AMTA submission on the 5-year Productivity Inquiry

21 October 2022

About AMTA

The Australian Mobile Telecommunications Association (AMTA) is the peak industry body representing Australia's mobile telecommunications industry. It aims to promote an environmentally, socially and economically responsible, successful and sustainable mobile telecommunications industry in Australia. Please see www.amta.org.au

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Introduction

AMTA welcomes the opportunity to respond to the Productivity Commission's interim report '5-year Productivity Inquiry'.

AMTA supports the Productivity Commission's focus "on the enablers of productivity growth in a modern, market-based, service-oriented world[1]".

In particular, AMTA commends the use and adoption of 5G in Australia to drive productivity improvements and stimulate economic growth because:

- The analysis AMTA commissioned by Deloitte Access Economics, publicly available in the '**5G Unleashed'** report, clearly shows the increase in productivity in supporting 5G technology.
- The **5G Unleashed** report identified several industry sectors that will significantly benefit in productivity growth from 5G.
- 5G is one important link in a value chain of products, capabilities and processes needed to maximise productivity growth. 5G adoption is a key enabler to drive this growth.
- The regional digital divide in Australia can only be effectively closed using wireless access technologies, such as 5G and, in the future, 6G. However, there is risk associated with a technology agnostic approach as proposed by the Productivity Commission.
- Participants in an industry will quickly adopt innovation if by not innovating they are competitively disadvantaged, resulting in a decline in market share and profitability.

5G Unleashed – driving productivity and economic growth

AMTA commissioned Deloitte Access Economics to produce a report, 5G Unleashed[2], to look at the economic impact 5G can have on Australia. Economic modelling in the report estimates 5G will increase productivity in Australia by $67 billion by 2030 based on the current trajectory for adoption. However, an additional $27 billion in productivity benefit can be realised by accelerating the adoption of 5G by business. That is, a 40% uplift in economic benefit over nine years, if 5G technology adoption is maximised.

The report also revealed that Australia has been a world leader in mobile telecommunications for decades and is currently ranked third globally. However, it is at risk of falling to ninth by 2025 due to a lack of business readiness for change and a policy regime that needs to be recharged.

Australian businesses were found to be slow when it comes to readiness for adoption of 5G despite 62% of businesses leaders across four sectors agreeing 5G will accelerate the growth of their business, with 59% saying they have no strategy to realise 5G and nearly 30% having no plans to implement 5G.

[1] Productivity Commission, Productivity Inquiry https://www.pc.gov.au/inquiries/current/productivity#draft
[2] Deloitte Access Economics, 5G Unleashed: Realising the potential of the next generation of mobile technology https://amta.org.au/5g-unleashed-deloitte-access-economics/

While Australia regularly leads the world in deploying new mobile technologies, if new mobile technologies aren't leveraged and adopted by other market sectors then the productivity gains for Australia won't be maximised.

Recognition and action across all levels of Government is important to provide focus on the adoption of 5G by business and Government.

Industry sectors to benefit from 5G

The 5G Unleashed report focused on four key industry segments that will benefit from the more rapid adoption of 5G:

1. Agriculture
2. Manufacturing
3. Health care
4. Smart cities

1. Agriculture

Deloitte Access Economics assessed the potential productivity uplift in agriculture as $15 billion from 2022 through to 2030. They identify the top five use cases for 5G in agriculture over the next 12 months as:

- Implementation of Artificial Intelligence and machine learning, supported by 5G access
- Greenhouse Automation
- Remote control of tools and machines
- Cyber security
- Automated machines and tools

AMTA has identified further examples and 5G case studies in our 5G 5 Ways series. In 5G 5 ways for agriculture we identify applications such as:

- the use of drones
- autonomous farm equipment
- livestock monitoring
- food management
- weather stations

2. Manufacturing

Deloitte Access Economics assessed the potential productivity uplift in manufacturing as $7 billion from 2022 through to 2030. The top five use cases for 5G in manufacturing over the next 12 months include:

- Sensors and data analytics
- Location tracking machines and products
- Remote monitoring of stock and production assets
- Mass customisation
- Factory automation

AMTA has identified specific transport and logistics 5G use cases and applications that support manufacturing and other industries. In the 5G 5 ways series for transport and logistics we identify applications such as:

- automated vehicles
- virtual reality and augmented reality support
- connected robots
- smart factories
- warehouses
- goods tracking

3. Health Care

Deloitte Access Economics assessed the potential productivity uplift in health care as $31 billion from 2022 through to 2030. They identify the top five use cases for 5G in health care over the next 12 months as:

- Advanced collaboration between medical experts
- Data analytics for predicting patient outcomes
- High quality video streaming for emergency services/health consultations
- Augmented reality/virtual reality for training purposes
- Sensors and wearables for monitoring patients

AMTA has identified further examples and case studies in predicting applications for 5G. In the 5G 5 Ways series for health care we identify applications such as:

- remote patient monitoring
- remote surgery
- personal health
- emergency response
- precision treatment

4. Smart Cities

Deloitte Access Economics assessed the potential productivity uplift in smart cities as $14 billion from 2022 through to 2030. They identify the top five use cases for 5G in smart cities over the next 12 months as:

- Cyber security
- Remote monitoring of pedestrian traffic, road congestion, air quality
- Smart devices or applications for security purposes
- Automation (e.g. street lights)
- Artificial intelligence/machine learning

AMTA has identified further examples and case studies in predicting applications for 5G for smart cities. In the 5G 5 Ways series for smart cities we identify applications such as:

- personal and home applications
- waste management
- personal health
- energy efficiency

- public safety and security

5G success dependencies

5G networks provide the low latency, high speed and capacity wireless access that underpin a productivity enabler. However, 5G represents just one critical component in a value chain of products and capabilities required to increase productivity.

Technical and business skills needed to exploit 5G value

Adequate skilled resources to implement 5G enabled solutions include:

- IT development and integration skills
- Automated machines and tools
- Sensors and data analytics
- Artificial Intelligence and machine learning
- Cloud computing
- Remote control applications

Australia's fitness to exploit these opportunities has reduced due to the reduced immigration of skilled workers in these and similar disciplines for the last couple of years. Programs are needed to lift the numbers of technology skilled individuals in the work-force to ensure adequate resources are available to meet a growing demand.

A report by The Tech Council of Australia and Accenture, "Getting to 1.2 million[3]", estimates Australia needs an extra 653,000 people to join the tech workforce in the next eight years. While many of those people won't be supporting 5G or 6G wireless directly, they no doubt will be contributing to the machines, applications and services that utilise 5G access.

Government focus should be on supporting a value chain of capabilities that together results in significant productivity improvement through the adoption and diffusion of innovation. Any gap in the value chain will ensure that real productivity benefits are not realised.

Deployment of 5G infrastructure

Frameworks that allow the deployment of 5G networks, including small mmWave cells, in a timely manner without undue regulatory red tape will ensure that 5G services and network capacity is available to meet market needs.

One of AMTA's top priorities is the timely, efficient and effective deployment of the 5G mobile network infrastructure. Having facilities such as multi-function poles falling within the Federal 'Low-Impact' exemptions would allow the deployment of infrastructure in a streamlined and efficient manner whilst ensuring there is appropriate consultation through a deployment code, without the need to steer through lengthy Local, State and Territory Government planning rules and regulations.

While some of Australia's mobile telecommunications infrastructure is established using these 'Low-impact' exemptions, there remains a substantial proportion that requires development approval from local government. This means navigating Local, State and Territory Governments planning rules and regulations. With ongoing improvements being made to 4G networks, together with the rapid parallel deployment of the latest 5G networks, the time has never been better for all three levels of

[3] The Tech Council of Australia and Accenture, Getting to 1.2 million, https://techcouncil.com.au/research/

government within Australia to review and recalibrate their policy settings and planning rules to cater for improved mobile connectivity.

AMTA has assessed the current regulatory frameworks of each of Australia's eight State and Territory Governments and has produced the 5G Infrastructure Readiness Assessment[4]. This provides a guide to improving the regulatory framework highlighting best practices and reform opportunities across Australia's State and Territory Governments.

Productivity gain opportunities won't be realised without the timely deployment of infrastructure to meet the demand.

The regional digital divide

An Australian challenge is providing communication services in a cost-effective manner when population density reduces. Australia's population is concentrated in main and regional cities, with vast areas of relatively thin population levels. Outside these population centres, fixed networks, such as optical fibre, are too costly to provide a sustainable return on investment. Advanced mobile and wireless technology is the most cost-effective manner of providing communication services in medium to low population dense areas. In remote, sparsely populated areas satellite communication is the most viable solution. However, this comes with latency and capacity constraints.

Interim report 2 "Australia's data and digital dividend"[5], recommends that a market-based mechanism that is technology neutral be applied for digital infrastructure investment. This should be carefully considered, especially if the government is largely funding this infrastructure. Unwise technology investments can lead to stranded assets and a lack of support, with a constrained development roadmap. In the wireless world there are clear cases of seemingly good solutions that resulted in wasted capital. These include:

- **CDMA** - CDMA infrastructure and handsets were available several years prior to 3G UMTS. The technology was more efficient than 2G GSM, providing more effective mobile broadband. It was widely deployed in both Australia and New Zealand but was replaced after four to five years of operation by the more globally adopted 3G UMTS technology.
- **WiMAX** - WiMAX followed a similar path to CDMA. It is a technology that provided 4G levels of data performance and efficiency that was available well before 4G LTE. However, any deployments of the WiMAX technology were replaced with 4G LTE once it became widely available.

The danger of an agnostic technology approach is that a technology might be selected that, at the time, satisfies the immediate need but fails to meet the changing needs of the market in the medium term. There have also been other bespoke wireless access technologies that have been deployed and replaced in the short to medium term.

It has also been argued that innovation adoption will result in better outcomes. With CDMA and WiMAX these positive outcomes were short-lived. Overall, for technology innovators, there are two likely pathways they can take:

- The quick approach of a customised solution that locks-in a service provider to an innovative solution for both infrastructure and devices, or

[4] Australian Mobile Telecommunications Association, 5G Infrastructure Readiness Assessment https://amta.org.au/5g-infrastructure-readiness-assessment/

[5] Productivity Commission, Page 40 Interim Report 2: Australia's data and digital dividend

- The longer and more lucrative path where the innovator patents the invention and has it adopted as part of the standard and thus earns long term royalties.

Selecting customised solutions could drive short term positive gains for the innovative vendor, but if sales are limited then there is a risk to both the vendor and their existing customers.

From a wireless access perspective, we strongly recommend that 3GPP based i.e., 5G, and in the future 6G, standards are adopted for wireless access, especially if Government funded. The 3GPP standards born out of the 2G GSM standards have provided an evolutionary pathway all the way to 5G and beyond, ensuring that investment reuse is maximised.

This would guarantee prudent investment is undertaken as the standards ensure:

- Support globally by large and small vendors
- Global economies of scale are leveraged in infrastructure and devices
- Proven spectral efficiency
- Harmonised deployments between market participants both in adjacent spectrum bands and geographies

Australia is a relatively small consumer of global infrastructure and therefore not in a position to exercise significant buying power over the global providers of technology. Where Australia does have more impact, relative to the size of its economy, is in influencing and shaping the standards to which global vendors design their products.

5G Technology Adoption

Technology adoption and diffusion of innovation will occur as a result of these conditions:

- A competitive advantage in the market occurs as a result of adopting innovation
- The task of adoption is simple, systematic and packaged
- The cost of adoption is relatively low
- The pay-back on adoption is short

Prior to affordable higher speed data networks, many industry segments sent large amounts of digital information via physical means, utilising removable hard-drives and couriers.

It was then relatively easy to show a clear benefit, both in terms of time and cost, of higher speed data networks. For example, the cost of an ISDN data call to send information was many times less than a courier transporting a removable hard-drive, even over short distances. Also, the information could be sent in real time and the distance between sender and receiver became irrelevant, resulting in greater business location flexibility. The pay-back on investment was a matter of weeks if the volume of information was high enough.

Sectors like the graphic arts industry adopted this new technology rapidly as publishers, the receivers of digital image content, moved to accept content in this manner.

The success of this adoption and the diffusion across the graphic arts industry was due to the combination of these elements:

- Promotion of the application through trusted industry peak bodies
- Trials with industry participants resulting in case studies and testimonials
- A worst case pay-back on investment within a couple of months

- A full solution, including network interfaces and software for content producers and publishers, and the data services from carriers
- Solution integrators available to implement the solution rapidly

We noted that the Commission has said, "For many organisations, diffusion involves lower risks, shorter lead times, less external funding and smaller needs for a specialised workforce — making it attractive for the bulk of organisations."[6] This was the case when migrating the transport of digital information from a physical medium to electronic data transfer, the costs were low, gains quickly realised and so adapted widely.

Within the mobile sector, business has been quick to adopt solutions that provide an immediate positive impact for business. For example mobile EFTPOS provided the flexibility for service industries to take secure payments immediately, resulting in rapid adoption across many industry verticals.

Today productivity gains are sometimes complex to uncover and involve more diverse capabilities such as: automated machines; software integration; cloud computing; data analytics and artificial intelligence. However, similar principles apply to reduce the barriers to adoption, namely:

- A positive business case with a short pay-back period on investment
- Packaged solutions with multiple partners working together to provide solutions that result in a quick realisation of positive business productivity outcomes
- Case studies that articulate the overall solution, with opportunities, challenges, and risk mitigations, and
- Support by peak industry bodies to provide credibility in the promotion of innovative business solutions, resulting in an increase in productivity and profitability of a sector

The role Government can play

Government and Government agencies have a role in promoting 5G technology solutions that will provide an uplift in productivity. These include:

- Education of different industry sectors on the benefits and the possibilities that technologies like 5G can have on productivity and profitability. AMTA's engagement of Government departments outside of the communications sector reveals that there is an opportunity to inform and educate on the capabilities of 5G and how it can be leveraged to improve productivity within their individual portfolios.
- Bringing together a value chain of innovators that, together, can develop productivity outcomes that can drive accelerated economic growth.
- Identification of skill and capability gaps across a value chain of enablers of productivity solutions, then implementing solutions to close those gaps through training, education, and immigration of skilled workers.
- Reducing the barriers to the deployment of solutions through Local, State and Territory and Federal planning reforms.
- Ensuring that there are adequate vital resources, such as spectrum, is available in a timely manner.

[6] Productivity Commission, Page 3 5-year Productivity Inquiry: Innovation for the 98% Interim report