

THALES



Military spectrum and ITU-R World Radio Conference (WRC)

WINNCOMM-EUROPE 2016

www.thalesgroup.com



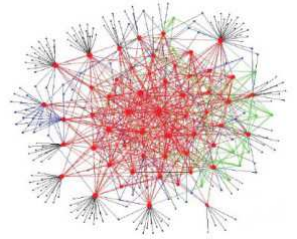
Agenda

- **Military spectrum : a pincers situation**
- **WRC-15 : Military spectrum release**
- **WRC-15 : Opportunities**
- **WRC-19 : Agenda items at stakes for defence systems**
- **Conclusion**

Military spectrum : a pincers situation

New systems NCW / C4ISR require more and more spectrum

- Unmanned systems, robots, multi platform combat systems ...



Spectrum resources decrease while system capabilities and complexity increases

- More than 1 GHz of MIL spectrum released since WRC-07
- More than 2 GHz at stake for the WRC-19



Threefold solution

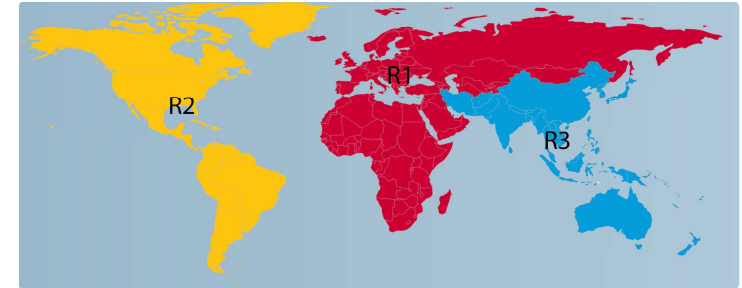
- Improve military systems spectrum efficiency
- Anticipate technical and regulatory mechanisms for military systems to have access to civil/commercial spectrum (dynamic spectrum)
- Request more spectrum (terrestrial, aeronautical, satellite applications)



WRC-15 : Military spectrum release

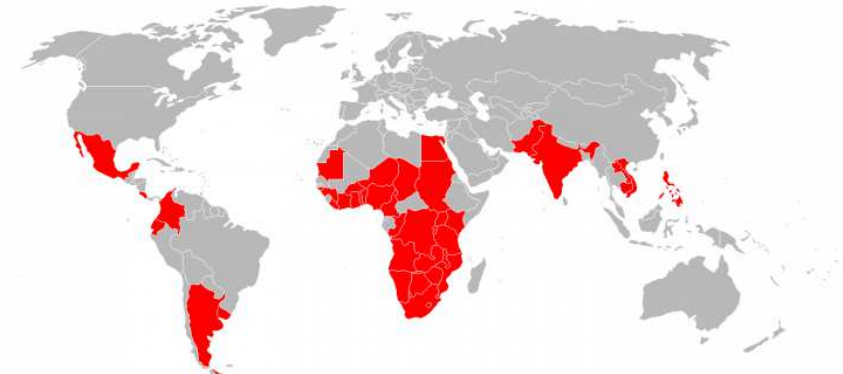
1427-1452 MHz and 1492-1518 MHz (L Band) in R1, R2 & R3

- Identification to IMT
- Coordination with neighbouring countries in R1 and R3 to protect AMS



3300-3400 MHz in some countries

- Identification to IMT
- No interference/no protection



4800-4990 MHz in 4 countries

- Identification to IMT
- PFD limit at 20 km from coasts



WRC-15 : Military spectrum release

13.4 – 13.65 GHz in Region 1

- FSS (↓) allocation limited to geostationary satellites

14.5 – 14.75 GHz in R1&R2 and 14.5 – 14.8 GHz in R3

- FSS (↑) allocation limited to geostationary satellites
- 500 km separation distance from borders
- Minimum antenna diameter of 6 m with PSD limit and a PFD limit at 22 km from coasts



WRC-15 : Opportunities

Public Protection & Disaster Relief

	R1	R2	R3
Tuning ranges	380-470 MHz 694-894 MHz (700&800 MHz)	694-894 MHz (700&800 MHz)	406.1-430 MHz, 440-470 MHz 694-894 MHz (700&800 MHz) 4 940-4 990 MHz

France has adopted 2X8 MHz : 698-703 MHz/753-758 MHz and 733-736 MHz/788-791 MHz

Use of stations of geostationary Ku/Ka FSS networks for UAS CNPC

- Review of conditions (severe) by ICAO and conclusion during WRC-23

New allocations in X band

- Failed to allocate 2X100 MHz additional spectrum for FSS
- Allocation to MMSS in 7 375-7 750 MHz limited to geostationary satellites (no protection)

FSS: Fixed Satellite Service MMSS: Maritime Mobile Satellite Service UAS: Unmanned Aircraft System CNPC: Control and Non Payload Communications

WRC-19 : Agenda items at stake for defence systems

- **AI 1.1 : allocation of the frequency band 50-54 MHz to the amateur service in Region 1**
 - Within NATO VHF band
- **AI 1.7 : spectrum needs for telemetry, tracking and command for non-GSO satellites with short duration missions, if necessary, to consider new allocations**
 - Some VHF NATO bands may be impacted
- **AI 1.13 : to consider identification of frequency bands for the future development of International Mobile Telecommunications (IMT), including possible additional allocations to the mobile service on a primary basis**
 - Frequencies under study : 24.25-27.5 GHz / 31.8-33.4 GHz / 37-40.5 GHz / 40.5-42.5 GHz / 42.5-43.5 GHz / 45.5-47 GHz / 47-47.2 GHz / 47.2-50.2 GHz / 50.4-52.6 GHz / 66-76 GHz / 81-86 GHz
 - Europe to identify 5G spectrum by end 2017 for a service in 2020 (beyond 24 GHz and also within existing IMT bands below 6 GHz)

WRC-19 : Agenda items at stake for defence systems

- **AI 1.16 to consider issues related to wireless access systems, including radio local area networks (WAS/RLAN), in the frequency bands between 5 150 MHz and 5 925 MHz, and take the appropriate regulatory actions, including additional spectrum allocations to the mobile service**
 - 5 350-5 470 MHz and 5 725-5 850 MHz radar bands at stake
 - New sharing mechanisms under definition

Conclusion

- **There are opportunities to allow military access to commercial spectrum :**
 - Regulated dynamic access with possible pre-emption to account scalable defence scenarios
 - Both military and commercial systems need to allow the sharing
 - L band, future 5G bands ... could be considered
- **Preserved military bands still needed : support needed to defend military spectrum at the WRC-19.**
- **Vigilance needed for bands already released in certain countries to avoid generalization or relax of constraints.**
- **Further needs to be carried at the ITU for WRC-24, large support necessary of the defence community through their countries**

“The miracle is this - the more we share, the more we have.”



Leonard Nimoy

yvon.livran@thalesgroup.com

THALES