



Australian Government

Department of Infrastructure, Transport, Regional Development and Communications

Australian 5G Innovation Initiative—round one—consultation summary

December 2020

© Commonwealth of Australia 2020
December 2020 / INFRASTRUCTURE

Ownership of intellectual property rights in this publication

Unless otherwise noted, copyright (and any other intellectual property rights, if any) in this publication is owned by the Commonwealth of Australia (referred to below as the Commonwealth).

Disclaimer

The material contained in this publication is made available on the understanding that the Commonwealth is not providing professional advice, and that users exercise their own skill and care with respect to its use, and seek independent advice if necessary.

The Commonwealth makes no representations or warranties as to the contents or accuracy of the information contained in this publication. To the extent permitted by law, the Commonwealth disclaims liability to any person or organisation in respect of anything done, or omitted to be done, in reliance upon information contained in this publication.

Creative Commons licence

With the exception of (a) the Coat of Arms; (b) the Department of Infrastructure, Transport, Regional Development and Communications photos and graphics; and (c) [OTHER], copyright in this publication is licensed under a Creative Commons Attribution 4.0 Australia Licence.

Creative Commons Attribution 4.0 Australia Licence is a standard form licence agreement that allows you to copy, communicate and adapt this publication provided that you attribute the work to the Commonwealth and abide by the other licence terms.

Further information on the licence terms is available from <https://creativecommons.org/licenses/by/4.0/>. This publication should be attributed in the following way: © Commonwealth of Australia 2020.

Use of the Coat of Arms

The Department of the Prime Minister and Cabinet sets the terms under which the Coat of Arms is used. Please refer to the Commonwealth Coat of Arms — Information and Guidelines publication available at www.pmc.gov.au.

Contact us

This publication is available in hard copy or PDF format. All other rights are reserved, including in relation to any Departmental logos or trade marks which may exist. For enquiries regarding the licence and any use of this publication, please contact:

Director—Publishing and Communications
Communication Branch
Department of Infrastructure, Transport, Regional Development and Communications
GPO Box 594
Canberra ACT 2601
Australia

Email: publishing@communications.gov.au

Websites: www.infrastructure.gov.au | www.communications.gov.au | www.arts.gov.au

Contents

Introduction	4
Background	4
Consultation process	4
Key consultation findings	5
Key program principles.....	5
The opportunity.....	5
Use cases	5
Locations.....	7
Defining 5G.....	7
Security and privacy.....	8
Grant and project size	8
Joint applications.....	9
Grant agreement and payment structure.....	10
Eligibility.....	10
Timing.....	11
Sharing project results	12
Assessment criteria.....	13
General comments.....	13
Criterion 1—Meets objectives of the program	13
Criterion 2—Ability to access relevant technology and spectrum	13
Criterion 3—Ability to be delivered	14
Criterion 4—Value for money	14
Other themes	15
Health concerns.....	15
Next steps	16

Introduction

In November and December 2020, the Department sought input from interested stakeholders on the first round of the Australia 5G Innovation Initiative (the Initiative). The Initiative will support investment in 5G trials by demonstrating the value of 5G to business in Australia and supporting private sector investment. The consultation was to seek feedback from industry and stakeholders on the Initiative's design and scope. This paper sets out the main views raised in submissions in relation to the questions raised in the [Discussion Paper](#) released to guide the public consultation.

Background

As part of the 2020-2021 Budget the Government announced the 5G Innovation Initiative. The Initiative will provide two rounds of grants funding, each with \$10 million in funding available. The first round of funding is anticipated to be available in the first half of 2021.

The Initiative's objectives are:

- Supporting emerging commercial use cases of 5G in key industry sectors
- Demonstrating the value of 5G to businesses in Australia
- Supporting private sector investment in 5G trials.

The intended outcomes of the program are:

- Boosting productivity and creating jobs with 5G technology, responding to the needs of different industries
- Bringing forward the potential 5G economic and productivity benefits to the Australian economy by demonstrating 5G applications
- Encouraging the more rapid deployment of 5G in Australia, in turn supporting increased investment in telecommunications infrastructure and jobs.

Consultation process

A Discussion Paper was released on 13 November 2020 to guide public consultation on the Initiative, with the opportunity to make submissions on the consultation paper until 11 December 2020. Submissions were received from a number of stakeholders who provided valuable feedback. Submissions were received from industry associations, the telecommunications industry, network equipment manufacturers, businesses, and individuals.

As part of the consultation process, two workshops were held with stakeholders to discuss and provide feedback on the Initiatives' design and scope. This included a workshop with peak bodies representing industry sectors where there are potential applications of 5G, and a workshop with representatives from the telecommunications sector and network equipment manufacturers. The Department also contacted a range of peak bodies, businesses and government bodies to raise awareness of the Initiative and to seek feedback on the Discussion Paper.

Key consultation findings

Key program principles

The opportunity

Generally there was consensus that the opportunity was well conceived and targeted. It was noted in the two stakeholder forums held by the Department, that it is a good moment in time to trial 5G and that there is a wide range of potential industrial and commercial use cases for 5G.

Telecommunications sector stakeholders noted that there are many features of 5G that can be demonstrated, as the 3rd Generation Partnership Project (3GPP) specifications have been developed to define 5G and enable use cases. It is now possible to demonstrate features like edge computing and massive machine to machine communications. It was noted that some 5G technologies require further development before being widely deployable, including ultra-reliable low latency communications (URLLC) and network slicing. Submissions also noted the importance of interoperability to ensure the full potential of 5G technology can be utilised.

Use cases

Telecommunications equipment providers noted the role of 5G in supporting the 4th industrial revolution – Industry 4.0. A range of submissions highlighted a number of use cases that can be trialled using 5G.

Discussions with peak bodies for different industries indicated there was a similar level of interest in the program and its ability to deliver outcomes.

Use cases identified in submissions

A number of specific uses for 5G were identified in submissions. While this list is not exhaustive, it provides a useful insight to the range of scenarios 5G's capabilities can be applied to.

- Smart Vehicles, Roads and Traffic Management¹
 - Vehicle-to-everything (V2X)
 - Connected intelligent transport system (C-ITS).
- Smart Agriculture and Resources Management²
 - Supporting large numbers of sensors to detect soil moisture and acidity levels to provide optimal crop irrigation
 - Using sensors to monitor water usage and outputs for improved water management, improving yields and reducing water loss.
- Smart Mining³
 - Use of automation, robotics, digitally enhanced equipment, sensor data, predictive analytics and machine learning to improve and streamline mining processes and improve health and safety of workers

¹ Intelligent Transport Systems Australia (ITS) submission, pages 1–2

² Nokia submission, page 3, Australian Radio Communications Industry Association (ARCIA) submission, page 1

³ Nokia submission, pages 3–4

- Removing workers from dangerous locations by using robotics equipment instead of humans
- Monitoring workers health and providing live feedback on exclusion zones
- 360 degree situational awareness in remote operating areas
- Predictive machine maintenance.
- Retirement Communities⁴
 - Using wearable health monitoring equipment for live health data and monitoring.
- Smart Factories⁵
 - Using machine type communications for real-time control of machines, improved robot to human interactions and edge cloud technology to create smart factories
 - Large numbers of sensors to monitor humidity and temperature levels to ensure optimal product conditions as well as predictive machine maintenance
 - Automated factory vehicles to deliver parts and components
 - Use of Digital Twins to conduct training and simulations in virtual reality
 - 5G millimetre wave length (mmWave) network base stations to provide URLLC for effective remote-control of automated equipment
 - Support of high-definition video streaming for automated video analytic monitoring for compliance and safety applications.
- Smart ports⁶
 - URLLC to provide efficient loading/unloading via automated remote control of unmanned ground vehicles
 - 3D information transmitted to augmented reality to provide additional information and receive off-site interactive support from remote experts.
- Augmented reality (AR)⁷
 - Immersive retail experiences with 'virtual dressing rooms' for customers to try on life-size virtual clothing online
 - Using increased bandwidth and low latency, firefighters could use AR enabled face masks to see floorplans for navigation and the locations of their colleagues throughout buildings.

Complementary technologies

Telstra's submission emphasised that '5G is not just about spectrum bands and base stations, it's about drawing together other complementary technologies such as the Internet of Things (IoT), data hubs, Artificial Intelligence, Machine Learning, Digital Twins and more in ways that were simply not possible in earlier generations of mobile networks.'⁸ Multiple submissions highlighted the importance of complementary technologies that utilise 5G for enhanced outcomes. Other technologies identified included mass IoT, multi-access edge computing, blockchain, automation, augmented reality, virtual reality, remote and surgical robotics, and connected vehicles. Stakeholders agreed using complementary technologies would maximise development opportunities for 5G uses and represent projects that provided the best value for money in showcasing 5G technology.

⁴ ARCIA submission, page 1

⁵ Nokia submission, page 4, Australia Logistics Council (ALC) submission, page 2

⁶ Nokia submission, page 4–5

⁷ Cradlepoint submission, page 3

⁸ Telstra submission, page 5

Applications of 5G

Submissions from businesses identified opportunities for 5G to support applications in tourism, construction, urban planning, education, retail, medicine and infrastructure. Submissions noted that there are a wide range of possible applications of different sizes and levels of complexity. Beyond specific applications, some submissions considered how the particular applications of 5G could be integrated into a range of businesses, such as augmented reality and immersive experiences. Telstra's submission also suggested trials demonstrating a full end-to-end ecosystem incorporating 5G networks should be favoured.⁹

Focus of use cases

The Australian Mobile Telecommunications Association (AMTA), considered there should be an emphasis placed on supporting new use cases that specifically 'solve business problems or deliver productivity gains'¹⁰. Telstra's submission was also supportive of the Initiative's focus on demonstrating practical business use cases. AMTA cautioned against trialling new technologies that are not going to address business problems and drive productivity. This is a position that was in alignment with industry sectors, telecommunications providers and equipment manufacturers. AMTA also identified that the program may provide a window into regulatory barriers that need to be addressed to enable 5G to be used in different sectors.¹¹

Locations

Stakeholders noted that there are a range of opportunities across different regions. Optus noted that metropolitan projects may be easier and cheaper to conduct, they considered that 'the Government should be aware that solutions and projects delivered in regional areas may be more costly to finalise, and the available funding arrangements will need to reflect this.'¹² Telstra in their submission highlighted that it already has a number of innovation centres across different regions, including in regional areas. Submissions from the Australian Radio Communications Industry Association (ARCI) and Challenge Networks highlighted that access to spectrum would make setting up private networks to trial use cases in regional areas easier than in metropolitan and urban areas. The Australia Logistics Council (ALC) highlighted the importance of including regional and remote area access to 5G as '5G technologies would be well suited to mining and agricultural environments.'¹³

Defining 5G

Where submissions discussed the characteristics of 5G to support new use cases, there was a general level of support for making use of all three - enhanced mobile broadband, massive machine-type communications, ultra-reliable low latency communication. Different submissions noted that there were opportunities to trial a range of applications that make use of these properties. Telstra highlighted that there are opportunities to make use of the various capabilities of 5G as supported through 3GPP standards, and that the program should not support other older technologies, such as

⁹ Telstra submission, page 6

¹⁰ AMTA submission, page 5

¹¹ AMTA telecommunications industry workshop

¹² Optus submission, page 4

¹³ ALC submission, page 2

3G or 4G LTE.¹⁴ AMTA and Challenge Networks supported this view, suggesting 5G should be defined using 3GPP Release-15 and onward¹⁵. In contrast, Cradlepoint noted that ‘gigabit LTE is a potential alternative test-bed for some trials where 5G is not readily accessible. Many cases can have a small-scale trail on gigabit LTE, then graduating onto 5G before broader rollout.’¹⁶ This view was also supported by ARCIA. Intelematics suggested a broad initial qualification of 5G technology, with an emphasis on delivering outcomes beyond what existing 4G technology is able to deliver.¹⁷ Existing use of 4G networks was identified as a potential barrier to the uptake of 5G by the ALC, which noted that ‘4G networks provide consistent serviceability to fast-moving transport such as trains and trucks which may inhibit industry from upgrading to 5G technologies.’¹⁸

Security and privacy

Several submissions, including Nokia, highlighted security, privacy and supply chain resilience concerns with new and evolving 5G networks, commenting ‘we believe the Initiative should be more overtly aligned with government cybersecurity priorities by requiring projects seeking funding to demonstrate their security credentials, across both their supply chains and in their infrastructure and data elements.’¹⁹ Some submissions also identified the importance of projects under the Initiative complying with network security requirements, such as those set out in the *Telecommunications Act 1997*, Telecommunications Sector Security Reforms (TSSR), and proposed in the Critical Technology Supply Chain Principles Discussion Paper.²⁰

Grant and project size

Stakeholders raised some concerns in relation to the size of the total pool of funding, and the potential size of grants available.

Generally, the telecommunications industry noted that the pool of available funding would be sufficient to deliver a number of projects. The Discussion Paper noted that a range of \$500,000 to \$1 million was anticipated for individual projects. Telecommunications stakeholders thought that range would be possible to demonstrate projects, but that it would be tight in terms of budget.²¹ Views of an appropriate size of projects range from \$200,000 to \$2 million. Telecommunications industry stakeholders thought that leveraging existing networks is one way to support a greater number of projects as funds would not be allocated to constructing network infrastructure.

ARCIA considered that there were likely to be some smaller projects using private networks that could be implemented. ARCIA noted that it ‘could foresee that with grant levels of between \$200,000 and \$500,000 it would be possible to supply and install small 5G systems for private operation for small agricultural applications or local area networks.’²²

¹⁴ Telstra telecommunications industry workshop

¹⁵ AMTA submission, Page 9, Challenge Networks submission, page 5

¹⁶ Cradlepoint submission, page 6

¹⁷ Intelematics submission, page 3

¹⁸ ALC submission, page 2

¹⁹ Nokia submission, page 6

²⁰ AMTA submission page 7, Optus submission, page 6-7, Nokia submission page 6, Confidential submission

²¹ Telecommunications industry workshop

²² ARCIA submission, page 4

Telecommunications industry stakeholders were generally supportive of a flexible approach to determining funding. Flexibility allows for the uncertainty of the program to be managed as, in comparison to other programs, the Initiative is new and seeking to accomplish different types of outcomes. Telecommunications industry stakeholders also supported the view that co-contributions and in-kind support, while not mandatory, would be welcomed when considering the value for money proposition of a project.

Manufacturers of 5G equipment also supported the general approach to the grants program. Nokia in particular suggested the 'consideration of introducing more flexibility related to the size of projects into the Initiative'.²³

Joint applications

The telecommunications industry saw significant potential in joint applications. Telstra noted that 'partnerships will be an integral component of any grant applications that demonstrate new, compelling uses of 5G', in particular, Telstra identified that joint applications will be critical for bringing together different aspects of emerging technologies and will be necessary to demonstrate the full potential of 5G. Optus and TPG Telecom also raised the importance of working with the telecommunications sector as a partner to deliver high quality projects in a timely manner.²⁴ AMTA noted that for joint applications, partnering with a telecommunications carrier was likely to be an important factor in delivering results.²⁵

Telecommunications equipment manufacturers also considered that joint applications were likely to provide significant value for money, compared to single applications. Nokia noted that 'While individual small-scale projects are valuable, collaboration and cooperation could be encouraged between proponents of similar projects, resulting in a higher quantum of funding for these larger projects. This would better help achieve the aims.'²⁶ Submissions from research-focused stakeholders also highlighted the potential of joint applications to maximise the impact of projects by bringing together organisations with complementary contributions, and facilitating access to technology.²⁷

Some stakeholders considered the Initiative is an opportunity for more overt cooperation between Commonwealth and state governments. Other stakeholders have raised the potential for state governments to partner with the private sector and universities to deliver projects as part of applications. Submissions noted that these types of collaborations have been trialled in the past and have been effective. Moreover, Nokia posited that such collaboration is necessary for the success of the program²⁸.

²³ Nokia submission, page 5

²⁴ Telecommunications industry workshop

²⁵ AMTA telecommunications industry workshop

²⁶ Nokia submission, page 5

²⁷ University of Technology Sydney submission, page 2, Wireless Innovation Lab submission, page 5

²⁸ Nokia submission, page 5

Grant agreement and payment structure

Stakeholders generally did not raise issues in relation to grant agreements or the proposed approach to the payment structure. Telecommunications carriers raised the importance of partnerships in grant applications and reiterated that successful projects will need to demonstrate new compelling use cases. The Wireless Innovation Lab (WILAB) suggested that the two payment approach would be suitable for larger scale investments but that there may be merit in considering one off payments for smaller projects.²⁹ Cradlepoint considered that 'the initial payment must be sufficiently substantial to enable recipient(s) to make the most of the trial and fully explore the potential of 5G to support their chosen use case, without being prevented by lack of funds'.³⁰

Eligibility

Some individual business submissions noted that the eligibility criteria should support businesses that have already built next generation tools. Submissions suggested that showing preference to companies that have already developed products will help deliver projects within the timeframes of the Initiative.

Telecommunications industry submissions considered that the eligibility criteria identified in the Discussion Paper were generally appropriate, noting they considered that joint proposals were likely to generate better results in relation to the program outcomes. Telecommunications industry submissions noted that Mobile Network Operators (MNOs) should be a partner to projects under the Initiative and that the Initiative would be less effective if the small funding pool was used for 5G network deployment. Optus advocated for all projects to involve partnership with a MNO to ensure the Initiative succeeds, 'as MNOs have existing expertise, infrastructure, and access to spectrum. Strong participation by the MNOs will likely produce better results and a better return for taxpayer funding'.³¹

The views of network equipment manufacturers differed to those of the telecommunications carriers. Nokia stated that it 'sees real economic value in the possibilities for enterprises to invest in private wireless networks using 3GPP technologies on their premises. Additional investment in private networks by private enterprises will significantly speed up 5G uptake overall'.³² Similarly, in consultation, Ericsson has noted there are opportunities for projects using private networks provided applicants can demonstrate that their projects will meet all eligibility requirements.³³ ARCIA and University of Technology Sydney (UTS) highlighted the benefits of private 5G network providers in the move to new network technologies, and the ability to use private 5G networks to adjust and trial network settings specific to 5G development.

²⁹ WILAB submission, page 5

³⁰ Cradlepoint submission, page 10

³¹ Optus submission, page 2

³² Nokia submission, page 6

³³ Telecommunications industry workshop

Stakeholders had a range of views on the eligibility of different kinds of activities in the program.

- There is strong support from a range of stakeholders that eligible projects must demonstrate the real capabilities of 5G. In particular, Telstra noted that 'projects under the 5G Innovation Initiative should focus on 3GPP-based technology to underpin projects.'³⁴ This view was supported by AMTA in their submission. AMTA's submission proposed that for round one projects should aligned with 3GPP specifications Release 15 (Rel-15) March 2019 and Release 16 (Rel-16) June 2020.³⁵
- Some stakeholders considered that a degree of research and development should be eligible for funding, with some emphasising the importance of having a comprehensive plan on how the proposed outcomes relating to trialling 5G applications will be achieved.³⁶
- Internet of Things Alliance Australia (IoTAA) considered that the eligibility requirements should specifically allow for work to be done on addressing interoperability issues. IoTAA consider that interoperability is a significant issue that will be critical to overcome if estimates of the economic benefit of 5G and the IoT are to be realised.
- Of network deployment, Telstra noted that 'We consider that using funding from the 5G Innovation Initiative to fund 5G network deployment would not be an optimal use of the program's funding.'³⁷ Additionally, Telstra are of the view that the program should not support the testing of network infrastructure or equipment. Other submissions identified specific network equipment deployment costs that could be considered as part of the Initiative, such as Open Radio Access Network (O-RAN) equipment, shared infrastructure, and private networks or testbeds.

Timing

Submissions from individual businesses confirmed that the timing of the Initiative was suitable to encourage applications of 5G. Cradlepoint's submission explored analysis on industry readiness that sought the views of IT decision makers in medium to large organisations. The research identified 'Seventy-three percent said they planned to either start using 5G for wide area network (WAN) connectivity, or to increase their usage of 5G in the next 12 months. Forty-five percent are already using 4G LTE for WAN.' Additionally 'two-thirds of organisations surveyed said they were confident or very confident 5G would deliver the promised business benefits within the next 12 months, and only 11 percent are not considering using 5G connectivity.'³⁸

This view from industry aligns with feedback from the telecommunications industry on the Discussion Paper. The telecommunications industry noted that the time was right to commence a program like the Initiative. The industry considered that the availability of public 5G networks was increasing and that would present a key opportunity for projects to commence in the timeframe.

The telecommunications industry was cautious about the timeframe for implementing projects, but considered that the timeframes stipulated in the Discussion Paper were feasible. The industry again noted that if applications were to use existing telecommunications infrastructure, rather than new

³⁴ Nokia submission, page 6

³⁵ AMTA submission, page 4

³⁶ Intelematics submission page 2, UTS submission page 3

³⁷ Nokia submission, page 8

³⁸ Cradlepoint Submission, page 4

private networks, it would be easier and more efficient to meet program objectives around demonstrating the productivity benefits of 5G.

AMTA noted that it considers 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'³⁹. Other stakeholders considered that longer time periods for projects may be required, depending on the size and complexity of the projects, to fully demonstrate the benefits of 5G. Telstra and ALC suggested a time period of up to 18 months, WILAB suggested 24 months may be required for some projects, and the UTS suggested activities up to three years to maximise the Initiatives' outcomes.

Telecommunications carriers suggested that '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.'⁴⁰ ARCIA however, considered that 'with proper support from Government and by selecting some industry leading organisations it is possible that trial systems could be managed within the timeframes outlined in the Discussion Paper.'⁴¹

Sharing project results

Stakeholders generally did not raise substantive issues in relation to sharing information about projects. Telstra's submission in particular noted they 'do not anticipate any barriers to sharing case studies arising from the 5G Innovation Initiative'.⁴² More broadly submissions from the telecommunications industry noted the important role that representative bodies from end-user industries will have in promoting the outcomes of projects. Generally there was an appreciation that in order to get the best outcomes from projects their results needed to be shared and used to inform end-user industries, and that such sharing can also inform the public to create awareness of the benefits of 5G. In addition to case studies, some submissions noted the potential for a range of approaches to sharing information including mid-cycle sharing and collaboration between projects.

Several submissions raised the need to protect commercially sensitive information. For example, Challenge Networks (CN) raised that case studies will be 'shared but potentially there may be some sensitivity with regards to the specific technical or commercial details of the solution. It will be important to develop some form of reasonable compromise'. CN further explains 'an end user will often only be willing to participate if there is some guarantee as to confidentiality regarding commercial and/or technical details.'⁴³

³⁹ AMTA submission, page 8

⁴⁰ AMTA submission, page 8

⁴¹ ARCIA submission, page 5

⁴² Telstra submission, page 9

⁴³ Challenge Networks submission, page 6

Assessment criteria

General comments

Submissions from the telecommunications sector generally did not raise significant issues with the proposed assessment criteria. Telstra noted that 'the proposed Assessment Criteria appear to be generally suitable for the 5G Innovation Initiative.'⁴⁴ In addition, Nokia welcomed the initiative as a 'straightforward mechanism'.⁴⁵

AMTA suggested 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.' In particular AMTA suggested the guidelines include an overall score for each application and additional guidance on how the various criteria will be assessed. AMTA consider that this information will be useful for any applicants that choose to submit in the second round.⁴⁶

A number of submissions noted that there should be criteria included to manage community concerns about the safety of 5G. Several submissions from individuals consider that there should be requirements for the measurement of electro-magnetic energy (EME) and health impacts in the program guidelines. Further information about the issues raised in these submissions is contained in the [health concerns](#) section.

Criterion 1—Meets objectives of the program

Stakeholders did not raise any substantial issues with this assessment criterion.

WILAB considered that this criteria 'could be inadvertently taken as a basic compliance and it does have the elements of making the focus on sharing insights for the benefit broadly.'⁴⁷ This aligns with the view of the AMTA in providing additional guidance more broadly on the assessment process and criteria.

Criterion 2—Ability to access relevant technology and spectrum

Submissions from telecommunications carriers highlighted that because they already have significant technology and spectrum assets that they are important partners to assist other applicants to meet this criterion.

AMTA noted that the 3GPP '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' and that Rel-16 adds support for further use cases such as V2X, Industrial Ethernet and Time Sensitive Networking (TSN) and non-public networks. On access to technology, AMTA proposed 'the assessment criteria be updated to include a requirement that only 5G trials involving 3GPP compliant equipment will be considered'.⁴⁸

⁴⁴ Telstra submission, page 9

⁴⁵ Nokia submission, page 5

⁴⁶ AMTA submission, page 9

⁴⁷ WILAB submission, page 6

⁴⁸ AMTA submission, page 4

Network equipment manufacturers considered that the Initiative is an opportunity to promote the range of spectrum license types available. Nokia considered that ‘the Initiative should promote the different types of license available. Australia has the opportunity with its unique type of licences and the large amount of spectrum either on mid-band or mmWave to explore new usages for all new type of actors based on their specific needs.’⁴⁹ This is a view supported by WILAB who welcomed the specific focus on smaller scale applications that ‘may provide fertile ground for more novel applications of 5G technology’.⁵⁰

ARCIA’s submission raised that there were likely to be difficulties in accessing spectrum for private networks and that access to spectrum is likely to be a barrier. This was supported by Challenge Networks, who stated ‘Access to spectrum remains by far the largest ‘Achilles heel’ of 4G/5G mobile network development.’⁵¹ Optus also outlined potential barriers relating to spectrum access, noting uneven allocation of sub-1GHz spectrum as a factor that could limit the spread of 5G in regional areas.⁵²

Criterion 3—Ability to be delivered

Stakeholders generally did not raise significant issues with this assessment criteria. WILAB noted that the assessment of the ability to be delivered in joint applications should relate to the capabilities of all participants and that this may be significant where a start-up has partnered with larger firms to propose applications.⁵³

Some submissions raised the importance of ensuring telecommunications network security and broader cybersecurity obligations were complied with when delivering projects. Submissions also raised that risks relating to data privacy and security should be considered and appropriately managed during the implementation of projects under the Initiative.

Criterion 4—Value for money

There was a general appreciation among stakeholder that the assessment of value for money may be challenging given the nature of trialling new 5G use cases. Stakeholders generally agreed that value for money was an important consideration and that the program needed to focus on projects that would generate productivity benefits. Some submissions suggested that, given the uncertainties around trials of new 5G uses, subjective business cases should be allowed.⁵⁴

In considering value for money, WILAB suggested that ‘the argument for “Value for Money” could be improved by specific focus around potential impact of adoption, overcoming barriers, economic benefits of use cases to Australia.’⁵⁵

⁴⁹ Nokia submission, page 6

⁵⁰ WILAB submission, page 6

⁵¹ Challenge Networks submission, page 4

⁵² Optus submission, page 3

⁵³ WILAB submission, page 7

⁵⁴ Optus submission page 6

⁵⁵ WILAB submission, page 7

AMTA and Optus also noted scalability and market relevance should be important factors in assessing value for money to ensure projects align with Australia's 5G future. Optus stated 'it is imperative that the solutions funded will deliver value for money, be of relevance and be scalable.'⁵⁶

Other themes

Health concerns

A number of submissions raised health and safety concerns around Electromagnetic Energy (EME), Electromagnetic Radiation (EMR), Electromagnetic Hyper-Sensitivity (EHS) and the perceived absence of research into 5G-specific technology. This included concerns regarding mmWave radiofrequency energy, the higher density of radiofrequency equipment deployed for 5G, and the addition of 5G signals to those already used for 3G, 4G and 4G LTE technologies.

Submissions also requested that research about the health of personnel be completed before, during and after the implementation of projects under the Initiative to provide a holistic health and safety understanding of 5G technology. Some submissions also objected to the 5G rollout, requesting that the Initiative, and the overall rollout of 5G, be stopped due to these health concerns.

Understandably, some people in the community want to know if EME from 5G is regulated for safety, and whether there are any health concerns. 5G is the name for the next generation of wireless telecommunications, building on the 3G and 4G mobile telecommunications services already used by most Australians. While 5G will sometimes use higher frequencies compared to 3G and 4G services, this does not mean the radiation will be higher or above the regulated limits. The technology 5G relies on for transmission is not new and the frequencies used by 5G services have been studied by scientists in Australia and overseas with no health effects having been discovered. Earlier this year, Australia's Chief Medical Officer confirmed there is no evidence telecommunication technologies, including 5G, cause adverse health impacts.

The Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) provides advice on radiation protection and sets the Radiation Protection Standard for Maximum Exposure Levels to Radiofrequency Fields – 3 kHz to 300 GHz (2002) (the Standard)⁵⁷. The Standard covers the frequencies used in a range of communications technologies, from radio and TV to mobile telephones and internet. Industry compliance with the Standard is also regulated to ensure safe levels of EME emissions. This includes placing strict requirements on network equipment and facilities, such as base stations or small cells, and end user devices, such as mobile phones and laptops.

The Standard is based on the most up-to-date Australian and international peer-reviewed research into EME and is informed by guidelines published by the International Commission on Non-ionizing Radiation Protection (ICNIRP) and endorsed by the World Health Organization (WHO). The Standard sets maximum EME emissions well below the level at which adverse health effects may occur. Compliance with the Standard protects the health and safety of workers who may be on the site as well as the Australian public.

- The Australian Communications and Media Authority (ACMA) sets rules for the communications industry to follow requiring that levels of EME emitted by radiocommunications and telecommunications network equipment and facilities must be

⁵⁶ Optus submission, page 4

⁵⁷ For more information see [ARPANSA Radiation Protection Series No. 3](#)

below the maximum limit set out in the Standard to protect the health and safety of Australians as they use, live and work near these types of facilities. All participants of the Initiative will be required to comply with the relevant ACMA rules and regulations. More information about this regulation is available at www.acma.gov.au/our-rules-eme. Concerns about compliance can also be raised with ACMA through their website, or by calling 1300 850 115 or by emailing info@acma.gov.au.

Next steps

The Department thanks stakeholders for their insightful submissions on the 5G Innovation Initiative, and their interest and commitment to advancing and developing technology for Australia's future. The feedback received has allowed the 5G Innovation Initiative to better understand the needs of stakeholders. Feedback will be considered in the development of the grant opportunity guidelines for the Initiative. The guidelines will be made available in early 2021.