ICTS Region 3

AMT Spectrum Encroachment in the Asia-Pacific Community

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Morning / Afternoon all,

My name is Jamie and I have been asked to represent region 3 as part of the ICTS proceedings.

It's a great pleasure to be involved as the utilisation of telemetry is something I am passionate about as it directly effects the organisation I work for.

As the 'Newbie' to this organisation, I have a lot to learn and although passionate, I fully understand my limitations when it comes to the regulatory space that is spectrum management.

Given this, the presentation I have put forth for you today is more of an introduction to myself and a generalised overview of what is going on close to home.

Region 3 presentaion Scope:

- Introduction
- Discuss the diverse nature of Region 3
- What Bands are being used for telemetry in my local area
- Spectrum Management / allocation in my local area
- Australia specific threats
- Invite members from Region 3 to facilitate communication with me.

So what am I going to talk to you about today?
As indicated, I would provide an introduction to myself then go on to talk about ......
READ SLIDE

General Intro:

I have pretty much worked around aircraft in some form or another my entire working life; from being a light aircraft charter pilot, Avionics technician repairing aircraft and now as an Engineer developing and intergrating test or enduring systems onto aircraft. For the last 20 years I have worked for the Australian Department of Defence. During that time I have had the opertunity to work on almost every platform some past and some now emerging that the Australian Defence force has.
During this time a large number of the activities have involved some form of telemetry capability development.
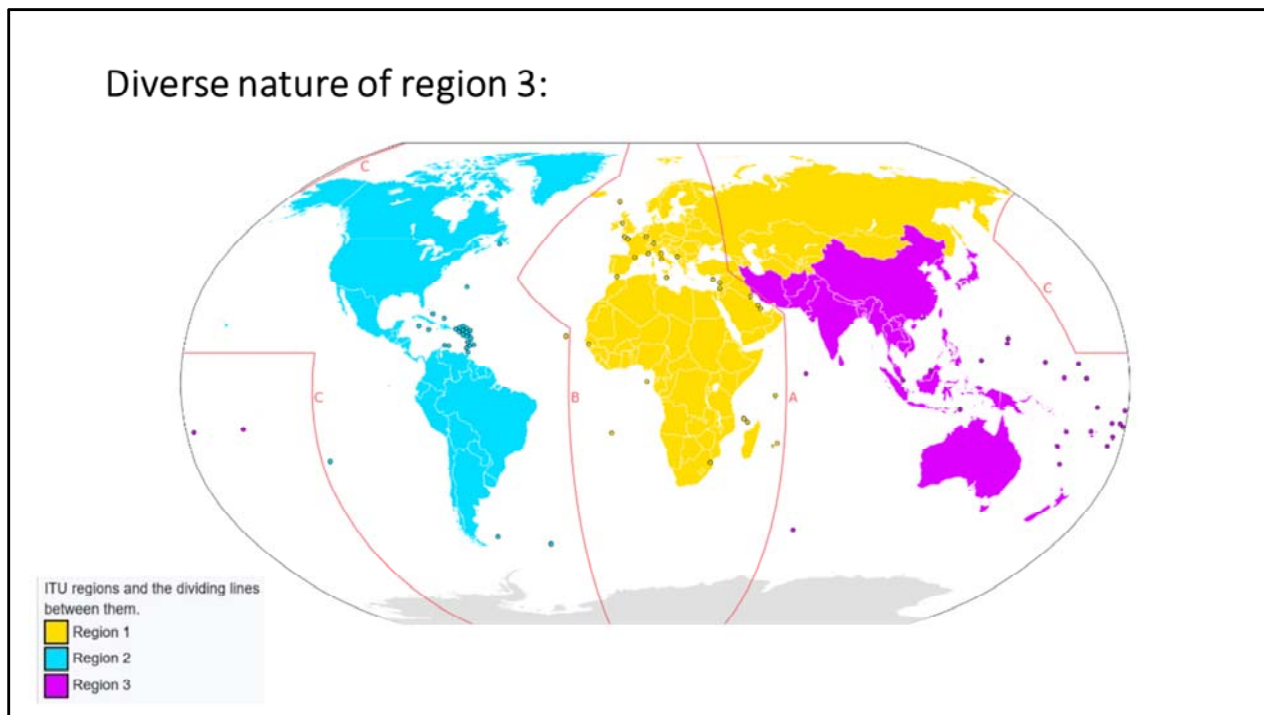
Diverse nature of region 3:

ITU regions and the dividing lines between them.
Region 1
Region 2
Region 3

Living within Australia, one of the things noticed most when travelling else where is the order of magnitude difference between the population of other areas.
As an example the USA as of this month has a population approx 330 Million. Japan which is in region 3 has 127 Million, where as Australia has 24 Milliion.
Region 3 is also spread out over a large expanse of water. So here is where the diverseness comes to play; how do you understand the issues being dealt with in areas like Japan as opposed to Australia or New Zealand?
What maybe an issue for someone trying to organise a telemetry link in Japan, may not have the same issue or concern in Australia.

Diverse nature of region 3:

Image source: https://www.lahistoriaconmapas.com/atlas/country-map02/usa-australia-map-overlay.htm

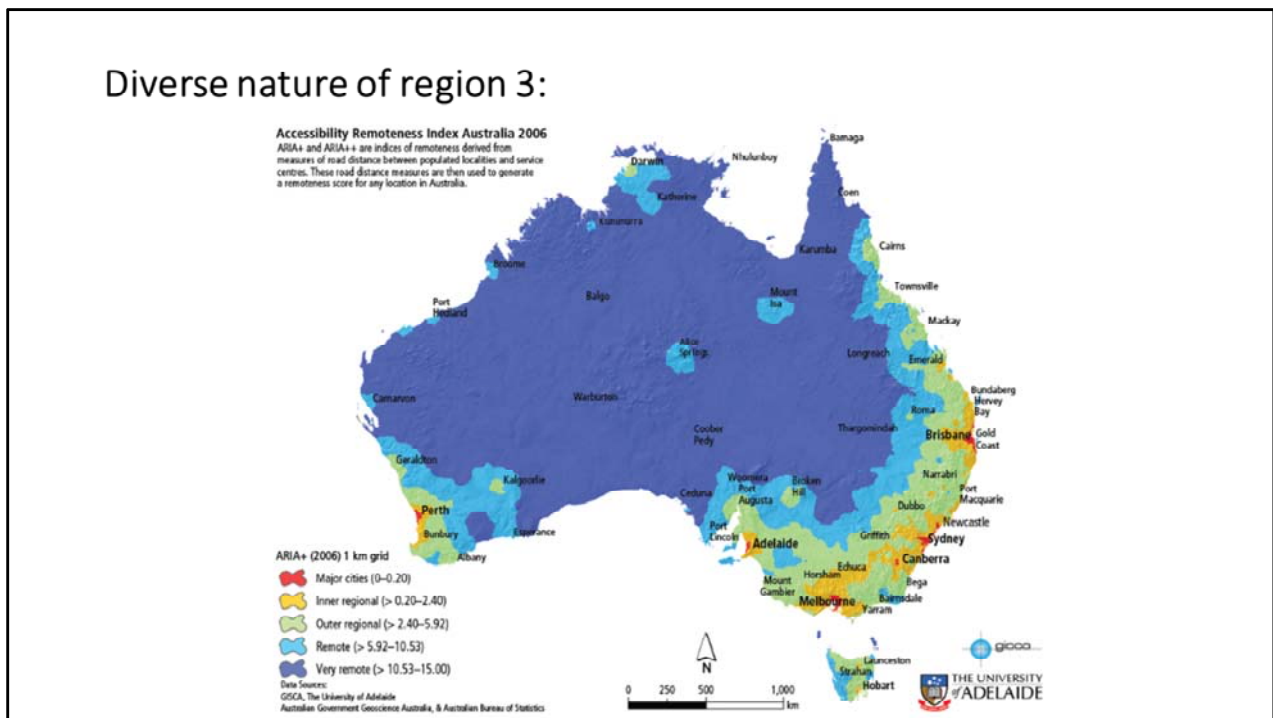330 Million people in the Continental USA as opposed to 24 Million.

Image source: https://aifs.gov.au/publications/families-regional-rural-and-remote-australia/figure1

The primary populous of Australia is located on the Eastern coast with the majority of the landmass classified as very remote.
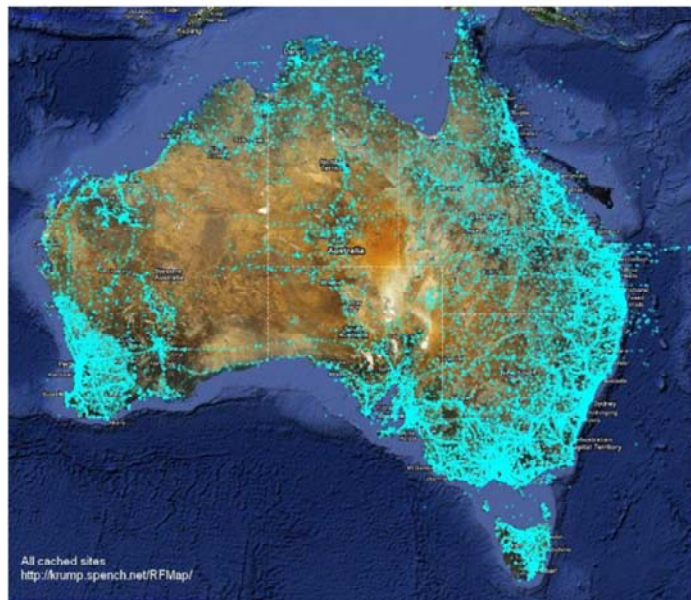
Diverse nature of region 3:

Image Source: http://spench.net/

Which when we overlay the known RF transmitters (2011) it can be seen that Australia's RF congestion areas are as expected the Eastern Coastline, Victoria / Tasmania and South Western tip of Australia.

For info: 3 people per square kilometre (0.6 of a square mile)

What Bands are being used for telemetry: (AUS only)

- Lower L band (LL) 1,429 – 1,545 MHz
- Upper-L band (UL) 1,710 – 1,850 MHz
- S-band 2,180 – 2,485 MHz
- C-Band 4,400 – 5,250 MHz (yet to be utilised)

Note: Frequencies are non specific, generalised only

RX-1

ZODIAC DATA SYSTEMS

Images sourced from Zodiac Systems product guides

With little input from other telemetry practitioners within region 3, I can only base my statement on what the organisation I work for has been asked to utilise for any specific activity.

Given the requests can be wide and varied, our organisation has elected to ensure the equipment acquisitions we undertake are able to provide us the most flexibility it can afford.

As such we are equipped and capable to use L, S and C bands as required within the bounds of appropriate link registration with our local spectrum authority.

Although our equipment is capable of C band, we are yet to utilise this area of the spectrum.
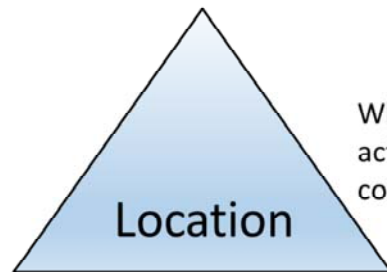
Frequency ranges sourced from product data sheets.

Spectrum Management / allocation:

An RF link registration needs to consider three main aspects:

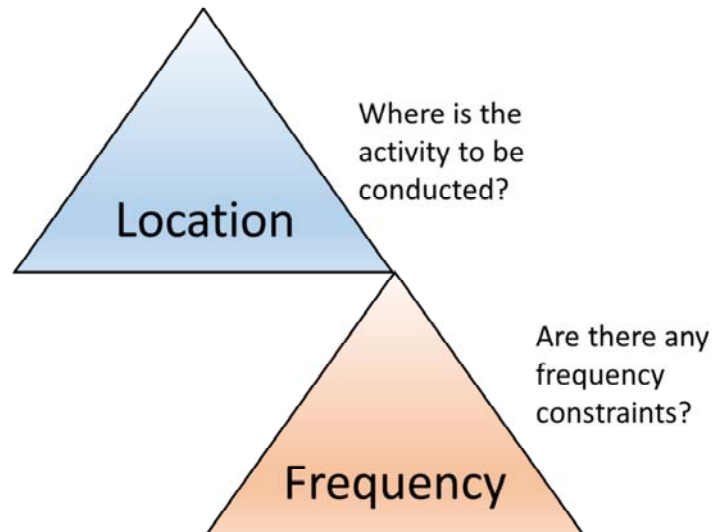Spectrum Management / allocation:

Location

Where is the activity to be conducted?

An RF link registration needs to consider three main aspects:
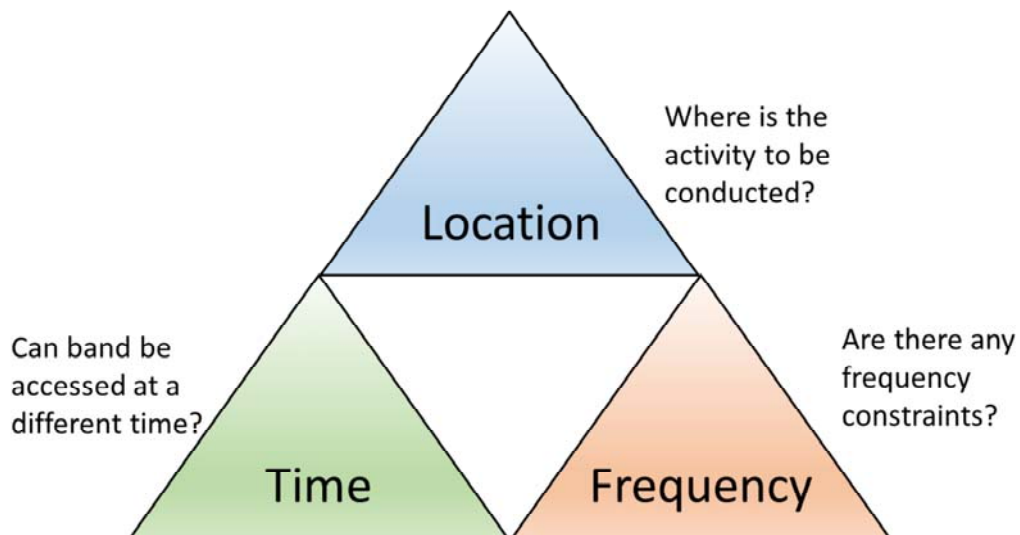1. Location – Where is the activity being conducted (click)

Spectrum Management / allocation:

Location

Where is the activity to be conducted?

Frequency

Are there any frequency constraints?

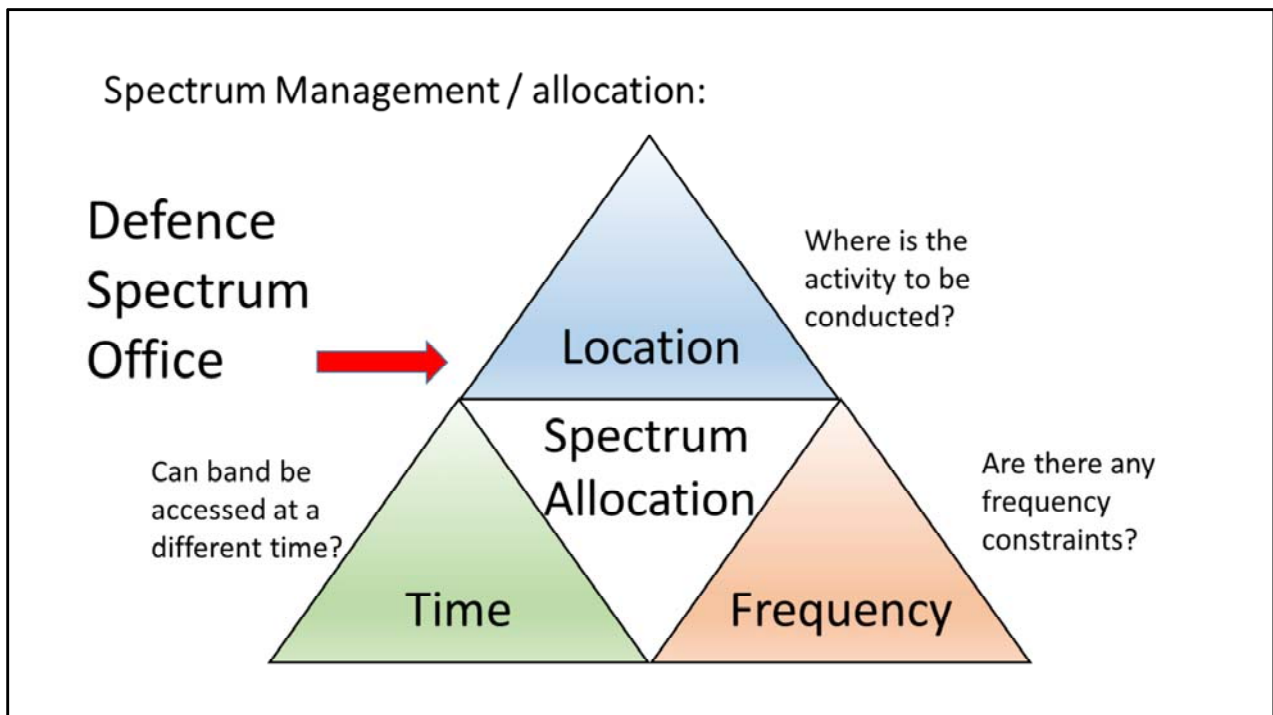An RF link registration needs to consider three main aspects:
1. Location – Where is the activity being conducted (click)
2. Frequency – What frequency is needed or available / what bandwidth is needed or bandwidth constraints imposed (click)

Spectrum Management / allocation:

Location — Where is the activity to be conducted?

Time — Can band be accessed at a different time?

Frequency — Are there any frequency constraints?

An RF link registration needs to consider three main aspects:
1. Location – Where is the activity being conducted (click)
2. Frequency – What frequency is needed or available / what bandwidth is needed or bandwidth constraints imposed (click)
3. Time – Although allocation may not be able to be issued 100% of the requested time, is there a time that the request can be met (part day / number of days etc.) (click)

An RF link registration needs to consider three main aspects:
1. Location – Where is the activity being conducted (click)
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3. Time – Although allocation may not be able to be issued 100% of the requested time, is there a time that the request can be met (part day / number of days etc.) (click)

This makes up a spectrum allocation.

To manage RF spectrum usage and allocation the Department of Defence are required to liaise with the Defence Spectrum Office located in Canberra (ACT), so as to register any RF links required to be established. This organisation works closely with the Australian Communications and Media Authority (ACMA) to ensure Defence activities do not effect or can work around / with civilian activities.
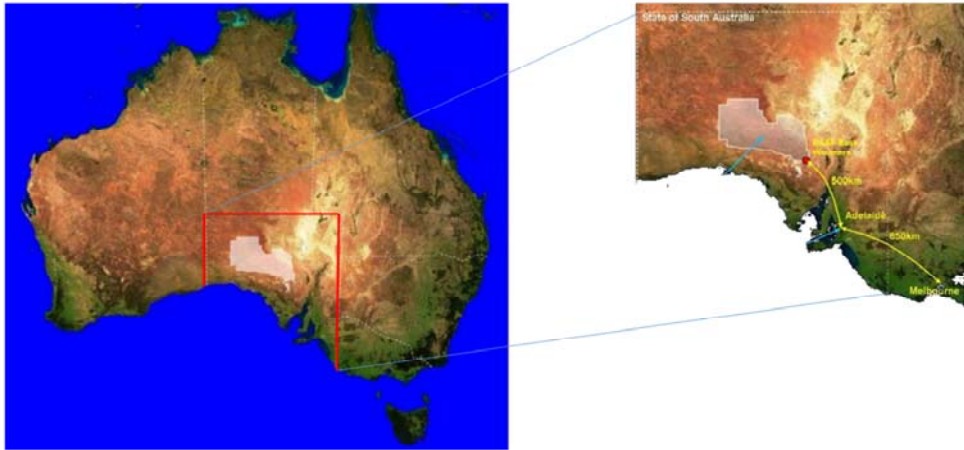
So far I have been talking specifically from a military task conduct perspective, however utilisation of the RF spectrum from a civilian perspective is to be via request to the Australian Communication and Media Authority.

Spectrum Management / allocation: Location

We talked about the relative remoteness that Australia affords in comparison to other nations around the globe. One advantage this remoteness provides is the ability to utilise intentional radiators that would not normally be able to be used else where. This does not mean it is a free for all affair. Proper assessments are still required prior to using remote areas such as the Woomera Test Range in central Australia, as issues such as Automated mining vehicles / trains need to be risk assessed for interference concerns.
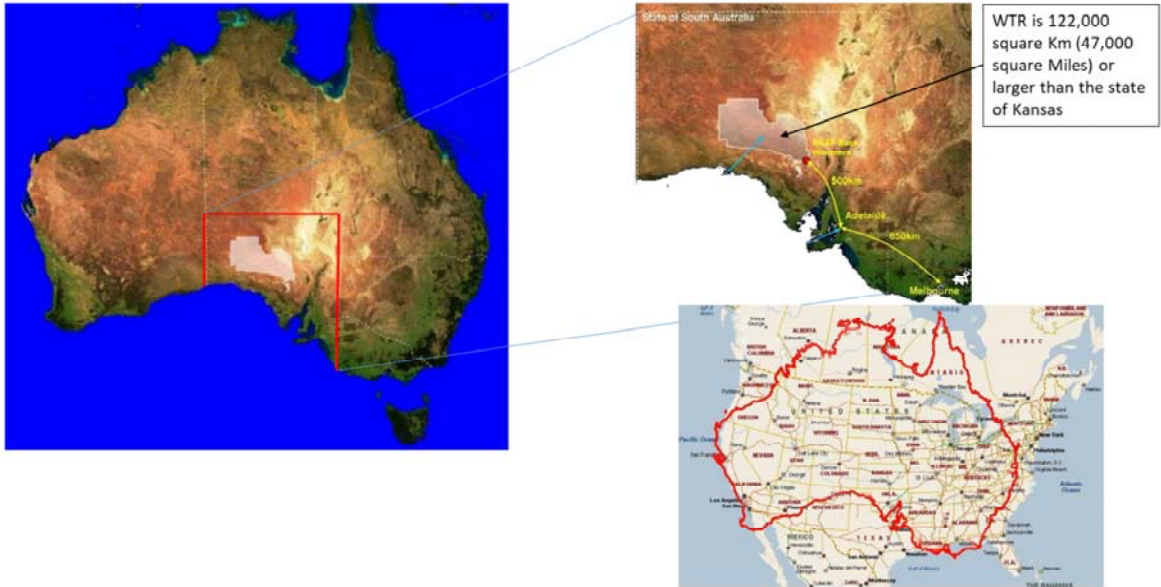
Spectrum Management / allocation: Location
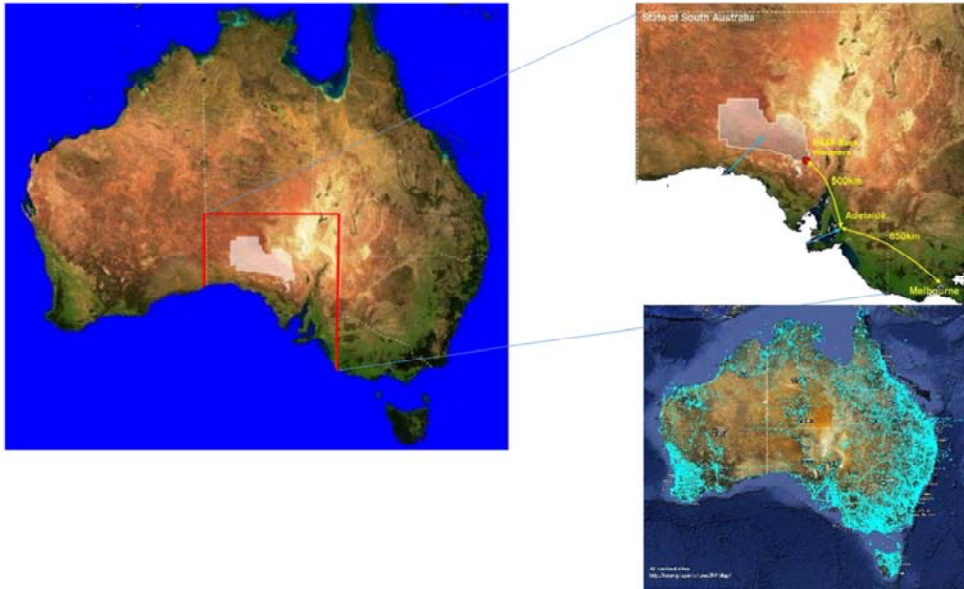
Bringing up the image of RF transmitters overlayed Australia, it can be seen that the Woomera Test Range is relatively quiet.

In a situation where an activity was required to be held in Sydney Harbor, heavy restrictions on allowable frequencies and Time of use would be in place.

Spectrum Management / allocation: Location

WTR is 122,000 square Km (47,000 square Miles) or larger than the state of Kansas.

Sell off of available frequency spectrum is occurring.
This was the headline of an ACMA media release in December last year.

Australian specific threats:

All 350 lots available in the auction were sold, realising total revenue of approximately **$853 million (576 million USD)**, equivalent to almost $0.29/MHz/pop.

- Dense Air Australia Pty Ltd won 29 lots for $18,492,000.

- Mobile JV Pty Limited (a joint venture arrangement between subsidiaries of TPG Telecom Limited and Vodafone Hutchison Australia Pty Limited) won 131 lots for $263,283,800.

- Optus Mobile Pty Ltd won 47 lots for $185,069,100.

- Telstra Corporation Limited won 143 lots for $386,008,400.

350 lots were sold
$853 million AUD bought by 4 companies, Telstra being the largest buyer.

All data taken from ACMA media release - 38/2018 - 10 December
https://www.acma.gov.au/theACMA/australias-5g-auction-concludes

Although this spectrum auction was for allocations within the 3.6Ghz range and not impacting on the L, S and C band telemetry utilisation; what it shows is the lucrative commodity spectrum lots are for a Government.
If pressured for my bandwidth it likly to see selling off something so critical to our profession, but the gains to the general populous in the form of more bandwidth for their mobile devices would be praised by many.
This is why it is so important our cause has a voice and that we have a playing field where our concerns are listened to.

Invite members from Region 3 to open communication:

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