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ICAO WRC-27 Preparatory Workshop

Agenda item 1.15: Lunar communications

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Presentation Overview

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Background

WRC-27 will decide how people can use radiocommunications on the lunar surface and in orbit.

This is also known as cislunar communications.

The current ITU Radio Regulations are not sufficient for the predicted scale of use cases. A better radio regulatory framework is needed.



Background

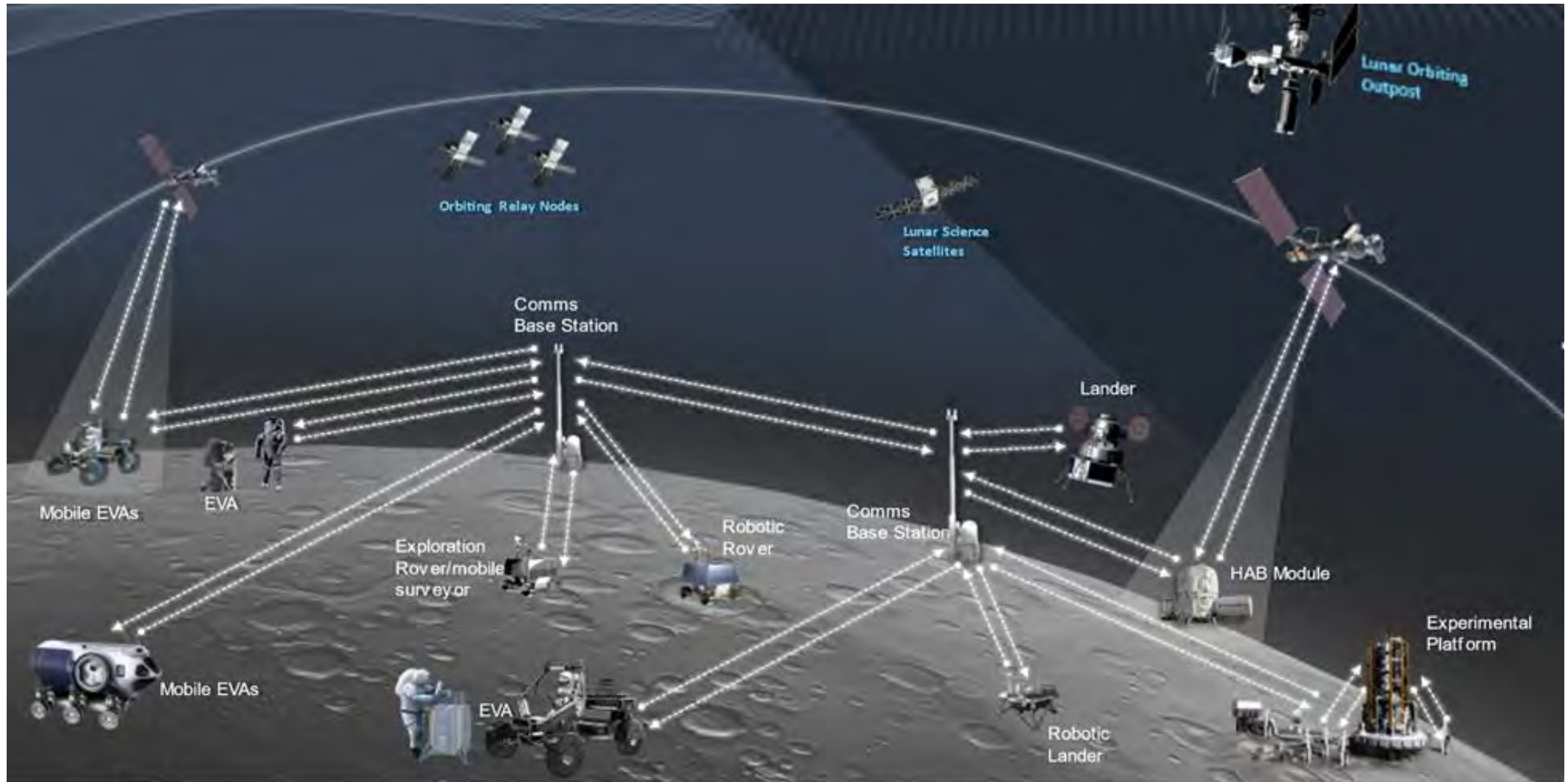
Frequency bands under consideration by ITU-R Resolution 680:

Limited to outside the shielded zone of the moon	Not limited to outside the shielded zone of the moon	
390 – 406.1 MHz	2400 – 2690 MHz	5775 – 5925 MHz
420 – 430 MHz	3500 – 3800 MHz	7190 – 7235 MHz
440 – 450 MHz	5150 – 5570 MHz	8450 – 8500 Mhz
	5570 – 5725 Mhz	25.25 – 28.35 GHz

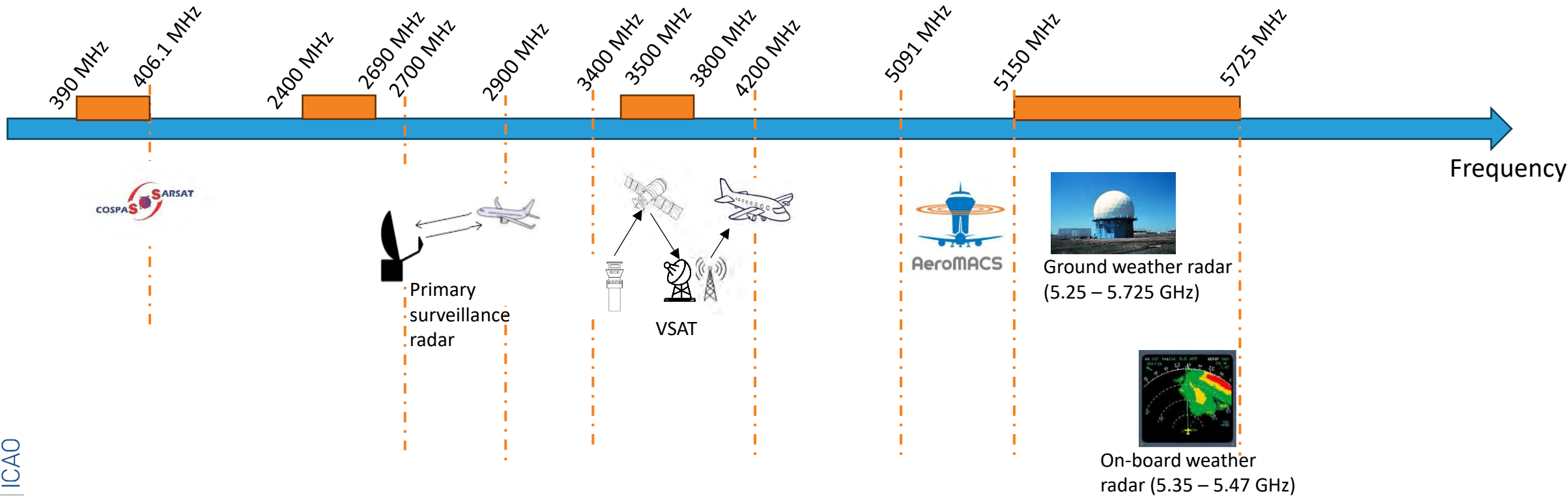
ITU-R Resolution 680 also asks for studies of potential new or modified frequency allocations and/or identifications to the SRS with appropriate regulatory provisions, for communications on the lunar surface or in lunar orbit communicating with systems on the lunar surface

Background

Lunar radiocommunication architecture



Potential issues



On-going work in ITU-R

Agenda item 1.15 is addressed by WP-7B.

Several documents are under development:

Sharing studies of space research systems for lunar operations under WRC-27 agenda item 1.15

- Studies on aeronautical systems do not identify significant risk of interference
- The key assumption is very large RLOS

Working document toward preliminary draft new Report ITU-R SA.[FUTURE LUNAR COMMUNICATION AND SYSTEMS STUDY] - Radiocommunication needs for future lunar vicinity activities beyond space research and consideration of associated radiocommunication services and sufficiency of existing regulatory provisions

- Explains spectrum needs. 3 scenarios are identified → Humans living and performing science on a lunar-orbiting platform, Humans living and working on the Moon to support science and exploration, Other (tourism, etc)

Working document towards preliminary draft CPM text for WRC-27 agenda item 1.15

- At this stage, methods to respond to this agenda item are not included in the draft CPM text attached to the meeting report
- Input contributions to the next meeting include methods that allocate space research service (space-to-space) SRS (s-s) to several frequency bands
- Key RLOS assumption limiting the use to the lunar environment is important

1.15

ICAO position

To ensure that ITU-R studies appropriately account for the protection of systems used for the provision of aeronautical services, in particular those operating in the frequency ranges 2 700-2 900 MHz, 3 600-4 200 MHz, 5 350-5 470 MHz.

To ensure that the proposed methods to satisfy this agenda item would not create constraints on the aviation systems used to support the safe operation of international civil aviation.

Conclusion

This agenda item explores space research service allocations for communications at the surface of the moon and between the moon surface of moon orbit vehicles.

Several frequency bands are identified, some of which are adjacent or overlapping aeronautical frequency bands.

Although the separation should be high enough to ensure that civil aviation systems remain free from harmful interference, civil aviation community should remain careful remain protected without undue constraints.

Thank You

