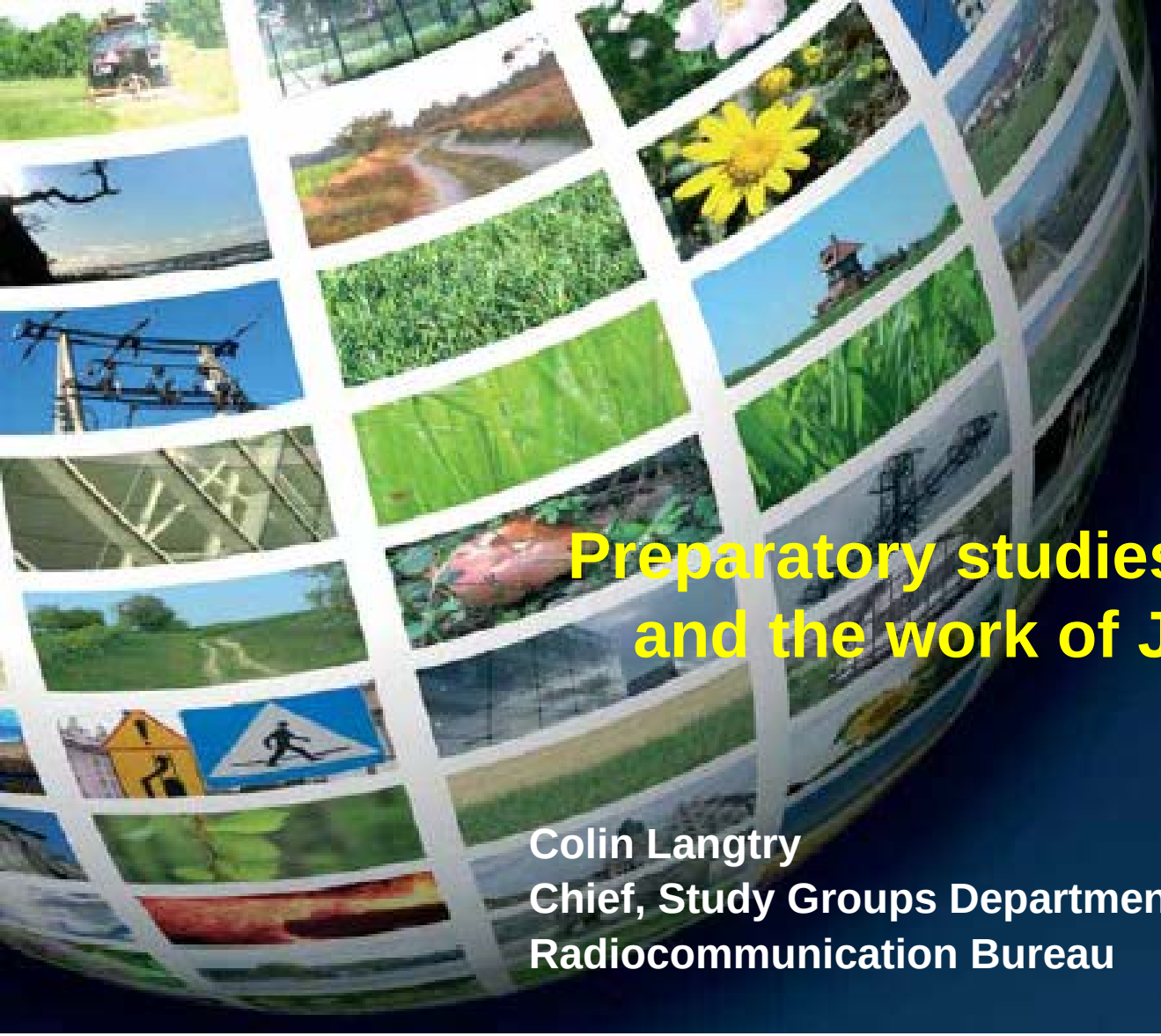


Preparatory studies for WRC-15 and the work of JTG 4-5-6-7

Colin Langtry
Chief, Study Groups Department
Radiocommunication Bureau

Regional Forum for AMS Region
IMT Systems - Technology, Evolution and Implementation
18-19 August 2014, Panama

Main Steps towards WRC-15

WRC-12: WRC-15 Agenda > **Resolution 807** (WRC-12)

1st Session Conference Preparatory Meeting CPM15-1

held on 20 – 21 Feb. 2012; **Results** in CA/201 of **19.03.12** + **Add. 1 of 15.01.13**

Council-12: approved WRC-15 Agenda, date & venue

See **Resolution 1343** (C12) (on line)

Subsequently approved by ITU Member States (CV 42/CV 47)

2nd Session Conference Preparatory Meeting CPM15-2

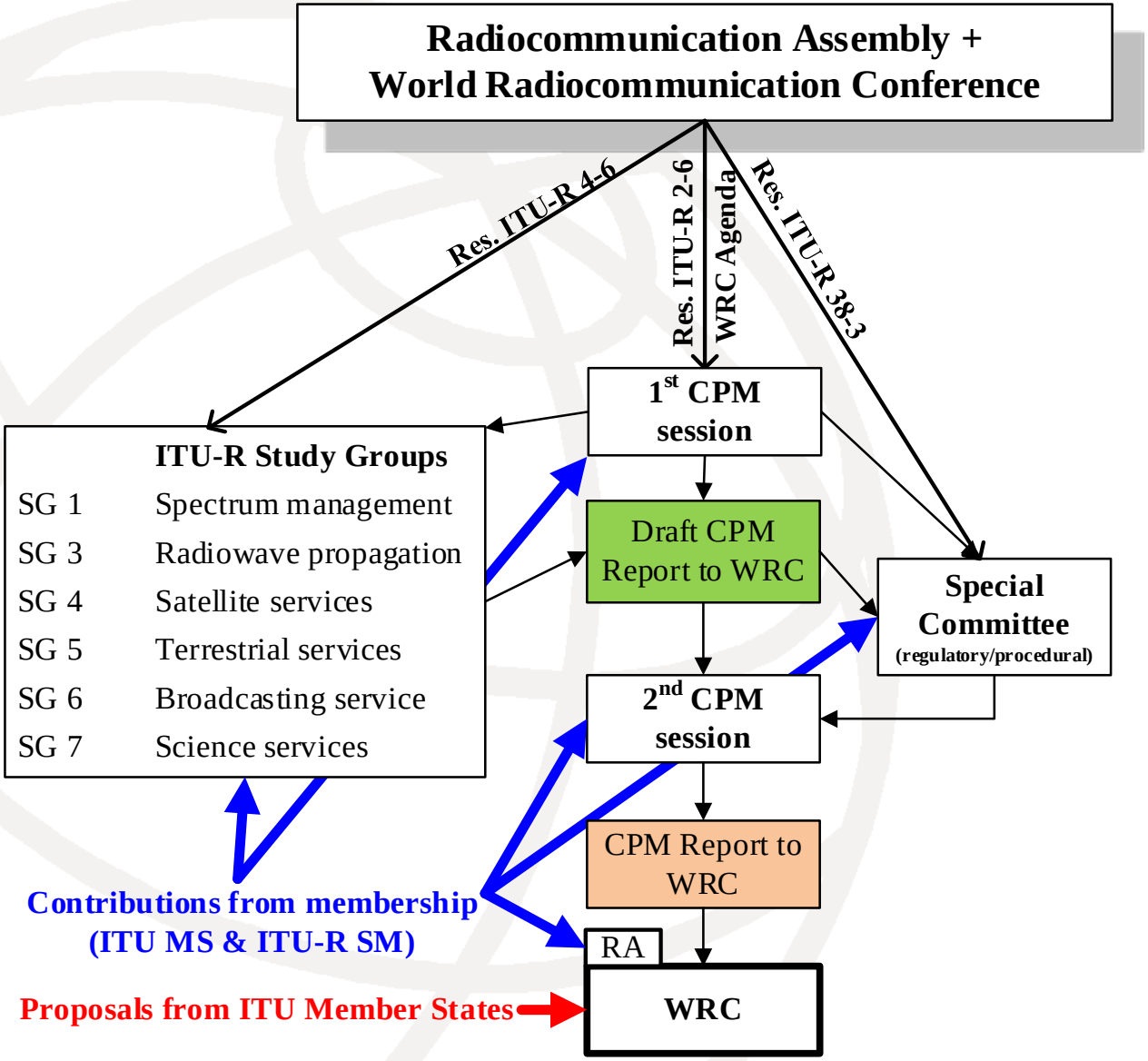
Geneva, 23 March – 2 April 2015

Final meetings of regional groups

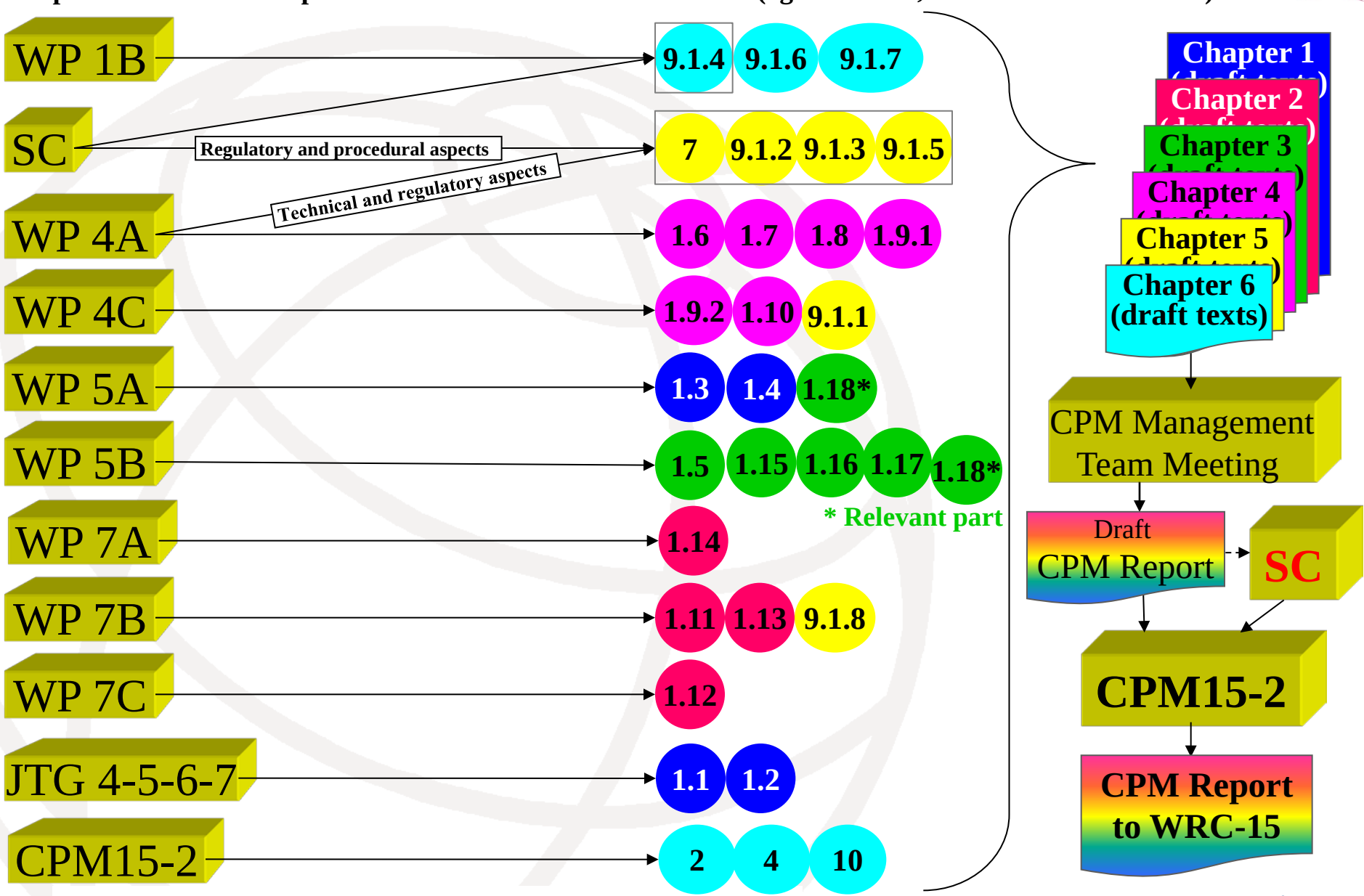
RA-15: 26-30 Oct. 2015 – WRC-15: 2-27 Nov. 2015

Both in Geneva

Summary of the CPM Process



Summary of CPM Report Preparation



Overview of Resp. Groups meetings *

Meeting overlaps shown in the table below are just for convenience of the presentation and do not represent the real situation

Year	January – March	April – June	July – September	October – December
2012	CPM15-1	WPs 5A, 5B, 4C, 4A, 1B (1st)	JTG 4-5-6-7 (1st) WPs 4C, 4A (2nd) WPs 7A, 7B, 7C (1st)	WPs 5A, 5B (2nd) JTG 4-5-6-7 (2nd) CPM-15 Steering
2013		WPs 7A, 7B, 7C (2nd) WPs 4C, 4C, 5A, 5B (3rd) WP 1B (2nd)	JTG 4-5-6-7 (3rd) WPs 7A, 7B, 7C (3rd) WP 4C (4th)	WP 4A (4th) JTG 4-5-6-7 (4th) WPs 5A, 5B (4th) WS on WRC-15 SC-WP
2014	WP 1B (3rd) WP 4A (5th) WP 4C (5th) JTG 4-5-6-7 (5th)	SG 6 WP 7A (4th) WP 7B (4th) WP 7C (4th) WP 5A (5th) WP 5B (5th) WP 1B (4th) SG 1 WP 4C (6th)	WP 4A (6th) SG 4 JTG 4-5-6-7 (6th) CPM-15 Management Team	WP 7A (5th) WP 7B (5th) SG 7 WP 7C (5th) WP 5A (6th) SG 5 WP 5B (6th) SG 6 WS on WRC-15 SC
2015	CPM15-2 SG 6	WP 7A (6th) WP 7B (6th) SG 7 WP 7C (6th) WP 1B (5th) SG 1 WP 4C (7th) WP 4A (7th) SG 4	WP 5A (7th) WP 5B (7th) SG 5 [WS on WRC-15] SG 6	RA-15 WRC-15

* WP 2015 Dates f
WPs not yet fina

(see the up-to-date ITU-R Meetings schedule at www.itu.int/en/events/Pages/Calendar-Events.aspx?sector=ITU-R)

Final steps of the CPM process

CPM Management Team meeting **(Res. ITU-R 2-6)** **1-5 Sep. 2014**

= CPM Steering Committee (CPM+SC C&VC + Chapter Rap.) + Chairmen of Study Groups and Responsible Groups

⇒ consolidate the output from the responsible groups into the draft CPM Report to WRC-15

Special Committee ***on Regulatory/Procedural matters*** **(Res. ITU-R 38-4)**

⇒ prepare a report to the CPM15-2 based on: **1-5 Dec. 2014**

- **Results of studies of the SC Working Party**
- **Extracts from the draft CPM Report**
- **Contributions from ITU-R membership**

2nd Session of Conference Preparatory Meeting (CPM15-2)

(see Res. ITU-R 2-6)

⇒ Prepare the CPM Report to WRC-15, using: **23 March to 2 April 2015**

- **the draft CPM Report**
- **the Report of the Special Committee**
- **Contributions from ITU-R membership**

⇒ Consider the preliminary BR Director's Report to WRC-15

ITU-R Studies for WRC-15 on IMT

Agenda items for WRC-15 (Res. 807 (WRC-12)):

1.1 - Res. **233 (WRC-12)**

- consider additional spectrum allocations to MS on a primary basis
- identify additional frequency bands for IMT
- related regulatory provisions to facilitate development of **terrestrial mobile broadband applications**

1.2 - Res. **232 (WRC-12)**

examine the results of ITU-R studies on the **use of the frequency band 694-790 MHz by the mobile**, except aeronautical mobile, service in **Region 1** and take appropriate measures;

Spectrum requirements for the mobile service

including suitable frequency ranges, and other specific requirements including channelling arrangements

(WP 5D)

Spectrum sharing and compatibility with other services

including consolidation of draft CPM text

(JTG 4-5-6-7)

Spectrum identified for IMT

Frequency bands identified for IMT in the Radio Regulations (RR):

Band (MHz)	RR Footnotes identifying the band for IMT
450 – 470	5.286AA
698 – 960	5.313A, 5.317A
1 710 - 2 025	5.384A, 5.388
2 110 - 2 200	5.388
2 300 - 2 400	5.384A
2 500 - 2 690	5.384A
3 400 - 3 600	5.430A, 5.432A, 5.432B, 5.433A

WP 5D Proposed frequency ranges

Description	Freq. ranges (MHz)	Inputs to WP 5D
< 1 GHz	410 – 420	410 - 430
	420 - 430	
	470-694	470-598
		598-608
		608-614
		614-694
	694-790	694-790
~ 1.5 GHz	1000-1700	1000-1300
		1300-1375
		1375-1400
		1400-1427/1427.9
		1427/1427.9-1452
		1452-1462.9
		1462.9-1475.9
		1 475.9-1492
		1492-1510/1510.9
		1510/1510.9-1518
		1518-1525
		1525-1559
		1559-1610
		1610-1660.5
		1660.5-1668
		1668-1675
		1675-1700

Proposed frequency ranges

Description	Freq. ranges (MHz)	Inputs to WP 5D
~ 2 GHz	2025-2110	2025-2090
		2090-2110
	2200-2290	2200-2215
		2215-2290
	2700-3400	2700-2900
		2900–2930
3-5 GHz		2930-3100
		3100-3200
		3200-3300
		3300-3400
	3400-5000	3400-3492.5
		3492.5-3542.5
		3542.5-3575
		3575-3600
		3600-3800
		3800-4200
		4200-4400
		4400-4900
		4900-5000

Proposed frequency ranges

Description	Freq. ranges (MHz)	Inputs to WP 5D
> 5 GHz	5350-5470	5350-5470
	5850-6425	5850-5925
		5925-6425
> 6 GHz	13.4 – 14.0 GHz	13.4 – 14.0 GHz*
	18.1 – 18.6 GHz	18.1 – 18.6 GHz*
	27.0 – 29.5 GHz	27.0 – 29.5 GHz*
	38.0 – 39.5 GHz	38.0 – 39.5 GHz*

*WP 5D indicated that technical information for compatibility studies has not yet been developed

Frequency ranges suitable for IMT implementation: 410-430 MHz, 470-790 MHz, 1 000-1 700 MHz, 2 025-2 110 MHz, 2 200-2 290 MHz, 2 700-5 000 MHz, 5 350-5 470 MHz and 5 850-6 425 MHz

WP 5A indicated 5 350 – 5 470 MHz and 5 725 – 5 850 MHz as suitable frequency ranges for RLAN

Estimated spectrum requirements

- ✓ Based on the methodology of Rec. ITU-R M.1768-1
- ✓ Calculated for RATG 1 (pre-IMT, IMT-2000 and enhancements) and RATG 2 (IMT-Advanced)

Total spectrum requirements for both RATG 1 and RATG 2 in the year 2020 (Report ITU-R M.2290)

	Total spectrum requirements for RATG 1	Total spectrum requirements for RATG 2	Total spectrum requirements RATGs 1 and 2
Lower user density settings	440 MHz	900 MHz	1 340 MHz
Higher user density settings	540 MHz	1 420 MHz	1 960 MHz

- ✓ WP 5A indicated 880 MHz required by 2018 for non-IMT broadband in 5 GHz range

Joint Task Group 4-5-6-7

http://http://itu.int/go/RJTG4567/web

International Telecommunication Union

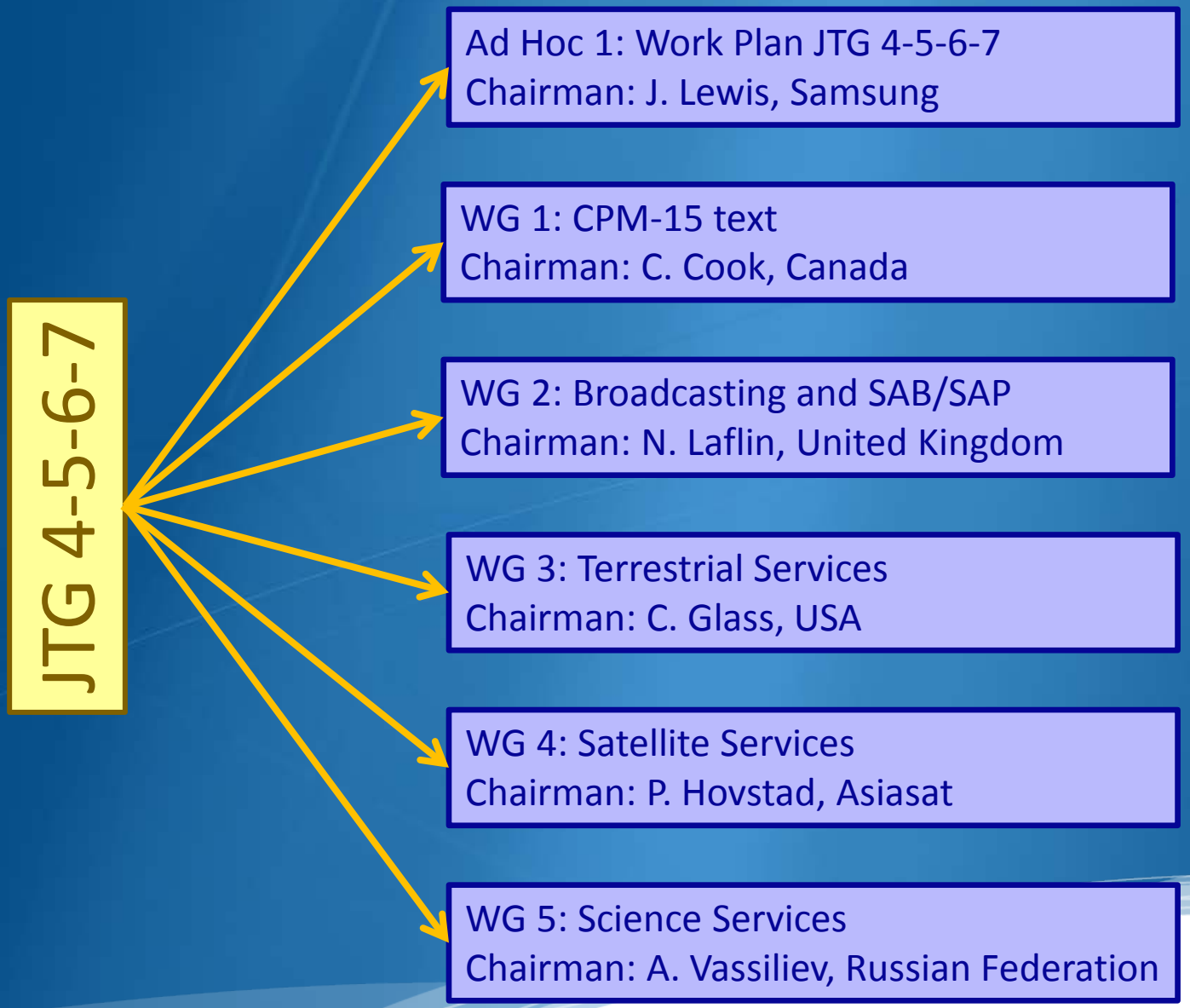
Background and Terms of Reference

- Decision to create JTG 4-5-6-7 – CPM-15-1 (CA/201, Annex 10)
- Chairman: Martin Fenton, United Kingdom
- Draft CPM text on WRC-15 agenda items 1.1 and 1.2 ➔ CPM-15 (to be submitted on 15 August 2014 Chapter Rapporteurs)
- Sharing studies taking into account:
  - Spectrum requirements for MS, including suitable frequency ranges from WP 5D
  - Spectrum requirements, technical and operational characteristics, performance objectives and protection requirements of other services from other Working Parties

Interaction with other concerned Working Parties

- Collect necessary information from WP's and SG's
- JTG 4-5-6-7 is self-sufficient – no need to liaise results to other Working Parties
- Urgent sharing studies - agenda item 1.2
  - Technical and operational characteristics, protection requirements from concerned Working Parties, and WP 5D and 6A to provide spectrum requirements before 31 December 2012
- Sharing studies – agenda item 1.1
  - Technical and operational characteristics, protection requirements and information on current and planned use from concerned Working Parties, and WP 5A and 5D to provide spectrum requirements preferably before 31 July 2013

Structure


JTG 4-5-6-7
Ad Hoc 1: Work Plan JTG 4-5-6-7
Chairman: J. Lewis, Samsung
WG 1: CPM-15 text
Chairman: C. Cook, Canada
WG 2: Broadcasting and SAB/SAP
Chairman: N. Laflin, United Kingdom
WG 3: Terrestrial Services
Chairman: C. Glass, USA
WG 4: Satellite Services
Chairman: P. Hovstad, Asiasat
WG 5: Science Services
Chairman: A. Vassiliev, Russian Federation

JTG 4-5-6-7

Status under agenda item 1.1

Potential candidate frequency bands

Frequency band	Primary service*	Results of studies
470-694/698 MHz	BS (television)	Inside GE06 sharing feasible with limitations (not SAB/SAP). Outside GE06 - separation distances.
1 350-1 400 MHz	Radioloc., (FS and MS in Reg. 1), RAS	Feasible with limitations. No adjacent band sharing with RNSS.
1 427-1 452 MHz	Aeronautical mobile (telem.), FS	Feasible with limitations.
1 452-1 492 MHz	FS, BS, RDS, AMT, BSS	FS, AMT, BSS feasible with limitations. Sharing not feasible with BS and RDS.
1 492-1 518 MHz	FS, AMT	Feasible with limitations.
1 518-1 525 MHz	FS, AMT, MSS	Feasible with limitations.
1 695-1 710 MHz	Met. Aids, MetSat, FS	Sharing not feasible with MetSat
2 700–2 900 MHz	ARNS, Met. Radar	Sharing not feasible with radar.
3 300–3 400 MHz	Radioloc., (FS and MS in Reg 1 and 3)	Sharing not feasible with radar.
3 400-4 200 MHz	FS, FSS	Feasible with limitations.
4 400-4 990 MHz	FS, AMS	Feasible with limitations.
5 350-5 470 MHz	EESS(active), Radioloc., ARNS, SRS	Sharing not feasible with EESS. Radar studies inconclusive.
5 725-5 850 MHz	FSS, Radioloc.	No conclusion.
5 925-6 425 MHz	FS, FSS	Feasible with limitations.

*Not necessarily primary in all of the band and in all Regions

Status under agenda item 1.2

- Support for lower edge of 694 MHz (Issue A)
  - channeling arrangements for IMT – baseline of lower duplex (30 MHz) of A5 channel plan
- BS-IMT sharing studies (Issue B)
  - Separation distances identified but differing views on OOBE
- ARNS-IMT sharing studies (Issue C)
  - Separation distances identified and regulatory procedures proposed
- Solutions for SAB/SAP (Issue D)
  - Sharing not possible with IMT
  - Footnotes solutions considered

ITU Inter-regional Workshops on WRC-15 Preparation

1st Meeting, 4-5 Dec 2013

Webpage

- Scheduled halfway through the preparatory cycle

⇨Presentation and review of the on-going preparatory studies of the ITU-R responsible groups for CPM-15

⇨Presentation of the preliminary views, draft priorities and positions of the regional groups

⇨Online archives of video presentations and documents

2nd Meeting, 12-13 Nov. 2014

Webpage

- Scheduled few months prior to CPM15-2

⇨Presentation of the Draft CPM Report to WRC-15 (explanation of the draft Methods to satisfy the WRC-15 Agenda items)

⇨Presentation and review of the regional groups' draft views, positions and common proposals

[3rd Meeting Q3 of 2015]*

- To be scheduled few months prior to WRC-15

⇨Presentation of the CPM & Dir. Reports to WRC-15

⇨Presentation and review of the regional groups' draft views, positions and common proposals

* see the ITU-R Meetings schedule at www.itu.int/en/events/Pages/Calendar-Events.aspx?sector=ITU-R

Thank you

www.itu.int