

## Background

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The NSW Small Business Innovation & Research (SBIR) program is an initiative of the NSW Government that provides competitive grants to small and medium-sized enterprises (SMEs) to find and commercialise innovative solutions to well-defined problems for NSW Government agencies. Further information about the SBIR program is available on the Office of the NSW Chief Scientist & Engineer website. This document sets out the Connectivity Challenge for the 2021 SBIR program.

## Challenge summary

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The NSW Telco Authority is seeking non-terrestrial connectivity technologies that could provide ubiquitous connectivity across NSW. Improved connectivity has the potential to reduce the digital divide for regional and remote citizens and businesses and provide emergency services organisations with critical communications across the state.

Technology solutions might include, but are not limited to:

- New satellite technologies providing reliable and secure connectivity
- Aerial solutions providing wide area coverage and capacity with rapid deployment
- Long range coverage solutions leveraging existing infrastructure and networks.

## Overview of challenge

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Comprehensive geographical network coverage across NSW is required for all of the major programs being delivered by the NSW Telco Authority.

Terrestrial network rollouts are a time consuming and costly approach to providing seamless and resilient geographical coverage in a state as large as NSW. These terrestrial connectivity solutions are also becoming less suitable for rural and remote areas in NSW due to the higher risk of hazards such as bushfires and floods. Non-terrestrial connectivity solutions can provide greater coverage without heavy infrastructure rollout; however they have challenges in interoperability, latency, capacity, cost and reliability.

This challenge is to develop new technology solutions that can leverage non-terrestrial connectivity technologies, potentially in conjunction with terrestrial connectivity technologies, to provide ubiquitous communications to communities, businesses and public services across regional and remote NSW. The challenge solution will assist the NSW Telco Authority to provide reliable and effective communications services to communities across NSW. For example, the NSW Telco Authority is building a Public Safety Network across the state to provide emergency services organisations with mission-critical voice services. This is being delivered through the Critical Communications Enhancement Program (CCEP) which will increase the level of shared coverage available to NSW Government agencies and essential services from less than 35 per cent at present to over 80 per cent of NSW. Coverage in urban areas will also improve from 96 per cent to nearly 100 per cent. Emergency and day-to-day operational communications will also benefit from network capacity, availability and resilience designed to meet public safety standards. This radio network will achieve what is called 'mission critical standards' of communications and is configured to achieve 99.95 per cent availability.

The challenge solution will also support the delivery of other major programs that NSW Telco Authority is delivering, such as:

- **The Commonwealth Mobile Black Spot Program** – The Australian Government has committed \$380 million to invest in improving mobile coverage and competition across Australia. This has delivered more than 1,200 new base stations and the latest round focuses on addressing major transport corridors and disaster-prone regions, and testing new technologies that support shared mobile coverage in regional areas. The NSW Telco Authority is working with commercial carriers to deliver new sites in NSW.
- **The NSW Connecting Country Communities Fund** – The NSW Government is investing in communications infrastructure and services to improve voice and data connectivity for regional NSW using both mobile and broadband internet access, and deliver metropolitan levels of service to regional NSW.
- **Public Safety Mobile Broadband** – The NSW Telco Authority is investing in next generation mission-critical communications technologies needed to support public safety agencies, for example to improve operational efficiency and effectiveness by allowing access to video, images, location tracking and other data.

## Solution requirements

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We need technology solutions that could provide new rural and remote connectivity over wide areas of the state where there is no terrestrial coverage. Given the challenges of terrestrial connectivity versus non-terrestrial connectivity solutions, there is an opportunity to better apply a non-terrestrial connectivity technology solution in the delivery of multiple NSW Telco Authority programs such as those listed above.

Proposals must demonstrate that the technology and its implementation:

- can be cost-effectively and rapidly deployed without extensive infrastructure requirements,
- can offer coverage and capacity over a wide area using alternative delivery technologies and approaches from traditional terrestrial rollouts,
- can be interoperable with existing P25 Land-Mobile Radio and 3G/4G/5G networks,
- can ensure seamless connectivity between terrestrial and non-terrestrial solutions,
- can deliver comparable performance with existing networks in terms of latency, capacity, usage cost and reliability, with end users experiencing similar performance and availability for voice and data services to their current services,
- is resilient against natural hazards, for example, can operate independently of the grid using sustainable power sources.

This challenge is agnostic to the type of technology used and is seeking the most effective and efficient technology and methodology. Applicants may propose a single technology or device, or a suite of technologies and devices that are integrated.

## Benefits of the solution

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Telecommunications services represents a major market in Australia worth over \$30 billion. Globally the market opportunity is immense. New products and services that can improve regional connectivity also deliver many public and private benefits including for:

- emergency services when responding to natural disasters in areas that are not highly populated
- local government and essential service providers in transport, energy, the environment and water supply
- people living in regional and remote areas to better access private and public online services, such as telehealth and e-education, as well as remote working
- regional business to maintain business-critical standards of communications in times of specific incidents or emergencies, to access business development, trade opportunities and e-commerce, and to accelerate business, productivity and jobs growth in regional areas.

### How to apply

For more information please visit [www.chiefscientist.nsw.gov.au/sbir](http://www.chiefscientist.nsw.gov.au/sbir)