



International Telecommunication Union (ITU)

International Regulation of Radio Frequencies and Associated Orbits

Operation of Satellites Free of Signal Interference

Presentation to
**the United Nations Conference
on Space Law and Policy**

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Overview



1. The ITU Radio Regulations (RR)

to anticipate the risks of signal interference



2. The RR evolves regularly

with the involvement of the private sector and administrations



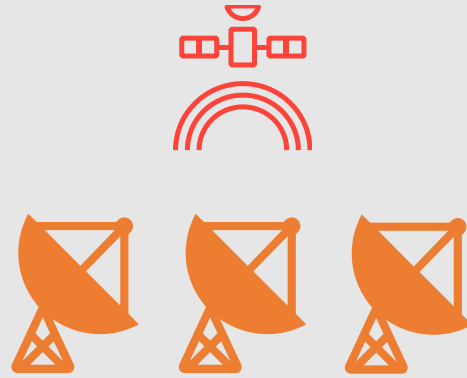
3. The Radio Regulations Board role between WRCs *and* Provisions for **operational interference resolution**



4. Trends and challenges

in the Space Sector for the RR

*World Radiocommunication Conference (WRC)



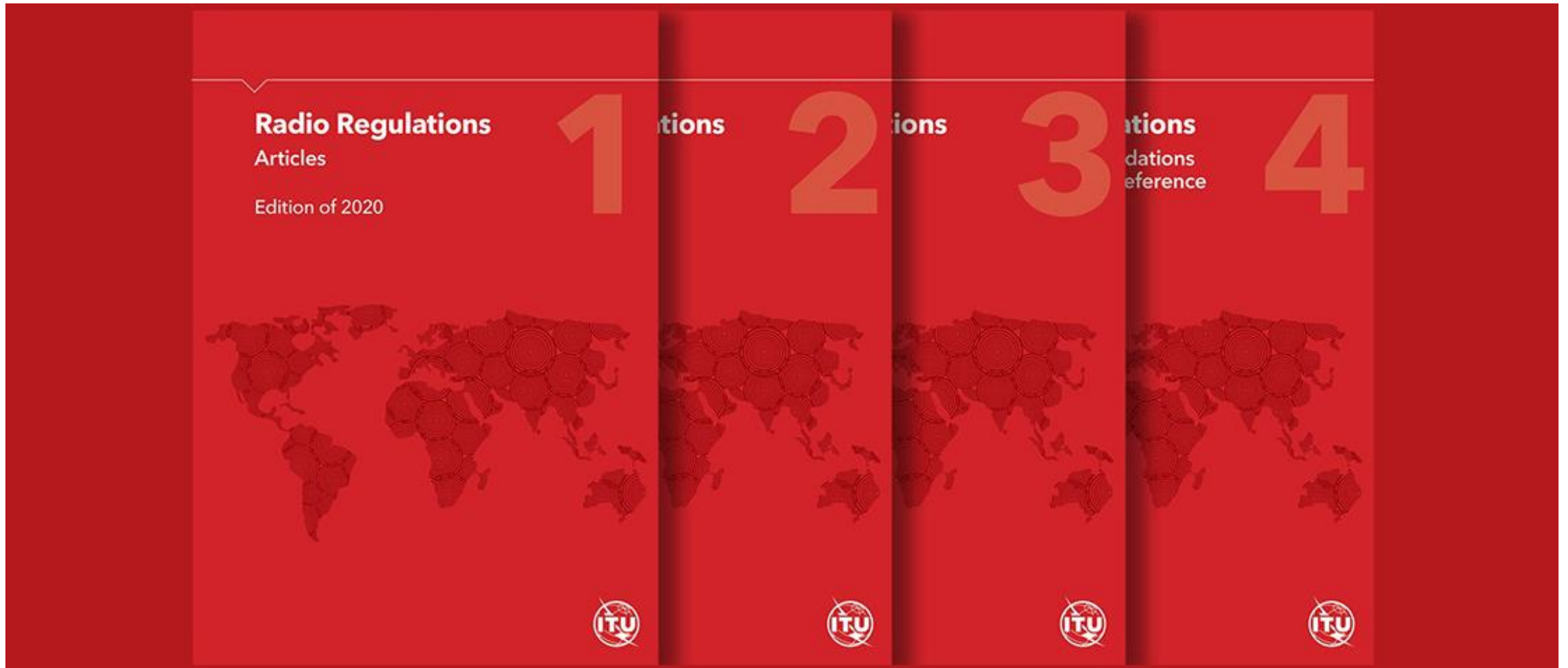
1. The ITU Radio Regulations (RR) to anticipate the risks of signal interference



IS SPACE BIG ENOUGH ?

Risk of Signal Interference During Operation





TODAY

39 Conferences since 1906
40 Services - 8.3kHz to 3'000GHz

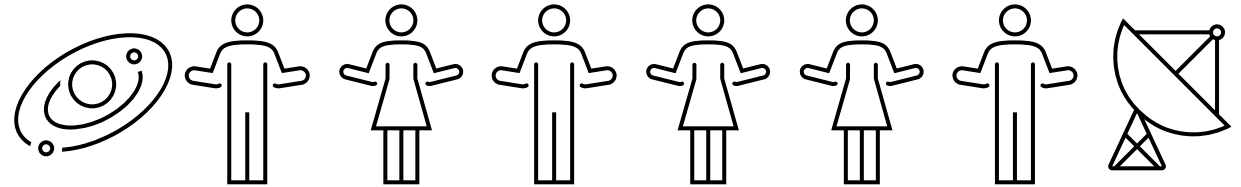
Master International Frequency Register

Right to operate free of interference

ITU Radio Regulations 2020 12 08

ITU CONSTITUTION (Art. 44)

Use of the **Radio-Frequency Spectrum** and
of the **Geostationary-Satellite** and
Other Satellite Orbits



Radio frequencies &
satellite orbits are limited
natural resources

Rational, Efficient,
Economical Use

Equitable Access

“In using frequency bands for radio services, Member States shall bear in mind that radio frequencies and any associated orbits, including the geostationary-satellite orbit, are limited natural resources and that they must be used rationally, efficiently and economically, in conformity with the provisions of the Radio Regulations, so that countries or groups of countries may have equitable access to those orbits and frequencies, taking into account the special needs of the developing countries and the geographical situation of particular countries.”



2. The RR evolves regularly with the involvement of the private sector and administrations





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**specialized agency for
information and communication
technologies (ICTs)**



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+700

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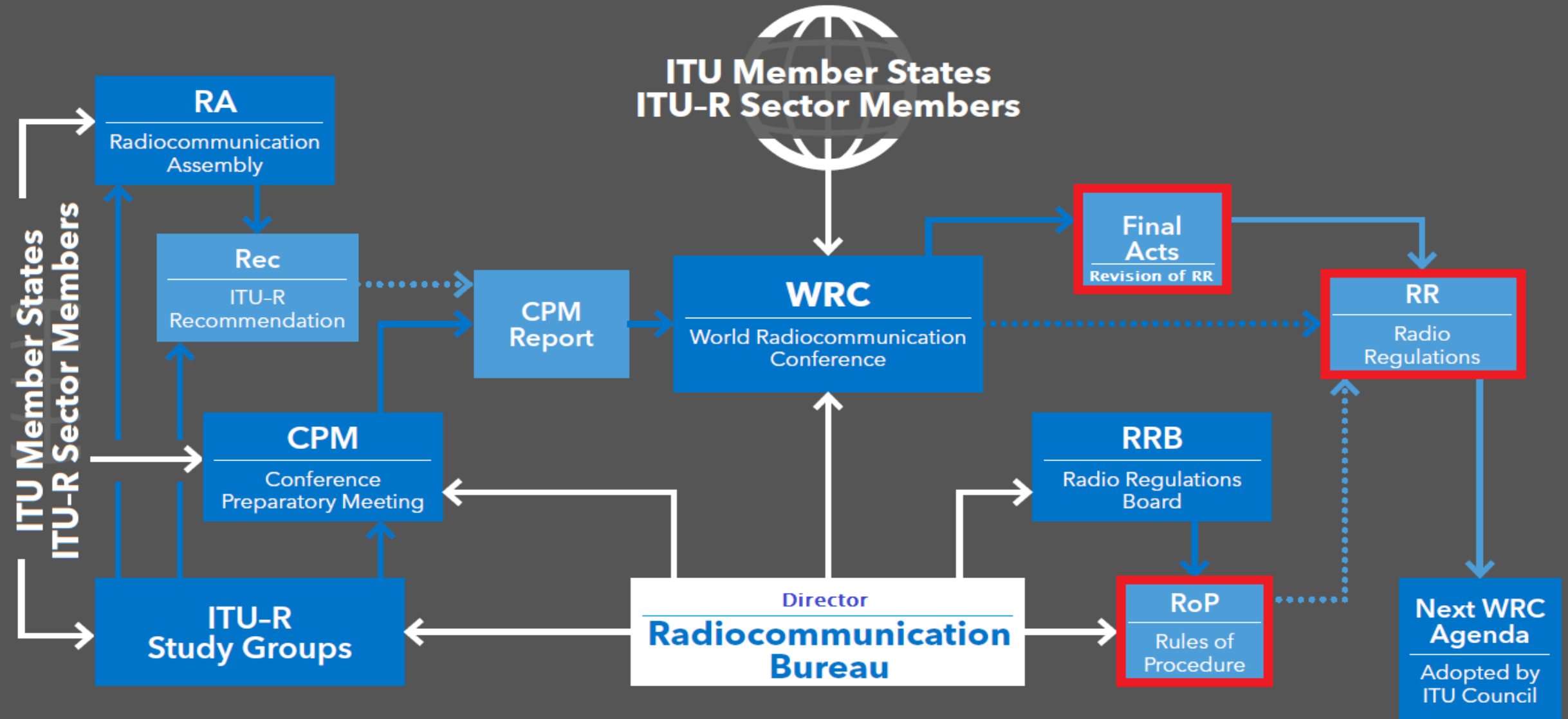
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The World Radiocommunication Conference process

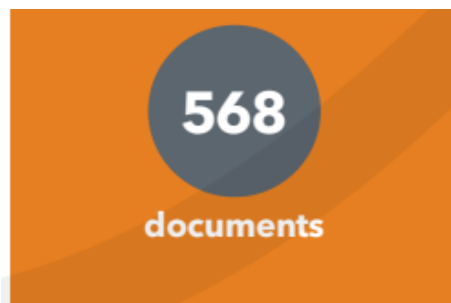




ITUWRC
SHARM EL-SHEIKH 2019

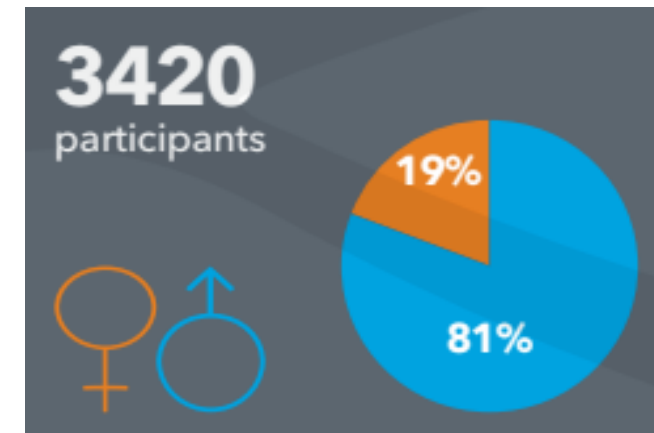
28 October - 22 November
Sharm El-Sheikh, Egypt

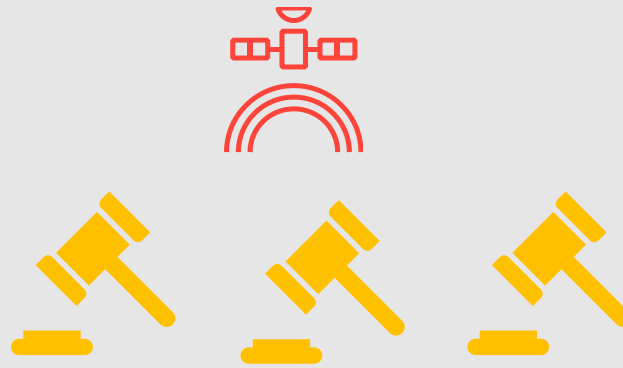
WRC-19 in Numbers



A 113 year-old international treaty

WRC-19 Gender Declaration Commitment of the Sector to gender equality and gender balance





**3. The Radio Regulations Board role
to deal with special cases and
provisions for **operational interference resolution****

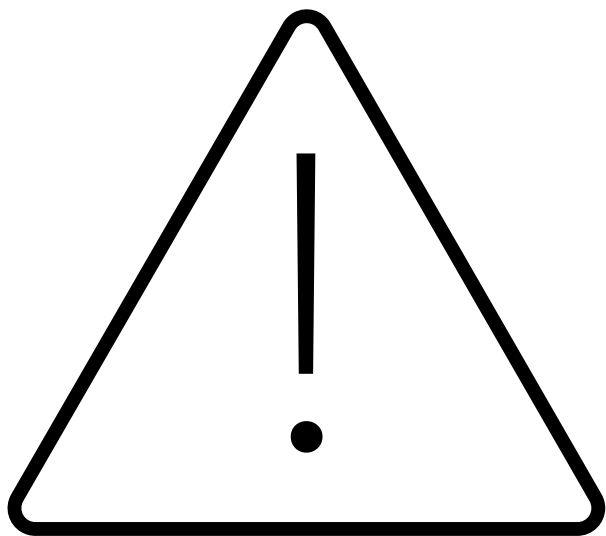


Radio Regulations Board - RRB

- Rules of Procedures (RoP)
- Consider requests of administrations about appeals on Bureau's decisions, Interference issues between countries
- BR question on application of the Radio Regulations
- Provide advice to WRC
- Perform any additional duties prescribed by a WRC or the ITU Council

RRB's decisions can only be overturned by a WRC



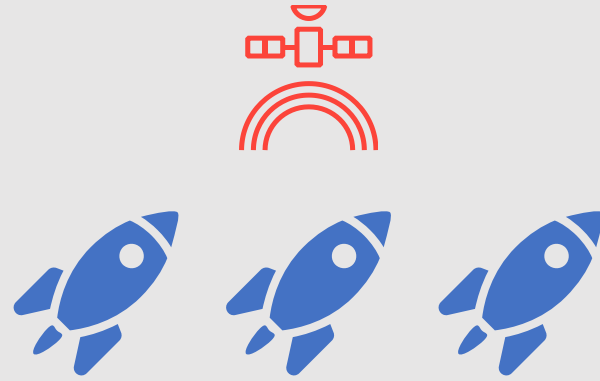


What if interference occurs during operation of the satellite?

Article 15- Interference Infringement of the Constitution or Radio Regulations

- All stations are forbidden to carry out unnecessary transmissions, or the transmissions of superfluous signals, or the transmission of false or misleading signals or the transmission of signals without identification. (RR15.1)
- **The station which is causing harmful interference shall immediately eliminate this harmful interference**
- This assumes a legal link between the transmit station and the administration under the jurisdiction of which it is placed: this is the purpose of the license (Article 18 of the Radio Regulations)





4. Trends and challenges in the Space Sector for the RR



New

Private investors and new technologies allowing new needs and usage of spectrum/orbit:

Mega-constellations,
small satellites,
moon/mars/asteroid exploration...

ITU and the Radio Regulations may be challenged by actors not coming from the telecom world,

but remain essential and unique to prevent interference, to ensure a stable environment and equitable sharing of global natural resources.



Broadband to the masses Orbital Internet



Space Tourism



Asteroid Mining



And much more!
Space fosters creativity

KEY POINTS TO REMEMBER



1. By regulating the 2 natural resources - the spectrum and the orbits, the Radio Regulations anticipate the risks of interference and maximize the use of the scarce resources.



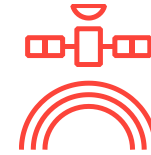
2. The RR is an international treaty. Its complete mechanism allows to adapt to new technologies and needs of the private sector.



3. The RRB allows to make decisions between WRCs. The harmful interference provisions address problems due to unintended operations.



4. The space remains attractive and its uses are constantly evolving. It is an ongoing challenge for RR to adapt.



Satellite technologies rely on the availability of radio frequencies that can be operated free from harmful interference.



The RR mechanism will continue to adapt at a steady pace creating a stable environment for investors.

International
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Contact

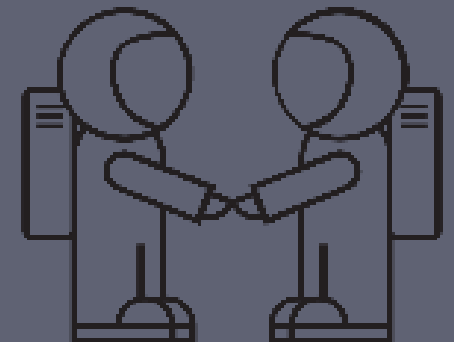


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ANNEXES



FREE ONLINE ACCESS

- The ITU Constitution
<http://www.itu.int/pub/S-CONF-PLEN>
- World Radiocommunication Conference (WRC)
<https://www.itu.int/en/ITU-R/conferences/wrc/Pages/default.aspx>
- ITU-Radio Regulations
<https://www.itu.int/en/history/Pages/RegulationsCollection.aspx>
- ITU-R Recommendations
<http://www.itu.int/publ/R-REC/en>
- Preface to the BR International Frequency Information Circular (Space services)
<https://www.itu.int/ITU-R/go/space-preface/en>

Abbreviations

- ITU: International Telecommunication Union
- RR: Radio Regulations
- MIFR: Master International Frequency Register
- WRC: World Radio Conference
- RRB: Radio Regulation Board
- GSO: Geostationary Orbit
- Non-GSO: Non- Geostationary Orbit
- LEO: Low Earth Orbit
- PFD: Power Flux Density
- EIRP: Equivalent Isotropic Radiation Power
- BR IFIC: Bureau Radiocommunication International Frequency Information Circular
- API: reference of a Special Section in the BR IFIC
- CR/C: reference of a Special Section in the BR IFIC
- ICT: Information, Communication and Technologies
- OOSA: Office of Outer Space Affairs