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AMTA Submission

Department of Infrastructure, Transport,  
Regional Development and Communications

# 5G Innovation Initiative



## About AMTA

The Australian Mobile Telecommunications Association (AMTA) is the peak industry body representing Australia's mobile telecommunications industry. Its mission is to promote an environmentally, socially and economically responsible, successful and sustainable mobile telecommunications industry in Australia, with members including the mobile network operators and service providers, handset manufacturers, network equipment suppliers, retail outlets and other suppliers to the industry. For more details about AMTA, see <http://www.amta.org.au>.



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# Introduction

AMTA strongly supports the Government's 5G Innovation Initiative. We believe that the Initiative will encourage innovation and investment in 5G industrial and commercial applications, which in turn will build awareness of the potential 5G has to offer Australian businesses, industry and manufacturing.

We welcome the opportunity to provide feedback on the Round One Discussion Paper (the Paper) and have provided our thoughts below as well as information on the current state of the mobile industry in Australia for context and background.

## Maximising return from the program

The Paper observes that *"A critical indicator for the success of the proposal is for projects to test and trial new solutions that make use of 5G's capabilities"*. AMTA supports the key program objectives and principles outlined in the Paper.

Regarding the first principle, we believe it is imperative that the program only funds projects that are purely 5G-related and could not be achieved using 4G or 4G/5G technology. We believe limiting the program to purely 5G use cases will best ensure that the program's objective of supporting Australia's 5G roll-out is achieved. The only internationally agreed, standardised definition of 5G is managed by the ITU<sup>1</sup>, and aligns to a specific set of requirements.

We suggest that for the purposes of the program, 5G should be defined as aligned with 3GPP specifications Release 15 (Rel-15) March 2019 and Release 16 (Rel-16) June 2020.<sup>2</sup>

We note that Rel-16 defines the first enhancements to 5G, which will add new functionality to already supported use cases as well as extend the support of 5G technology to new use cases. For example, Rel-15 mainly targeted enhanced mobile broadband (eMBB) and selected ultra-reliable low-latency communication (URLLC) use cases, while Rel-16 adds support for further use cases such as Vehicle-to-everything (V2X), Industrial Ethernet and Time Sensitive Networking (TSN) and non-public networks.

We propose the assessment criteria be updated to include a requirement that only 5G trials involving 3GPP compliant equipment will be considered.

AMTA also considers that bringing together other complementary technologies that 5G as an innovation platform will support, such as the Internet of Things (IoT), data hubs, Artificial Intelligence, Machine Learning, Digital Twins and more will also be a critical measure of success for the program. Combining 5G with these complementary technologies will give rise to new

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<sup>1</sup> ITU - [International Telecommunication Union](https://www.itu.int)

<sup>2</sup> 3GPP Releases ([3gpp.org](https://www.3gpp.org))

applications and use cases that simply were not possible on earlier generations of mobile technology, or through fixed networks. We propose the assessment criteria for the program should also include the use of these technologies.

Solving genuine business problems or demonstrating genuine productivity gains is a third imperative we believe should be better highlighted in the assessment criteria. Novel use cases may have appeal for creating case studies to demonstrate 5G capabilities, but if these case studies are in unconventional or niche scenarios, translation more broadly into traditional business or industrial settings relevant to the Australian economy may be difficult. AMTA proposes the assessment criteria should be weighted toward proposals that solve business problems or deliver productivity gains where the case studies arising from the proposal are broadly applicable across multiple industries and sectors.

We note that Australia's 5G roll-out is already well in progress and is quite advanced in some areas. We propose the program should look to utilise existing network infrastructure wherever possible to maximise the number of case studies that can be funded by the program.

AMTA considers that close co-operation and/or partnerships with mobile network operators is a pragmatic way to minimise program costs (by avoiding deployment of bespoke infrastructure) and to therefore maximise the return of the program.

We have also provided responses to some of the questions from the Paper below.

## Responses to questions

### Question 1.

**Do you have any comments on the types of use cases that the Initiative is seeking to support?**

We agree that the program could be an opportunity to showcase 5G use cases relevant to all enterprise types and sizes including small to medium enterprises where there are productivity benefits that can be demonstrated. We believe that a focus on some small to medium enterprises will also achieve the optimum results in terms of building awareness of the potential benefits of 5G. Larger enterprises may already be further along in developing their plans for utilising 5G in their businesses. With all levels of potential recipients of funding it remains very important to examine issues of scale and relevance to the marketplace in the short to medium term. In terms of 5GII being a catalyst, scale and applicability to current market issues and conditions may be well suited to larger-scale projects in partnership with larger enterprises, particularly in the manufacturing, agricultural, health or logistics sectors where larger enterprises may be more ready to participate in a 5G trial.

We note that the total pool of funds is not large, so consideration should be given to identifying grant options with a high chance of success that can be readily applied to enterprises in the short term as a way of building momentum.

### Question 2.

**What are the technical, regulatory or other barriers to implementing 5G use cases? If you have identified barriers, can you suggest ways these barriers could be overcome?**

One of the important outcomes of 5GII projects will be an assessment of existing regulatory settings and the potential need for reform to better support 5G solutions.

For example, we note that there are regulations in place that prohibit the commercial use of drones in Australia and that this poses a barrier to any trial of 5G applications that involve drone technology. We note that drones are an emerging technology and a rapidly growing industry with the potential to offer significant economic and social benefit.

We note the likely probability that drones could in the near future be equipped with 5G connectivity that would improve their safe operation. This may include the ability for the device to automatically download aviation charts rather than relying on users to manually update their systems. Through this, the drone would always be aware of restrictions in its surrounding airspace.

5G could enable connectivity from individual drones to Unmanned Traffic Management (UTM) Systems, including the ability to transmit their location and altitude to air traffic control. In the event a drone commits an airspace incursion, air traffic control may then be able to issue an instruction to the drone to exit the controlled or restricted airspace.

We also note that there are significant security-related regulatory requirements around the deployment of network infrastructure. If applicants are proposing to deploy their own 5G Network Infrastructure we suggest that they must be subject to the same security related requirements as set out in the *Telecommunications Act 1997* and as proposed by the Critical Technology Supply Chain Principles discussion paper and *Security Legislation Amendment (Critical Infrastructure) Bill 2020* currently in consultation with industry.

#### Question 3.

**What are your views on the level of maturity of 5G applications available to be trialled, and are there particular sectors where it will be possible to demonstrate 5G's productivity benefits?**

AMTA considers that many aspects of 5G technology are now sufficiently mature and that the 5GII is well-timed. We also consider that running the program in two rounds separated by 12-18 months is pragmatic, both for the reason the Paper identifies (to pick up any industries/sectors under-represented in Round 1), but also as 5G technologies will have further matured in that time, for example, to pick up capabilities such as Ultra-Reliable, Low-Latency Capability (**URLLC**); Zero Touch Automated Slicing; Local Traffic Breakout; Standalone 5G; Massive Machine Type Communication (**MMTC**) and SLA for connectivity and offering of highly reliable 5G network.

#### Question 4.

**What locations offer the best opportunities to deliver 5G projects, and are there any barriers to delivering projects in particular locations or geographic regions?**

AMTA observes that regional network rollouts may incur higher costs, for example to achieve adequate coverage or backhaul, which potentially risks under-representation from industries such as agriculture or mining. As such, we propose there is potential benefit in clustering like or related use cases together in "hubs" so they can leverage each other's experience, skills, resources and infrastructure where appropriate.

#### Question 5.

**Given the quantum of funding, what type and scale of projects could the Initiative appropriately support?**

As noted above, in response to question 1, the pool of funding is not large so scalability and market relevance are important factors to consider. We also believe that partnerships with mobile network operators will be the key to success due to the costs of network infrastructure as well as access to appropriate spectrum. Specifically, involving a mobile network operator in a partnership will lead to a better return on investment as otherwise infrastructure might require diversion of co-funding.

#### Question 6.

**What are your views of the proposed requirements for joint applications, grant agreements, grant value and the payment structure of the Initiative? Are there other program requirements that should be considered?**

We note that the Paper anticipates joint applications and we assume that this allows for multiple partners in any joint application, for example a mobile network operator could conceivably partner with an enterprise and a university; or two enterprise partners; or another telco industry

partner. In most cases, we believe that a mobile network operator will need to be involved in the partnership for a use case to be feasible, as well as to minimise costs by leveraging existing 5G networks, including access to spectrum and infrastructure.

#### Question 7.

**Do you have any comments on the eligibility requirements, including the types of applications eligible for funding, the funding of network infrastructure, and whether the criteria will encourage participation from a variety of applicants?**

AMTA suggests that applicants should be required to explain how they intend to address various phases of the project such as:

- Phase1: MVP and Solution Design, Possible LAB testing
- Phase2: Actual Implementation and Reporting
- Phase3: Plan to scale the solution and how it will benefit the sector.

#### Question 8.

**In what timeframe could projects under the Initiative be feasibly implemented?**

As noted in our comments above, we suggest that existing 5G network infrastructure should be utilised where possible to minimise costs and maximise the return on the program. We consider that where existing 5G networks are utilised, a total timeframe of around 12 months to set up a project (including sourcing customer equipment and developing the solution) and then run it for a few months to obtain learnings and refine the solution seems reasonable. However, if bespoke private 5G networks need to be designed and deployed (including coordination and installation of base station equipment) an additional six months is likely to be required.

#### Question 9.

**What do you consider are the best ways to promote 5G use cases within industry sectors and more widely? Do you anticipate any barriers to sharing case studies?**

AMTA considers that utilising and working with communications industry bodies such as ourselves, the IoTAA or Communications Alliance is the best way to promote 5G use cases to other industry sectors and beyond. We consider this approach to be an efficient way to work with the Department to target industry bodies and associations in sectors such as agriculture, health, transport, tourism and the arts to further relay the case studies and learnings from the initiatives. AMTA has a long and successful track record of working across Government to showcase 5G technology and its capabilities as they evolve., We would welcome the opportunity to further that relationship in this context. We also note that AMTA, IoTAA and Communications Alliance also all have experience in public relations, outreach and awareness building campaigns targeting both the general public as well as other industrial sectors and verticals.



Question 10.

**Do you have any comments on the proposed assessment criteria, including their ability to support a variety of projects from diverse applicants?**

We suggest that it would be helpful for applicants to understand the criteria framework in more detail and also have feedback on the assessment process to be used. For example, will there be an overall score for each application and will the guidelines include guidance on how the various criteria will be assessed? We note that feedback will be most useful for any applicants that choose to submit in the second round.

Question 11.

**Should the program have any specific limits on what qualifies as technology that operates using 5G? If so, what would these limits be?**

AMTA considers that limiting the program to purely 5G use cases will best ensure the program's objective of supporting Australia's 5G roll-out is achieved. The only internationally agreed, standardised definition of 5G is managed by ITU<sup>3</sup>, and aligns to a specific set of requirements. There are only three technologies that the ITU recognises meet the definition for 5G, and of these, only 3GPP-based technologies are applicable to the Australian market. We propose the assessment criteria should be updated to include a requirement that only 5G trials involving 3GPP compliance equipment will be considered.

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<sup>3</sup> ITU - [International Telecommunication Union](https://www.itu.int)

## Background – Australia’s mobile industry

5G networks will create an innovation platform that will be fast, responsive, reliable and transform the way Australians live and work by delivering unprecedented digital connectivity across the community and economy.

As a small, agile economy with a history of early adoption of digital technology and innovation, Australia is uniquely positioned to take advantage of the potential that 5G has to offer to develop our role in the region and globally as a leading technology nation. For the last four years, Australia has consistently ranked 1<sup>st</sup> in an index that includes 165 countries (representing 99% of global population) for its mobile connectivity.<sup>4</sup> 5G is the innovation platform that will grow the mobile industry’s capacity as a key contributor to Australia’s future global competitiveness.

5G will deliver substantial improvements in the speed, latency and capacity of mobile networks in order to meet the current and forecast strong and ever-increasing demand for mobile services including new capabilities that will be enabled by this next generation of services.

5G has the potential to transform industries and sectors including agriculture, transport and logistics, manufacturing, health, education and emergency services. It will change the way both Government and enterprise deliver goods and services as we transition to smarter cities where everything that can be connected is connected.

### The growing demand for 5G

AMTA notes the recent Ericsson Mobility Report (Nov 2020)<sup>5</sup> that found:

- More than 1 billion people will have access to 5G coverage by the end of 2020.
- The pace of introducing new 5G functionality has increased in 2020 in both the network and device domains, despite uncertainties caused by the COVID-19 pandemic.
- 3.5 billion 5G subscriptions are forecast by the end of 2026 - estimated to account for more than 50 percent of mobile data traffic at that time.
- Four out of every ten mobile subscriptions in 2026 will be 5G. Current 5G uptake in subscriptions and population coverage confirms the technology as deploying the fastest of any generation of mobile connectivity.
- Fixed wireless access (FWA) is now offered by nearly two thirds of service providers globally. FWA connections are forecast to grow more than threefold, reaching more than

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<sup>4</sup> GSMA Mobile Connectivity Index, The State of Mobile Internet Connectivity Report, July 2019

<sup>5</sup> [Ericsson Mobility Report, Nov 2020](#)

180 million by the end of 2026 and accounting for a quarter of all mobile network data traffic

- By the end of 2020, more than 1 billion people – 15 percent of the world’s population – will live in an area that has 5G coverage rolled out. In 2026, 60 percent of the world’s population will have access to 5G coverage, with 5G subscriptions forecast to reach 3.5 billion.
- The rate of introducing 5G New Radio (NR) functionality is increasing, with more than 150 5G device models launched commercially. Many devices support 5G frequency division duplex (FDD) and dynamic spectrum sharing (DSS). The first 5G standalone (SA) networks have been launched in Asia and North America, as well as the first devices capable of NR carrier aggregation.

## **5G drives productivity**

Mobile telecommunications have historically had an enabling impact on other industries, across the economy and society. Latest generation mobile technologies, applications and services continue to change the way we work, live and play by enabling a mobile and data rich dimension to our connectivity. 5G has the potential to drive economic growth further as it enables service providers to offer cost-effective technology to meet consumer demand for data and new advanced 5G services.<sup>6</sup>

Australia’s mobile sector is an integral part of the broader telecommunications industry. It is a significant component of the critical infrastructure that facilitates our ability to connect, work and transact.

The mobile industry directly contributed \$8.2 billion to our economy in 2017-18. The industry also directly employed almost 25 000 FTE people in 2017-18.

Indirectly, the industry contributed \$14.7 billion of economic activity, through contributions to revenue and employment in other sectors.<sup>7</sup>

And for every FTE role employed in the mobile industry there are 3.7 employed in flow-on industries.<sup>8</sup>

Beyond the total \$22.9 billion value added to GDP by mobile in 2017-18 and the employment contribution, mobile technologies, including 5G, continue to drive productivity throughout the Australian economy. While productivity has generally declined over the last decade, mobile technologies have boosted both labour and capital productivity as shown in the diagram below.

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<sup>6</sup> Ericsson and Arthur D. Little, [5G for business: a 2030 market compass](#), Oct 2019, page 3

<sup>7</sup> Deloitte Access Economics, [Mobile Nation 2019: the 5G Future](#), chapter 2

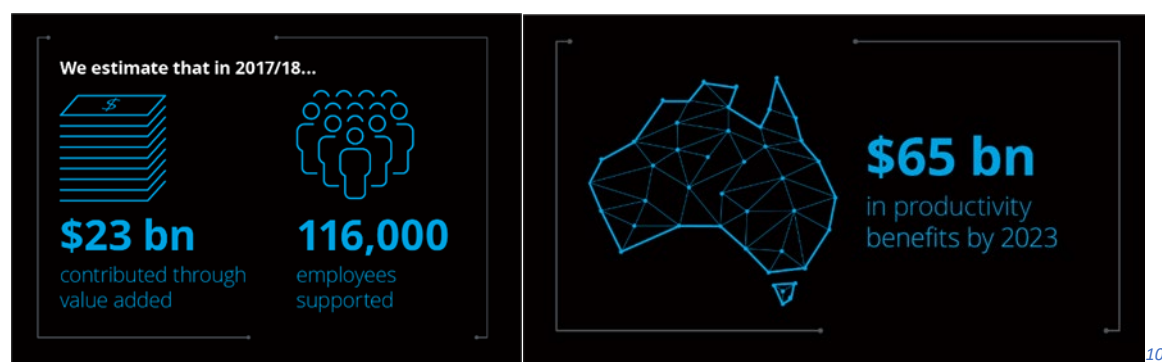
<sup>8</sup> Ibid



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Deloitte Access Economics estimates that the productivity impact of mobile will be equivalent to \$2500 for every Australian by 2023. This amounts to a total of \$65 billion of additional GDP by 2023, or 3.1% increase in GDP.

#### Forecast productivity benefits by 2023



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The Bureau of Communications and Arts Research also recognises that:

“Digital transformation has long held the promise of improving productivity outcomes, and the planned rollout of 5G internationally has been viewed as the next development continuing the critical enabling capacity of communications services across the economy.”<sup>11</sup>

The Bureau’s own research forecast a \$1300-2000 per capita benefit to GDP after the first decade of a 5G roll-out in Australia, noting that this is a conservative estimate that did not fully consider consumer and indirect benefits. The Bureau, however, concludes that 5G has the potential to

<sup>9</sup> Ibid, page 18

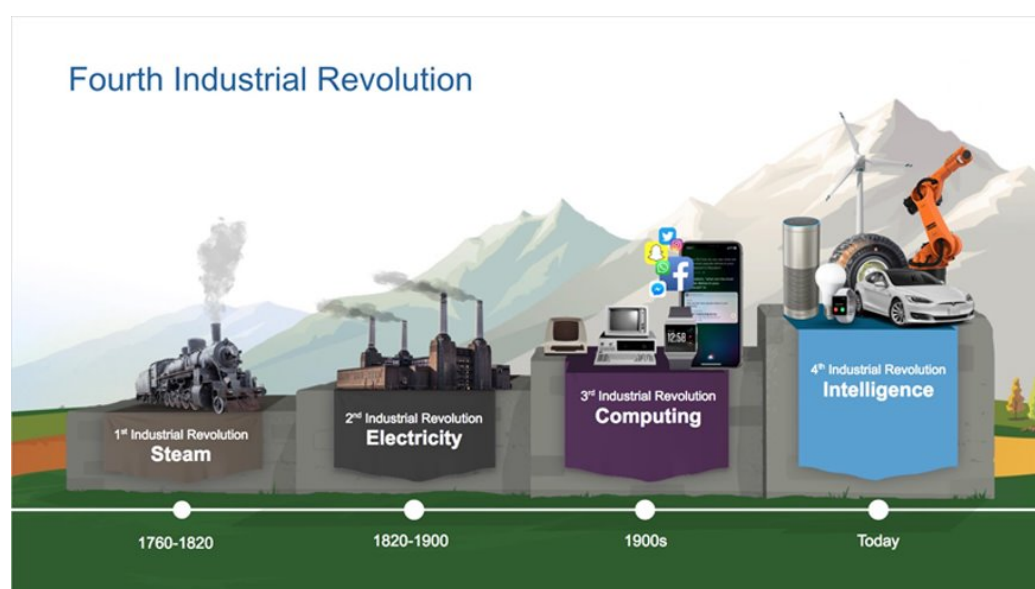
<sup>10</sup> Ibid

<sup>11</sup> Bureau of Communications and Arts Research, [Impacts of 5G on productivity and economic growth](#) April 2018

transform the economy by “supporting, and even accelerating, Australia’s digital transformation”.<sup>12</sup>

In addition to the direct and indirect impacts on productivity and connectivity 5G will play a central role in an increasingly convergent and intelligent technology ecosystem that will drive the 4<sup>th</sup> Industrial Revolution as illustrated below.

#### *Industry 4.0*



We believe that 5G will enable the infrastructure to underpin Australia’s transition to Industry 4.0 as businesses move to increase automation and become ever increasingly reliant on data. Australian businesses will increasingly rely on mobile derived data to drive innovation, develop new revenue streams, and streamline operations. In a 2018 survey of 550 Australian businesses by Deloitte Access Economics, 80% of enterprises reported that they had already implemented at least one emerging technology, or that they expect to implement one in the next 3 years.<sup>13</sup>

### **5G enables connectivity and Australia’s COVID recovery**

Mobile technology also provides significant social benefits with 60% of Australians reporting that their smartphone has replaced 3 or more other devices or items, such as cameras, street directories, or calendars. And 94% of mobile users do not leave the house without taking their smartphone with them. Mobiles are now a multi-purpose utility tool that enable us to remain connected both at work and socially.

5G promises applications and use cases that will revolutionise the health, transport and education sectors. Mobile devices provide social connectivity as well as enable flexible work arrangements, promoting greater workforce participation.<sup>14</sup> This has been increasingly relevant during 2020

<sup>12</sup> Bureau of Communications and Arts Research, [Impacts of 5G on productivity and economic growth](#), April 2018, page 6

<sup>13</sup> Deloitte Access Economics, [Mobile Nation 2019: the 5G Future](#), chapter 4

<sup>14</sup> Deloitte Access Economics, [Mobile Nation 2019: the 5G Future](#), page 33

when so many employees were encouraged to work from home in the interests of public health. Wearable mobile devices can help Australians track their health and reach fitness goals, and can also provide more critical health monitoring, enabling older Australians to live in their own homes for longer. Transport and logistics will be able to rely on IoT smart trackers to improve efficiency and autonomous vehicles will reduce costs as well as improve safety and accessibility for all road users. The NRMA notes that autonomous vehicles will deliver improved safety, decrease congestion, provide options for young, elderly and disabled people, as well as reduce pollution and emissions.<sup>15</sup>

Australia's economy is certainly feeling the impact of the restrictions put in place to manage the health crisis caused by the global Corona virus pandemic.<sup>16</sup> Our economy will also be impacted by global reactions to the pandemic as countries across the world grapple with the resulting health, social and economic issues.

Mobile telecommunications, however, remains an enabling technology and connectivity has proven critical to the ability of many businesses and industries to remain operating throughout the pandemic. It is therefore clear that the demand for connectivity, particularly mobile connectivity, will not decline, but continue to grow.

In fact, a recent survey of 2500 global executives (including 200 based in Australia) by Accenture<sup>17</sup> found that 80% of executives expected that 5G would bring tremendous value to their business in various ways. The survey found that while 34% are yet to adopt 5G; 28% have piloted it; 26% are using it in some areas and 10% have implemented it across their organisation. The main benefits around 5G were understood to be productivity gains with 75% of those surveyed seeing the potential for 5G to boost productivity; as well as create new revenue streams and modernise business models.

Accenture concluded that 5G is likely to be an integral part of the drive towards digitisation and that the current pandemic and its associated circumstances will only accelerate this process:

"It's clear that Australian businesses recognise the huge potential of 5G, with many ready to take advantage of the opportunity to connect all their assets into an intelligent enterprise, creating new business potential."<sup>18</sup>

And:

"A growing share of businesses are now working from home, which puts strong connectivity at the core of efficiency in operations. As businesses adapt their models to meet virtual working

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<sup>15</sup> NRMA, [Driverless cars: the benefits and what it means for the future of mobility](#)

<sup>16</sup> ABC News, Treasurer Josh Frydenberg says Australia is in recession, 3 June 2020

<sup>17</sup> Accenture, 5G technology will benefit Australian businesses and society, 21 June 2020, [Consultancy.com.au](#)

<sup>18</sup> Ibid

conditions, many are realising that remote working actually has concrete value for their business, indicating that these might end up being long term arrangements in some cases."<sup>19</sup>

Australia's mobile network operators continue to deploy 4G and increasingly 5G in 2020 and the pace of deployment has not slowed due to COVID-19.<sup>20</sup>

Mobile telecommunications have historically had an enabling impact on other industries across the economy and society. As the world starts to recover from the impacts of COVID-19, we expect that 5G will continue to drive economic growth and play a key role in Australia's recovery as it enables service providers to offer cost-effective technology to meet consumer demand for data and new advanced 5G services.<sup>21</sup>

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<sup>19</sup> Accenture, 5G technology will benefit Australian businesses and society, 21 June 2020, [Consultancy.com.au](https://www.consultancy.com.au)

<sup>20</sup> ChannelNews, [Telstra 5G rollout undeterred by coronavirus](#), 26 May 2020

<sup>21</sup> Ericsson and Arthur D. Little, [5G for business: a 2030 market compass](#), Oct 2019, page 3

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