

ITUWRS
ONLINE2020

29TH WORLD RADIOCOMMUNICATION SEMINAR
30 November - 11 December 2020

Results of the 2019 World Radiocommunication Conference (WRC-19)

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www.itu.int/go/wrs-20

#ITUWRS



World Radiocommunication Conference 2019 (WRC-19)



WRC-19

Updated the Radio Regulations, the international treaty on the use of radio spectrum and satellite orbits

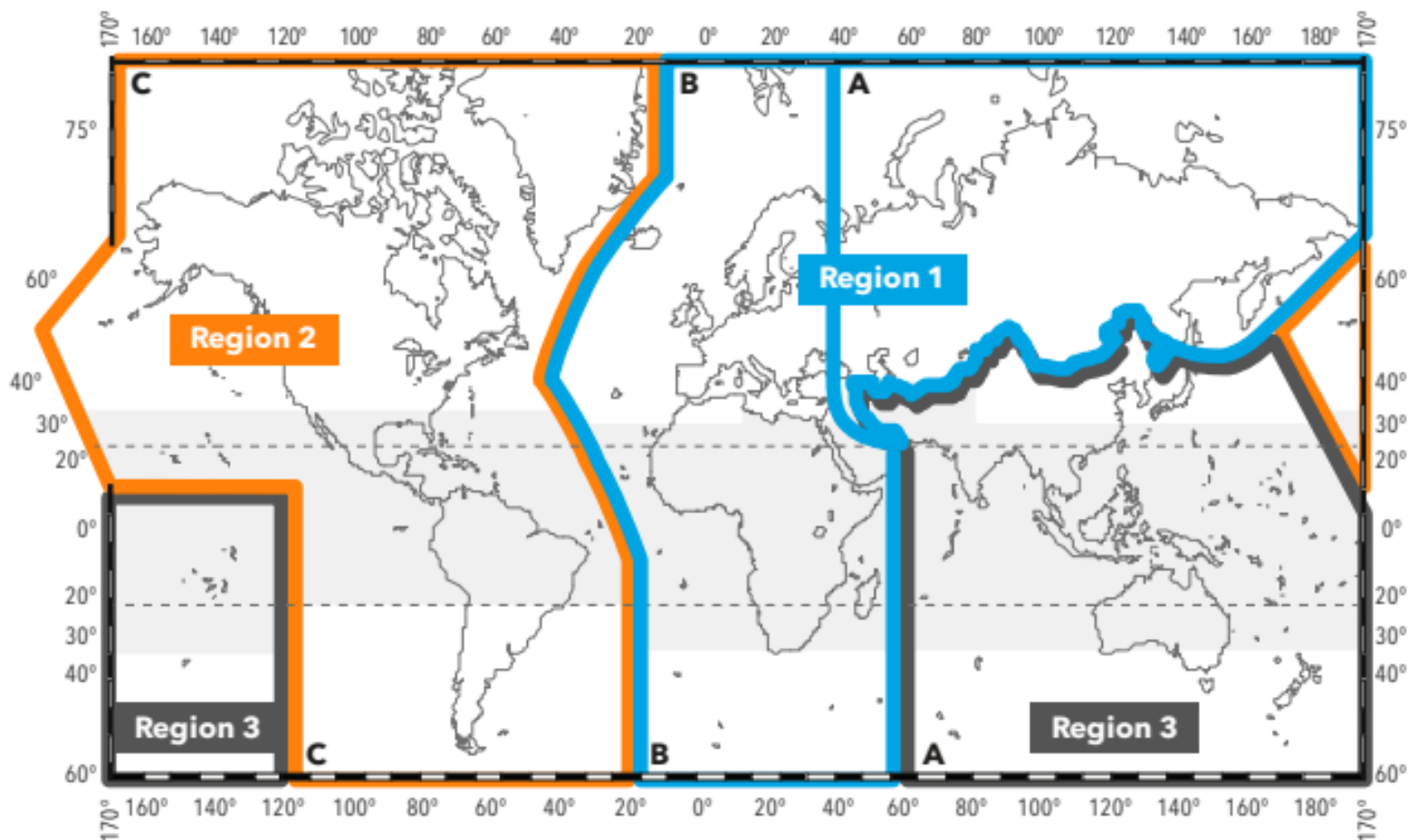
Brought together all stakeholders in a process that is aimed at building **consensus**

- Provided a stable and **predictable regulatory environment** needed for future investments
- Enabled **new radiocommunication systems** and applications to access the radio spectrum
- Protected the operation of **existing radiocommunication services**
- Ensured the rational, equitable, efficient and economical use of the radio-frequency spectrum and satellite-orbit resources

Spectrum Harmonization

Benefits:

- Reduces the potential for harmful interference
- Enables interoperability and **international roaming**, allowing citizens to use the same device in different countries
- Increases economies of scale, thereby enabling **affordable devices and services**
- Supports **emergency communications**



WRC-19 in numbers



ITUWRC
SHARM EL-SHEIKH2019

28 October - 22 November
Sharm El-Sheikh, Egypt

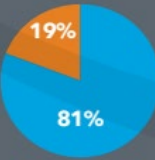
A 113 year-old
international
treaty

163

countries

3420 *

participants



52

new resolutions

Number of agenda
Items under 1

1.1-1.16

Numbers of Issues
Identified under 9.1
(besides
Resolution 80)

9 Issues

Number of Issues
under 7

11 Issues

568

documents

129

participating
entities

51

amended existing
resolutions

* WRC-19 was the largest WRC and the largest ITU conference ever!!!!



Quotes



Ruth Pritchard-Kelly

VP Regulatory Affairs,
OneWeb

“The new generation of satellites are being mass-produced on assembly lines. In years past, it took up to a year to build a single satellite by hand. Now we’re building a satellite a day.”

“The decisions of the WRC have a huge impact on the use of the limited resource of radio spectrum in the region.”

Tariq Al Awadhi

“It has been, and still is, the strength of consensual decisions at the ITU level which facilitates the efficient and effective use of spectrum beyond territorial borders.”

Alexander Kühn

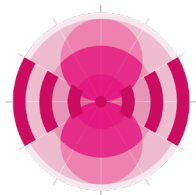


Brett Tarnutzer

Head of Spectrum, GSMA

“Mobile connects over 5 billion people in the world today. 5G is not just going to be something for the developed markets, it’s also going to be something for the developing world.”

Some key
outcomes



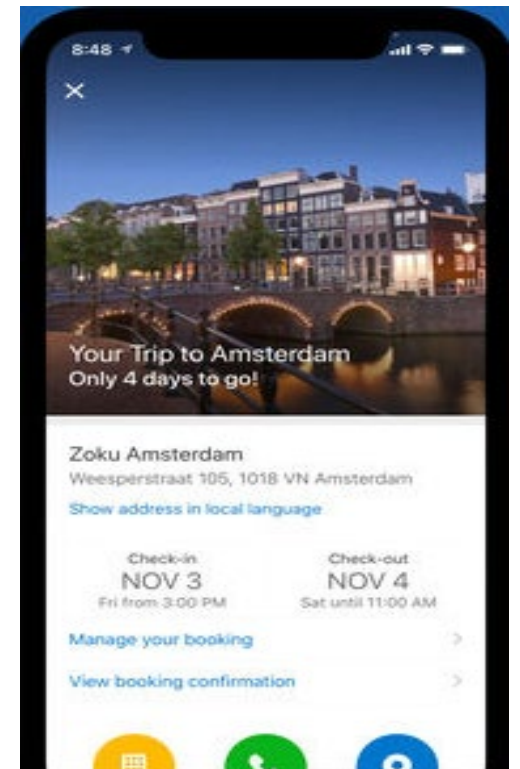
Terrestrial broadband systems and applications (IMT, HAPS, RLANs)

International Mobile Telecommunication 2020 (IMT-2020): The Road to 5G



WRC-19 considered the need for additional spectrum for IMT-2020 (5G) ...

- WRC-19 identified several bands in the millimeter frequency range for International Mobile Telecommunications (IMT)
- WRC-19 established conditions to protect the existing services from IMT
- A total of **17.25 GHz additional bandwidth in frequencies above 24 GHz** was harmonized (86% on a global basis)
- Needed for enhanced mobile broadband (eMBB) to provide services requiring very high data rates, for example 3D video or augmented reality
- **Satisfying IMT-2020/5G requirements in high capacity spectrum**

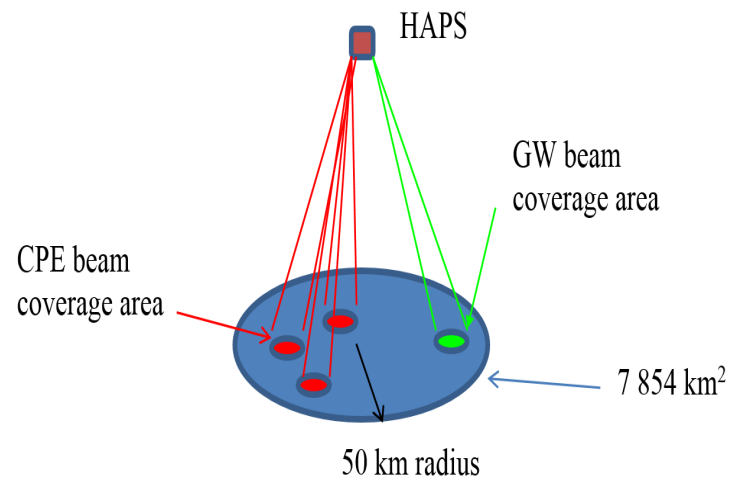
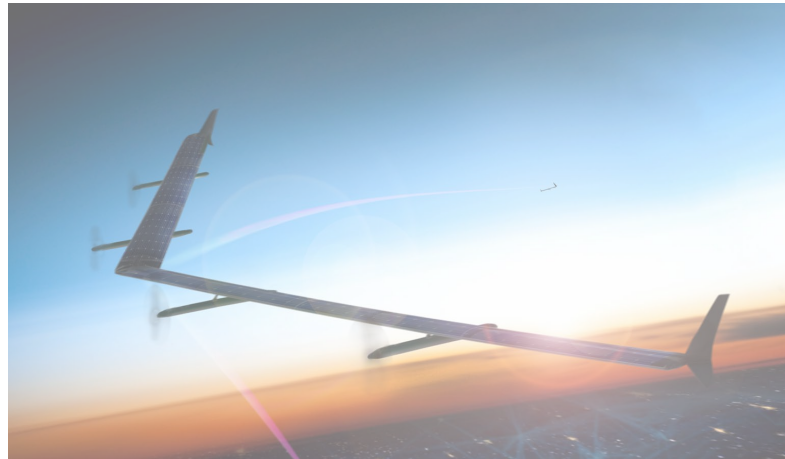


...while also protecting EESS for weather forecasting

- Resolution 750 (Rev. WRC-19) specified the limits of unwanted emission power levels from IMT systems in 24.25-27.5 GHz to **protect systems in the Earth exploration-satellite service (passive)** in 23.6-24.0 GHz, in a two-step approach.
 - Before 1 September 2027:
 - Base Station: at -33 dB(W/200 MHz)
 - Mobile Station: -29 dB(W/200 MHz)
 - For new systems after 1 September 2027:
 - Base Station: -39 dB(W/200 MHz)
 - Mobile Station: -35 dB(W/200 MHz)



High Altitude Platform Stations (HAPS)



WRC-19 considered existing and additional bands for HAPS in the fixed service

- WRC-19 identified frequency bands for HAPS on a global and regional basis
- This will facilitate the development and implementation of HAPS
- It will enable affordable broadband connectivity and telecommunication services in underserved communities and in rural and remote areas, including mountainous and desert zones, thus connecting the unconnected
- HAPS can also be used for disaster recovery communications
- Conditions were imposed on HAPS through RR footnotes and Resolutions to protect the existing services

Radio Local Area Networks (RLANs) in 5GHz



WRC-19 considered additional spectrum and regulations for RLANs in 5 GHz band



- WRC-19 changed the regulatory conditions for WAS/RLANs in the band **5 150 - 5 250 MHz**.
- Allowing the use of Wi-Fi devices in trains and cars, which was very much sought by the automotive and railway industries.
- It also permits a limited deployment of outdoor WAS/RLANs, with due protection of space services.

Transport issues (Maritime, Aeronautical, Railway, Intelligent Transport Systems)

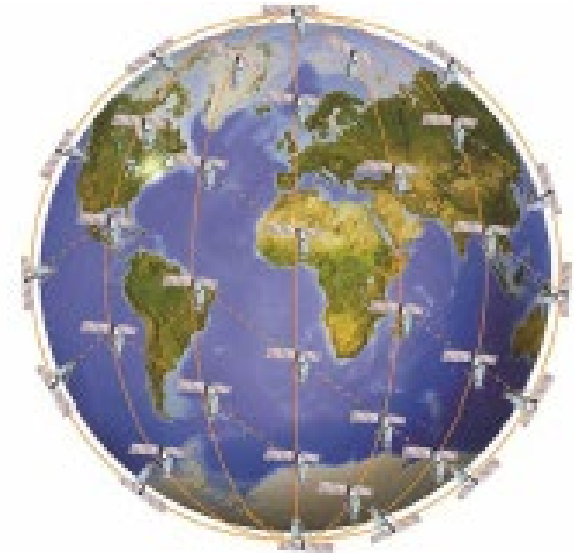
Modernization of Global Maritime Distress and Safety System (GMDSS)



WRC-19 considered two GMDSS Upgrades:

- **Issue A:** Introduce Navigation Data (NAVDAT), a future digital system to replace NAVTEX (Navigation Telex)
- **Issue B:** Introduced additional satellite systems into GMDSS

- ❖ WRC-19 adopted provisions to introduce the new NAVDAT system
- ❖ WRC-19 upgraded an allocation to maritime mobile-satellite service to expand the provision of a truly global maritime distress and safety system. This system is operational and includes coverage of polar regions



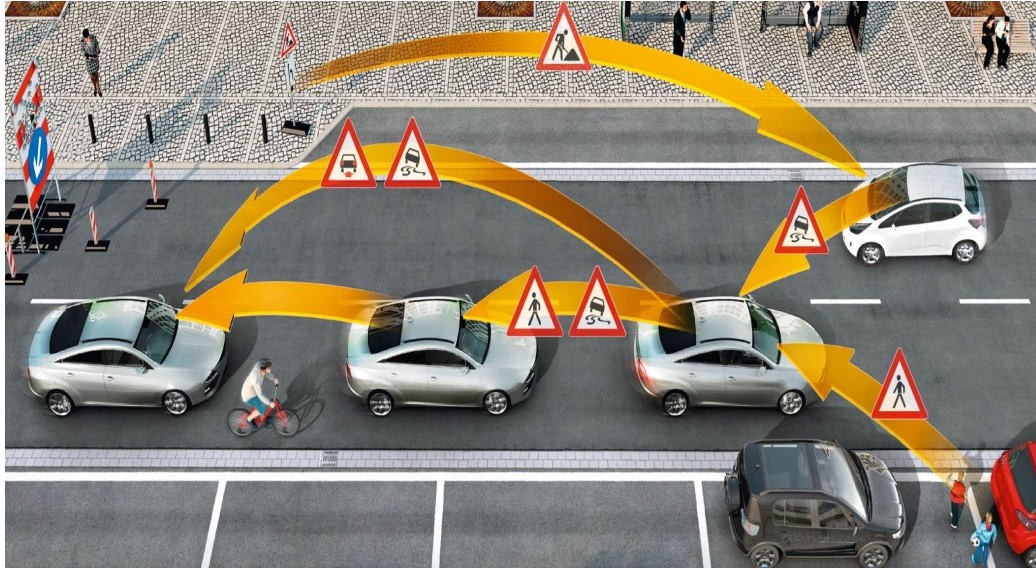
Radiocommunication systems between train and trackside (RSTT)

WRC-19 will consider need for globally or regionally harmonized bands for railway radiocommunication systems between train and trackside (RSTT)



- A new Resolution was adopted on Railway Radiocommunication Systems to invite the ITU-R to continue the development of spectrum harmonization of RSTT.
- RSTT applications include train radio, train remote (e.g. communications between train and ground to control engine), train surveillance (video)

Intelligent Transport Systems (ITS)



- 1.4 billion cars in the world, annual increase of 4 %.
- WHO: 1.3 million traffic fatalities in the world every year
- Cellular, RLAN serve Intelligent Transport Systems: vehicle-to-vehicle (V2V), vehicle-to-infrastructure (V2I), vehicle-to-everything (V2X)
- Examples: V2V: maintain a safe distance, identification of location, distance, direction of emergency vehicle, V2I: right-turn collision caution, red light caution, etc.

【 Red Light Caution】



WRC-19 considered spectrum harmonization for ITS in different bands, focus on 5.8 GHz

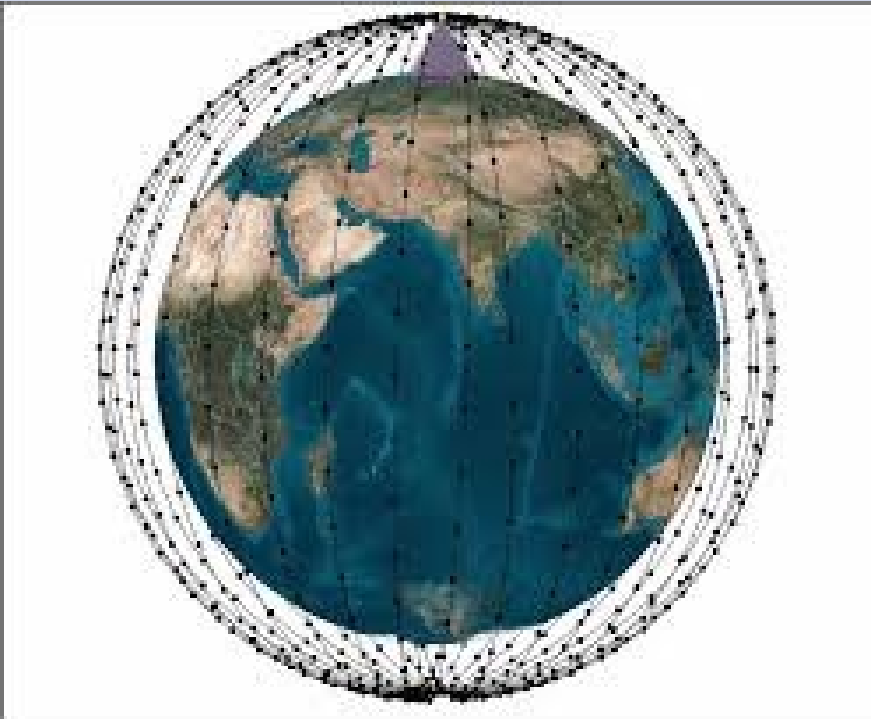
- WRC-19 adopted a new Recommendation on Intelligent Transport Systems towards connecting vehicles, improving traffic management and assisting safe driving.

Satellite Issues

(Satellite Broadband, Earth Stations
in Motion, NGSOs and Small Sats)

Advances for non-geostationary satellites including small satellites

Mega-constellations



Small satellites



Two major innovations

WRC-19 Adapts RRs for Mega-constellations of non-GSO Satellite Systems!!

- These non-GSO systems will have to **deploy 10% of their constellation within 2 years** after the end of the current regulatory period for bringing into use, **50% within 5 years**, and **complete the deployment within 7 years**
- The approach will help ensure that the Master International Frequency Register is aligned with the actual deployment of non-GSO satellite systems
- WRC-19 struck a **balance** between the **prevention of spectrum warehousing**, the proper functioning of coordination, notification and registration mechanisms, **and** the operational requirements related to the **deployment of non-GSO systems**



Earth Stations in Motion: Provides communications on the move

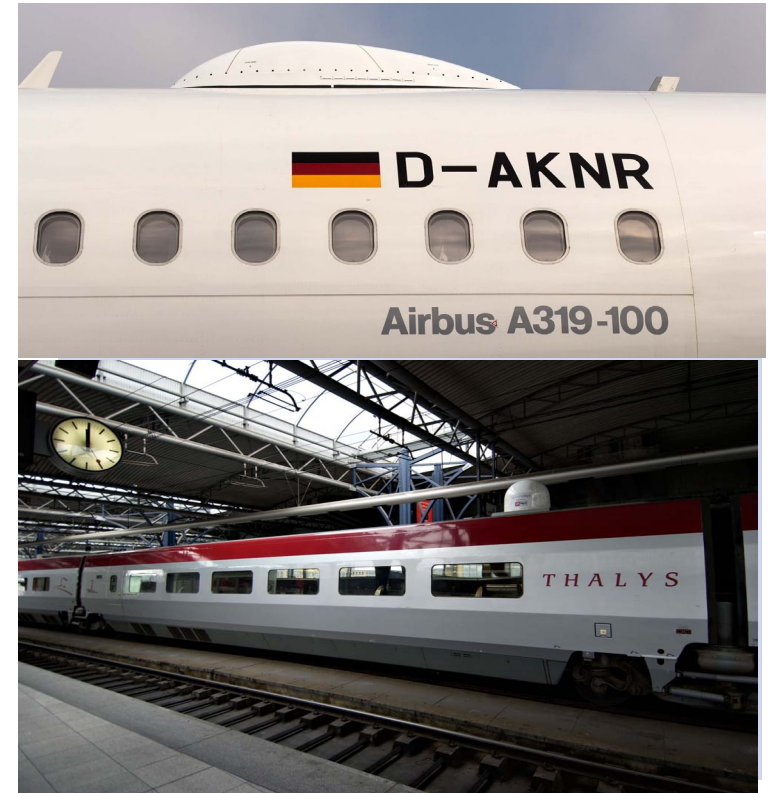
1980s



1990s and 2000s



2010s



Three historical phases

WRC-19 enhances connectivity to moving vessels/vehicles in the air, at sea and on land !!

- WRC-19 defined the **regulatory, operational and technical conditions under which the frequency bands 17.7-19.7 GHz and 27.5-29.5 GHz can be used by ESIM** communicating with geostationary-satellite orbit (GSO) space stations in the fixed-satellite service (FSS) **in all Regions**
- It will enable the **connection of people on ships (maritime ESIM) , aircraft (aeronautical ESIM) and land vehicles (land ESIM)** and ensure their safety, security and broadband access while in motion
- The decision on ESIMs **will increase the use and further develop ESIMs** while protecting other GSO networks and non-GSO systems as well as terrestrial services



Gender Declaration

- The conference declared the commitment of the Sector to gender equality, and gender balance.
- The declaration advances gender mainstreaming in all radiocommunication activities within the BR as well as in the ITU-R study groups and ITU conferences.
- The ITU Member States and Sector Members aim at increasing the number of girls and women in STEM, the number of scholarships and fellowships, and the number of internships and training opportunities provided to women.



QUESTIONS???

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Thank you!

ITU – Radiocommunication Bureau

Questions to brmail@itu.int or joanne.Wilson@itu.int

