar content delivered via different means or by different ‘traditional’ industries; and,
- Adequately accommodate and respond to the fact that technology and online content are evolving faster than the applicable legislation and regulation which attempt to regulate them.

By way of example, the Telecommunications Act insufficiently delineates between the PSTN infrastructure and the large and growing number of applications and services it supports. The Broadcasting Services Act pays insufficient attention towards next generation delivery mechanisms, next generation encoding standards and next generation consumer devices and the manner in which they can be used. And the Copyright Act is permeated by profound technology, content, industry and platform assumptions that impair or confuse its application towards Digital Economy concepts.

At the time of legislative drafting, there is no reasonable way that the details of ‘natural’ evolution can be predicted. It is unreasonable to assume evolution will always be ‘smooth’. It cannot be known whether evolution will occur quickly or slowly and indeed, there are good examples of both.

In recognition, the regulation and legislation of ICT, copyright and competition should be reviewed more frequently than in the past. A regular review cycle should be scheduled. Given the overlap between various legislation, review of any one Act in isolation may continue to engender the technological or application specific biases of the past. The legislative and regulatory frameworks need to be considered in their entirety.

Implementing the best environment to support development and retailing of online content

Alcatel-Lucent believes a new policy, regulatory and legislative approach is required to deal with the Digital Economy and online content concepts in an independent technology neutral manner.

Specifically this applies to:

- Intellectual property; its creators, owners and licensees and their rights;
- The devices to which intellectual property is delivered, the manner in which their capabilities can be exercised, the fundamental requirement for consumers to be permitted to process content into forms in which it can be appropriately accessed on different and otherwise incompatible devices;
- Online services that originate, distribute, manipulate content / intellectual property in its various forms, the facilitation of connections and exchange of information;
- The physical medium of delivery, the industry participants that deploy, operate and maintain it, the concept of carriage; and,
- Industry participants and issues such as organisational structure, control, ownership, the competitive environment and geographic footprint.

The task is greater than a piecemeal revision of existing legislation as it requires fundamental and coordinated reform of policy to remove inconsistencies and impediments to development within the existing regulatory structures. However, the potential benefits are worth the effort.

If Australia gets this right, our local industry will be assured of substantially simpler and more consistent regulation, new opportunities for collaboration, new opportunities to innovate and new opportunities to compete.

Failure to achieve this will mean Australia risks tilting the playing field to encourage technology and industry specific opportunism, hampering the natural convergence of technologies and industries, impeding the adoption of next generation technologies and the evolution of the Digital Economy.

*What can industry and other stakeholders do to assist the Government's existing efforts to develop the digital and media literacy skills of Australians?
How can industry assist in promoting the attractiveness of ICT related degrees?*

This section responds to Section C3 ('Developing Australia's knowledge and skills base')

Alcatel-Lucent is a significant employer of highly skilled and highly educated ICT professionals and as such we are motivated to promote this sector at all levels of education in Australia. We acknowledge that the industry has a clear role to play in ensuring that the sector presents an attractive career opportunity and clear career pathways.

Today, there is clearly a shortage of school students that see the technology, maths and sciences fields as exciting careers. Alcatel-Lucent is now devoting considerable effort and resources trying to address this. As an example, we have sponsored the national museum tour of the Star Wars exhibition through partnership with the Power House in Sydney and Scienceworks in Melbourne. This initiative is targeted at all levels of school students and in particular targeting year 11 physics students with whom we are participating in workshops to explore and experiment with today's technologies, thus linking to the Star Wars 'technologies of the future'⁶.

Alcatel-Lucent also works with third party industry bodies to promote innovation and academic development in Australia. For example Alcatel-Lucent in association with the Telecommunication Society of Australia (TSA) and the Australian Computer Society (ACS) recently honoured the authors of the three winning submissions for this year's Eckermann-TJA Alcatel-Lucent Broadband Environment Challenge awards at a ceremony in Melbourne.

The Alcatel-Lucent Broadband Environment Challenge recognises innovative work submitted to the Telecommunications Journal of Australia (TJA) on how broadband technology can contribute toward environmental sustainability.

This year's winning papers demonstrated tangible environmental benefits, including the reduction of greenhouse gas emissions through grid-charged, electrically powered passenger vehicles, improving water efficiency in irrigation and reducing energy consumption in mobile telecommunications networks.

Industry participants such as Alcatel-Lucent should be encouraged to continue investing in students, training and career development. Through this and other programmes, we hope to develop the level of interest in ICT careers and feel strongly that much more could and should be done. The Government, in partnership with the broader industry, should continually review the level of investment in the promotion of ICT careers and seek new ways to collaborate and promote its attractiveness.

⁶ Although futuristic, the Star Wars saga purportedly took place 'A long time ago in a galaxy far far away'.

What, steps, if any, should Government take to promote the greater adoption of teleworking and videoconferencing?

What impact do Operational Health and Safety laws have on the uptake of teleworking and videoconferencing in your industry?

This section responds to Section C5 ('Digital Economy and the environment')

Alcatel-Lucent strongly supports and encourages its teleworking employees.

Teleworking should be encouraged as the new 'Australian way of life'

Alcatel-Lucent sincerely hopes that before the next decade is through, a significant proportion of Australia's workforce will be realising the benefits and potential of working outside today's traditional 'workplace'.

Teleworking in all its forms is becoming more important to business in Australia and in general, globally in developed markets. It has been proven that teleworking reduces costs, improves productivity, provides employees with more attractive and flexible lifestyle choices, reduces congestion and transport related carbon emissions. Australian teleworkers are already demonstrating that they can be 'global employees', effectively importing jobs and offering global experience that would otherwise be inaccessible.

Deployment of ubiquitous broadband capabilities is just the first step. It is also necessary, but not sufficient on its own, to promote and encourage the teleworking approach to businesses and to educate managers about managing staff remotely. There is also a real need to further promote and develop the teleworking culture to employees to train them to work equivalently or more productively than in the office environment.

Critically, Australian employers should treat teleworkers and non teleworkers equally when it comes to career development, promotion and other opportunities.

The social benefits of teleworking could be profound. Australian carers that today face difficulties because of responsibilities caring for aging relatives will no longer need to 'work part time'. Working parents should be far better able to manage the demands of work and children while still 'having a life'.

The government can help facilitate teleworking by overseeing the creation of more flexible part time and casual child care placements. Easy access to flexible and casual child care will further support teleworking parents and their employers. As a result, the demand on full time childcare placements, from parents for whom telecommuting is not an option, would be reduced.

The benefits of even moderate levels of teleworking accrue for those who continue to commute. Lower congestion levels naturally reduce queuing and improve commuter traffic flow so that average commuting time is reduced. Getting just ten or twenty per cent of cars off the road helps significantly reduce travel time and congestion (as observed during school holidays). This level of reduction would be achievable even if the average Australian employee teleworked for just one day every one to two weeks.

Other well documented research⁷ that highlights the productivity benefits derived from teleworking:

- The City of Los Angeles found productivity among its teleworkers was 12.5 per cent higher than for other employees.
- Regional health insurers Blue Cross/Blue Shield and Travellers Insurance have reported 20 per cent increases in productivity among their teleworkers.
- The national retailer J C Penny documented a 25 per cent increase in productivity among its teleworking catalogue order processing staff.
- The City of San Diego measured a 34-40 per cent increase in productivity among participating workers.
- The ICT company Storagetech in Boulder, Colorado, reported a 144 per cent increase in productivity.
- Hewlett-Packard reported a 20 per cent productivity increase among its teleworking call centre staff.
- Unisys in New Zealand gained net benefits of NZ\$12 412 per teleworker, per annum through its telecentre-based telework initiative in Wellington.

A pragmatic approach towards OH&S will be another valuable step forwards. Working from home is not ‘equivalent’ to working in the office. Home workers can (and should be able to) work in many different physical environments: the living room, the study, outdoors, the dining room and so on. The OH&S environment in a home context is different than that of the traditional workplace and it is inappropriate to mandate the template of a workplace OH&S environment in a private home. It should also be remembered that Australian workers can be effective and should be encouraged to be productive when at a café, in an airport lounge, in a taxi and in many other locations away from their ‘home’ or ‘office’.

Promoting the use of PC and mobile collaboration tools should be strongly encouraged. The old “conference room” ISDN video-conf facility is neither scalable nor convenient for widespread collaboration. Government can play a role in promoting awareness and adoption of collaborative applications such as PC based video conferencing, desktop sharing and instant messaging applications, particularly amongst less ICT literate Australians. Australia’s youngest generations seem to be more familiar with these tools but for now it is Australia’s older generations that will be managing them whilst they are still in the workforce.

⁷ Source: www.teleworkaustralia.net.au

Combating climate change

Our vision and hope is that before the next decade has drawn to a close, Australians will be better informed and will thoroughly understand their energy consumption habits using remote monitoring, management tools and automated devices. They will use energy only when needed and will be more careful than ever before to use it wisely.⁸

If Australia gets it right remote-access capabilities should be commonplace in appliances, tools and machinery by 2020. Appliances should be able to be accessed, monitored and operated using all manner of personal, fixed or mobile devices, whether it's from a mobile phone or a laptop. Australians should be able to remotely check what channel the home TV is tuned to, to turn off the home air conditioner or crank it back, to check home security and manage answering machines.

Assuming we make a good start now then by 2020, broadband initiatives initiated this year will have had time to mature and enable a significant reduction in Australia's carbon emissions to levels and put us on track to exceed our 2050 targets for stabilising the global climate.⁹

⁸ Dennis, M., Jones, H. M. 2007, Broadband communication enables sustainable energy services, Telecommunications Journal of Australia 57 (2 and 3): pp. 25.1 to 25.16. Provides a comprehensive discussion of the roll broadband can play in assisting the energy sector to meet essential cost and performance targets for a sustainable national electricity supply network.

⁹ Mallon, K., Johnstone, G., et al, 2007, Towards a High Bandwidth, Low Carbon Future. Telecommunications-based Opportunities to Reduce Greenhouse Gas Emissions. Climate Risk Pty Ltd. Provides a comprehensive, quantified overview of the carbon savings and economic benefits arising from the use of telecommunications networks - including Broadband.

What, if any, additional datasets should government collect to improve the benchmarking of Australia's Digital Economy?

What do you consider are the key Digital Economy indicators?

Do you have views on the adequacy of the existing data sets or suggestions as to how they might be improved?

This section responds to Section C6 ('Measuring the Digital Economy and its Impacts')

Existing data sets, including those collected by ACMA, ACCC and the ABS provide a useful snapshot of the ICT or telecommunications sector at a particular point in time. Today's measurements tend to explore parameters such as the number of businesses and consumers connected, connection bit rate and the aggregate volume of data download. These measures miss an important and fundamental point that the network's utility derives also from the variety of different applications, industries and geographic and consumer segments using it¹⁰.

There needs to be greater and timelier analysis of the impact of technology. This should be done by tracking the technology intensity against key economic indicators such as productivity and growth. Acknowledging and interpreting the correlation between the two will put Government in a much stronger position to investigate impediments to uptake and investment, and the rationale for acting on these impediments.

Looking to the future, these aspects will provide far greater insight as to the growth and success of the Digital Economy. This is where the real innovation lies.

Measurement of inter-industry synergy is not necessarily straightforward, however it is better to have a timely and indicative industry snapshot rather than overtly rigorous and robust research that may take years to analyse and report on. This could be achieved by:

- Monitoring the growth of the aggregate values of non-traditional services delivered using Digital Economy means (eHealth and eEducation for example). At the same time, it will be worthwhile to monitor declining growth in traditional delivery means.
- Monitoring the number of Digital Economy enabled devices available per household. Traditionally, focus has been directed towards the number of PCs. The number of network-enabled media players, collaboration devices, health care appliances and other online devices would provide important insight into the progress and nature of convergence.
- Monitoring the proliferation of home networks and the mix of home networking technologies. Are Australian homes adequately prepared for accessing the Digital Economy and are adequate resources being directed towards installing appropriately rated cabling?
- Monitoring growth in the number of independent applications and sources of online content Australians routinely access through their broadband connections rather than via traditional means such as telephone or in person.

¹⁰ Refer to earlier footnotes citing Reed's and Metcalfe's laws.

- Monitoring the growth of aggregate network uploads by online content providers in disparate industry sectors. Perhaps however it would be more informative to monitor the number of sessions or the aggregate time spent conducting transactions or using a service (as opposed to measuring raw data volume which cannot easily be compared across industries).
- Identifying Australia's key greenhouse emissions contributors and measuring ongoing uptake of network based alternatives and solutions. Estimating the tonnes of paper, litres of fuel, car trips and time saved through distributing and accessing content online.
- Monitoring the number of businesses providing network-based services or providing access to their services via the network, and tracking the aggregate value of sales or business directly generated using Digital Economy means.
- Monitoring numbers of Digital Economy professionals and the number of Australians with qualifications pertaining to Digital Economy infrastructure and applications technologies and the economic value of their Digital Economy contributions.

Representing this data by geographic region provides insight as to the successful adoption of Digital Economy technologies and their value.

About Alcatel-Lucent

Alcatel-Lucent (Euronext Paris and NYSE: ALU) is an international organisation that provides solutions that enable service providers, enterprises and governments worldwide, to deliver voice, data and video communication services to consumers.

Alcatel-Lucent has provided equipment and technology underpinning more than 90 FTTx deployments in 90 per cent of the top broadband economies including more than 20 national operators and over 60 municipalities and utilities. Over 75 of these are based on our flagship Gigabit Passive Optical Network (GPON) solution for the delivery of ultra-high-speed services to residential and business users. In addition:

- We are the world's leading supplier of xDSL technologies, a position Alcatel-Lucent has held since 1997 (according to research firm Dell'Oro); and,
- We are engaged with 25+ major telecommunications incumbents and competitors in IP end-to-end network transformations and in many more non end-to-end transformation projects.

Alcatel-Lucent has been part of the Australian telecommunications fabric since 1895. We are proud to supply equipment and services in advanced DSL, fibre optics, wireless and satellite access to Australia's leading telecommunications incumbents and competitors, supplying the infrastructure for a significant portion of Australia's residential DSL community. We already help many Australians take advantage of a digital lifestyle. Everyday more than 300 TeraBytes of data (equivalent to around 3 billion web pages or 60 million songs) are delivered across our DSL technology platforms in Australia and New Zealand. More than 25 million calls are made across our Australian technology platforms.

Our leadership in the development of Australia's communications infrastructure has included the country's first undersea cable network, the introduction of broadband Internet, the country's first 3G mobile network (m-Net) and the world's longest optical link, between Adelaide and Darwin. As a leader in fixed, mobile and converged broadband networking, IP technologies, applications, and services, Alcatel-Lucent offers the end-to-end solutions that enable compelling communications services for people at home, at work and on the move.

With operations in more than 130 countries, Alcatel-Lucent considers itself a local partner with global reach. The company has the most experienced global services team in the industry, and one of the largest research, technology and innovation organisations in the telecommunications industry. Alcatel-Lucent achieved revenues of Euro 17.8 billion in 2007 and is incorporated in France, with executive offices located in Paris.

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