World Radio Conferences, WRC

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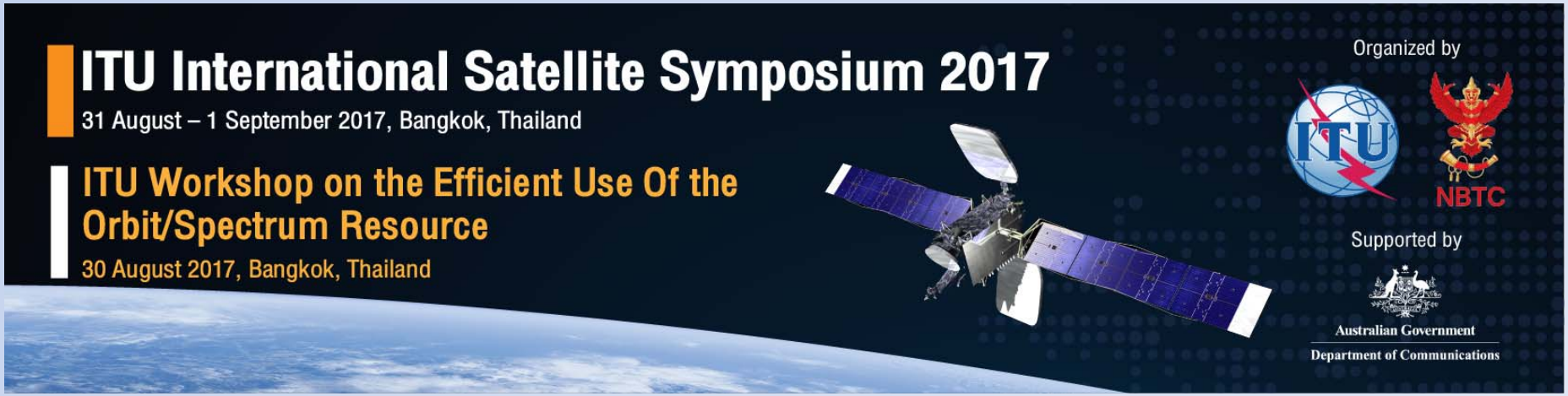


World Radio Conferences, WRC

WRC performs a complete and detailed review of the Radio Regulations RR (RR), and its Rules of Procedure (RoP)

WRC updates RR & RoP considering technological developments on Spectrum Radio and sector realities and challenges, to respond early and appropriately to these changes.

WRC have the authority to modify the RR by addenda, modifications or deletions they deem pertinent. These modifications are made by consensus, and only if necessary, would vote (one vote per administration).

Purpose of ITU WRC

1. Create regulatory certainty for a multi-trillion dollars activity that provides radiocommunications-based services to billions of people in all countries worldwide, playing a increasingly important role in the development of our societies
2. Strike the right balance between the spectrum requirements of all radiocommunication services
3. Creating certainty requires consensus in order to achieve stable results on a sustainable use of orbit/spectrum resources
4. Reaching consensus requires time, efforts and patience.
5. This is the price to pay for developing and maintaining a sustainable ecosystem for radiocommunications and avoid massive disruptions.

WRC Duties

1. Consider any radiocommunication matter of worldwide character

2. Develop instructions to the Radio Regulations Board and the Radiocommunication Bureau, and review their activities

3. Determine issues considered by Radiocommunication Assembly and Study Groups as part of the preparatory work for WRC future

4 . Set agenda of next WRC, and subsequent draft.

WRC Calendar

WRCs performs every 4 years; normally is held at Geneva, Switzerland, with a typical duration of 4 weeks

Last WRC: Geneva, Switzerland 2-27 November 2015 (WRC-15)

Next WRC:

- Sharm el-Sheikh (Egypt) 28/10 – 22/11 2019 (WRC-19)

- Geneva, Switzerland (tbc) 2023 (WRC-23)

Inter WRC preparatory meetings (CPM) are held, typically two:

1st : the week after the WRC; 2nd : ~ 6 months before next WRC.

Regional conferences are held, usually one for each regional ICT Organization, 6 to 12 months before each WRC.

WRC-15 numbers

WRC-15 numbers

- 4 weeks; preceded from ITU Radio Assembly RA-15 (1 week); followed by WRC-19 CPM-1 (2 days)
- Around 3300 participants from 162 Member States,
- Around 500 participants representing 130 other entities, including industry, also attended the conference as observers
- 667 Documents submitted before WRC-15 which include 2700 proposals
- WRC-15 addressed over 40 topics related to frequency allocation and frequency sharing for the efficient use of spectrum and orbital resources.

Main WRC-15 key achievements

1. Providing spectrum for mobile broadband (IMT) on a global basis
2. Providing frequencies for Global Flight Tracking
3. Making new allocations to the FSS, MMSS and EEESS
4. Authorizing frequency bands and establishing regulatory conditions for unmanned aircraft systems
5. Providing required spectrum for WAIC as well as for
6. automotive and maritime transports
7. Improving the satellite frequency assignments regulatory procedures

These results have demonstrated once again the **ITU ability** to **keep up with the pace of technological advancements** and to **timely respond to the urgent needs of the Membership**

Structure

- Committee 1: *Steering Committee*
- Committee 2: *Credentials Committee*
- Committee 3: *Budget Control Committee*
- Committee 4, 5 and 6: *Specified Agenda Items Committees*
- Committee 7: *Editorial Committee*

Committee 4 (mainly terrestrial issues)

- Working Group 4A (Aeronautical and Radiolocation)
  - Sub-Working Group to deal with Agenda item 1.5 (SWG 4A1 a.i. 1.5)
  - Sub-Working Group to deal with Agenda item 1.17 (SWG 4A2 a.i. 1.17)
  - Sub-Working Group to deal with Agenda item 1.18 (SWG 4A3 a.i. 1.18)
  - Sub-Working Group to deal with Agenda item on Global Flight Tracking (GFT) (SWG 4A4 - GFT)

- Working Group 4B (Maritime and Amateur)
  - Sub-Working Group to deal with Agenda item 1.4 (SWG 4B1 a.i. 1.4)
  - Sub-Working Group to deal with Agenda item 1.16 (SWG 4B2 a.i. 1.16)
  - Agenda item 1.15 (to consider spectrum demands for on-board communication stations in the maritime mobile service in accordance with Resolution 358 (WRC 12) will be treated directly at the working group level.

- Working Group 4C (Mobile and PPDR)
  - Sub-Working Group to deal with agenda item 1.1 (SWG 4C1 a.i. 1.1)
  - Sub-Working Group to deal with agenda item 1.2 (SWG 4C2 a.i. 1.2)
  - Sub-Working Group to deal with agenda items 1.3 and 9.1; 9.1.7 (SWG 4C3 a.i. 1.3, issue 9.1.7)

Committee 5 (mainly satellite issues)

- Working Group 5A (Space Science)
  - Plenary to deal with Agenda items 1.13, 5 (Resolution (Rev.WRC-03) 74) and relevant parts of 9.2
  - Sub-Working Group to deal with Agenda item 1.11 (SWG 5A1 a.i. 1.11)
  - Sub-Working Group to deal with Agenda item 1.12 (SWG 5A2 a.i. 1.12)
  - Sub-Working Group to deal with Agenda item 1.14 (SWG 5A3 a.i. 1.14)

- Working Group 5B (Satellite Allocation)
  - Sub-Working Group to deal with agenda item 1.6 (SWG 5B1 a.i. 1.6)
  - Sub-Working Group to deal with agenda item 1.7 (SWG 5B2 a.i. 1.7)
  - Sub-Working Group to deal with agenda item 1.9.1 (SWG 5B3 a.i. 1.9.1)
  - Sub-Working Group to deal with agenda item 1.9.2 (SWG 5B4 a.i. 1.9.2)
  - Sub-Working Group to deal with agenda item 1.10 (SWG 5B5 a.i. 1.10)

- Working Group 5C (Satellite Regulatory Issues)
  - Sub-Working Group to deal with agenda item 1.8 (SWG 5C1 a.i. 1.8)
  - Sub-Working Group to deal with agenda item 7 and related parts of agenda items 9.2 and 9.3 (SWG 5C2 a.i. 7)
  - Sub-Working Group to deal with agenda item 9.1.2 (SWG 5C3 a.i. 9.1.2)
  - Sub-Working Group to deal with agenda item 9.2 (SWG 5C4 a.i. 9.2)

Committee 6

- Working Group 6A (WG 6A General Issues)
  - Sub-Working Group 6A1 on WRC-15 agenda items 2 and 4 (SWG 6A1 a.i. 2, 4 (IbR & Res. 95))
  - Sub-Working Group 6A2 on WRC-15 agenda item 9.2*, Issues not related to satellite (SWG 6A2 a.i. 9.2.NSat)
- Working Group 6B (WG 6B Next WRC)
  - Agenda of future conferences, a.i. 6, 10
  - 1 Ad-Hoc Group (AHG) 6B1
  - 2 Ad-Hoc Group (AHG) 6B2
  - 3 Ad-Hoc Group (AHG) 6B3
  - 4 Ad-Hoc Group (AHG) 6B4
- Note: Contributions for WRC-23 agenda considered separately

WRC-15 MAIN OUTCOMES

- **Amateur radio:**

- New allocation in 5351.5 - 5366.5 kHz, to maintain stable communications over various distances, especially to attend disaster situations and for relief operations.

- **- Emergency communications and disaster relief**
- Identification of 694-894 MHz to facilitate mobile broadband communications for robust and reliable mission critical emergency services in public protection and disaster relief (PPDR), such as police, fire, ambulances and disaster response teams.

- - **Search and rescue**
- Reinforce protection to Search and Rescue beacons in 406-406.1 MHz to uplink search and rescue satellites, as the Cospas-Sarsat system: as 12/2013, it provided assistance in rescuing over 37,000 persons in over 10,300 incidents worldwide.

- - **Coordinated Universal Time (UTC)**
- Further studies regarding current and potential future reference time-scales, including modification of UTC and suppressing "*leap second*". Report will be considered by WRC-23. Until then, UTC shall continue to be applied and as maintained by the International Bureau of Weights and Measures (BIPM).

WRC-15 MAIN OUTCOMES

- **- Global flight tracking for civil aviation (GFDT)**
- 1087.7-1092.3 MHz allocated to aeronautical mobile-satellite service (Earth-to-space) for reception by space stations of Automatic Dependent Surveillance-Broadcast (ADS-B) from aircraft transmitters. This will facilitate reporting the position of aircraft equipped with ADS-B anywhere in the world, including oceanic, polar and other remote areas.

- **- Unmanned aircraft and wireless avionics systems**
- Opened the way to ICAO to develop worldwide standards for unmanned aircraft systems (UAS), and identified regulatory conditions that may apply internationally. It also was agreed on spectrum for wireless avionics intra-communications (WAIC) to replace the heavy and expensive wiring used in aircraft

- **- Enhanced maritime communications systems**
- New allocations in 161.9375-161.9625 MHz and 161.9875-162.0125 MHz to maritime mobile-satellite service. Also enabled new Automatic applications of Identification System (AIS) and other ones to improve maritime radiocommunication. New applications using AIS technology, to improve the safety of navigation. Studies will continue on the compatibility between maritime mobile-satellite service (MMSS) in the downlink in the band 161.7875-161.9375 MHz and incumbent services in same and adjacent bands.

WRC-15 MAIN OUTCOMES

- **- High-Altitude Platform Stations (HAPS)**
- Facilitate access to broadband applications delivered by HAPS. To study possible use of Bands: global level: 38-39.5 GHz; regional level: in Region 2, 21.4-22 GHz and 24.25-27.5 GHz

- **- Wireless Access Systems including radio local area networks (WAS/LAN)**
- To study the Band 5 150 MHz and 5 925 MHz for possible use by such systems

- **- Road Safety**
- Frequencies for short-range high-resolution automotive radar allocated in 79 GHz Band. It provides a globally harmonized framework for automotive radar to prevent collisions and improve vehicular safety by reducing accidents.

- **- Intelligent Transportations Systems Applications (ITS) :**
- Studies to consider possible global or regional harmonized bands to implement the evolving ITS under existing mobile-service allocations,

- - **Railway Communications:**
- Facilitate global or regional harmonized bands to implement radiocommunication railway systems between train and trackside, within mobile-service allocation

WRC-15 MAIN OUTCOMES

- **- Operation of broadband satellite systems: Earth Stations in Motion**
- Facilitate global deployment of Earth Stations In Motion (ESIM) in the Bands 19.7-20.2 and 29.5-30.0 GHz in the fixed-satellite service (FSS), allowing satellite systems to provide global broadband connectivity for the transportation community. Earth stations on-board moving platforms: ships, trains, airplanes, can communicate with high power multiple spot beam satellites, at rates of 10-50 Mbits/s.

- **- Non-GEO Satellite Systems**
- Study of technical and operational issues and regulatory provisions for new Non-GEO satellite orbit systems in Bands: 3 700-4 200 MHz, 4 500-4 800 MHz, 5 925-6 425 MHz and 6 725-7 025 MHz, allocated to the fixed-satellite service
- To study use for Non-GEO FSS of Bands: 37.5-39.5 GHz (space-to-Earth), 39.5-42.5 GHz (space-to-Earth), 47.2-50.2 GHz (Earth-to-space) and 50.4-51.4 GHz (Earth-to-space)
- To study accommodation requirements in the space operation service for Non-GEO satellites with short duration missions

WRC-15 MAIN OUTCOMES

- **- GEO FSS**
- To determine possible new primary allocations to the FSS 37.5-39.5 GHz (Earth-to-space, limited to FSS feeder links only) for both GSO and non-GSO orbit use
- - possible allocation of the frequency band 51.4-52.4 GHz to the fixed-satellite service (Earth-to-space)

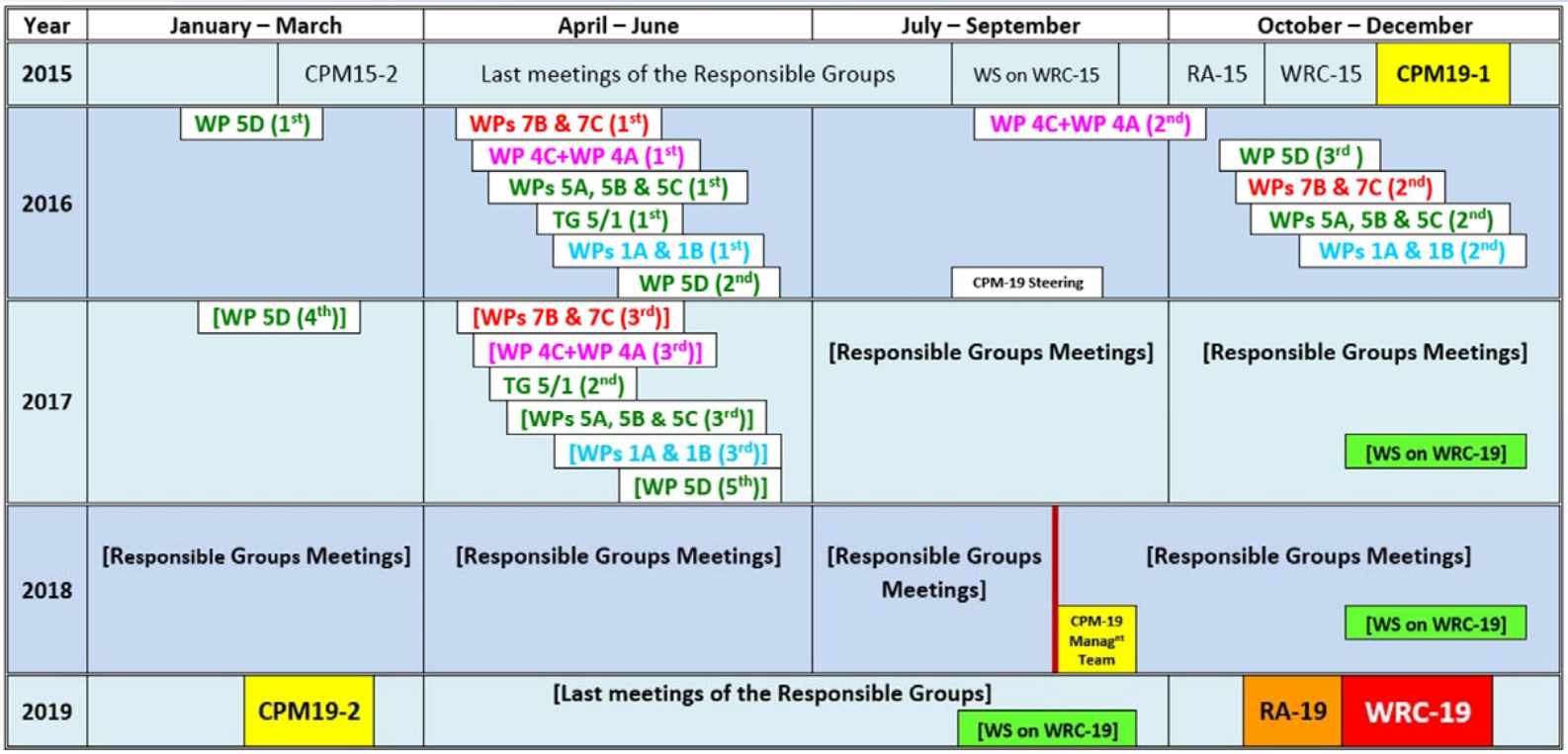
- - **Procedures for Satellite Networks Filings:**
- - Elimination of the Advance Publication Information (API) by Administrations for frequency assignments to satellite networks and systems, and Transitional measures - - Modern electronic means of communication for administrative correspondence related to advance publication, coordination and notification of satellite networks including Appendices 30, 30A and 30B, earth stations and radio astronomy stations, -
- - Electronic submission and publication of satellite network filings

- **Earth observation satellites for environmental monitoring**
- New allocations in 7-8 GHz to uplink large amounts of data of future earth-exploration satellite services (EESS). Allocations in the 9-10 GHz range for modern broadband sensing technologies and space-borne radars on active sensing EESS.

WRC-19 Process

WRC-15	CPM-1	UIT-R	APT	CPM-2	RA	WRC-19
• Defines the agenda for WRC-19	• Allocates the work of the agenda items to relevant study groups, defines chapter rapporteur and the structure of the CPM report	• Conducts studies for 4 years and prepares draft CPM text	• Attempts to consolidate Regional positions	• Consolidates the CPM text that includes the methods to solve each agenda item	• The Radio Assembly appoints the chairmans and vice charmans of the study groups, revises the structure of the study groups, approves or revises ITU-R resolutions.	• Modifies the Radio Regulations (e.g. allocation/identification of frequency bands)

Overview of the ITU-R Calendar towards WRC-19



[…] = planned meetings

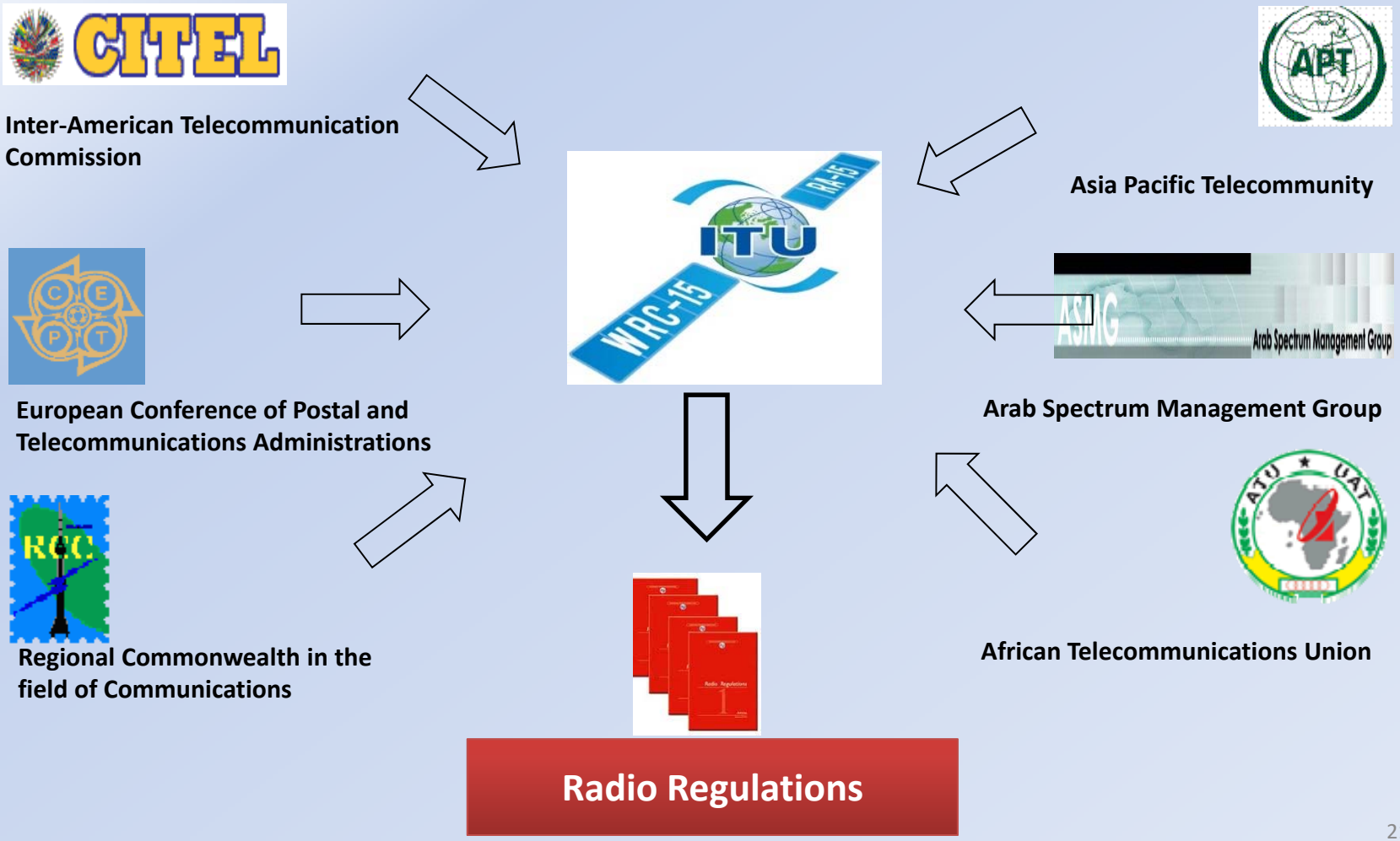
WS on WRC-19 = ITU Inter-regional Workshop on WRC-19 Preparation

Up-to-date information online at: www.itu.int/en/events/Pages/Calendar-Events.aspx?sector=ITU-R

ITU Inter-Regional Workshops on WRC-19 Prep.

[1st Workshop [Nov.] 2017]	• To be scheduled halfway through the preparatory cycle ⇨Presentation and review of the on-going preparatory studies of the ITU-R responsible groups for CPM-19 ⇨Presentation of the organization, preliminary views, draft priorities and positions of the regional groups
[2nd Workshop Q4 2018]	• To be scheduled few months prior to CPM19-2 ⇨Presentation of the Draft CPM Report to WRC-19 (explanation of the draft Methods to satisfy the WRC-19 agenda items) ⇨Presentation and review of the regional groups' draft views, positions and common proposals
[3rd Workshop Q3 2019]	• To be scheduled few months prior to WRC-19 ⇨Presentation of the CPM & Dir. Reports to WRC-19 ⇨Presentation and review of the regional groups' draft views, positions and common proposals

WRC-19 Process



Thank you!

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