



Australian Government

Defence

RadComms 2022 – Making Waves

Defence Current and Future Spectrum Challenges



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Defence ICT Strategy





2020 Defence Strategic Update

Australia's strategic environment has deteriorated

Strategic
realignment
in Indo-
Pacific
region

Australia's region, the Indo-Pacific, is in the midst of the most consequential strategic realignment since World War II.

Strategic
competition

Strategic competition, primarily between the United States and China, will be the principal driver of strategic dynamics in the Indo-Pacific.

High
intensity
military
conflict

Though still remote, the prospect of **high intensity military conflict** in the Indo-Pacific is less remote than in the past.





2020 Defence Strategic Update (ctd)

Strategic
warning
time has
changed

Australia can no longer assume a ten-year **strategic warning time** is an appropriate basis for defence planning

Grey-zone
activities

Grey-zone activities – such as the use of para military forces and coercive economic levers – are being applied in ways which challenge sovereignty and habits of cooperation.

Threats to
human
security

Threats to human security, such as the Coronavirus pandemic and **natural disasters**, mean disaster response and resilience measures demand a higher priority in Defence planning.





Defence Electromagnetic Strategy

To overcome this rapid change, Australian Government has invested \$575 billion through the 2020 Force Structure Plan. The majority of that investment will deliver capability that is in some way reliant on the electromagnetic spectrum.

Defence Electromagnetic Spectrum Strategy



GOAL 1 – PIVOT

Shape Defence people, policy, and processes to embrace a coordinated approach for the use of the electromagnetic spectrum



GOAL 2 – PEOPLE

Enhance Defence people, structures, and training to excel across Defence's electromagnetic spectrum requirements



GOAL 3 – POSTURE

Coordinate Defence electromagnetic spectrum capabilities to ensure Defence can achieve its full range of spectrum effects



GOAL 4 – PRESENCE

Ensure Defence represents its electromagnetic spectrum equities within the spectrum community



GOAL 5 – PRACTICE

Enable Defence to operate in the electromagnetic spectrum to achieve its full range of spectrum effects





Defence Electromagnetic Strategy (ctd)

Defence EMS Strategy and Forward Work Plan defines Defence's approach to achieve the goals and objectives.

- This includes engagement with national and international regulatory bodies to ensure Defence equities are understood and protected

National
regulators

Defence has established regular engagement at the SES1/star 1 and SES 2/star 2 levels with the ACMA and Department of infrastructure, Transport, Regional Development, Communications and the Arts (DITRDCA)

International
regulators

Defence personnel participate at the International Telecommunication Union (ITU) and Asia-Pacific Telecommunity (APT) meetings

Allies and
partners

Defence engages regularly with allies and partners on EMS spectrum issues





Defence complies with international and national EMS regulatory framework

International and national EMS regulation

Defence complies with
ITU Radio Regulations

Defence operates within the
Australian Spectrum
Management Framework

International EMS regulation

ITU Radio Regulations



Australian EMS regulatory framework



**Australian Radiofrequency
Spectrum Plan 2021**
Including general information

Defence Spectrum Office
applies for the
radiocommunications
licences and makes
frequency assignments via
**Defence employed accredited
persons**





Defence complies with the ITU Constitution

ITU Constitution Article 48

ARTICLE 48

Installations for National Defence Services

- 202**
PP-98
- 1 Member States retain their entire freedom with regard to military radio installations.
- 203**
- 2 Nevertheless, these installations must, so far as possible, observe statutory provisions relative to giving assistance in case of distress and to the measures to be taken to prevent harmful interference, and the provisions of the Administrative Regulations concerning the types of emission and the frequencies to be used, according to the nature of the service performed by such installations.
- 204**
- 3 Moreover, when these installations take part in the service of public correspondence or other services governed by the Administrative Regulations, they must, in general, comply with the regulatory provisions for the conduct of such services.

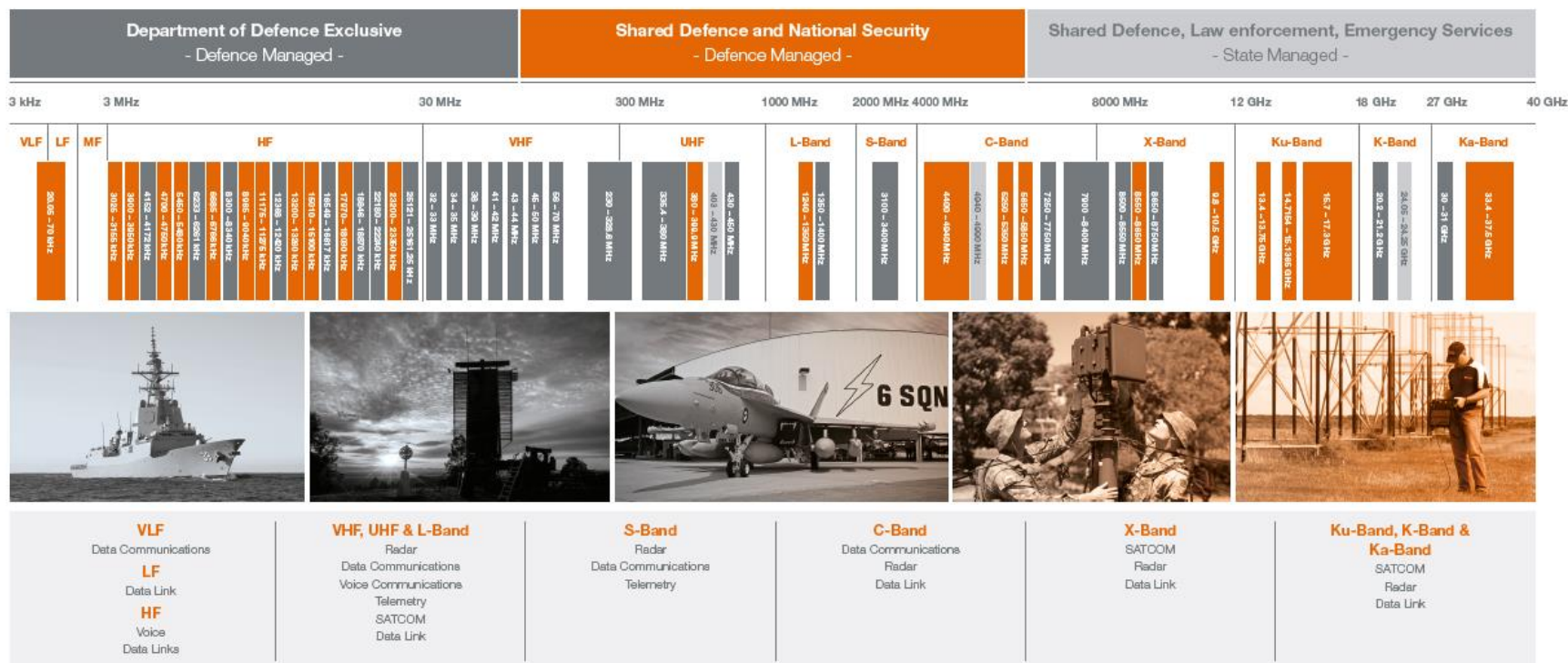




Defence EMS environment is congested, contested and constrained

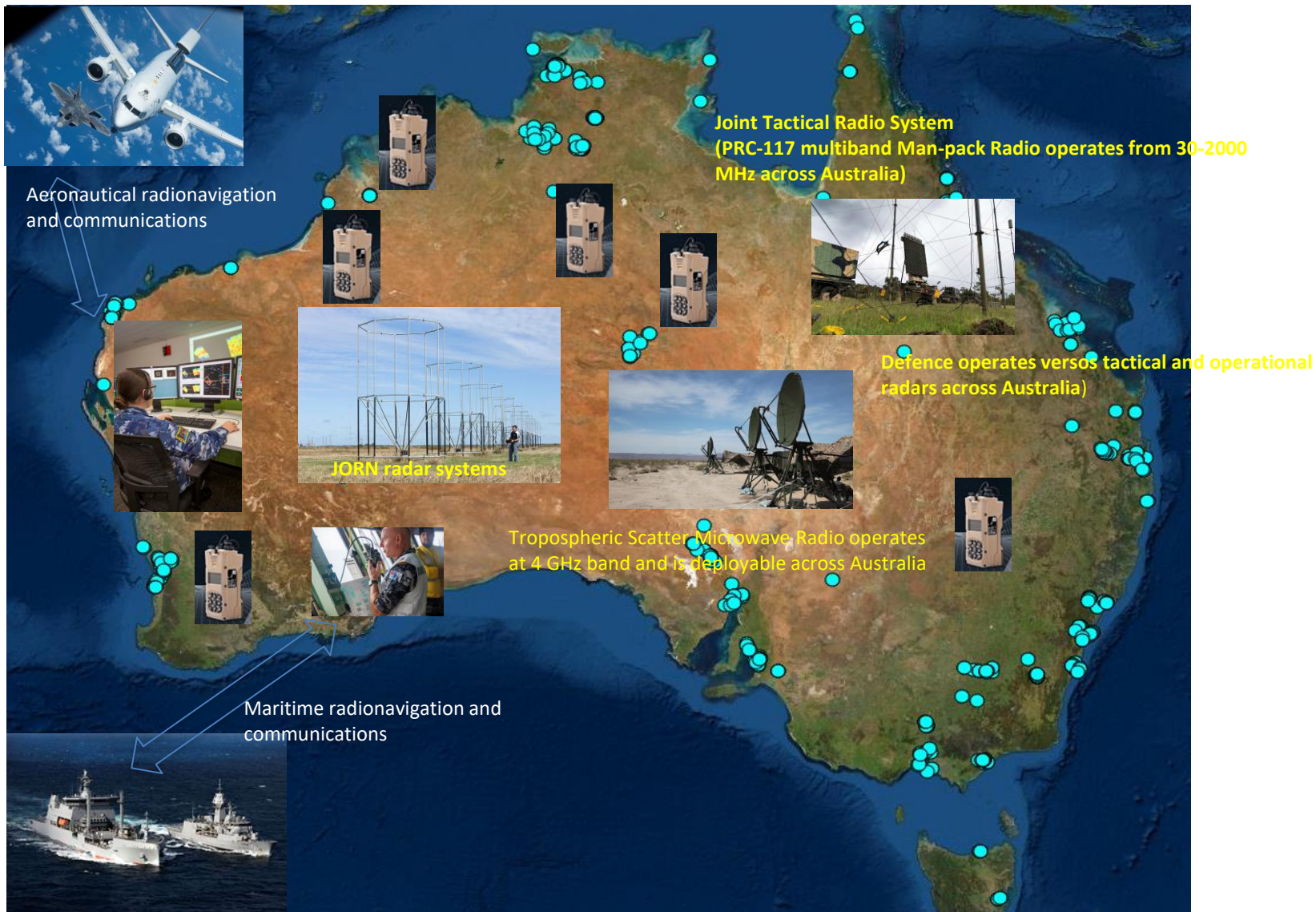


Australian Defence Radiofrequency Spectrum





Current Defence EMS **terrestrial** environment is congested, contested and constrained





Current Defence EMS **Space** environment is congested, constrained and contested

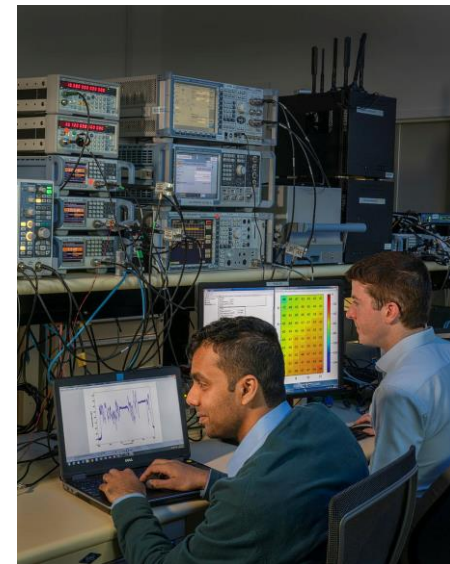




Current Defence EMS environment

Electronic warfare

- A set of measures and actions for the detection and jamming of electronic systems
 - control of forces and weapons (offensive)
 - Includes electronic protection (defensive)
- The EA-18G Growler
 - **electronic attack** aircraft
 - capable of disrupting, deceiving or denying a broad range of military electronic systems, including **radars and communications**
- **Effective EW relies on Defence's ability to access the EMS**





Emerging Defence EMS environment – **Requirements**

Harmonised
spectrum

Access to the **harmonised 5G spectrum with FVEYs, NATO and AUKUS nations** is essential. Any fragmentation of this spectrum will come at **the cost of Defence's interoperability with allies and partners.**

Strategic
spectrum
planning

Strategic long term spectrum planning is essential as the lifecycle of some Defence capabilities spans over decades.

Technical
standards

Technical standards are commonly developed for civilian IMT applications. Defence needs to cooperate with defence industry and **increase its presence in standards developments.**





Emerging EMS environment

Uncrewed Aerial Systems (UAS) and Counter UAS

UAS have become a critical force multiplier for the Australian Defence Force (ADF).

- **Triton** is a high altitude long endurance aircraft used for long range maritime patrol
- **MQ 12 Wasp** provides commanders and security forces enhanced situational awareness and improves decision making
- **PD-100 Black Hornet Nano** unmanned aircraft vehicle is used for various purposes.

Counter UAS

- **Drone Jammers** are needed to counter hostile UAS actions.

Defence supports the DITRDCA's initiative on Emerging Aviation Technologies Future Spectrum Workshops and will continue to cooperate on these issues.

Defence would like to thank the ACMA's new arrangement for the banned equipment and exemption framework.





Emerging EMS environment

Fifth Generation (5G) and beyond communications networks

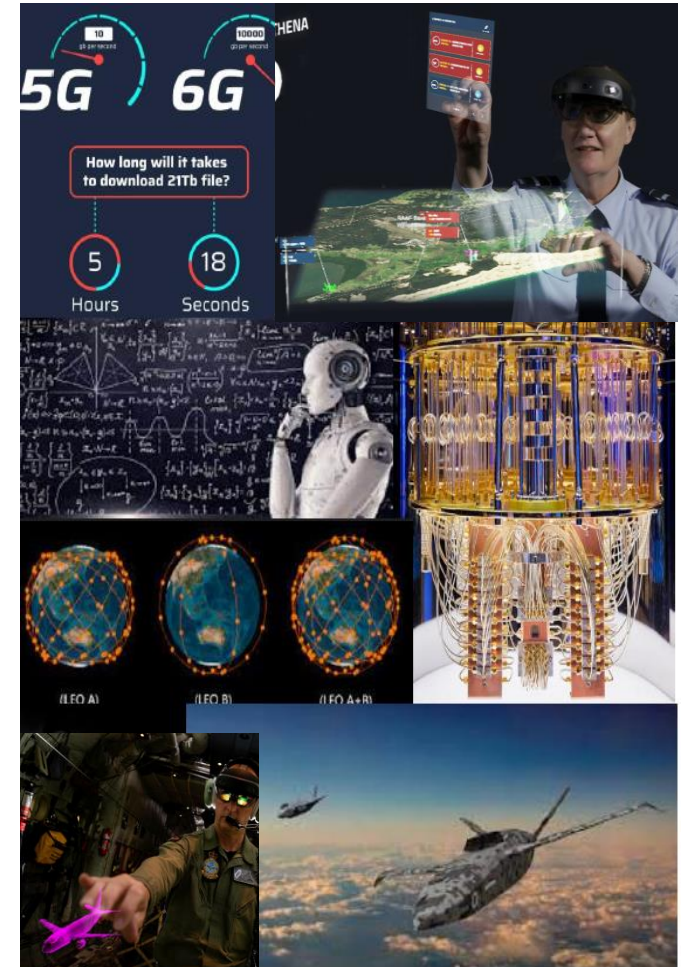
Applications

- Communications
- Autonomous Vehicles
- Intelligence, surveillance and reconnaissance systems
- augmented and virtual reality

Laser communications:

- improves data rate
- reduces the potential of interference or jamming.
- Both terrestrial and space applications

Must be **Scalable, Resilient, Survivable** *in order to* deliver advantages in the digital age and defend Australia and its national interests.



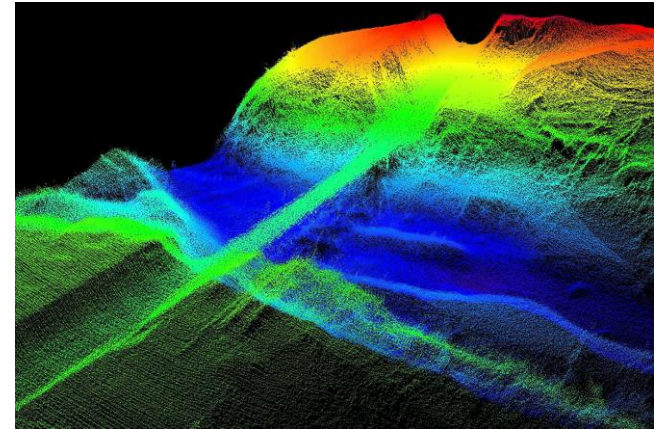


Defence Spectrum Management Software (JP2248)

Supports the outcomes of the 2022 Defence EMS Strategy to assure EMS access to support missions

- Improves the **efficiency and effectiveness** of EMS use to support ADF decision making superiority.
- Requires the ACMA data on a daily basis
- Allied and partner interoperability via
 - SFAF legacy format
 - SSRF (XML) for future data interchange

There may be need for a unified format for spectrum data interoperability at the Government level!





Defence Spectrum Office



Thank you!!!

