Lecture Text for

Module 2-5: Roles of ITU-R Study Groups for a WRC

- ITU-R Study Groups, Working Parties and Task Groups and their roles in the preparation for WRC
- Important timeline for the preparation of a WRC

Lecturer: Mr. Xiaoyang Gao
Introduction of the Lecturer

Mr. Xiaoyang Gao

Biographical notes

Mr. Xiaoyang Gao is a Chief Spectrum Officer of China Satellite Communications Co., Ltd (CHINA SATCOM), Vice-Chairman of ITU CPM-19. He is an expert of the Radio Association of China, and a member of Radio Applications and Management Committee under China Institute of Communications.

He participated in satellite engineering for more than 30 years, ITU&APG relevant activities for more than 20 years, including PP-14, WRCs, Working Party and Study Group meetings, ITU Council and Council Working Group meetings and APT Conference Preparatory Group meetings.

As Vice-Chairman of Satellite Services of ITU during the period 2007-2015, he also chaired as Drafting Group Chairman of APG on Satellite Procedure and Regulatory issues for WRC-12, Working Party Chairman of APG on Satellite Services for WRC-15, CPM Report Rapporteur on Fixed-Satellite Service for WRC-15, Working Party Chairman of WRC-15 on Satellite Allocation issues. By RA-15, Mr. GAO was elected as Vice-Chairman of WRC-19 preparatory meeting.
ITU-R SG/WP/TG for WRC

Xiaoyang GAO, CHINA SATCOM, CHINA

A. Main Points

- ITU-R Study Groups, Working Parties and Task Groups and their roles in the preparation for WRC
- Important timeline for the preparation of a WRC
A. ITU-R in Brief

- **ITU-R**: Radio-frequency allocation, satellite orbit management and access technologies.

  An increasing number of players need to make use of these limited resources, and participating in ITU-R conferences and study group activities.

  WRC is ITU-R highest-level meeting.

- ITU has twelve regional and area offices around the world.

  The Regional Office for Asia and the Pacific in Bangkok and its Area office in Jakarta serve 38 Member states, as well as the ITU Sector Members and Associates, most of which have their headquarters in the Region.
A. ITU-R in Brief

- **World Radiocommunication Conferences (WRC):**
  To review, and, if necessary, revise the Radio Regulations, the international treaty governing the use of the radio-frequency spectrum and the geostationary-satellite and non-geostationary-satellite orbits.
  - Revise the Radio Regulations and any associated Frequency assignment and allotment Plans
  - Address any radiocommunication matter of worldwide character
  - Instruct the Radio Regulations Board and the Radiocommunication Bureau, and review their activities;
  - Determine Questions for study by the Radiocommunication Assembly and its Study Groups in preparation for future Radiocommunication Conferences.

  Conference Preparatory Meeting (CPM) shall prepare a consolidated report to be used in support of the work of such conferences.

A. ITU-R in Brief

- **Radiocommunication Assemblies (RA):**
  RA are responsible for the structure, programme and approval of radiocommunication studies. They are normally convened every three or four years and may be associated in time and place with World Radiocommunication Conferences (WRCs).
  - assign conference preparatory work and other questions to the Study Groups;
  - respond to other requests from ITU conferences;
  - suggest suitable topics for the agenda of future WRCs;
  - approve and issue ITU-R Recommendations and ITU-R Questions developed by the Study Groups;
  - set the programme for Study Groups, and disband or establish Study Groups according to need.
A. ITU-R in Brief

- The objectives of the regulations:
  With a view to fulfilling the purposes of the ITU set out in Article 1 of the Constitution, these Regulations have the following objectives:
  - to facilitate equitable access to and rational use of the natural resources of the radio-frequency spectrum and the geostationary-satellite orbit
  - to ensure the availability and protection from harmful interference of the frequencies provided for distress and safety purposes
  - to assist in the prevention and resolution of cases of harmful interference between the radio services of different administrations
  - to facilitate the efficient and effective operation of all radiocommunication services
  - to provide for and, where necessary, regulate new applications of radiocommunication technology
B. ITU-R STUDY GROUPS

- ITU-R Study Groups (SGs) develop the technical bases for decisions taken at WRCs and develop global standards (Recommendations). Reports and Handbooks on radiocommunication matter. Particular attention is paid to the radiocommunication needs of developing countries.

- ITU-R SGs gathers more than 4000 specialists, from: ITU Member States, Sector and Associate Members, and Academia participate on ITU-R SG activities; ITU-R SG work in cooperation with other international radiocommunication organizations.

- ITU-R counts with 6 SG, composed by 21 Working Parties, WP. WP meets twice a year (some WP 1 or 3), normally at Geneva. SG meets yearly (after sessions of their respective WP)

- Currently 1163 Recommendations and 517 Reports in force, and also 41 Handbooks

- All ITU-R Rec, Rep, Op, and the Spectrum Management related Handbooks are of public access (download), free of charge
B. ITU-R STUDY GROUPS

- **STUDY GROUPS**
  - Study Group 1 (SG 1): Spectrum management
  - Study Group 3 (SG 3): Radio wave propagation
  - Study Group 4 (SG 4): Satellite services
  - Study Group 5 (SG 5): Terrestrial services
  - Study Group 6 (SG 6): Broadcasting service
  - Study Group 7 (SG 7): Science services
  - Coordination Committee for Vocabulary (CCV)
  - Conference Preparatory Meeting (CPM)

B. ITU-R STUDY GROUPS

SG1: Spectrum management

Scope: Spectrum management principles and techniques, general principles of sharing, spectrum monitoring, long-term strategies for spectrum utilization, economic approaches to national spectrum management, automated techniques and assistance to developing countries in cooperation with the Telecommunication Development Sector.

Structure:
WP 1A: Spectrum engineering techniques
WP 1B: Spectrum management methodologies / economic strategies
WP 1C: Spectrum monitoring

B. ITU-R STUDY GROUPS

SG3: Radiowave propagation

Scope: Propagation of radio waves in ionized and non-ionized media and the characteristics of radio noise, for the purpose of improving radiocommunication systems.

Structure:
WP 3J: Propagation fundamentals
WP 3K: Point-to-area propagation
WP 3L: Ionospheric propagation and radio noise
WP 3M: Point-to-point and Earth-space propagation
B. ITU-R STUDY GROUPS

SG4: Satellite services

Scope: Systems and networks for the fixed-satellite service, mobile-satellite service, broadcasting satellite service and radiodetermination-satellite service.

Structure:
WP 4A: Efficient orbit/spectrum utilization for the fixed-satellite service (FSS) and broadcasting-satellite service (BSS)
WP 4B: Systems, air interfaces, performance and availability objectives for the fixed-satellite service (FSS), broadcasting-satellite service (BSS) and mobile-satellite service (MSS), including IP-based applications and satellite news gathering (SNG)
WP 4C: Efficient orbit/spectrum utilization for the mobile-satellite service (MSS) and the radiodetermination-satellite service (RDSS) ¹

¹ WP 4C also deals with the performance issues related to RDSS

B. ITU-R STUDY GROUPS

SG5: Terrestrial services

Scope: Systems and networks for fixed, mobile, radiodetermination, amateur and amateur-satellite services.

Structure:
WP 5A: Land mobile service above 30MHz ² (excluding IMT); wireless access in the fixed service; amateur and amateur-satellite services
WP 5B: Maritime mobile service including the Global Maritime Distress and Safety System (GMDSS); the aeronautical mobile service and the radiodetermination service
WP 5C: Fixed wireless systems; HF and other systems below 30 MHz in the fixed and land mobile services
WP 5D: IMT systems
TG 5/1: WRC-19 Agenda item 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, in accordance with Resolution 238 (WRC-15)";

² Including the exact frequency of 30MHz
B. ITU-R STUDY GROUPS

SG6: Broadcasting service

Scope: Radiocommunication broadcasting, including vision, sound, multimedia and data services principally intended for delivery to the general public; it encompasses the production and distribution of programmes (vision, sound, multimedia, data, etc.) as well as contribution circuits among studios, information gathering circuits (ENG, requirements for SNG, etc.), primary distribution to delivery nodes, and secondary distribution to consumers.

Structure:
WP 6A: Terrestrial broadcasting delivery
WP 6B: Broadcast service assembly and access
WP 6C: Programme production and quality assessment

B. ITU-R STUDY GROUPS

SG7: Science services

Scope: “Science services” refer to the standard frequency and time signal, space research (SRS), space operation, Earth exploration-satellite (EESS), meteorological-satellite (MetSat), meteorological aids (MetAids) and radio astronomy (RAS) services.

Structure:
WP 7A: Time signals and frequency standard emissions:
WP 7B: Space radiocommunication applications
WP 7C: Remote sensing systems
WP 7D: Radio astronomy
C. ITU-R SG/WP/TG Roles for WRC

- **ITU-R Series on Rec, Rep, Handbook:**
  - BO: Satellite delivery
  - BR: Recording for production, archival and play-out; film for television
  - BS: Broadcasting service (sound)
  - BT: Broadcasting service (television)
  - F: Fixed service
  - M: Mobile, radiodetermination, amateur and related satellite services
  - P: Radiowave propagation
  - RA: Radio astronomy
  - RS: Remote sensing systems
  - S: Fixed-satellite service
  - SA: Space applications and meteorology
  - SF: Frequency sharing and coordination between fixed-satellite and fixed service systems
  - SM: Spectrum management

- **Prepare draft CPM text**

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C. ITU-R SG/WP/TG Roles for WRC

- Normally, all the WRC preparatory work will be performed **within the framework** of the foreseen work programme and organization of the ITU-R Study Groups.

- **First session of CPM19-1**

  Besides organizing preparatory studies, proposing a CPM Report structure, nominating six (6) Chapter Rapporteurs, CPM19-1 invited ITU-R Study Group 5 to establish a dedicated Task Group (TG 5/1) to deal with complex issues related to WRC-19 agenda item 1.13.
### C. ITU-R SG/WP/TG Roles for WRC

#### Allocation of ITU-R preparatory work for WRC-19

<table>
<thead>
<tr>
<th>Topic</th>
<th>Responsible group</th>
<th>Actions to be taken by the group</th>
<th>Concerned group</th>
</tr>
</thead>
<tbody>
<tr>
<td>9.1</td>
<td>to consider an allocation of the frequency band 600-900 MHz to the satellite service in Region 2, in accordance with Resolution 446 of the Second World Radiocommunication Conference</td>
<td><strong>WP SA</strong></td>
<td>WP 3B, WP 3C, WP 4N, WP 4A, WP 5A, WP 5C, WP 5K, WP 5V, WP 5Z, WP 6K, WP 7C, WP 7P, WP 7V</td>
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<td>WP 5A</td>
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<td><strong>WP 5A</strong></td>
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<td>9.2</td>
<td>to consider the possibility of establishing a satellite shared service for earth stations operating in the mobile-satellite service, meteorological satellite service and Earth exploration-satellite service in the frequency bands 600-900 MHz and 300-400-05 MHz, in accordance with Resolution 765 of the Second World Radiocommunication Conference</td>
<td><strong>WP 7B</strong></td>
<td>WP 4C, WP 4D, WP 4X, WP 7B, WP 7V, WP 7C</td>
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<td>WP 7B</td>
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#### Resolution 765 of the Second World Radiocommunication Conference

- **WP 7B**: To conduct and complete, in time for WRC-19, the necessary technical, operational and regulatory studies on the possibility of establishing a shared service for earth stations in the frequency bands 600-900 MHz, 300-400-05 MHz and the frequency band 300-400-05 MHz.
C. ITU-R SG/WP/TG Roles for WRC

### Table: ITU-R SG/WP/TG Roles for WRC

<table>
<thead>
<tr>
<th>Topic</th>
<th>Preparatory group</th>
<th>Action to be taken by the group</th>
<th>Concerned group</th>
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</thead>
</table>
| **WP 25** | **WP 25** | 1. Draft a legal instrument for the harmonization of technical conditions for satellite systems and services **WP 25**
2. Coordinate the work of WP 25 with ITU-R WP 8A |
| **WP 33** | **WP 33** | 1. Draft a legal instrument for the harmonization of technical conditions for satellite systems and services **WP 33**
2. Coordinate the work of WP 33 with ITU-R WP 8A |
| **WP 52** | **WP 52** | 1. Draft a legal instrument for the harmonization of technical conditions for satellite systems and services **WP 52**
2. Coordinate the work of WP 52 with ITU-R WP 8A |
| **WP 58** | **WP 58** | 1. Draft a legal instrument for the harmonization of technical conditions for satellite systems and services **WP 58**
2. Coordinate the work of WP 58 with ITU-R WP 8A |

**Note:** WP 4 is responsible for the study items requested in the latest WRC with respect to the terrestrial component of IMT, taking into account the technical and operational characteristics of IMT. IMT is the worldwide development of the IMT standardization of the IMT-T standardization. IMT-T is the worldwide development of the IMT-T standardization.
### C. ITU-R SG/WP/TG Roles for WRC

<table>
<thead>
<tr>
<th>Chapters of the draft CPM Report</th>
<th>WRC-19 Agenda items</th>
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<tbody>
<tr>
<td>1. Land mobile and fixed services</td>
<td>1.11, 1.12, 1.14, 1.15</td>
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<tr>
<td>2. Broadband applications in the mobile service</td>
<td>1.13, 1.16, 9.1 (9.1.1, 9.1.5, 9.1.8)</td>
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<tr>
<td>3. Satellite services</td>
<td>1.4, 1.5, 1.6, 7, 9.1 (9.1.2, 9.1.3, 9.1.9)</td>
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<td>4. Science services</td>
<td>1.2, 1.3, 1.7</td>
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<td>5. Maritime, aeronautical and amateur services</td>
<td>1.1, 1.8, 1.9.1, 1.9.2, 1.10, 9.1 (9.1.4)</td>
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<tr>
<td>6. General issues</td>
<td>2, 4, 9.1 (9.1.6, 9.1.7), 10</td>
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**Regional preparation for WRC-19**

- **Region A**: [AFRICOM](https://www.itu.int/en/ITU-A/RegionA/Pages/AFRICOM.aspx)
- **Region E**: [APCIC](https://www.itu.int/en/ITU-A/RegionE/Pages/APCIC.aspx)
- **Region C**: [APCIC](https://www.itu.int/en/ITU-A/RegionC/Pages/APCIC.aspx)
- **Region D**: [APCIC](https://www.itu.int/en/ITU-A/RegionD/Pages/APCIC.aspx)
- **Region B**: [APCIC](https://www.itu.int/en/ITU-A/RegionB/Pages/APCIC.aspx)
- **Region I**: [APCIC](https://www.itu.int/en/ITU-A/RegionI/Pages/APCIC.aspx)
- **Regional Commonwealth in the Field of Communications (RCC)**

**Regional Events**

- **38th PCC-III**: 27 Nov-1 Dec, 2017, Barranquilla, Colombia
- **5th RCC WGC**: [2018]

**Informal Group** (Chairman: Mr. T. Al Awadhli, tariq.alawadhli@tra.gov.eg)

http://www.itu.int/go/wrc-19-regional
C. ITU-R SG/WP/TG Roles for WRC

1st Workshop on 21-22 Nov. 2017
- 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 [21-23 November 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

D. Important Timeline

[Diagram showing timelines and responsibilities for CPM-19, WRC-19, and related meetings]
D. Important Timeline

### Dates for CPM19-2, RA-19, WRC-19, CPM23-1

<table>
<thead>
<tr>
<th>Year</th>
<th>January – March</th>
<th>April – June</th>
<th>July – September</th>
<th>October – December</th>
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<tr>
<td>2016</td>
<td>WP 5D (37)</td>
<td>WP 7B &amp; 7C (15)</td>
<td>WP 4C+WP AA (18)</td>
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<td>WP 7B &amp; 7C (15)</td>
<td>WP 8C &amp; WP AA (17)</td>
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<td>2017</td>
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<td>2018</td>
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www.itu.int/en/events/Pages/CalendarEvents.aspx?sector=ITU-R
E. TIPS

- Take part in ITU-R studies
- Learn other regional group studies
- Know update of ITU-R PDN Rep/Rec and draft CPM text
- Exchange different views

Thank you for your kind attention

ITU-R SG/WP/TG for WRC

QUESTIONS?