

ADTIA - CAG Members Response

ADTIA recognises the importance of digital workers and the "road" (physical cabling and wireless infrastructure) on which the future digital economy must travel to enable connectivity and innovation for future generations

The Digital Economy: Opening up the conversation

1. How are advances in digital technology changing the way you work, your industry, and your community?

Response:

General

Most of our communication is via the internet in gathering business information, opinion, detailed product engineering information, liaising with or advising clients and contract management, records keeping and sharing and even our business management with accountants, lawyers and government agencies.

The Australian regulatory framework and carrier network capability should be driving the digital economy and allowing professional, non-office based working or national or international collaboration. Unfortunately, many see this current political non-partisan approach to Australia's future infrastructure as lacking vision, support or willingness to move forward in order to increase Australia's capability and to generate economic growth.

Work:

Improved and effective working from multiple locations. In this respect, repositories of data are no longer confined to geographical areas and communications across geographical locations is allowing greater participation from a more diverse range of participants leading to improved business outcomes never before considered.

In the last few years there has been a significant shift for technical work with engaging contracting businesses and moving away from the employment model thus impacting on the (digital) skills requirement of this workforce. There has also been a shift to workforce mobility and remote working to allow for support of diversity, inclusiveness, return-to-work mothers and the disadvantaged and to support parenting and work-life balance. In addition to this, there has been a significant shift to task automation, which is increasingly mobile.

The expectation is that RAN (Residential Area Networks) become equivalent to corporate networks in availability, reliability and symmetric data transfer to allow for conferencing, upload/download of corporate files and models with low latency that enable remote diagnostics and even deployment of remote robotics in such areas as medical and homes for the elderly.

Industry

Given cabling is at the core of the digital economy and its transformation is generating a lot of work for the ADTIA “Cabling Advisory Group” (CAG). The lack of standardization, whilst seemingly beneficial as a way of gaining market share, creates some winners but significantly unintended consequences and many losers. The CAG is trying to bring these issues to the fore through industry committees and government agencies as they seriously impact the productivity of Australia’s economy while creating business uncertainty.

As a professional services industry in a national market, APAC and greater international market; the need to compete, generate ideas, collaborate and innovate are core to development of workforce digital capability, access to markets and opportunity enabling economic viability.

This shift to workforce mobility more and more supporting remote working, enabling support diversity, remote inclusiveness, return-to-work mothers, assisting the disadvantaged and to support parenting and work-life balance which is constantly moving higher and higher, year on year, and is essential to remaining competitive in a both a national and global markets. These are now core corporate workforce requirements.

Of concern is the lack of “future-ready” quality carrier infrastructure to support rapid bandwidth increases in the residential sector and small business parks. This needs to be addressed in a strategic national approach. This is equivalent in importance to water security, food security and energy security; it must not be left to ‘market’ and based on profit. Digital Economy development and growth will in future be driven by Customers; both connected and not connected to the Carriers.

Additionally, it should be stated that the current commonwealth regulatory framework requires updating and re-regulating to enable growth and development in Australia’s Digital Economy but not at the expense of consumer expectations and rights. The updating of the current regulatory framework is essential to underpin Australia’s Digital Economy development, as witnessed in other countries that are moving from an unregulated or self-regulated environment to a well-considered re-regulated environment.

National Digital Economy management is of such a national strategic importance that it cannot be left to the “market” (left to chance) without some framework in place to guide and assist the implementation of the digital benefits. Telecommunications needs a minimum level of quality, service (availability and reliability) and safe practice all of whom should be mandatory. The current Australian, carrier-centric self-regulated framework doesn’t support the above requirements and leaves this to market based on competition – whatever this means, hence the need to review and consider co- and re-regulations with industry bodies and associations.

Community

Lack of industry quality, standardisation and not considering consumer needs are

leading to growing frustration with new technologies and loss of confidence in the Digital Economy and its benefits by the community at large due to the poor infrastructure currently in place.

Standardisation is seen by major service providers as a potential to open their ecosystems and to undermine their market share, and may lead to losses in individual organisations. A standardised approach that allows the majority of the human intellectual capital to be put to the betterment of the society at large where elements are able to work seamlessly, robustly in a secure environment.

However, the failure to standardise leads to loss in productivity and creates uncertainty across the community at large because much human intellect is wasted in backing technologies that are superseded – hence there has to be a balanced and considered approach to policies and programs by both government and industry and not by a select few.

We are starting to see a move in Smart Cities, Smart Buildings and facilities and HIoT (Home Internet of Things). This technology will be Artificial Intelligence (AI) supported, to allow for increase improvements in task automation, solution development and optimisation. This move to an IoT environment will grow exponential (in deployed solutions and number of devices) and is expected to encompass >97% of our communities, work and life, and economy by 2035.

The concern is that the telecommunications infrastructure and network may already be outdated at completion and that maintenance will be costly. Currently this national network strategic approach appears fragmented between public and private carriers, with a vested interest in not providing a truly open, integrated platform to support Smart Cities, Smart Buildings and facilities and HIoT.

2. What is your vision for an Australia that thrives in a digital economy? Where would you like to see Australia in five, 10 and 20 years' time?

Response:

Part 1

While industry will drive innovation in digitization of products and services leading to a plethora of products and services, the infrastructure and platforms needed for this, needs to ensure connective inclusion in the form of a robust telecommunications network that efficiently distributes digitally encoded information on an analogue platform be it in the form of cable or wireless.

The major leap, indeed priority for Australia is to ensure its connectiveness is maximised through the use of fibre and if and when appropriate through its multi mix technology services delivery with the NBN infrastructure to ensure it is virtually limitless.

Standardisation in the physical network built environment where technologies can be

deployed on a standardised platform to allow for the enhanced management of energy, water and even vehicular traffic etc. Hence a smart home is not just a sales pitch but a truly standards based platform that provides the right mode to allow for reliable and secure connectivity and is technology agnostic, i.e. is the right technology for the purposes of society.

Part 2

The Digital Economy should ensure that wholesale telecommunications infrastructure can support the expected data bandwidths with low latency required by new and emerging technologies, by the nation, community and business, in five years, 10 years and 20 years' time.

3. What is the role of government in achieving that vision?

Response:

Our Federal and State Governments need to create an environment that allows for the digitization of work and products thrive allowing for innovation and community benefits. There needs to be support for the development of standards and promotion of the use of standards that form the telecom built environment and to ensure a truly transactional environment. This will allow for enterprises to develop business plans that enable them to invest to meet consumer demands.

This includes a well-developed policy and framework that provides certainty in meeting the demands of the “Smart” technologies and converging products. This framework may include (among many things) a review of standards and other regulatory requirements that will strengthen the consumer’s expectations. This will allow the true benefits for business to be competitive and drive efficiency and productivity.

One example that may be reviewed within this framework is the Telecommunications Scheduler 3 laws. This 20 year old framework had created a so called competitive framework but has institutionalised waste and poor productivity with property owners losing to the benefit of inefficient telecommunications infrastructure deployment.

The Federal Government needs to better understand how agencies and businesses require support in altering this law to ensure competitiveness through inclusion by utilising shared high-quality infrastructure and effective collaboration between Telco’s and property owners.

Government needs to engage better with industry associations and the public on matters of cybersecurity and through its approved industry associations gain support and implement a joint program that will provide certainty in the digital world.

4. What are the key disruptive technologies or business models that you are seeing? What do you predict is on the horizon in five, 10, 20 years' time?

Response:

Without any doubt, at the physical layer, one and two technologies stand out with Fibre and the use of radio connected to/by cabling such as fibre to enable high bandwidth low latency connectiveness via next generation mobility systems.

This will impact every thread of society from basic training to robotics in medical, transport and commerce etc. On top of this will reside the software applications industry and government use for our society and this will be underpinned by thorough immersive training in how to use and manage these technologies as they evolve.

The role of government is to ensure a legislative framework is in place that encourages rather than discourages performance based competitiveness and services. In the majority opinion of this group, acknowledging the political sensitivities and the assumption based cost engineering, Australia will need to consider a Fibre to the Premise/Business to support the exponential growth of ICT and the exponential change in technologies that will occur moving forward.

It is to be expected fibre optical cable will underpin Australia's telecommunications this century. The Digital Economy will be based on a foundation of high availability, high reliability optical fibre that will support Digital and Smart converging devices, computing devices, software, mobility networks, etc.

The Digital Economy will not develop or grow above its current capability on low bandwidth copper due to its physical limitations. If Government can create a high bandwidth, high availability and high reliability information highway, digital commerce and innovation in Australia will flourish. Whether this is undertaken by Governments or businesses, it is imperative that the Telecommunications infrastructure is robust and capable of handling the expected traffic from the Digital Economy.

The impact of these technology and technology driven events, across all sectors has not been listed but below is a short-list of notable disruptions that society, business and government can experience is listed.

Five-year (2022) vision:

- Desktop computer will have the processing power of one human brain.
- Autonomous vehicles
- Electric vehicles
- Driverless electric transport
- De-centralised (building) power generation
- Education on demand, learn what you need when you need from home
- Peer-to-peer trading of energy (via AV/EV)

- Wearable tech
- Narrow band wireless networks
- Ultra high speed wireless broadband
- AI automation of professional services (10% above current)
- Robot automation of labour services (12% above current)
- Smart buildings and precincts - IoT
- IIoT – Industrial Internet of Things
- HIoT – Home Internet of Things (10% market penetration)
- Voice activated smart homes
- Demand side management to manage the use of energy and the integration of micro grids
- VR Tele-presence
- Augmented Reality of services
- 8K televisions
- 5G WWAN – wireless wide area technology
- Quantum computing
- Block chain – democratisation of relationships/ peer-to-peer contracts for use of personal information (time and type limited), business contracts and fiscal lending (<\$50k)

10-year (2027) vision:

- Desktop computer will have the processing power of ~32-64 human brains.
- Cognitive (AI supported) buildings
- Smart cities
- AI automation of professional services (55% above current)
- Robot automation of labour services (50% above current)
- Smart buildings and precincts - IoT
- HIoT – Home Internet of Things (70% market penetration)
- Holographic “tele-presence”
- 3D /Holographic video panels
- Li-Fi
- DNA-memory storage
- Nanobots
- Personal AI assistants
- Cybernetic augmentation
- Quantum communications and security; to the individual
- Block chain – fiscal lending (<\$5m)
- Introduction of “Basic Services” rather than “Basic Income”
- Personal robot servants
- Education will be delivered by AI.

20-year (2037) vision:

- Desktop computer will have the processing power of ~48,000 human brains.
- Mobile-phone size computers will have the processing power of one-eight human brains.

- AI automation of professional services (90+% above current)
- Robot automation of labour services (90+% above current)
- All built environment will be “smart”
- Introduction of nanobot/nano-intelligence into the environment.
- The start of the decentralisation/dismantling of the current governments structures.
- Discussions on AI – robot equal rights.
- Human intelligence can be moved between organic, robotic and “cloud” platforms.
- Trans-human augmentation – biology will become an another Information and Communications Technology
 - Cybernetic augmentation
 - Aging cured
 - Brain augmentation and direct interfacing to the “internet”
 - Nanobot to augment human brain – each nanobot will have the processing power of a current mobile phone
 - Genetic coding, programming and manipulation.

The description of these impacts cannot be outlined or discussed within this paper due to duration and space constraints and if further details are required, contact ADTIA and a meeting with the CAG can be arranged.

5. What communication services, and underlying data, platforms and protocols, does Australia need to maximise the opportunities of the digital economy?

Response:

Telecommunications information conveyance relies on physical platforms that interwork with transmission technologies efficiently converting digital to the underlying analogue environment of fibre and wireless to allow protocol interaction. Currently the most important layers are analogue. Like road and rail physical infrastructure they allow the efficient transport of cargo, i.e. data, to where-ever the transport physical connection goes. **By way of example** *the 30 year program to map Saturn using satellite technology only occurred because of the marriage of the physical platforms, designers, builders, launchers, optical and wireless systems and ground stations to physically interact with the digital systems on the physical satellite. Without the thorough training, engineering, quality design and construction and development of physical communications systems this project could not have occurred.* Digital only works with the application and the physical layer providing the connectivity, Government and Stakeholders need to understand this.

Create the Digital Economy Infrastructure: If Government can create a high bandwidth, high availability and high reliability information highway, digital commerce and innovation in Australia will flourish.

Educate: Cloud-based, zero-cost access to the public on coding, education tools and collaboration. This will allow Australians and future workers to learn code and to sandbox solutions. Furthermore, a free “Raspberry Pi” or equivalent to “students” who have reached a minimum level of coding competency and request the micro-computer.

With the correct infrastructure and an educated/enabled citizenry, Digital Economy innovation, new technology integration, new markets and opportunities and solutions will happen as a consequence. Government needs to create the environment and nurture the environment over time, to create the Digital Economy we need as a country and for future generations.

An example of the future of technology is the use of a Smart Wired house platform which supports the connectivity and integration of:

- Communications
- Entertainment
- Security
- Digital home health
- Age & assisted living
- Intelligent light and power
- Electric vehicle charging
- Appliances – intelligent
- Solar
- Energy storage systems

6. What opportunities do we have to accelerate the development of technologies that will underpin Australia’s digital economy?

Response:

The Federal Government needs to support the distribution of transmission transport pathways that will enable efficient digitally encoded passage of information. This is presently blocked by the telecommunication framework and how it has been organised in Australia.

While competition maybe an enabler of products and services it is not very good at efficient infrastructure management. We don’t need more than two efficiently deployed pathways to everywhere, but these multi deployed pathways need to be well managed freeways for data communication that efficiently and reliably supports the digital traffic of the future as the promise of fibre, 5Gplus, and radio provides. One of the barriers to the deployment of technologies is the impact of non-standard/proprietary/legacy systems that require a total upgrade, i.e. take all the old hardware and infrastructure out and replace it with a totally new platform.

After a couple of decades of debate and the lack of national consensus of the need for a truly high-speed broadband network that is future agnostic, the challenge of the

present technology deployments [multi-mix] will be the need to upgrade and maintain the infrastructure due to poor policy and lack of consensus at the political level. This, along with the lack of proper structural separation of TELSTRA's national network at the time of privatisation means the rollout of the NBN became an expensive exercise not previously foreseen by the Government of the day.

Currently there is no requirement, under the National Construction Code, to cater for telecommunications. This leads to building with little or no infrastructure to support the deployment of telecommunications, be it wired or wireless.

One key element for the deployment of a high quality / speed telecommunications access network is the need to have cabling reticulated to corner of a building such that connectivity is truly ubiquitous either physically or wirelessly at building sites to service an ever-growing number of devices.

The opportunity:

The multi-dwellings building environment, establish under the NCC or other instruments, the need to have buildings that either have world class infrastructure or the pathways and spaces to easily and cost effectively deploy world class telecommunications infrastructure. With the increasing use of devices, residence and tenants in multi dwelling buildings are now demanding improved telecommunications connectivity. Whilst cable pathways and spaces are not that expensive to install during a new build or renovation over the building lifetime without this adequate environment how is a building owner/tenant to allow for the delivery of the services we are all seeking.

The key risk and mitigation of risk to technology and digital disruption is our physical infrastructure. The issue is Australia's regulation framework doesn't recognise the crucial importance of communications infrastructure in our building environment treating it as simply LAND! This needs to be addressed. The issues are:

- Carriers are not required to follow any communication cabling wiring rule regulations when installing cable within a 3rd party/customer building while registered cablers are.
- In-building 4G/5G DAS and Wi Fi systems cannot become the responsibility of the building owner as they are a part of the larger ubiquitous telecommunications mobile network. While more and more speed and less latency are required and therefore the need to invest in these systems, building owners do not have the responsibility, oversight or expertise to manage this technology. This requires a telecom literate holistic carrier to build, maintain, invest and upgrade as a part of their overall telecommunications system.
- Customer (communication) cabling wire rule regulations were designed, under the current framework, to protect the safety of persons and carrier

network integrity of cabling connected to the carrier network –the intent was to connect this customer access network to the carrier network at the time of service installation. There is a significant amount of networks (utility, transport, industrial, manufacturing, etc.) that are not connected to a carrier within a building. Present telecom Access networks are not regulated to meet a minimum guarantee or level of network integrity or indeed provide guaranteed performance. Improving infrastructure, improves network availability and reliability, which improves fiscal position, improves digital innovation and trade opportunities, and assists mitigation of risks associated with digital disruption.

It is assumed that telecom business and digital entrepreneurs prefer to manage these risks to maximise their opportunities. However, while telecom infrastructure is a cost burden and not revenue raising this will not change. Safety or business shut-down due to lost service is more and more a concern, happening at a significantly high rate on the older copper based networks. This may have been acceptable last century but isn't now. Infrastructure (and safety) is business critical, and will impact the national digital economy if not managed well.

The opportunity here is to undertake a program that enables industry and governments to set minimum, universal wiring rules for communication cabling in the build environment that would set a minimum level for safety, availability/reliability and performance.

Telecommunications pathways and spaces for both the Carrier and Customer, as per AS/NZS 3084 should be mandated either in the Building Code or the as a Regulation but only on the basis that this is managed well through support and consultation with stakeholders in this area, unlike what OCCURS UNDER THE PRESENT Schedule 3 legislation.

It should also be a basic requirement, and the future should allow for, greater interaction within the installed telecom transport layer to ensure safety and time efficiency. This will occur through technology progress as a result of the merger of digital and sensory platforms transported by fixed line and radio based telecommunications platforms enabling mobility that is far more effective across the community than we are able to enjoy today.

7. What opportunities do we have in standards development and regulation to:

- **enable digital entrepreneurship, innovation and trade?**
- **mitigate the risks associated with digital disruption?**

Point 1:

1. Review of international standards is critical as the Australian economy cannot afford to go it alone. Australia has been globalising and undertaking this work but it must be fast tracked. Any review **MUST** consider the Australian standards and regulatory requirements eg OH&S, separation and voltage differences in other countries etc.

2. Thorough training in how telecommunications works and development of workers installations skills to improve the quality of the network and the installations within premises. This should include industry and Government collaborating in supporting a quality and standardised co-regulated system.
3. Businesses that are driven by legal frameworks that ensure competitiveness in their niche areas of business and to discourage unnecessary infrastructure duplication or indeed replacement when greater data speed is required.
4. Building infrastructure that encourages connectiveness with the costs apportioned to those operating the business i.e. mobile coverage in buildings being a telecommunications service that is integrated with services in the street to prevent call dropout – *surely a carrier obligation*. These services need to be owned and managed by the service provider in collaboration with building owners rather than what occurs now.
5. Smart building occupancy can only occur with telecommunications infrastructure that is well designed for the future, quality engineered and managed to interconnect the myriad of digital devices likely to be used within a site and/or in the street. The very security and functionality of society in the future will depend on this infrastructure.

Point 2:

Risk mitigation can only occur with well-trained people, operating with the future in mind on well-designed telecommunications infrastructure, as this is the physical layer on which everything depends. The present multi-cast physical layer appears unproductive and costly as can be seen by the number of complaints and intervention by the ACCC.

There is a need for telecom network diversification, as there is with road transport, but this needs to be efficiently and thoughtfully deployed and managed unlike at the present. Cabling, and in particular Fibre, by its very nature has a massive capacity capability for digital information due to its usable spectrum when well installed and terminated on suitable hardware systems. Australia needs to think very carefully about how much of this infrastructure is needed and where it is deployed, this along with how it is managed in industry.

8. What digital standards do we need to enable Australian businesses to participate in global supply chains and maximise the opportunities of the digital economy?

Response:

Digitisation is an evolving science driven by the user product environment across all aspects of human endeavour, higher and higher speed digital protocols deployed tend to be on platforms that are common to industry and specific in their application. This is an ever-evolving science and very intuitive largely controlled by industry.

Regulation needs to ensure:

1. Security and where necessary interception of sensitive information used for

public good such as medical, transport, personal and industrial information misuse.

2. The common good of society where it should be impossible to garner information at the disadvantage of society or to leverage an unlawful position while ensuring agencies can interpret unlawful access and usage.
3. Communications Cabling: Adoption of ISO/IEC 14543.3(parts 1-6) Communication layers - Network based control as an Australian Technical Specification. Also there should be consideration to adopt ISO 11801 (parts 1-6) Information technology -- Generic cabling for customer premises within the Australian context.

The Government must cease relying on legislation based on economics that have nothing to do with efficiency and perceived competition and care of the common good such as occurs with present telecommunication laws.

9. What opportunities do we have to build trust and community confidence through resilience to cyber threats, online safety and privacy?

Response:

It is unfortunate, that through lack of training and understanding, people are often misinformed allowing political difference and a poor long term understanding of community need. It is fine to be competitive but not if it is actually in the public interest and encourages only self-interest. Self-interest must be tempered by being deliberately honest with the communication of factual and collaborative information.

Trust comes from inclusiveness and being open and obviously wise and forward looking in leading the country or business ventures that is in the common good of the country and its inhabitants.

Safety comes from common good and privacy is clearly identifiable in this context. If it is not in the common good to protect privacy it is important it is made public but self-interest must at all costs be tightly managed. E.g. when bad internet sites known, Government should mandate ISP's to block them and to only allow access to those where specific access is requested. This managed access does not need to be on public display.

Freedom of expression and learning can only be achieved by openness, but not if it offends unreasonably. This is a very difficult domain to manage and especially for the politics of popularity so opt in appears to be the only way to manage this situation rather than opt out. This means access is managed, not like it is today, where opt out is thrust onto the public. An example of this is in the media where it is virtually possible to do anything with programming until it offends and then, as an individual, somehow it needs to be controlled by the community – how?

Another example is the deregulation and privatization of all our nations' assets to privately owned interests. The public should not be placed into a position of having

to somehow wade through misinformation to assess the best power, gas, fuel and telecommunications services and prices. Further injustice and inefficiency is seeing jobs going overseas while Australian's hold onto an enquiry call for an excessive time while attempting to obtain a service or information about fundamental their societal needs.

Our Governments need to seek genuine productivity through good enterprise management and innovation and this has not occurred in Australia since deregulation of basic utilities. Australia was for many years a leader in telecommunications research and innovation but has slipped massively since deregulation of this industry in the form it has occurred and it has not been taken up by Australian industry for many reasons – however do government and industry need to consider reinvesting in joint ventures to encourage innovation or rely on international organisations to dictate what is best for Australia?

10. What roles should government, business and individuals play in protecting the community in a digital economy?

Response:

Government should ensure standards are put in place for the deployment of technologies which incorporate security as an element. Currently internet connected devices are selling quickly and are installed to function with little to no knowledge of the potential for back door security breaches.

Government needs to ensure there is a platform to ensure Australians are:

- Informed
- Educated
- Supported
- Guided
- Cybersecurity prepared - Cybersecurity awareness and training programs need to be encouraged and funded to assist the individuals, communities and future users of the Digital Economy to not only be aware but also know how to protect themselves

Government, through well considered legislation must be the enabler of society allowing its people and business to seek more and more convenience, speed, safety and reliability through what has been enabled by Australia's legal framework. Australian society can only rely on plain English laws that ensure the rights of its citizens while creating a platform that enables business to thrive. Business should be only allowed to thrive at the product delivery stage. By way of example with vehicular transport, it relies on efficient and well thought out roads but can provide from basic through to luxury vehicular enhancements while utilising the same roadway platform.

However no industry or government can or should be allowed a position where they are able to take unreasonable advantage over an individual's or countries common good for any reason. Australia needs to be wise in decision making to maximise use of resources while caring for the environment.

11. What integrity and privacy measures do we need to ensure consumers can protect their data?

Response:

Firstly we need to define what is meant by data and how it is made private and where is it to be transported and used? This is much compromised at present at a national level. This needs to be clearly understood by society as an issue and managed for the common good. Any method used to convey personal data in any form must have clear and precise boundaries placed around its use and who is to access it. This is certainly not the case now on the internet or in people's homes.

Our agencies of Government obviously need access to data as does commerce in all forms but this can only be based on need for common good and not disruptive, political or business leverage needs of any form. People cannot be of themselves trusted with another party's information unless it is agreed by the individual parties.

A framework for this can only be established at the highest levels of society and as a framework to the conduct of government and business and let Australians first be informed and have their say on consumer rights and privacy in respect of their data.

12. What are barriers for business, particularly small business, in adopting cyber security and privacy practices?

Response:

Understanding and cost – the lack of knowledge of the threats and the speed of development of the technology place small business particularly in a very difficult position as they are in many cases required to upgrade but do not have the in house IT support and therefore may leave themselves exposed.

To operate and prosper small business, need knowledge and an understanding that Government Agencies are looking after their interests enabling them to conduct business without undue overheads.

The Government needs to fully understand CYBER security and the then use their agency expertise as a resource for their people and to lead small business into best solutions to ensure they are secure. Currently it is left to business and in a framework where there is little to no guidance or training in this area. The overheads of available time in setting up and running a small business are burdened by the overheads of available time and the impositions of government requirements.

Currently COSBOA is fully engaged in the Cybersecurity programs with small businesses and it would be prudent to seek their input into this area.

13. What integrity measures do the Australian Government and the private sector need to take to ensure business-consumer transactions are secure?

Response:

By proactively ensuring the pathways for commerce on the telecommunications network are as reasonably possible secure. The assessment of a transaction to ensure security must be multi-authenticated between the transacting parties with security support and no intervention possible. Not sure how this might be achieved but given the number of transactions in banking and share trading and commerce, surely a common set of rules can be agreed at the highest levels of society for this along with its management.

Currently COSBOA is undertaking activities regarding transactional and data security through the Australian Digital Council and possibly engage with them to seek their input into this area.

14. What is holding Australian businesses back in terms of benefiting from digital technologies?

Response:

As mentioned throughout this document, the largest is telecommunications pathways uncertainty and how services might be delivered. The range of technology options needs to be understood and then efficiently delivered.

The present telecommunications industry is a blockage to this and the cost is substantial in CAPX, OPPX and productivity - without a good road you cannot drive a quality car and to cross country an all-terrain vehicle is required, and this is not productive in terms of cost, speed or functionality.

Businesses need reliable connectivity and needs to be better considered for residential businesses where an increasing percentage of people are now working from home.

Why are we not changing the present telecom legal framework and insist on efficiency and productivity? Technology needs a framework and a platform to operate efficiently – this is common sense so our present framework needs to be reviewed to ensure this outcome. This has led and continues to lead to sub-standard installation where all safety requirements may be met but network performance is an unknown quantity.

In 2017 the only mandated standards in telecommunications are AS/CA S008 and AS/CA S009. Standards whose primary function is safety, safety of the users of a telecommunications network, persons working on a telecommunications network and equipment connected. In fact in AS/CA S009 there is only one clause that comes

even close to dealing with performance and it is:

5.5.1 Fit for purpose

A cabling product shall be fit for purpose for its intended use.

At best in the residential environment, cabling is tested using what is equivalent to using a test lamp in electrical wiring. Yet in the electrical industry, due to safety concerns testing is significantly more important with testing to prove functionality and performance.

So business can spend a lot of money in setting up the most sophisticated system to deliver a quality service by having world class data centres, using world class telecommunications network to come to a grinding halt within the residential premises because the cabling installation is limiting performance.

The infrastructure has to be fit for purpose for both safety and performance. Performance relates to:

- Speed based on what is available from the infrastructure
- Reliability in how it was installed
- Security

The reliability of telecommunications in particular the broadband connectivity must be equivalent to that we are used to from power and electricity and the soon to be extinct PSTN under USO.

15. What would help Australian businesses to embrace digital technologies?

Response:

Training and understanding along with removing uncertainty of connectivity. While we might talk everything is “digital” this is only encoded information transported on a physical network platform and this needs to be well considered and implemented and isn’t within Australia today.

16. What efforts are you or your organisation making to respond to digital transformation? Why?

Response:

ADTIA was initially incorporated in January 2009 as a member based association, the Australian Digital Television Industry Association represented the industry as a whole and focused on quality education, skills development and the recognition of individuals involved in the digital reception sector of the telecommunications industry.

With the announcement of the Australian Government's "Digital Rollout", ADTIA was contracted by the Department of Broadband, Communications and the Digital Economy (DBCDE) to provide technical advice and expertise in developing a Bank of Questions for use in an online system to assess the skills and knowledge of antenna installers wanting to register as Government endorsed installers.

Following on from the Question Bank, ADTIA was also involved in the development of Antenna Installer Training and Assessment Resources for use by RTOs (Registered Training Organisations) within the VET (Vocational Education and Training) sector. ADTIA is currently contracted by Standards Australia to review AS 1367 (Cable standard for RF distribution of TV signals) and AS1417 (Antenna standard for VHF and UHF broadcast bands).

With the end of the switchover from analogue to digital television, the Association has expanded its membership base to encompass the types of work its members will be doing into the future, particularly in the converging telecommunications and digital sectors.

As a result, the Association is now known as the **Australian Digital & Telecommunications Industry Association (ADTIA)**, its purpose being to:

- Represent the digital and telecommunications industries in delivering the best possible technological outcomes for consumers
- Establish digital and telecommunications benchmarks and training standards that ensure a consistent application and standardised system for compliance and quality outcomes throughout Australia
- Monitor and improve the levels of quality, expertise and qualifications of digital and telecommunications technicians
- Provide a networking organisation for members and act as an advisory group for government and industry
- Work with industry and members to create employment opportunities within the digital and telecommunications industry.

As we all recognise, and this strategy reinforces, the digital transformation is bringing rapid changes at so many levels it seems at times near impossible to be able to keep on top of them. If we look at the hierarchy of transformation taking place we can identify the common element and focus on those.

So why are we doing it, because the industry, ADTIA, ICAA, the cabling Registrars and the enterprises in this industry did the ground work. As an example, the International Copper Association working in conjunction with the ACMA accredited Registrars and various industry players has done exactly this, in 2004 the ICAA commissioned a project "Technology Roadmap" which concluded that the built environment will be underpinned by 10 main characteristics, which heading are:

- Flexibility modularity and materials
- Water
- Energy
- Communications
- Security, safety & health
- User-friendliness, comfort & safety
- Home operations base
- Entertainment
- Smart services, appliances and fittings
- Maintenance management



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The ICAA and the Registrars have since developed and promoted the Home Wiring Essential which is made up of:

1. Code of practice for home wiring – setting the framework
2. Quick guide to Smart wiring – making it accessible to the consumer
3. Installer handbook – making sure the installer delivers what the consumer wants

This Home wiring essential covers:

- Entertainment
- Communications
- Energy management
- Security
- Digital home health
- Age & assisted living
- Intelligent light and power
- Electric vehicle charging

The current document can be accessed at
<http://registeredcable.com.au/industry/smart-wired/>

These documents are now being updated to incorporate:

- Solar
- Electric storage systems

- Appliances
- Economic cable sizing

The Cable Registrars ensure that they provide industry information via emails to their Registered Cablers on a regular basis. Articles on emerging technologies and Skills Training available within the Industry are also communicated to those wanting to upskill to meet new technologies or reskill to work in different areas of telecommunications.

The Registrars and registered cablers websites are listed below:

- Australian Cabler Registration Service (ACRS)
 Website www.acrs.com.au
- Australian Security Industry Association Limited (ASIAL)
 Website: www.asial.com.au
- BICSI Registered Cablers Australia Pty Ltd (BRCA)
 Website: www.brca.com.au
- Fire Protection Association Australia (FPA Australia)
 Website: www.fpa.com.au
- TITAB Australia Cabler Registry Services (TITAB)
 Website: www.titab.com.au
- Registered Cablers - Website: www.registeredcablers.com.au

ADTIA with its board members and industry stakeholders constantly drive the benefits of the Digital economy but without the properly skilled and trained workforce both performance and effectiveness will always be an issue – see www.adtia.org.au and attached industry paper.



Digital Industry and workforce overview 2017 v2.0.zip

17. What opportunities do we have to use digital technologies to improve linkages into export markets and global supply chains?

Response:

Australia and the world opportunities will grow as the number of people on the internet grows from 3 billion to 5 billion. Australia is a very innovative country in so many fields and this relies on information flow.

The Federal Government needs to ensure the highest speed telecommunications framework is developed and is well maintained as it is the connector of everything not just the internet of things (IoT). We should be training, researching and enabling thinking at all levels in a framework of cooperation which will enable greater digital development at the user levels.

There are no barriers to possibilities however to maximise the potential skills, capability and capacity of the digital economy requires a robust and performing infrastructure at a minimum cost. Products and services will come from Digital

economy be it automation, medical, gaming, efficient road and rail transport, smart buildings, ecology, training and development – the list goes on and on.

The user capability has to be improved so Digital Literacy and education of the benefits is a must for both the workers and the communities.

Telecommunications is the enabler of almost everything so if we can connect all Australians premises to the better performing network consumers will benefit in the future.

18. What opportunities do small and medium-sized businesses have to embrace digital innovation to drive customer value, improve their services and unlock their potential?

Response:

Small business needs to deliver in a timely fashion and telecommunications effectiveness underpins this potential. Product development is determined by need and in the digital information age telecommunications of information efficiently, faithfully and at speed and low cost is everything to small business. If digital pathways are available at low cost then innovation will follow.

An example is where how far Mobile Communications has come since TELSTRA researched this in their now defunct Clayton research facility in the late 1970s. At the time it was said it would never work and look where it has gone with the development of computer sciences and miniaturization etc.

Another example is manufacturing benefiting from the Digital Economy using:

- AI and robotics
- 3D printing

Whilst the actual manufacturing process may take place outside Australia the ability to access the opportunities to develop the Intellectual Property that goes into the AI, Robotics and printing is available from anywhere in the Australian continent.

Tourism

Tourism is no longer just what the local tourist information office can present but the reaching out to a global market from the far flung corners of the world to showcase the uniqueness that is only physically available in regional and remote Australia. This requires not only connectivity but skills to showcase to a global audience.

Education

Today we are still using the digital medium to deliver what is conventional on line training via video lectures with some interaction. The key to making education a global business is to marry the educational needs with AI in a range of languages and context so that learners experience is not diminished due to language and cultural barriers.

Mining

Australia is a leader in mining and has been for some time developing robotics in this area, robotics that needs to be monitored and maintained. Whilst someone in Australia cannot go on site on the other side of the world they can be monitoring the system in real time and implementing proactive maintenance regimes to avoid or minimise downtime by applying the know how via the combinations of robotics, AI and human capital. Also this industry uses driverless trucks and trains through digital tools – these are only a few examples.

Health

Given the growing need to support an aging population to stay at home for longer and the fact that we have a universal health care system can potentially place Australia at the forefront of developments in this area. More information is available through medical journals and associations on the use of AI and robotics in medicine as well as digital tools in Health.

19. What are the key new growth industries that Australia should be tapping into? In what technologies and sectors should Australian businesses take the lead, and where should we be a ‘fast follower’ of international trends?

Response:

Data management collection and transport. This underpins efficient transaction at the human level. We should be leading in smart building, banking, shopping, motor transport, rail automation, efficient power generation and use, and all the applications that underpin this revolution. Without an effective and efficient low cost telecommunications sector digital innovation cannot occur.

20. What opportunities do we have to equip Australians with the skills they need for the digital economy, today’s jobs, and jobs of the future?

Response:

Training and hands-on in high tech and construction can only occur on location where the information and experience needs to take place. We need to ensure that training can be delivered through digital mediums anywhere it is needed. Without this approach the internet of things cannot occur or indeed anything else we can look forward to in society that needs to be communicated remotely. Even virtual reality along with robotics needs high bandwidth communication so the importance is the telecom network to each location should not be underestimated.

Greater investment both financially and socially in the vocational training (VET) sector is required with the emphasis on Digital Literacy at ALL levels. Not everyone needs a university degree to ensure the digital infrastructure is in fact able to deliver the potential and benefits of the digital transformation. The VET skills and capabilities are essential to the workforce managing the issues surrounding the Digital Economy

and ensure quality outputs are achieved by the Australian population.

Currently the most sought after entry level skill in the telecommunications industry is the cabler registration that requires skilled workers to maintain the integrity of the Customer Premises Telecommunications Network and ensure the health and safety for users and workers.

The attitude that only regulatory training is valued needs to change to ensure that training that leads to the skills required to work in the Telecommunications industry is also valued by workers and Industry. This includes the technical skills of the workers in ensuring the performance and integrity of the Network. This can only occur when development occurs in the physics and mathematics of how cable and wireless transport mediums operate and are maintained are well understood.

21. What opportunities do we have to bridge the ‘digital divide’ and make the most of the benefits that digital technologies present for social inclusion?

Response:

There are many areas of social issues that are hindered by the ‘digital divide’ including elderly and equity groups who could benefit from the support services from community groups and educative services in understanding how to use the digital tools. This should be a social program managed by various social and industry organisations.

The role of governments, industry associations and organisations is to enable support but importantly Australia requires an efficient telecommunications system to all walks of society and then they will, through competent low cost connectiveness, avail themselves and their businesses to utilize these technologies.

By society having a realistic digital pathway and within a cost-effective system, Australians will engage and connect with the available devices. The additional bridge to taking advantage of the opportunities is knowledge, service and products.

22. What opportunities do we have to ensure digital technology has a positive impact on the cultural practices and social relationships of Australians?

Response:

This digital (r)evolution will cause cultural differences between the digital literate and the disadvantaged within the ‘digital divide’. The overall good will only come from being connected, enabling the means to communication. Human nature, being what it is – innovative and curious, will take this to the next step because effective connectiveness will enable all aspects of society to operate more seamless.

23. Additional topics/ issues not covered.

Comments:

It appears there is a massive disconnect in understanding data and its conveyance and indeed how it is derived and might be used.

At the very least it needs to be realized the physical infrastructure in society needs to work effectively in every sector and across every domain. As the telegraph led to the phone and voice and this led to the fax and overseas communications the modern telecom network needs to transport signals effectively at high bandwidth required by modern devices.

Our telecom infrastructure is the only means by which this can occur and thus the new digital economy requires this network to be cost effective and reliable as distinct from being a profit center and so-called competitive in terms of price only.

Looking at the decisions regarding deregulation of telecommunications in Australia, this has caused no less or greater employment but has removed fundamental training, research and engineering from Australia and one may conclude that this change along with self-regulation has created a uncertainty and loss of consumer confidence in the infrastructure and service delivery providing a difficult pathway for digital innovation for ALL Australian not just the initial fibre connected premises.

Careful consideration is now needed to overcome present issues and to then build the next generation fixed and wireless infrastructure pathways upon which future digital devices required by society will depend. This has occurred and cannot be undone but we may need to recognise that a new approach of industry/government funded research and collaboration may be the new model for ensuring that Australia stays in the “digital game”.

If Australia is to truly be a part of the digital revolution and the business promise it suggests, the Federal Government needs to seek a satisfactory future business pathway for telecommunications to it prospers not only in dollar terms but efficiency and effectiveness. This is about Australia demonstrating to itself that it can become part of the world revolution in digital services rather than falling further behind.

Recommendation:

ADTIA strongly recommends the Federal Government to set up a bipartisan Senate Committee to investigate convergence within the Telecommunications sector and its impact on the Digital Economy. The investigation may enlighten Australia on the way forward to building a strong Telecommunications Infrastructure that incorporates all modes of Broadband that will support a resilient and innovative Australian Digital Economy.

If you require further information please contact Dominic Schipano, Secretary, ADTIA at dominics@adtia.org.au. Thank you for the opportunity to provide our stakeholders thoughts on this important topic.