



COMMUNICATIONS
AUTHORITY OF KENYA

Outcome of CPM23-1 Looking Ahead to WRC-23

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Frequency Spectrum Management

30th June 2020



COMMUNICATIONS
AUTHORITY OF KENYA

Agenda

1. Introduction
2. Topics of the WRC-23 Agenda
3. WRC-27 Preliminary Agenda
4. CPM Chapter Rapporteurs
5. Structure of the draft CPM Report
6. WRC-23 AIs & Resp. Groups
7. New TG 6/1
8. Summary of CPM Report Preparation

Introduction





- In accordance with Resolution ITU-R 2-7, the CPM normally holds two sessions during the interval between WRCs.
- Agenda for WRC-23 sets roadmap for important future technological aspirations for the use of the spectrum, to be addressed by ITU-R, Admin and regional groups in the next 4 years.
- The 1st session of CPM for WRC-23 (CPM23-1) dealt with
 - Allocation of Ais to the relevant ITU-R Study Groups
 - Prepared a draft structure for the CPM Report –chapter structure and TOC
 - Grouped in five broad categories/chapters WRC-23 Agenda items
 - Appointment of Chapter Rapporteurs & co-Rapporteurs
 - Established TG6/1 for AI 1.5

Topics of the WRC-23 Agenda

WRC-19 agenda item 10

WRC-23 agenda

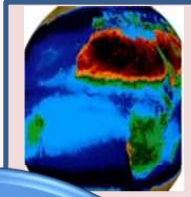
- 1.1  Mobile
- 1.2  Mobile
- 1.3  Mobile
- 1.4  Broadcasting
- 1.5  Broadcasting

3.3 ≤ MS & IMT ≤ 10.5 GHz



0.694 ≤ HIBS ≤ 2.7 GHz

470 ≤ BS, MS ≤ 960 MHz



Spaceborne radar sounders (2ndary)

EESS (active) @ 45 MHz

SRS @ 14.8-15.35 GHz

Remote-sensing observation requirements - EESS (passive) @ 231.5-252 GHz



- 1.6  Aviation
- 1.7  Aviation
- 1.8  Aviation
- 1.9  Aviation
- 1.10  Maritime
- 1.11  Maritime

Sub-orbital vehicles

New AMS(R)S VHF alloc.

UAS CNPC links via FSS

Dig. techno. for aviation safety-of-life applications (App.27)

New AMS alloc. (around 15.5 & 22 GHz) for non-safety applications

GMDSS modernization and e-navigation



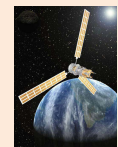
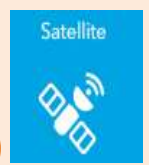
A-ESIM & M-ESIM (GSO Ku-FSS)

ESIM (NGSO Ka-FSS)

ISS / Sat.-to-Sat. links

NB MSS for IoT (L/S-bands)

Ka-FSS (s-E) (R2)



Regulatory issues

(Sat. regulations, harmonization of spectrum use, etc.)



► 19 specific and 11 standing items, see Res. 811 (WRC-19)

1. Fixed, Mobile and Broadcasting Issues

WRC-23 agenda items 1.1 to 1.5

- 1.1 ➤ In the band **4 800-4 990 MHz** (identified for IMT in about 40 countries), consider the pfd criteria in No. 5.441B for the **protection of stations of the aeronautical and maritime mobile services** located in international airspace and waters from other stations located within national territories ➤ **Res. 223 (Rev.WRC-19)**
- 1.2 ➤ Consider the **identification for IMT** of the following frequency bands: **3 300-3 400 MHz** (sub-Reg.1 & Reg.2), **3 600-3 800 MHz** (R.2), **6 425-7 025 MHz** (Reg.1), **7 025-7 125 MHz** (globally) and **10.0-10.5 GHz** (Reg.2) ➤ **Res. 245 (WRC-19)**
- 1.3 ➤ Consider a **primary allocation** of the band **3 600-3 800 MHz** to the **mobile service** within **Region 1** ➤ **Res. 246 (WRC-19)**
- 1.4 ➤ Consider use of **high-altitude platform stations as IMT base stations (HIBS)** in the **mobile service** in certain frequency bands **below 2.7 GHz*** **already identified for IMT**, on a global or regional level
* studies of bands **694-960 MHz**, **1 710-1 885 MHz** (1 710-1 815 MHz for ↑ only in Reg. 3), **2 500-2 690 MHz** (2 500-2 535 MHz for ↑ only in Reg. 3, except 2 655-2 690 MHz in Reg. 3) ➤ **Res. 247 (WRC-19)**
- 1.5 ➤ Review the **spectrum use and spectrum needs of existing services in 470-960 MHz** in **Region 1** and Consider **regulatory actions in 470-694 MHz** in **Region 1** ➤ **Res. 235 (WRC-15)**



2. Aeronautical and Maritime issues

WRC-23 Als1.6 to 1.11

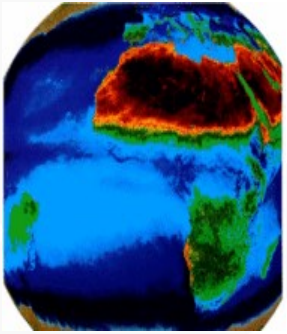
- 1.6 ➤ Consider regulatory provisions to facilitate **radiocommunications for sub-orbital vehicles** ▶ Res. 772 (WRC-19)
- 1.7 ➤ Consider **AMS(R)S** allocation for both the E-s & s-E directions of **aeronautical VHF communications** in all or part of the frequency band **117.975-137 MHz** ▶ Res. 428 (WRC-19)
- 1.8 ➤ Review and, if necessary, revise **Res. 155 (Rev.WRC-19)** & No. **5.484B** to accommodate the **use of FSS networks** by **control and non-payload communications** of **unmanned aircraft systems** ▶ Res. 171 (WRC-19)
- 1.9 ➤ Review Appendix **27**, to **accommodate digital technologies for commercial aviation safety-of-life applications** in **existing HF bands** allocated to the **AM(R)S** and ensure coexistence of current and modernized HF systems ▶ Res. 429 (WRC-19)
- 1.10 ➤ Consider **spectrum needs**, for possible **new AMS** allocations for **non-safety aeronautical mobile applications** ▶ Res. 430 (WRC-19)
- 1.11 ➤ Consider possible **regulatory actions** to support the **modernization of the GMDSS** and **implementation of e navigation** ▶ Res. 361 (Rev.WRC-19)



3. Science Issues

WRC-23 agenda items 1.12 to 1.14

- 1.12 ➤ Consider new **secondary allocation** to the **EESS (active) service** for **spaceborne radar sounders** within the range of frequencies **around 45 MHz**
- ▶ Res. 656 (Rev.WRC-19)



- 1.13 ➤ Consider to **upgrade of the allocation** of the frequency band **14.8-15.35 GHz** to the **space research service**
- ▶ Res. 661 (WRC-19)

- 1.14 ➤ Consider possible adjustments of the existing or possible new primary **frequency allocations to EESS (passive)** in the frequency range **231.5-252 GHz**, to ensure alignment with more up-to-date **remote-sensing observation requirements**
- ▶ Res. 662 (WRC-19)



4. Satellite issues

WRC-23 agenda items 1.15 to 1.19

- 1.15 ➤ Consider the use of the band **12.75-13.25 GHz** (E-s) by **earth stations on aircraft and vessels** communicating with **GSO** space stations in the **FSS globally**
 - ▶ **Res. 172 (Rev.WRC-19)**
- 1.16 ➤ Consider the use of the bands **17.7-18.6 GHz** and **18.8-19.3 GHz** and **19.7-20.2 GHz** (s-E) and **27.5-29.1 GHz** and **29.5-30 GHz** (E-s) by **non-GSO FSS** earth stations in motion (**ESIM**)
 - ▶ **Res. 173 (WRC-19)**
- 1.17 ➤ Consider **inter-satellite links** in specific frequency bands*, or portions thereof, by adding an inter-satellite service allocation where appropriate
 - * (ISS/s-s) **11.7-12.7 GHz**, **18.1-18.6 GHz**, **18.8-20.2 GHz** and **27.5-30 GHz**
 - ▶ **Res. 773 (WRC-19)**
- 1.18 ➤ Consider **spectrum needs** and potential **new MSS allocations*** for future development of **narrowband MSS systems**
 - * in the bands **1 695-1 710 MHz** (R2), **2 010-2 025 MHz** (R1), **3 300-3 315 MHz** and **3 385-3 400 MHz** (R2)
 - ▶ **Res. 248 (WRC-19)**
- 1.19 ➤ Consider new **primary allocation** to the FSS (s-E) direction in the frequency band **17.3-17.7 GHz** in **Region 2**
 - ▶ **Res. 174 (WRC-19)**



5. Other topics to be studied

WRC-23 agenda item 9.1

- Consider technical and operational characteristics, spectrum requirements and appropriate radio service designations for **space weather sensors** with a view to describing **appropriate recognition and protection in the Radio Regulations** without placing additional constraints on incumbent services
- Consider **amateur service and the amateur-satellite service** allocations in the frequency band **1 240 1 300 MHz** to determine if **additional measures** are required to **ensure protection of the RNSS (s-E)** operating in the same band
- Study the **use of IMT system** for **fixed wireless broadband** in the frequency **bands allocated to the fixed services** on primary basis

Additional topic identified at CPM23-1

- **Protection of EESS (passive)** in the frequency band **36-37 GHz** from **non-GSO FSS space stations**

WRC-27 Preliminary Agenda

WRC-23 agenda item 10

▶ see Res. 812 (WRC-19)



- 2.1 ▶ Consider **additional RLS spectrum allocations** on a co-primary basis in the band **231.5-275 GHz** and **identification for RLS applications** in bands in the range **275-700 GHz** for millimetre and sub-millimetre wave **imaging systems**
 - ▶ Res. 663 (WRC-19)
- 2.2 ▶ Consider the technical, operational and regulatory measures, as appropriate, to facilitate the **use of the bands 37.5-39.5 GHz (s-E), 40.5-42.5 GHz (s-E), 47.2-50.2 GHz (E-s) and 50.4-51.4 GHz (E-s)** by **aeronautical and maritime earth stations in motion (ESIM)** communicating with **GSO FSS** space stations
 - ▶ Res. 176 (WRC-19)
- 2.3 ▶ Consider the allocation of all or part of the frequency band **[43.5-45.5 GHz]** to the **fixed-satellite service**
 - ▶ Res. 177 (WRC-19)
- 2.4 ▶ Consider the introduction of **pdf and e.i.r.p. limits in Article 21** for the frequency bands **71-76 GHz** and **81-86 GHz**
 - ▶ Res. 775 (WRC-19)
- 2.5 ▶ Consider conditions for the use of the **71-76 GHz** and **81-86 GHz** bands by stations in the **satellite services** to ensure **compatibility with passive services**
 - ▶ Res. 776 (WRC-19)
- 2.6 ▶ Consider regulatory provisions for recognition of **space weather sensors** and their protection in the RR, taking into account the results of ITU R studies reported to **WRC-23 under agenda item 9.1**
 - ▶ Res. 657 (Rev.WRC-19)

WRC-27 Preliminary Agenda (cont'd)

WRC-23 agenda item 10

▶ see Res. 812 (WRC-19)



- 2.7 ➤ Consider **NGSO FSS system feeder links** in the bands **71-76 GHz** (space-to-Earth and proposed new Earth-to-space) and **81-86 GHz** (Earth-to-space) ▶ Res. 178 (WRC-19)
- 2.8 ➤ Consider **space-to-space links** in the bands **[1 525-1 544 MHz]**, **[1 545-1 559 MHz]**, **[1 610-1 645.5 MHz]**, **[1 646.5 1 660.5 MHz]** and **[2 483.5-2 500 MHz]** among **NGSO and GSO satellites** operating in the **MSS** ▶ Res. 249 (WRC-19)
- 2.9 ➤ Consider spectrum allocations to the **MS** in the band **1 300-1 350 MHz** to facilitate the **future development of mobile-service applications** ▶ Res. 250 (WRC-19)
- 2.10 ➤ Consider **improving the utilization** of the **VHF maritime frequencies** in Appendix 18 ▶ Res. 363 (WRC-19)
- 2.11 ➤ Consider **new EESS (Earth-to-space) allocation** in the band **22.55-23.15 GHz** ▶ Res. 664 (WRC-19)
- 2.12 ➤ Consider **use of existing IMT identifications** in the frequency range **694-960 MHz** by consideration of the possible **removal of the limitation regarding aeronautical mobile** in the IMT for the **use of IMT user equipment by non-safety applications**, where appropriate ▶ Res. 251 (WRC-19)
- 2.13 ➤ Consider a possible **worldwide allocation** to the **MSS** for the **future development of narrowband mobile-satellite systems** in the range **[1.5-5 GHz]** ▶ Res. 248 (WRC-19)

First Session of CPM-23

Scope defined in [Resolution ITU-R 2-8](#)

- **Geneva, 25-26 November 2019** ⇒ results published in CA/251, of 19 Dec. 2019
(see at www.itu.int/md/R00-CA-CIR-0251/en)
- **Define framework of preparatory studies:**
Structure of the draft CPM Report with five (5) Chapter, one Annex and eight (8) (co-)Rapporteurs
- **Identify responsible ITU-R Groups** for each WRC-23 agenda item (AI) & topics
 - ⇒ 8 existing Working Parties and
 - ⇒ Proposed new TG 6/1 for AI 1.5 + 4 existing SGs for the WRC-27 preliminary agenda items**and contributing ITU-R groups**
- For sharing and compatibility studies, service/application **characteristics & parameters** from contributing WPs are **required by 15 June 2021 at the latest and unless otherwise specified** (e.g. case of TG 6/1 with 15 May 2021)

Overlapping frequency bands between some WRC-23 agenda items

1.2 (IMT) WP 5D	1.16 (non-GSO FSS ESIMs) WP 4A	1.17 (ISL) WP 4A	1.18 (narrowband MSS) WP 4C
3 300-3 400 MHz (Regions 1 & 2)			3 300-3 400 MHz (Region 2)
	27.5-29.1 GHz (E-s) 29.5-30 GHz (E-s)	27.5-30 GHz (s-s)	




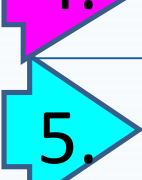


* E-s: Earth-to-space; s-s: space-to-space.

- The responsible groups are invited to **exchange the necessary characteristics, parameters and protection criteria to complete studies** addressing **mutual compatibility & sharing feasibility** among the applicable services/applications.
- They should **coordinate their work and review**, as appropriate, the **progress of studies so that any potential difficulties can be addressed**.

Draft CPM Report

Chapters of the draft CPM Report

WRC-23 Agenda items

 1. Fixed, Mobile & Broadcasting issues	1.1, 1.2, 1.3, 1.4, 1.5
 2. Aeronautical and maritime issues	1.6, 1.7, 1.8, 1.9, 1.10, 1.11
 3. Science issues	1.12, 1.13, 1.14
 4. Satellite issues	1.15, 1.16, 1.17, 1.18, 1.19, 7
 5. General issues	2, 4, 9.1 topics a), b), c), d)
 Annex 1	Information on WRC-23 agenda item 10

CPM Chapter Rapporteurs

<u>Chapters</u>	<u>(Co-)Rapporteurs</u>
1. Fixed, Mobile & Broadcasting issues	Dr. H. ATARASHI (J) for AIs 1.1, 1.2 and 1.4 Mr. U.A. MAHMUD (NIG) for AIs 1.3 and 1.5
2. Aeronautical and maritime issues	Mr. Mohammed ALHASSANI (UAE)
3. Science issues	Mr. T. A. BAKAUS (B)
4. Satellite issues	Ms. F. Magnier (F) for AIs 1.15, 1.16, 1.17, 1.18, 1.19 Mr. G. KWIZERA (RRW) for AI 7
5. General issues	Mr. J. HUANG (CHN) Dr. J. in PARK (KOR)

Structure of the draft CPM texts for an agenda item

Chapter N	
Agenda Item 1.XY	
[Relevant WRC Resolutions if any]	
N/1.XY/1	Executive Summary*
N/1.XY/2	Background*
N/1.XY/3	Summary and Analysis of the results of ITU-R studies, including a list of relevant ITU-R Recommendations
N/1.XY/4	Method(s) to satisfy the Agenda Item
N/1.XY/5	Regulatory and procedural considerations

* Not more than half a page of text

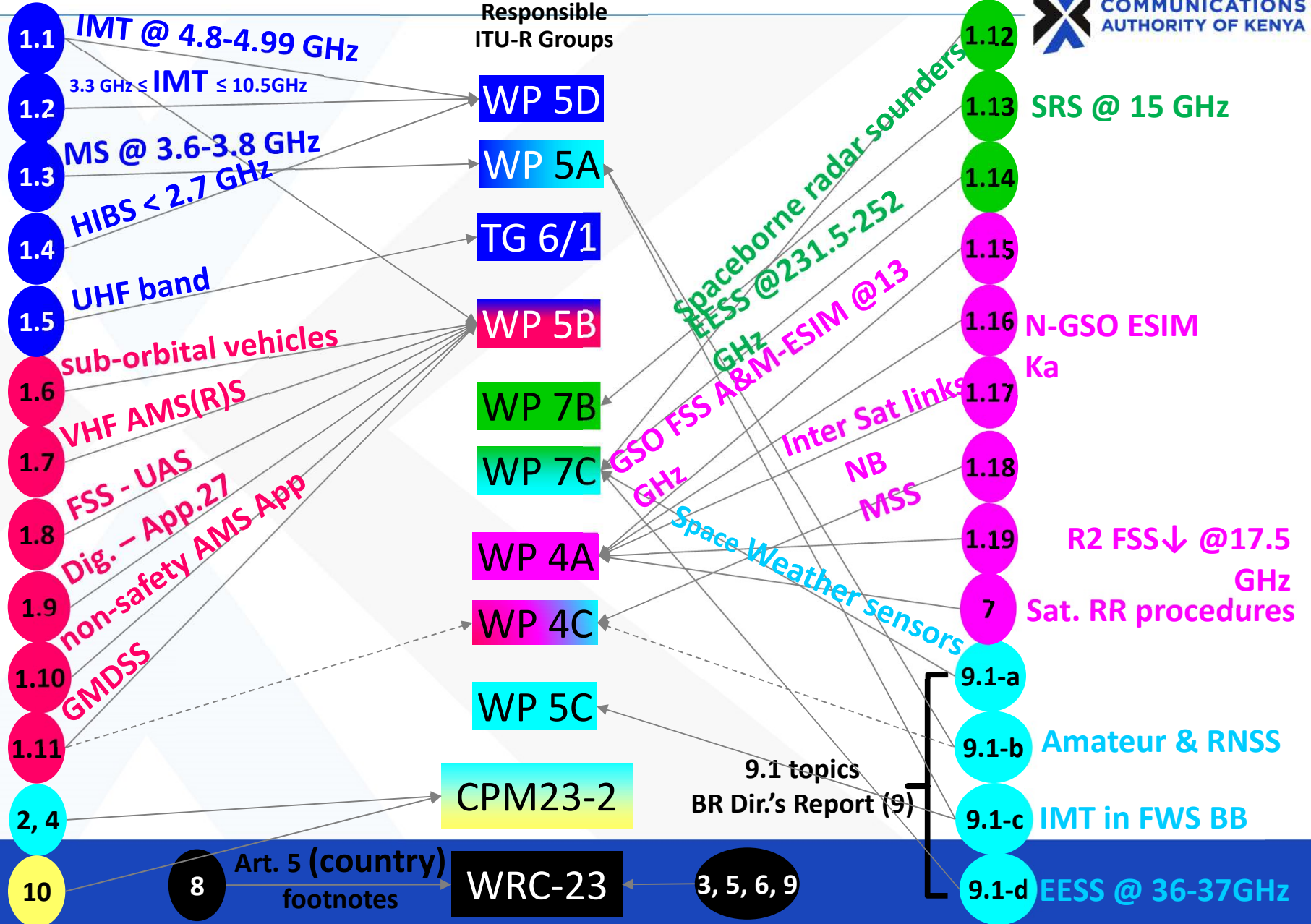
Chapter 5 **Agenda Item 9.1(9.1-[x])**

5/9.1-[x] [Title of the topic]
Summary of the results of ITU-R studies

Annex 1 – Information on WRC-23 AI 10

2.[x] [label of the agenda item]
[Text of a short summary of ITU-R studies completed under the preliminary agenda item]

WRC-23 agenda items & Resp. Groups

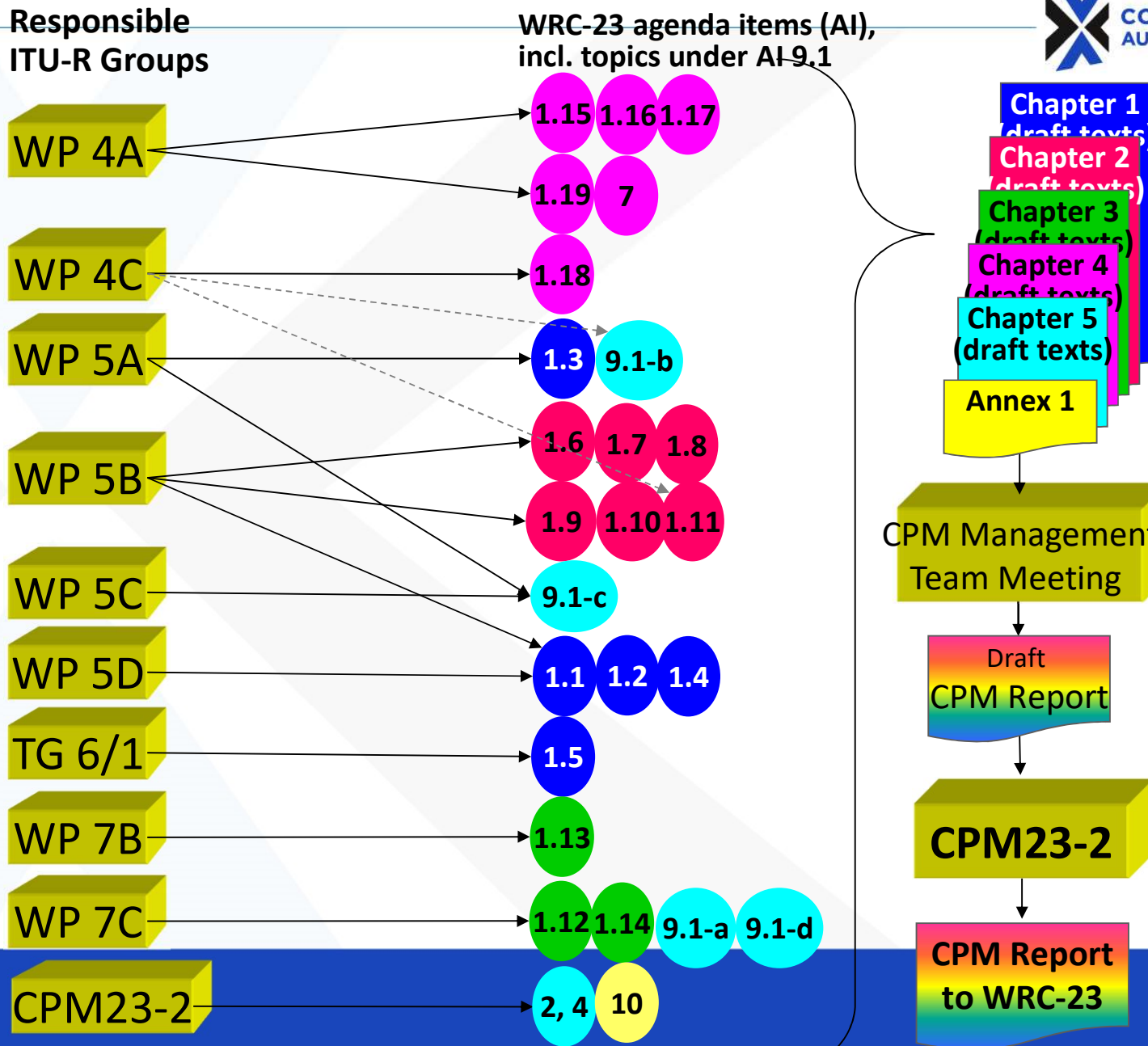


New TG 6/1 on WRC-23 AI 1.5

- ✓ Taking into account CPM23-1 Decision (see [CA/226 Annex 9](#)), SG 6 established **new TG 6/1** (www.itu.int/en/ITU-R/study-groups/rsg6/tg6-1)
- ✓ **SG 6 appointed Mr. Sergey PASTUKH as the Chairman**
- ✓ **SG 5 is invited to appoint the Vice-Chairman, who will coordinate the development of the draft CPM text**
- **By 15 May 2021**, in accordance with *resolves to invite ITU-R 1* of Res. 235 (WRC-19), results of studies on **spectrum use and spectrum needs within the band 470-960 MHz** should be reported by:
 - **Working Party (WP) 6A regarding the Broadcasting Service** (including the needs of the countries party to the **GE06 Agreement**)
 - **SG 5 relevant WPs regarding the Mobile (except aeronautical mobile) Service**
- **By 15 May 2021**, study assumptions (incl. propagation model, system parameters) and technical characteristics including protection criteria of the services allocated in the band **470-694 MHz** should be provided by the WPs*
- **TG 6/1 is responsible for conducting the sharing and compatibility studies (resolves to invite ITU-R 2 & 3) and developing the draft CPM text**
- **CPM23-1 provided also elements for the scheduling of the 5 or 6 meetings of TG 6/1**

(* Contributing Working Parties: 3K, 3M, 5A, 5B, 5C, 5D, 6A)

Summary of CPM Report Preparation



Deadlines and Meeting Dates will be determined, based on WRC-23 dates, taking into account Res. ITU-R 2-8



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Credit : ITU Radiocommunication Bureau

