

The Evolution of Critical Communications

How Industry is Responding to the Needs of Critical Users for both Voice and Data

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- Mission Critical Communications has been based around voice for pretty much all of the post World War II period, and even today is the mainstay for critical comms, particularly in the Public Safety and Emergency Services community



- But the path away from voice being the primary tool and the march toward data centric connectivity started 25 years ago with the introduction of devices such as the BlackBerry and the iPhone.
- Whilst consumers have taken to this technology like a duck to water, mission critical users tend to be much more conservative and have taken a little longer to catch up, but in 2024, most of them are starting to catch up

What are mission critical customers wanting to use data for ?



We have been hearing for the past 10 years that cellular technology would make LMR extinct, but to date that has not proven to be correct.

In some jurisdictions such as NSW, they are still building P25 Government Radio Networks, however we have certainly seen a marked shift in what our customers are now asking for.

Public Safety customers are still wanting voice communications, but many of them are now wanting to pair that with data communications, and in most cases broadband data, whereas other mission critical users like agriculture, mining and transport are starting to remove voice all together for everything except emergencies

To date, the only way to provide this data economically has been to use traditional LMR networks for the voice and commercial cellular networks for data.

But this approach has significant problems

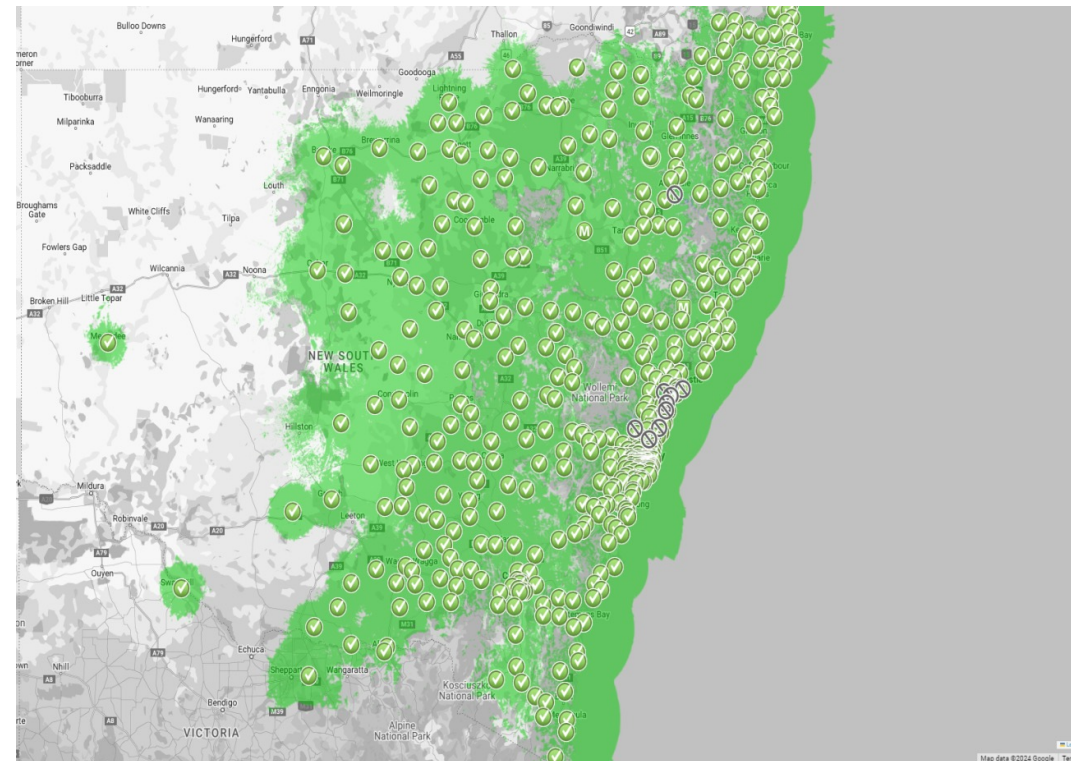
Coverage

One of the biggest challenges in Australia, is our size vs our population, there just isn't that many of us, particularly away from the populated cities.

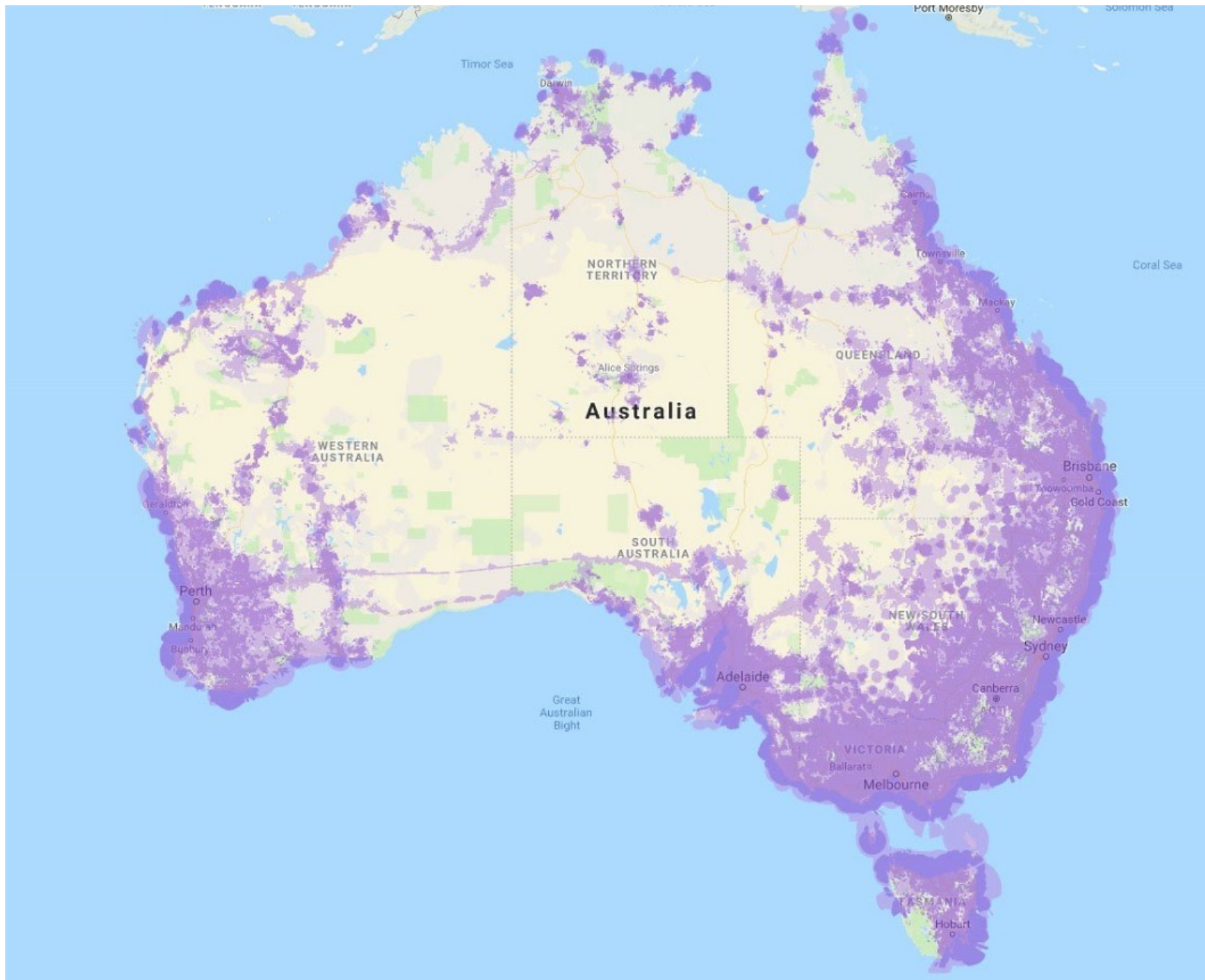
But some people still live or travel through these unpopulated areas, and where we get people, we need emergency services, and those emergency service need communications



NSW Cellular Coverage All Carriers 2023

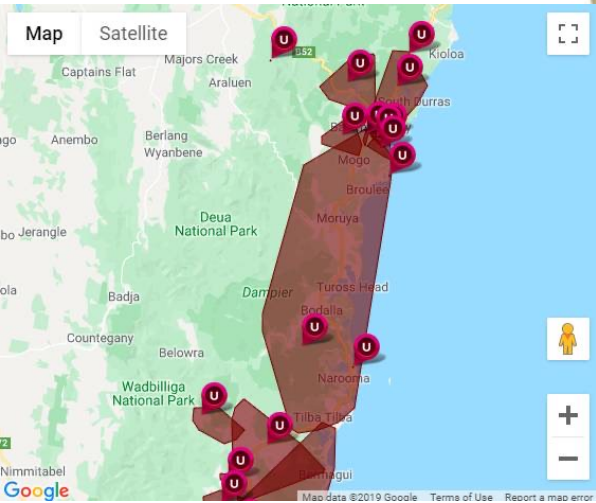
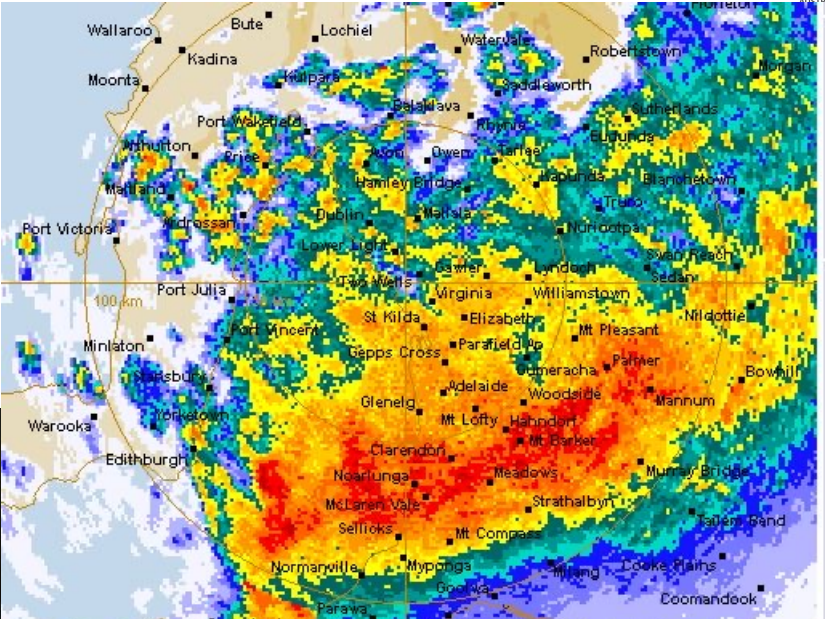


NSW PSN Radio Network Mobile Coverage 2024



Across all of Australia, Cellular networks only cover around 30% of the land mass

Power and Network Resilience



So what options do mission critical users have for broadband data in Australia ?

- PSMB ??? – been talked about and planned since 2016. Although some funding made available in the last budget, still no real progress, and still significant doubts over spectrum, coverage and cost
- Commercial Broadband – presently the cost effective method of providing mobile broadband, but coverage and resilience are still problems
- GEO/MEO/LEO satellite services – vary in data throughput, latency and cost, and all need a view of the sky

Direct Device to satellite

The next advancement in this space is the development of direct connection from the handset to the satellite

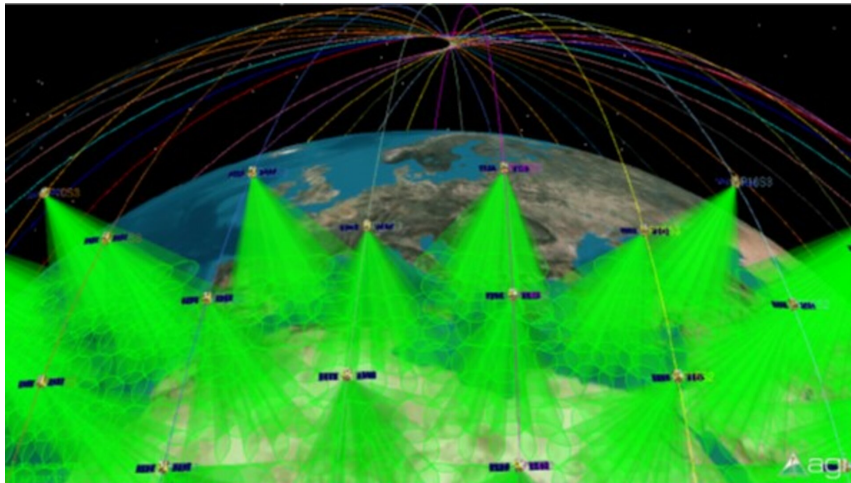
This is already available in a limited way with some handsets like the iPhone using text to satellite, with voice services expected to start rolling out in 2025, and data not far afterwards

This will be another option for outdoor coverage, but again will not be a solution for all use cases



Hybrid Solutions

Whilst work is underway to construct and enhance LTE networks, improve interworking between LMR and other technologies, the approach of using a mix of all of the available technologies is starting to provide these users with what they are looking for



Bringing together LMR, Cellular, Satellite, Mesh & wifi it is possible to give the users what they need today, whilst work continues to evolve capabilities that will simplify and improve the user experience

How can we help these users to understand the best solution to meet their needs ?

- Resilience
 - Ensuring sufficient diversity of bearers
 - Hardening of networks
- Cost Effective
 - Multiple bearers and technologies add significant cost to the user
 - Need to properly understand the use case to provide the right mix
- Collaborate
 - Recognise that not business has all the answers, and look to collaborate if needed to provide the best solution for the customer



As I put my former customers hat on, I would like to challenge all within our industry to think about the individual strengths of each of our businesses, and recognise that nobody is the best at everything.

Our customers want the best solutions, and they don't usually care if its 1, 2 or 10 different companies that come together to deliver it, provided they get a seamless answer to their problems