ITU-R Basics

Joaquin RESTREPO
Head, OPS Division
ITU, Radiocommunication Bureau

ITU Regional Radiocommunication Seminar for Americas (RRS-13-Americas)

Asunción, Paraguay, 8-12 July 2013

1. ITU
2. ITU-R
3. SPECTRUM MANAGEMENT
4. RADIO REGULATIONS
5. WRC-15

1. ITU
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4. RADIO REGULATIONS
5. WRC-15

International Telecommunication Union

Founded at Paris in 1865 as the International Telegraph Union. Present name in 1932

In 1947 became a specialized agency of the United Nations, responsible for issues concerning Information and Communication Technologies

ITU coordinates the shared global use of the radio spectrum and satellite orbits, works to improve telecommunication infrastructure in the developing world, and assists in the development and coordination of worldwide technical standards.

International Telecommunication Union

ITU is headquartered in Geneva, Switzerland

Americas Offices :

Regional Office: Brasilia

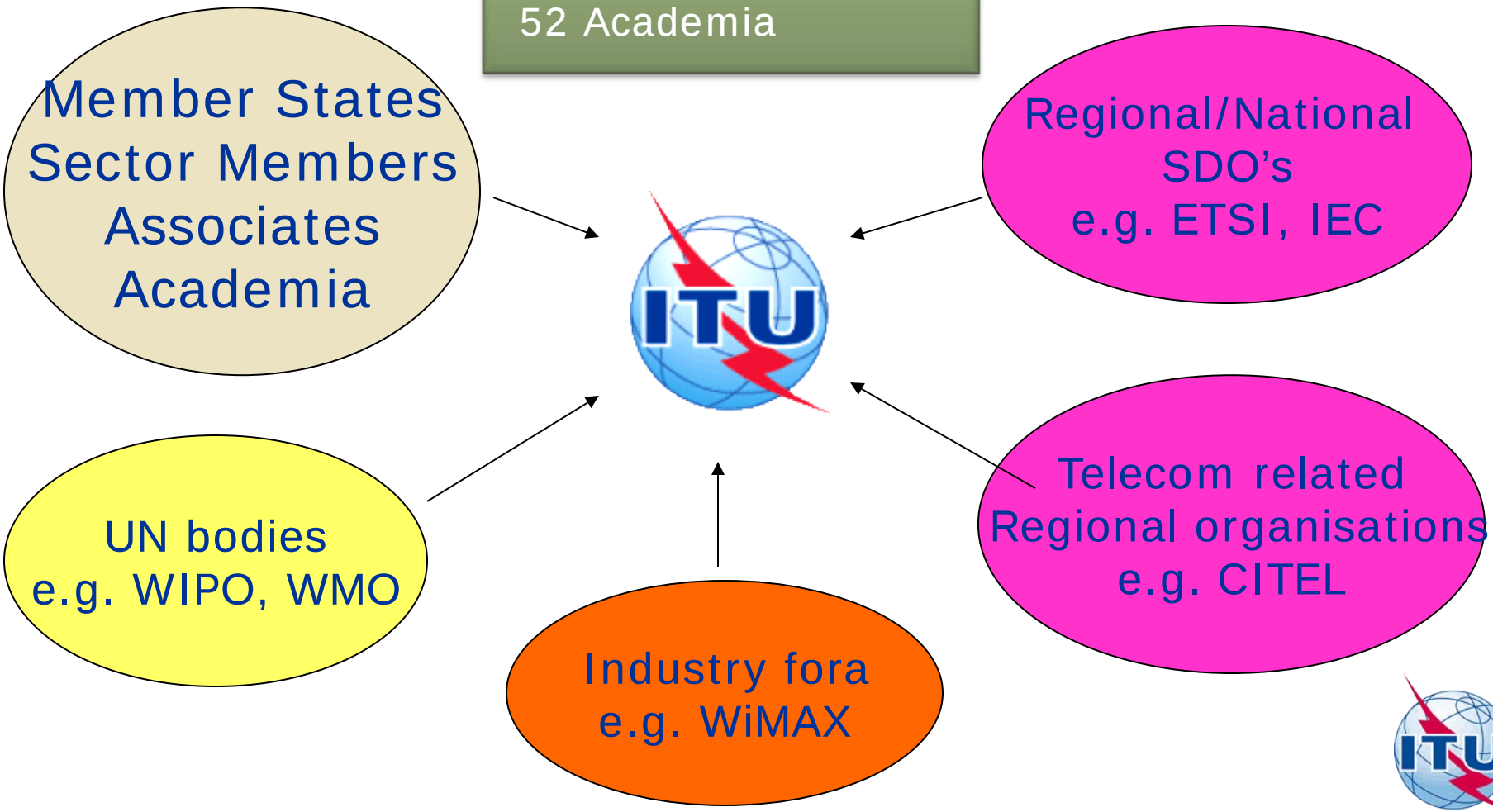
Area Offices:

- Santiago (South America),
- Tegucigalpa (Meso America)
- Bridgetown (Caribbean)

Also Region and Area Offices in: Asia, Africa, Europe

International Telecommunication Union

193 Member States
579 Sector Members
175 Associates
52 Academia



ITU Structure

Sector ITU-T
Telecommunication standardization
- network and service aspects
(Bureau: TSB)

Sector ITU-D
Assisting implementation and operation of telecommunications in developing countries
(Bureau: BDT)

Sector ITU-R
Radiocommunication standardization and global spectrum management
(Bureau: BR)

ITU Basic Texts

ITU is governed by their basic legal instruments, configured as international treaties and therefore binding on all signatory States. These legal instruments are:

1. The Constitution of the International Telecommunication Union
2. The Convention of the International Telecommunication Union
3. The Administrative Regulations governing the use of Telecommunications:
    a. International Telecommunication Regulations, RTI
    b. Radio Regulations, RR (including the Rules of Procedure)
4. Optional Protocol on the Compulsory Settlement of Disputes Relating to the Constitution, Convention and Administrative Regulations

ITU Governance

ITU is governed by the Plenipotentiary Conference (PP) and the Administrative Council.

Plenipotentiary Conference, PP

Supreme organ of the Union. It is the decision making body which determines the direction of the Union and its activities. PP is held every 4 years;

- Last PP: Guadalajara, Mexico, October 2010
- Next PP: Busan, Korea, October 2014

Plenipotentiary Conferences, PP

PP main functions:

- Review ITU Constitution and Convention
- Review ITU Strategic Plan and Budget
- Elect ITU Council Members (States)
- Elect ITU Officials:
  - General Secretary
  - Deputy Secretary
  - ITU Bureaus Directors: BR, TSB, BDT
- Elect Radio Regulations Board (12 members)

ITU constitution is available free of charge for general public (download) at:

ITU Council

ITU Council acts as the Union's governing body in the interval between Plenipotentiary Conferences.

Council is conformed by Administrations elected during PP (less than 25% of State Members, i.e. 48 Members)

ITU Council meets every year (last meeting June 2013)

Its role is to consider broad telecommunication policy issues to ensure that the Union's activities, policies, strategies, and budget, fully respond to today's dynamic, rapidly changing telecommunications environment.

ITU Council

Current Council is:

- **Region A (Americas): 9 seats:** Argentina, Brazil, Canada, Costa Rica, Cuba, Mexico, Paraguay, United States, Venezuela

- **Region B (Western Europe): 8 seats;** France, Germany, Greece, Italy, Spain, Sweden, Switzerland, Turkey

- **Region C (Eastern Europe and Northern Asia): 5 seats;** Bulgaria, Czech Republic, Poland, Romania, Russian Federation

- **Region D (Africa): 13 seats;** Algeria, Burkina Faso, Cameroon, Egypt, Ghana, Kenya, Mali, Morocco, Nigeria, Senegal, Rwanda, South Africa, Tunisia

- **Region E (Asia and Australasia): 13 seats;** Australia, Bangladesh, China, India, Indonesia, Japan, Korea (Republic of), Kuwait, Malaysia, Philippines, Saudi Arabia, Thailand, United Arab Emirates

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Radiocommunication Sector (ITU-R)

ITU-R mission is to ensure the rational, equitable, efficient and economical use of the radio-frequency spectrum by all radiocommunication services, including those using satellite orbits, and to carry out studies and approve Recommendations on radiocommunication matters.

In implementing this mission, ITU-R aims at creating the conditions for harmonized development and efficient operation of existing and new radiocommunication systems, taking due account of all parties concerned.

Radiocommunication Sector (ITU-R)

ITU-R primary objective is to ensure interference free operations of radiocommunication systems.

This is ensured through implementation of the Radio Regulations and Regional Agreements, and the efficient and timely update of these instruments through the processes of the World and Regional Radiocommunication Conferences.

Radio standardization establishes ´*Recommendations*´ intended to assure the necessary performance and quality in operating radiocommunication systems. It also seeks ways and means to conserve spectrum and ensure flexibility for future expansion and new technological developments.

ITU-R Duties

1. Celebration of World and Regional Radiocommunication to expand and adopt Radio Regulations and Regional Agreements on the use of radio spectrum

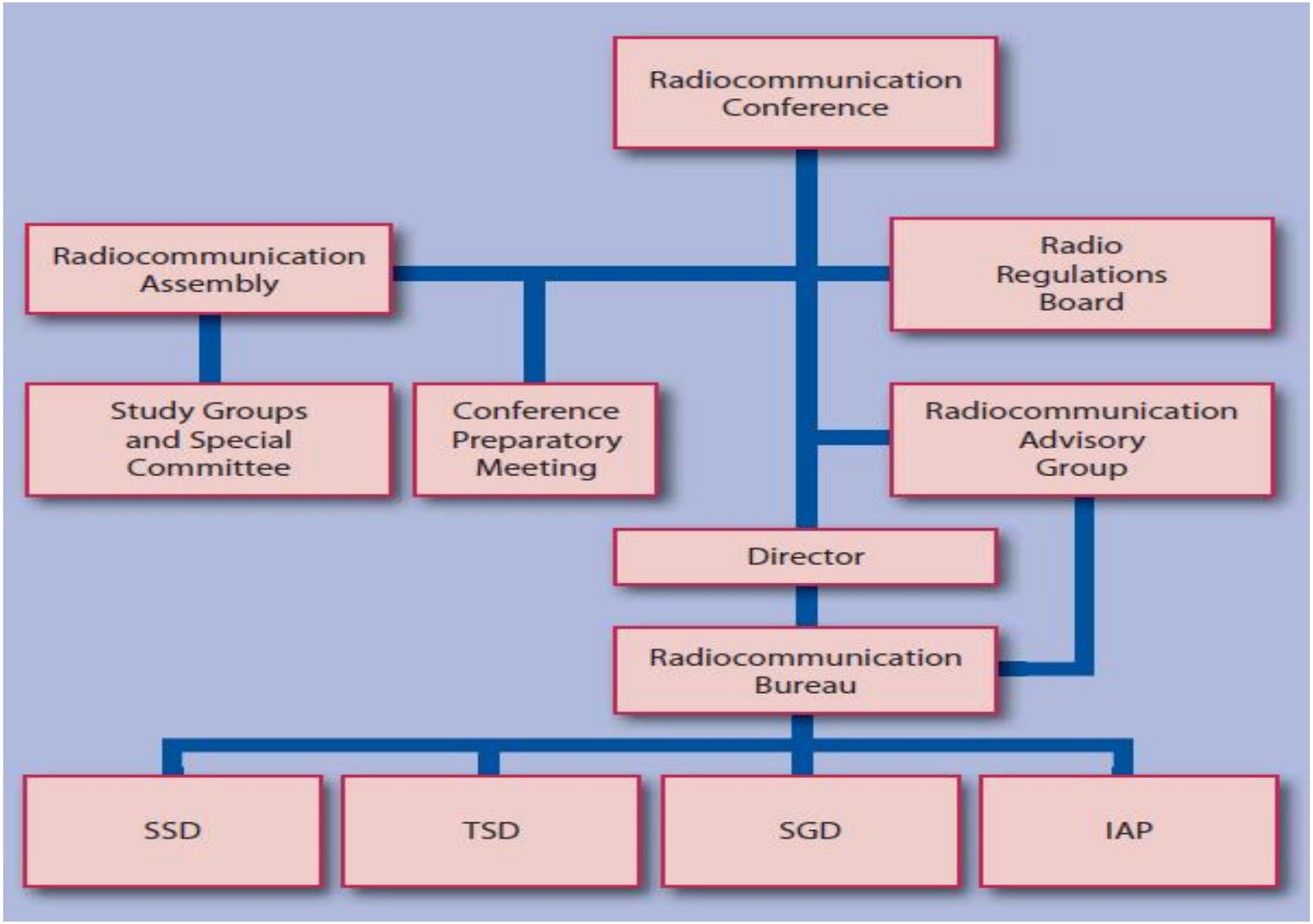
2. Development of ITU-R, developed by the study (EC) Radio in the framework established by the Assemblies, on the technical characteristics and operational procedures of the services and radio systems

3. Coordination of efforts to eliminate harmful interference between radio stations of different countries

4 . Updating the Master International Frequency Register

5. The establishment of mechanisms, providing information and seminars to contribute to the management of radio spectrum nationally

ITU-R Structure



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).

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 3 (or 4) years; normally is held at Geneva, Switzerland, with a typical duration of 4 weeks

Last WRC: Geneva, Switzerland February 2012 (WRC-12)

Next WRC:

- Geneva, Switzerland October 2015 (WRC-15)
- Geneva, Switzerland 2018 (WRC-18)

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.

Radio Regulations Board

Radio Regulations Board, RRB, addresses the correct and accurate application of RR and RoP.

Conformed by 12 members (2 for each administrative region of the ITU), elected during PP

RRB performs their functions independently and non-permanent basis.

RRB normally meets 4 times per year at the ITU headquarters in Geneva, Switzerland.

RRB Duties

1. Approve the Rules of Procedure which uses the ITU-R to implement the provisions of RR, and registering frequency assignments made by Member States;

2. Consider matters referred by the BR can not be solved by applying the RR and its Rules of Procedure;

3. Browse research reports unresolved interference by BR application of one or more treatments, and make recommendations thereon;

4. Advise the WRC and RA

5. Consider appeals against decisions taken by the BR regarding frequency assignments;

Radiocommunications Assembly

1. Radiocommunication Assemblies (RA) are responsible for the structure, programme and approval of radiocommunication studies.

RA are normally convened every 3 (or 4) years, associated in time and place with WRC (the week before)

Last RA: Geneva, Switzerland January 2012 (RA-12)

Next RA:

- Geneva, Switzerland October 2015 (RA-15)
- Geneva, Switzerland 2018 (RA-18)

RA Duties

1. Assign conference preparatory work and other questions to the Study Groups

2. Respond to other requests from ITU conferences

3. Suggest suitable topics for the agenda of future WRCs

4. Approve and issue ITU-R Recommendations and ITU-R Questions developed by the Study Groups

5. Set the programme for Study Groups, and disband or establish Study Groups according to need.

Radiocommunications Advisory Group

Radiocommunication Advisory Group (RAG) is tasked to:

1. Review the priorities and strategies adopted in the Sector
2. Monitor progress of the work of the Study Groups;
3. Provide guidance for the work of the Study Groups;
4. Recommend measures to foster cooperation and coordination with other organizations and with the other ITU Sectors.
5. Provide advice on these matters to the Director of the Radiocommunication Bureau (BR).

Radiocommunications Advisory Group

Radiocommunication Assemblies (RAs) may refer specific matters within its competence to the RAG. The RAG may be authorized to act on behalf of the RA between two Assemblies.

RAG meets yearly at Geneva.

- Last meeting: May 2013
- Next meeting: June 2014

RAG meetings are open to ITU-R members.

ITU-R Study Groups

ITU-R Study Groups are established and assigned study Questions by a RA, to prepare draft Recommendations for approval by ITU Member States.

Studies focus on the following:

1. Efficient management and use of the spectrum/orbit resource by space and terrestrial services
2. Characteristics and performance of radio systems
3. Operation of radio stations
4. Radiocommunication aspects of distress and safety matters
5. Carry out preparatory studies for WRCs or RRCs

ITU-R Study Groups

More than 5000 specialists, from: ITU Member States, Sector and Associate Members, and Academia

ITU-R SG accomplish their work in cooperation with other international radiocommunication organizations. Particular attention is paid to the radiocommunication needs of developing countries.

SG are composed by Working Parties, WP

WP meets twice a years (some WP 1 or 3), normally at Geneva.

SG meets yearly after sessions of their respective WP

ITU-R Study Groups

SG 1 Spectrum management

SG 3 Radiowave propagation

SG 4 Satellite services

SG 5 Terrestrial services

SG 6 Broadcasting service

SG 7 Science services

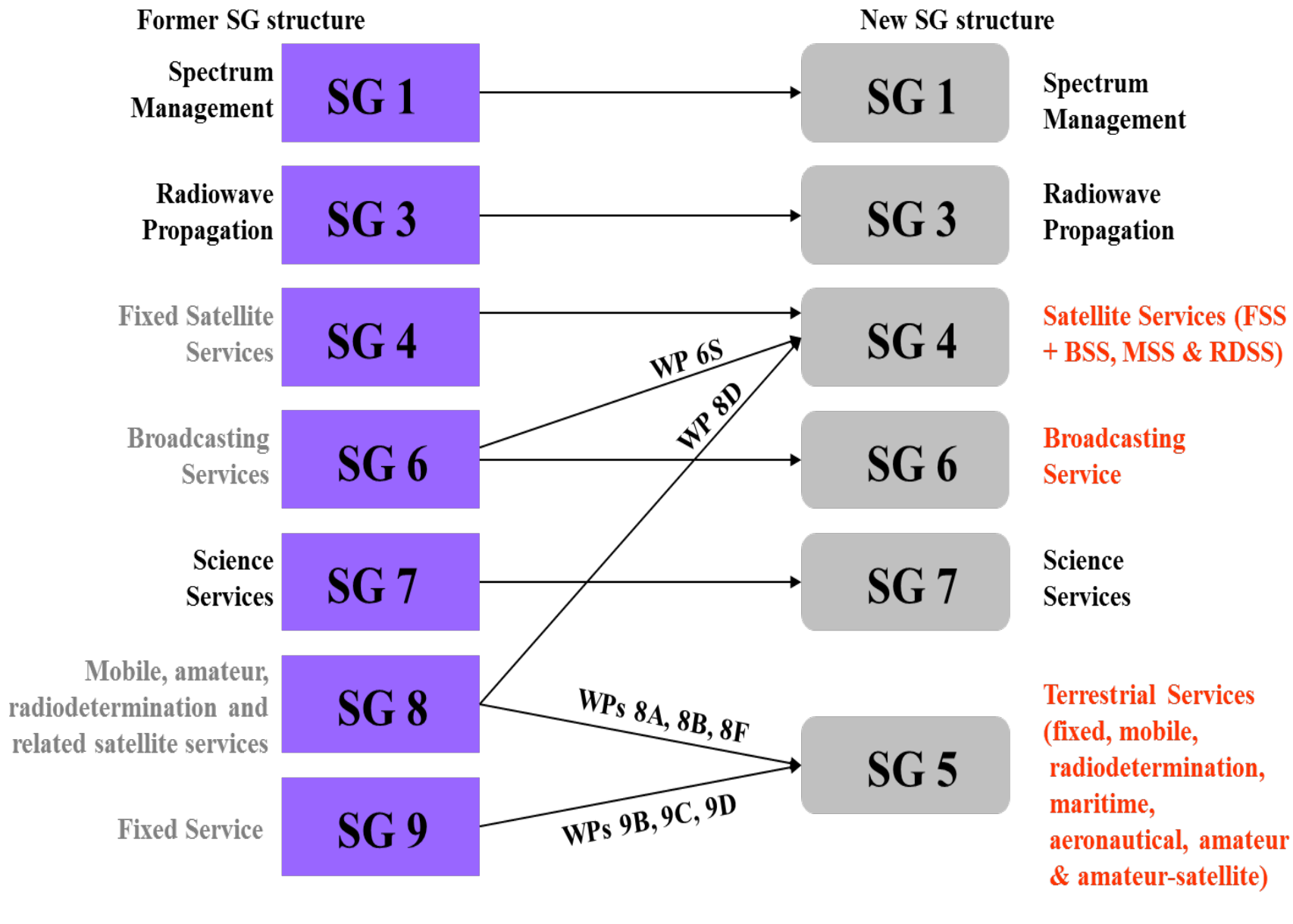
Joint Task Group 4-5-6-7 (JTG 4-5-6-7): WRC-15 Agenda items 1.1 and 1.2

CCV: Coordination Committee for Vocabulary

CPM: Conference Preparatory Meeting

SC: Special Committee on Regulatory/Procedural Matters

ITU-R Study Groups



ITU-R Study Groups

SG 1 Spectrum management

WP 1A: Engineering Techniques

WP1B: Methodologies for Efficient Spectrum Management and Economic Strategies

WP 1C: Spectrum Monitoring

SG 3 Radiowave propagation

WP3J: Fundamentals of Propagation

WP 3K: Point-to-area propagation

WP 3L: Ionospheric propagation and radio noise

WP 3M: Point to Point Spread and Earth-Space

ITU-R Study Groups

SG 4 Satellite services

WP 4A: Efficient use of Orbit and Spectrum for the Fixed Satellite Service, SFS, and the Broadcasting Satellite Service, SRS

WP 4B: Systems, Radio Interfaces, Millennium Performance and Availability for FSS, BSS and MSS (Mobile Satellite Service), including IP-based applications and satellite news gathering (Satellite Newsgathering, SNG)

WP4C: Efficient use of Orbit and Spectrum for MSS and SDRS (Radio determination Satellite Service). Is also responsible for aspects of performance related to SDRS

ITU-R Study Groups

SG 5 Terrestrial services

WP 5A: Land Mobile Service above 30 MHz (International Mobile Telecommunications excluded, IMT) Wireless Access in the Fixed Service; Amateur Service and Amateur-Satellite Service

WP 5B: Maritime Mobile Service, including Global Maritime Distress and Safety System (GMDSS), aeronautical mobile, and Radiodetermination Service

WP 5C: Fixed Wireless Systems; HF systems and other systems below 30 MHz in the Fixed and Land Mobile Services

WP 5D: IMT Systems (3 sessions per year)

ITU-R Study Groups

SG 6 Broadcasting service

WP 6A: Provision of terrestrial broadcasting

WP 6B: Assembly and access to the broadcasting service

WP 6C: Production and evaluation of the quality of programs

SG 7 Science services

WP 7A: Emission standard frequency and time signals

WP 7B: Applications to space radiocommunications

WP 7C: Remote Sensing Systems

WP 7D: Radio Astronomy

ITU-R Study Groups

No Working Parties splitting:

Joint Task Group 4-5-6-7 (JTG 4-5-6-7): WRC-15 Agenda items 1.1 and 1.2

CCV: Coordination Committee for Vocabulary

CPM: Conference Preparatory Meeting

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ITU-R Releases

- *ITU-R Recommendations:* http://www.itu.int/pub/R-REC
- *ITU-R Reports:* http://www.itu.int/pub/R-REP
- *ITU-R Handbooks:* http://www.itu.int/pub/R-HDB

All ITU-R Rec & Rep, and the SM related Handbooks might be download by general public, free of charge

Compliance with ITU-R Recommendations is not mandatory. However, while some are incorporated by reference in the ITU Radio Regulations,

ITU-R Recommendations are developed by radiocommunication world experts, thereby enjoying a high reputation and worldwide implementation, having the status of international standards in their domain of application.

ITU-R Releases

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

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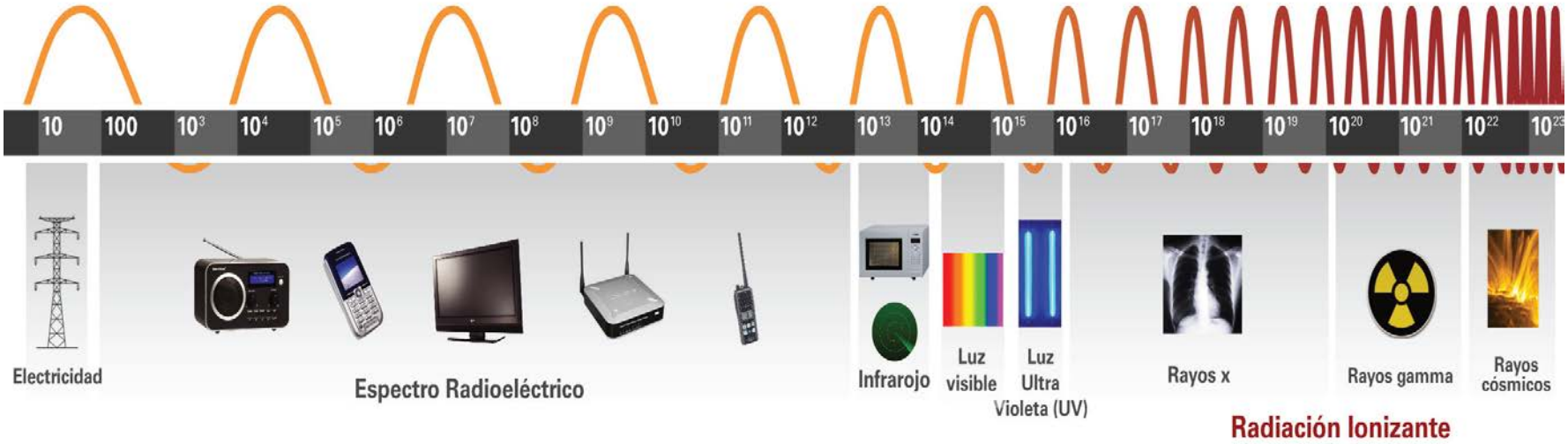
Spectrum Management

Radioelectric Spectrum:

Portion of Electromagnetic Waves, used for Communications

From 3 KHz to 3.000 GHz

Artificial burden, based on technologic development



Spectrum Management

Spectrum as a Resource

Natural Resource: phenomena of nature

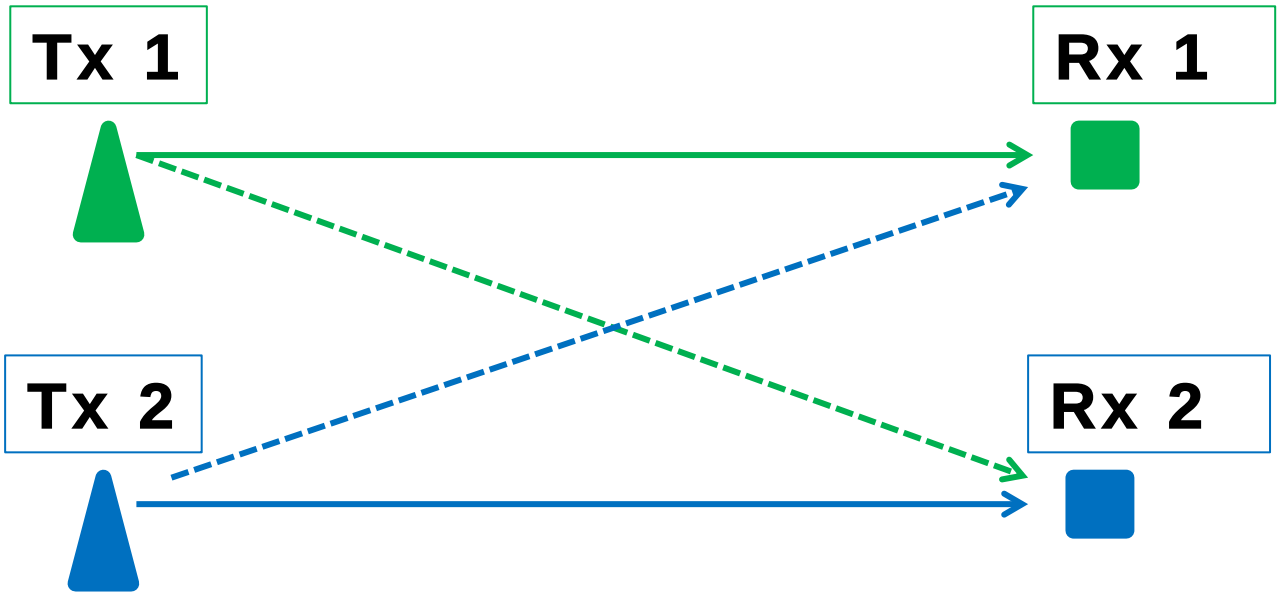
Non replicable: can be reproduced (as agriculture)

Scarce: quantity of information (Mbps) that can handle (MHz) is limited, i.e. “shared” by stations using same frequency

Then, Spectrum Management aims to guarantee and efficient and rational use of Spectrum

Main goal: <u>prevent and control Interferences</u>

Spectrum Management



Interference: any signal received from other Transmitter different than the intended one

It disturbs the capacity of any radiocommunication link to send information

Interferences (RR)

*1.166 **interference:** The effect of unwanted energy due to one or a combination of emissions, radiations, or inductions upon reception in a radiocommunication system, manifested by any performance degradation, misinterpretation, or loss of information which could be extracted in the absence of such unwanted energy.*

*1.167 **permissible interference:** Observed or predicted interference which complies with quantitative interference and sharing criteria contained in these Regulations or in ITU-R Recommendations or in special agreements as provided for in these Regulations.*

Interferences (RR)

*1.168 **accepted interference:** Interference at a higher level than that defined as permissible interference and which has been agreed upon between two or more administrations without prejudice to other administrations.*

*1.169 **harmful interference:** Interference which endangers the functioning of a radionavigation service or of other safety services or seriously degrades, obstructs, or repeatedly interrupts a radiocommunication service operating in accordance with Radio Regulations (CS).*

Spectrum Management

Planning:

Defining the use of different bands (Allocations)

Licensing

Authorizing of emissions, and technical conditions (Assignments)

Enforcement

Verifying the use of spectrum in conformity with licensing

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RADIO REGULATIONS

As spectrum cannot be limited to a given territory, international coordination is necessary

RR is an International Treaty, elaborated and revised by administrations, during WRC; has a binding nature for signatories states.

ITU acts a depositary of RR

Last version: RR-12 (as revised during WRC-12)

Download for general public, free of charge:

http://www.itu.int/pub/R-REG-RR-2012

RADIO REGULATIONS

RR classifies services that use radio communications, according to several parameters, namely:

1. Link type: Terrestrial (earth to earth) or satellite (earth-satellite, satellite-earth, satellite-satellite)

2. Type of coverage: land, maritime, aeronautical

3. Station type: fixed, mobile

4. Type of use: communications, broadcasting, navigation and associated, meteorological, scientific, earth observation, time standard, astronomy, security, special.

RADIO REGULATIONS

It also defines the different types of radio stations, classified as:

1. Terrestrial space
2. Land, sea, air
3. Fixed, mobile
4. Broadcasting, amateur radio, radio-astronomy, etc.

There are 41 types of services and 53 types of stations

RADIO REGULATIONS

*1.16 **allocation (of a frequency band):** Entry in the Table of Frequency Allocations of a given frequency band for the purpose of its use by one or more terrestrial or space radiocommunication services or the radio astronomy service under specified conditions. This term shall also be applied to the frequency band concerned.*

*1.17 **allotment (of a radio frequency or radio frequency channel):** Entry of a designated frequency channel in an agreed plan, adopted by a competent conference, for use by one or more administrations for a terrestrial or space radiocommunication service in one or more identified countries or geographical areas and under specified conditions.*

RADIO REGULATIONS

1.18 assignment (of a radio frequency or radio frequency channel): Authorization given by an administration for a radio station to use a radio frequency or radio frequency channel under specified conditions.

Allocation is granted to Radiocommunications Services

Assignment is granted to Radiocommunications Stations

RR does NOT deal with Assignments, because it is an sovereign and autonomous right of administrations

However, Station Assignment shall be consistent with the Allocation of the band such Station intends to operate:

e.g.: TV Station, in bands allocated to Broadcasting Services

RADIO REGULATIONS

RR is technically neutral, hence, it

- Does allocate frequency bands to radiocommunication services
- Does not allocate to specific applications
- Does not allocate to particular technologies

e.g.: allocation for:

- “mobile”(terrestrial) (*service*)
- not for:

- cellular networks (*application*)
- neither GMS, LTE, Wimax, etc. (*technology*)

RADIO REGULATIONS

Type of Allocations:

PRIMARY (with capital letters) Secondary (with lower case)

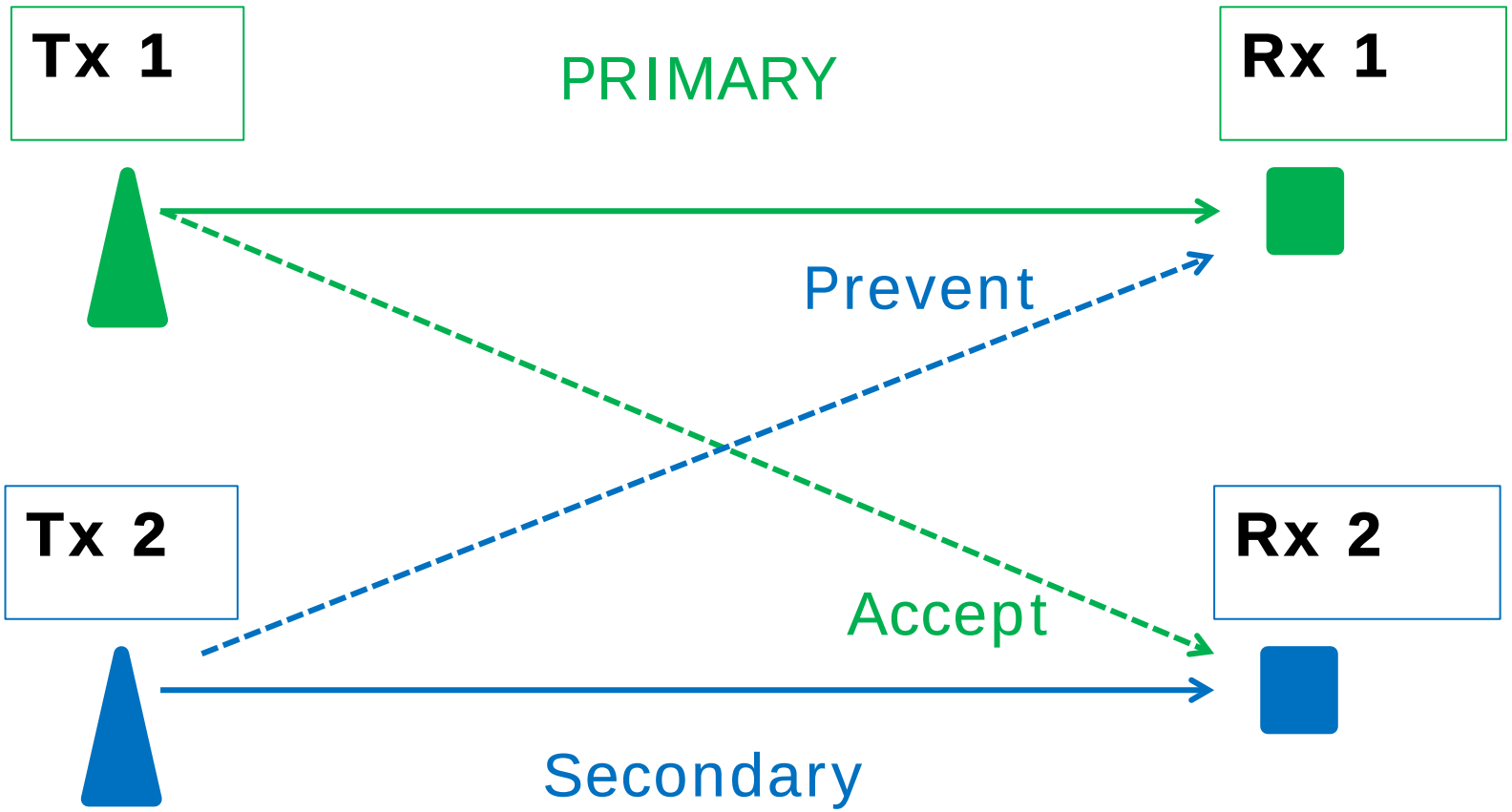
5.28 Stations of a secondary service:

5.29 a) shall not cause harmful interference to stations of primary services to which frequencies are already assigned or to which frequencies may be assigned at a later date;

5.30 b) cannot claim protection from harmful interference from stations of a primary service to which frequencies are already assigned or may be assigned at a later date;

5.31 c) can claim protection, however, from harmful interference from stations of the same or other secondary service(s) to which frequencies may be assigned at a later date

RADIO REGULATIONS



RADIO REGULATIONS

Many times National regulations “replicates” RR content, adopting them into their legal framework.

Nonetheless, RR is applied on the international context; for national issues, each country should apply its national framework

National Spectrum Planning includes National Table of Frequency Allocations (NFTA), and maybe also channeling Plans. They could adopt applications and/or technologies

NFTA shall be consistent with the national concerns as expressed on the International Table of Frequency Allocations (ITFA) of RR (Article 5), in particular his Region, and national footnotes

STATIONS REGISTRATION

Stations protection cannot be “in abstract”

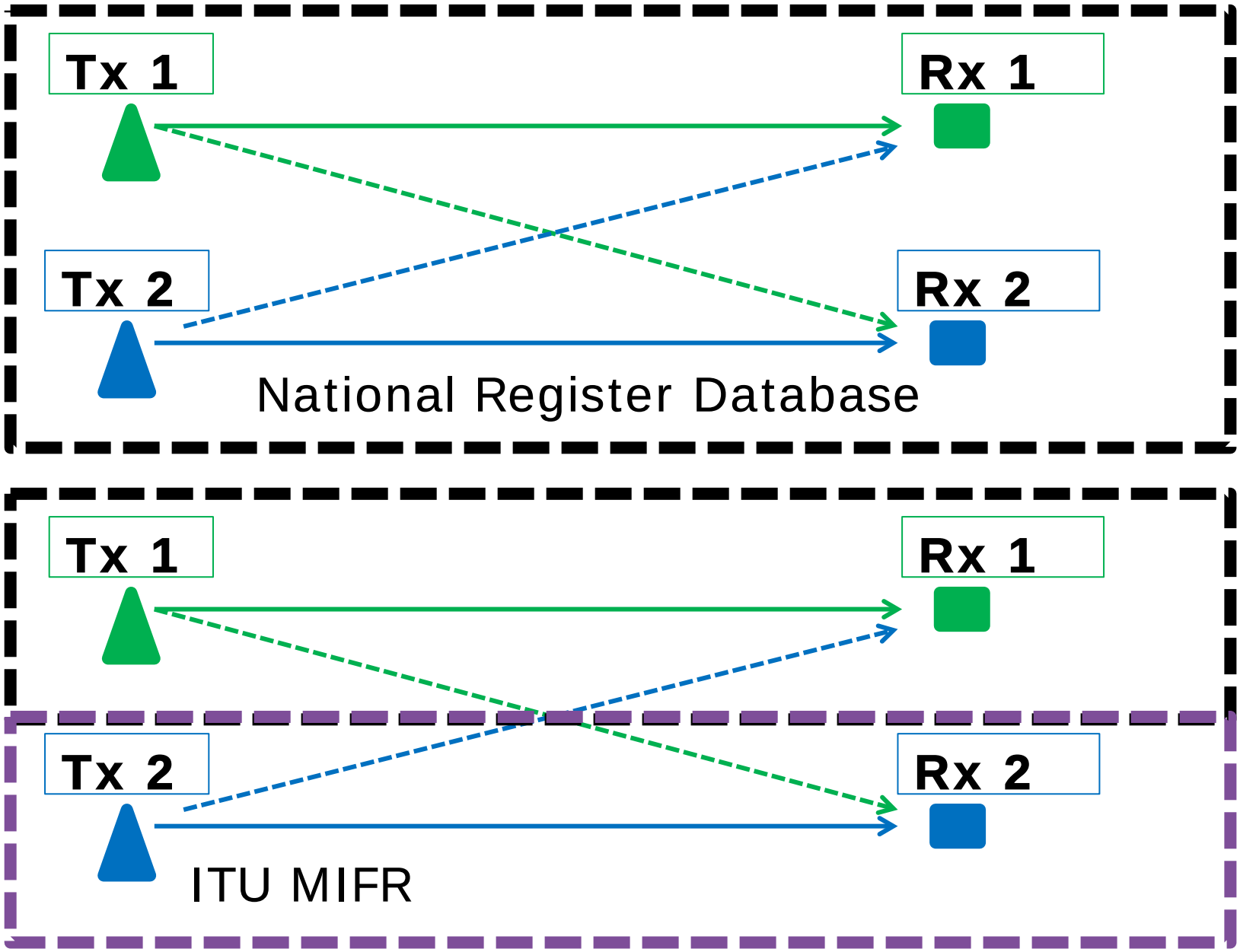
Stations shall be duly registered, with all their technical parameters, and other issues:

- National: National Table
- International: ITU MIFR

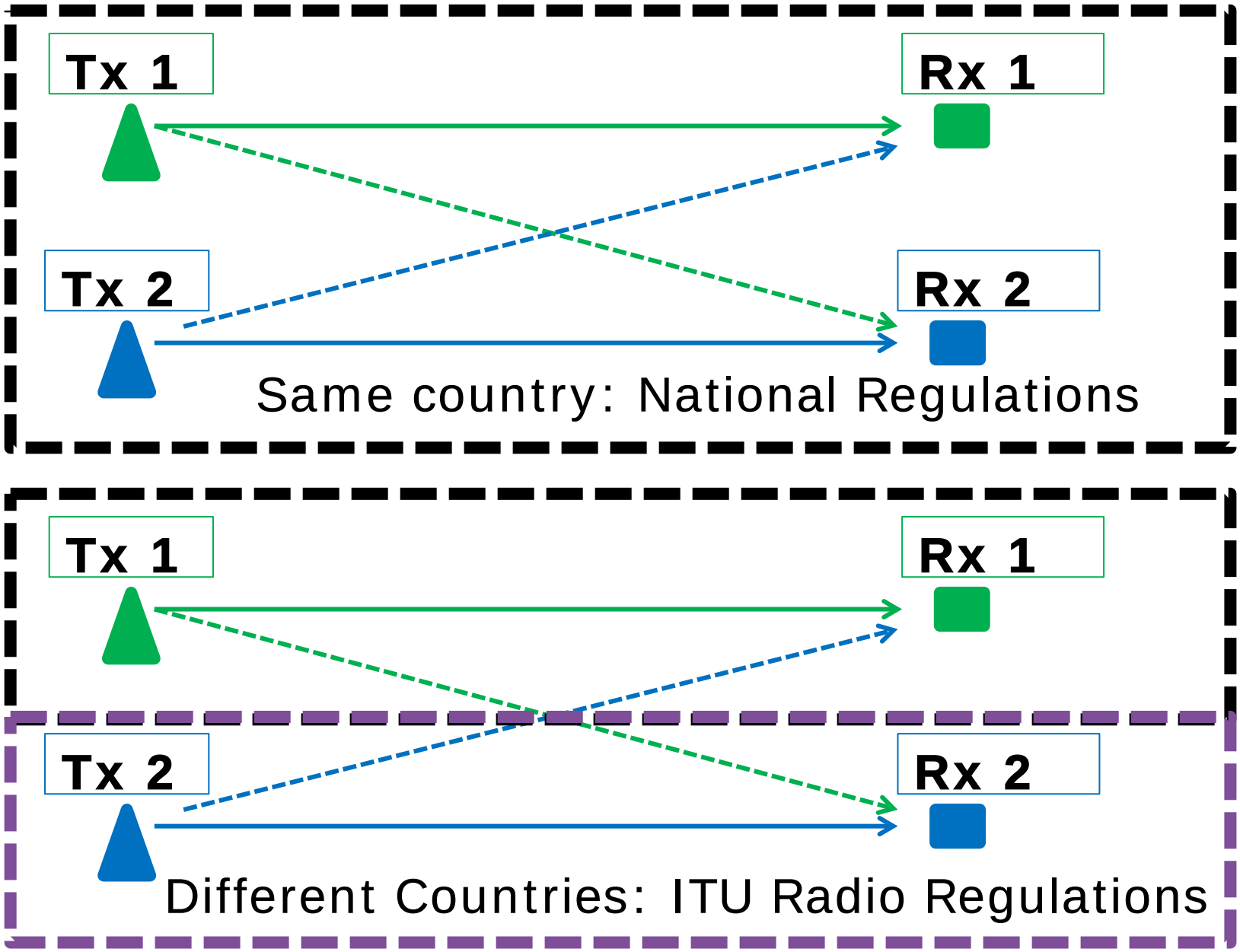
Interference situations need to be objectively analyzed, and measured

- National: Application of Spectrum National Rules
- International: Application of RR and RoP

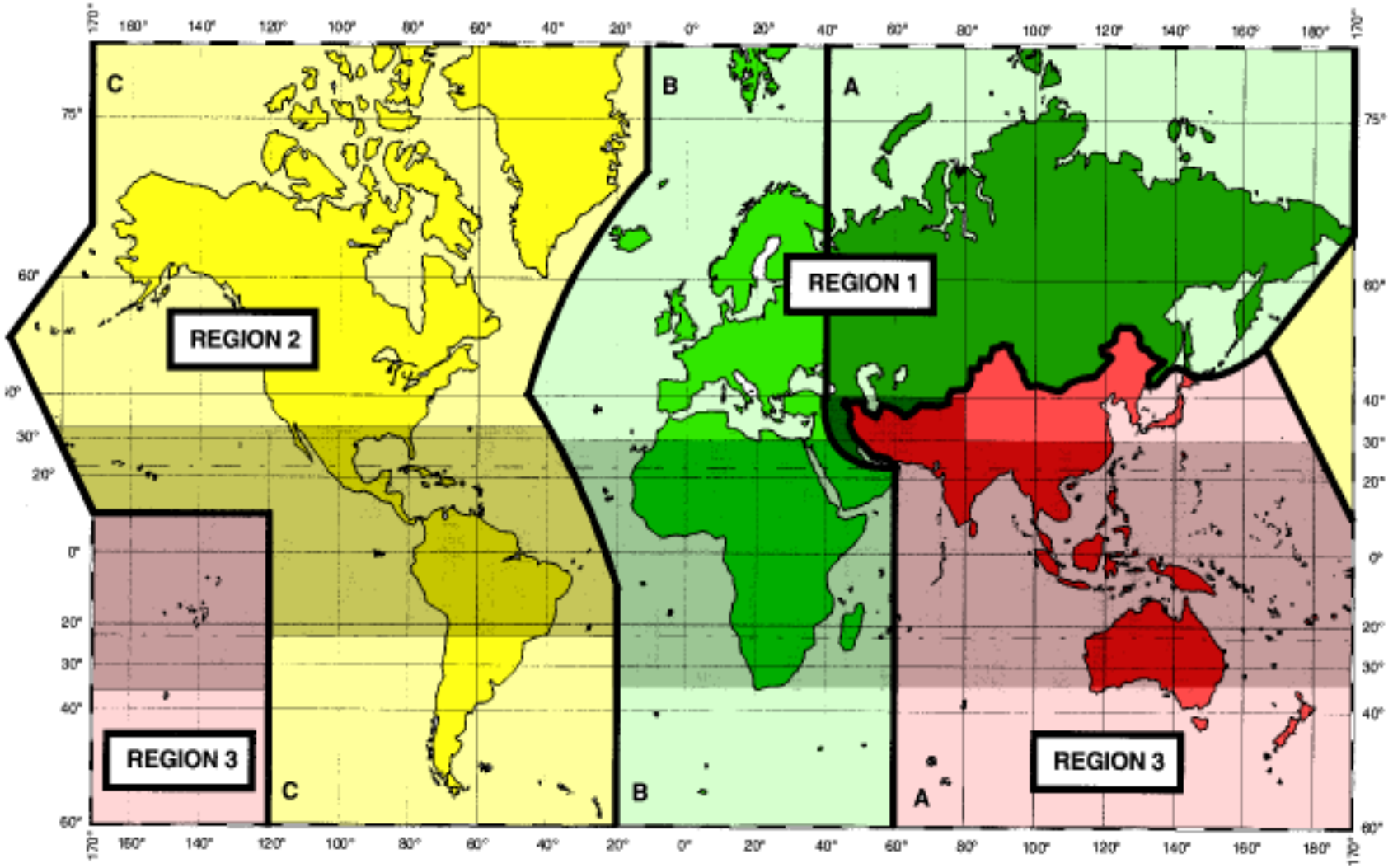
STATIONS REGISTERS



SPECTRUM RULES



RR REGIONS



RADIO REGULATIONS

VOLUME 1: Articles (59)

VOLUME 2: Appendices (22)

VOLUME 3: Resolutions (151) and Recommendations (24)

VOLUME 4: ITU-R Recommendations incorporated by reference (39)

MAPS: Set of Maps for App. 27

RADIO REGULATIONS VOL 1

CHAPTER I – Terminology and technical characteristics

ARTICLE 1 Terms and definitions

ARTICLE 2 Nomenclature

ARTICLE 3 Technical characteristics of stations

CHAPTER II – Frequencies

ARTICLE 4 Assignment and use of frequencies

ARTICLE 5 Frequency allocations

ARTICLE 6 Special agreements

RADIO REGULATIONS VOL 1

CHAPTER III – Coordination, notification and recording of frequency assignments and Plan modifications

ARTICLE 7 Application of the procedures

ARTICLE 8 Status of frequency assignments recorded in the Master International Frequency Register

ARTICLE 9 Procedure for effecting coordination with or obtaining agreement of other administrations

ARTICLE 10 (Number not used)

ARTICLE 11 Notification and recording of frequency assignments

ARTICLE 12 Seasonal planning of the HF bands allocated to the broadcasting service between 5 900 kHz and 26 100 kHz

ARTICLE 13 Instructions to the Bureau

ARTICLE 14 Procedure for the review of a finding or other decision of the Bureau

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CHAPTER IV – Interferences

ARTICLE 15 Interferences

ARTICLE 16 International monitoring

CHAPTER V – Administrative provisions

ARTICLE 17 Secrecy

ARTICLE 18 Licences

ARTICLE 19 Identification of stations

ARTICLE 20 Service publications and online information systems

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CHAPTER VI – Provisions for services and stations

ARTICLE 21 Terrestrial and space services sharing frequency bands above 1 GHz

ARTICLE 22 Space services

ARTICLE 23 Broadcasting services

ARTICLE 24 Fixed service

ARTICLE 25 Amateur services

ARTICLE 26 Standard frequency and time signal service

ARTICLE 27 Experimental stations

ARTICLE 28 Radiodetermination services

ARTICLE 29 Radio astronomy service

ARTICLE 29A Radio services related to Earth observation

RADIO REGULATIONS VOL 1

CHAPTER VII – Distress and safety communications

CHAPTER VIII – Aeronautical services

CHAPTER IX – Maritime services

CHAPTER X – Provisions for entry into force of the Radio Regulations

ARTICLE 59 Entry into force and provisional application of the Radio Regulations

RR Table of Allocations (Art. 5)

Example: excerpt from Art. 5:

Allocation to services		
Region 1	**Region 2**	**Region 3**
495-505	MARITIME MOBILE	
505-526.5 MARITIME MOBILE 5.79 5.79A 5.84 AERONAUTICAL RADIONAVIGATION	**505-510** MARITIME MOBILE 5.79 **510-525** MARITIME MOBILE 5.79A 5.84 AERONAUTICAL RADIONAVIGATION	**505-526.5** MARITIME MOBILE 5.79 5.79A 5.84 AERONAUTICAL RADIONAVIGATION Aeronautical mobile Land mobile

Global Harmonization: Ultimate goal (as possible; RR Rec 34)

Ex.: 495-505 KHz situation

RADIO REGULATIONS

NOT HARMONIZED ALLOCATION:

- Different Services by Region: not global scale for terminals; harder border coordination (Regions edges)
- Different Primary Services: countries might adopt different primary service, harder border coordination intra RR Region
- Primary and Secondary Services: some country might allocate as primary onto his territory; however, for international coordination it can be claimed protection
- National Footnotes: national particular exemptions, with all the above inconvenients

ITU-R Rules of Procedure

The Radio Regulations are supplemented by its Rules of Procedure, clarifying the application of particular rules or establishing the necessary practical procedures that may not be stipulated in current regulations. These rules stem from an extensive review and revision of the Rules of Procedure of the Board of the Radio Regulations, taking into account the decisions of the WRC.

ITU-R Rules of Procedure

RoP are to be used by administrations and the Radiocommunication Bureau in applying the Radio Regulations. The RoP are presented in three main parts:

- Part A: Rules relating to a provision of the Radio Regulations, or a limited number of them.
- -Part B: Rules relating to a process such as the technical examinations.
- Part C: Rules relating to internal working methods of the Board

Example RR & RoP bounds

In appliance of provision 1.23 (RR)

1.23 *space operation service:* A *radiocommunication service* concerned exclusively with the operation of *spacecraft*, in particular *space tracking*, *space telemetry* and *space telecommand*.

These functions will normally be provided within the service in which the *space station* is operating.

it shall be followed the associated procedure (RoP)

1.23

1 Number **1.23** states that the functions of the space operation service (space tracking, space telemetry, space telecommand) will normally be provided within the service in which the space station is operating. The question thus arises as to the appropriateness of considering frequency assignment notices with classes of stations performing these functions, to be in conformity with the Table of Frequency Allocations when the Table does not contain an allocation to the space operation service.

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WRC-15 AGENDA

- WRC-15 Agenda was drafted during

the past WRC-12 (WRC-12 Res. 807)

- Approved by the ITU Council

in 2012 (C12 Res. 1343)

- Booklet with detailed WRC-15 Agenda and its Related Resolutions might be downloaded by general public, free of charge, at:

http://www.itu.int/go/wrc-15

WRC-15 AGENDA

1. Allocations: Items 1: 1.1 to 1.18 (incl. 1.6.1 & 1.6.2; 1.9.1 & 1.9.2)

2: ITU-R Recommendations incorporated by reference

3: RR changes and amendments

4: Res. and Rec. of previous WRC

5: Report from the Radiocommunication Assembly

6: Urgent items to ITU-R SG for next WRC

7: Review Res. 86 related to rational, efficient, and economical use of radio frequencies and any associated orbits, including the geostationary-satellite orbit;

8: country footnotes

9: BR Director Report (items 9.1 to 9.3)

10: Agenda Next WRC (WRC-18), and Draft Agenda WRC-?

WRC-15 Timelines

February – December 2012	January – December 2013	January – December 2014	January – September 2015	26-30 Oct. 2015	2-27 Nov. 2015
CPM15-1 20-21 Feb.	SC-WP Q4	SC [Q4]	CPM15-2 23/3-2/4	RA-15	WRC-15
Meetings of Responsible Groups and Study Groups 21 Feb. 2012 →→→→→→→→→→→→→→→→→→→→ [Q3] of 2014					
CA/201 CPM 15-1 Results 19 Mar.		Deadline for draft CPM texts [Q3]			
[CPM-15 Streering]	[CPM-15 Streering]	CPM-15 Management Team [Q3]			
	ITU Workshop On WRC-15 Prep. (Q4)	ITU Workshop On WRC-15 Prep. [Q4]	ITU Workshop On WRC-15 Prep. [Q3]		
C-12, 4-13 Jul WRC-15 Agenda		Publication Draft CPM Report [Q4]	Publication CPM Report to WRC-15		

WRC-15 Regional Meetings

•APG15-1, 10-11 September 2012, Da Nang, S.R. Viet Nam
•**APG15-2, [July 2012]**

Asia Pacific Telecommunity

•**1st meeting, [Early 2013]**

•**1st meeting, [February 2013]**

African Telecommunications Union

•CPG15-1, 16 – 18 April 2012, Mainz, Germany
•**CPG15-2, 22-25 January 2013, Luxembourg**

European Conference of Postal and Telecommunications Administrations

•XX PCC.II, 22-27 October 2012, Mexico City, Mexico
•**XIX PCC.II, [8-12 April 2013]**

Inter-American Telecommunication Commission

•COMs/WG1, 21-25 May 2012, Moscow, Russian Federation
•**WG2, 17-21 December 2012, Kiev, Ukraine**

Regional Commonwealth in the field of Communications

WRC-15 TOPICS

BROADBAND

- Additional spectrum for mobile BB applications (and band identification for IMT)
- Use of the 700 MHz band in Region 1 by the mobile (with IMT Id.) and other services
- Additional spectrum for Broadband PPDR for a revision of Res. 646 (Rev. WRC-12)

WRC-15 TOPICS

SPACE SERVICES

- Possible additional primary allocations for FSS:

  - 250 MHz (Reg. 1) for E-S & S-E, within 10-17 GHz to overcome shortfall in spectrum available at 10-15 GHz

  - 250 MHz (Reg. 2) & 300 MHz (Reg. 3) for E-S, within the 13-17 GHz, to overcome the bandwidth limitation in E-S vs. S-E

- Review regulatory provisions of current FSS allocations

WRC-15 TOPICS

SPACE SERVICES

- Possible new FSS & MMSS allocations at 7/8 GHz – to increase spectrum available for current & future FSS applications, estimated at ~100 MHz max – for MMSS, to address operations beyond territorial waters with additional regulatory measures

- Spectrum requirements & possible additional allocations to MSS, incl. Sat. comp. for BB applications (IMT), 22-26 GHz

WRC-15 TOPICS

SPACE SERVICES

- Review the use of the band 5091-5150 MHz by the FSS (E-to-S) (limited to feeder links of N-GSO MSS systems)
- Review provisions relating to ESVs at 5.925-6.425 & 14-14.5 GHz, to take account of the technological advancements and compatibility improvements
- Regulatory notification/coordination procedures for an efficient use of spectrum/orbit resources - Res.86
- Coordination Arc reduction and technical criteria
- Protection of the MSS in the band 406-406.1 MHz

WRC-15 TOPICS

SPACE SERVICES

- Satellite orb. & frequency spectrum to deliver International Public Telecommunication Services in developing countries

- FSS ES operation at 3.4-4.2 GHz, as an aid to safe operation of aircraft & reliable distribution of meteorological information in some Reg. 1 countries

- Regulatory aspects for nano- & pico-satellites

WRC-15 TOPICS

AERONAUTICAL SERVICES

- Unmanned Aircraft Systems – Consider use of FSS bands (not App. 30/30A/30B) for control and non-payload communications of UAS in non-segregated airspaces

- Consider possible spectrum requirements & regulatory actions, including appropriate aeronautical allocations, to support WAIC

WRC-15 TOPICS

MARITIME SERVICES

- Consider spectrum demands for on-board communication stations in the maritime mobile service (MMS) in the UHF band
- Regulatory provisions & spectrum allocations to enable possible new AIS technology and other new applications to improve maritime radiocommunication

WRC-15 TOPICS

CLIMATE MONITORING, WEATHER FORECAST

Earth observations

- New primary allocation to EESS (E-to-S) at 7/8 GHz to accommodate ↑ & ↓ TT&C in the same transponder, increasing efficiency and reducing satellite complexity, [56 MHz] needed

- Extension of current EESS (active) allocation at 9.3-9.9 GHz by up to 600 MHz within the bands 8.7-9.3 GHz and/or 9.9-10.5 GHz for future high-resolution radars (SAR) to satisfy global environment monitoring of great value for the global community (50 cm resolution ⟶ 1200 MHz bandwidth)

WRC-15 TOPICS

SPACE RESEARCH

Possibility of increasing the 5 km distance limitation & allowing SRS (S-to-S) use of the 410-420 MHz band for proximity operations by space vehicles communication with orbiting manned space vehicle)

WRC-15 TOPICS

RADAR

Consider a primary allocation to the RLS at 77.5-78.0 GHz for automotive applications (with short range high resolution radars)

WRC-15 TOPICS

AMATEUR RADIO FOR EMERGENCY

New secondary allocation at 5.25-5.45 MHz to bridge the propagation gap between 3.5 & 7.0 MHz amateur radio bands and maintain stable communication over various distances & 24 hours/day, especially for use when providing emergency communications

WRC-15 TOPICS

SPECTRUM MANAGEMENT

- Updating & rearrangement of the RR (excepting Art. 1, 4-9, 11, 13-18, 21-23 & 59)
- *Review of definitions of fixed-service, fixed stations and mobile station*
- Spectrum management guidelines for emergency & disaster relief radiocommunication

WRC-15 TOPICS

WRC-18 PRELIMINARY AGENDA (Res. 808)

- Following issues in addition to standing agenda items on IbR of ITU-R Rec., review of WRC Res. & Rec., Country footnotes, Res.86, BR Dir.'s Report:
- Regulatory actions, including spectrum allocations, to support GMDSS modernization and implementation of e-navigation
- Appropriate regulatory procedures for notifying satellite networks needed to facilitate the deployment and operation of nano-satellites and pico-satellites

WRC-15 Agenda Items

1: on the basis of proposals from administrations, taking account of the results of WRC-12 and the Report of the Conference Preparatory Meeting, and with due regard to the requirements of existing and future services in the bands under consideration, to consider and take appropriate action in respect of the following items:

WRC-15 AGENDA

1.1: to consider additional spectrum allocations to the mobile service on a primary basis and identification of additional frequency bands for International Mobile Telecommunications (IMT) and related regulatory provisions, to facilitate the development of terrestrial mobile broadband applications, in accordance with Resolution 233 (WRC-12);

1.2: to examine the results of ITU-R studies, in accordance with Resolution 232 (WRC-12), on the use of the frequency band 694-790 MHz by the mobile, except aeronautical mobile, service in Region 1 and take the appropriate measures;

WRC-15 Agenda Items

1.3: to review and revise Resolution 646 (Rev.WRC-12) for broadband public protection and disaster relief (PPDR), in accordance with Resolution 648 (WRC-12);

1.4: to consider possible new allocation to the amateur service on a secondary basis within the band 5 250-5 450 kHz in accordance with Resolution 649 (WRC-12);

1.5: to consider the use of frequency bands allocated to the fixed satellite service not subject to Appendices 30, 30A and 30B for the control and non-payload communications of unmanned aircraft systems (UAS) in non-segregated airspaces, in accordance with Resolution 153 (WRC-12)

WRC-15 AGENDA

1.6: to consider possible additional primary allocations:

1.6.1: to the fixed-satellite service (Earth-to-space and space-to-Earth) of 250 MHz in the range between 10 GHz and 17 GHz in Region 1;

1.6.2: to the fixed-satellite service (Earth-to-space) of 250 MHz in Region 2 and 300 MHz in Region 3 within the range 13-17 GHz;

and review the regulatory provisions on the current allocations to the fixed satellite service within each range, taking into account the results of ITU-R studies, in accordance with Resolutions 151 (WRC-12) and 152 (WRC-12), respectively;

WRC-15 Agenda Items

1.7: *to review the use of the band 5 091-5 150 MHz by the fixed satellite service (Earth-to-space) (limited to feeder links of the non-geostationary mobile-satellite systems in the mobile-satellite service) in accordance with Resolution 114 (Rev.WRC-12);*

1.8: to review the provisions relating to earth stations located on board vessels (ESVs), based on studies conducted in accordance with Resolution 909 (WRC-12);

WRC-15 Agenda Items

1.9: to consider, in accordance with Resolution 758 (WRC-12):

1.9.1: possible new allocations to the fixed-satellite service in the frequency bands 7 150-7 250 MHz (space-to-Earth) and 8 400-8 500 MHz (Earth-to-space), subject to appropriate sharing conditions;

1.9.2: the possibility of allocating the bands 7 375-7 750 MHz and 8025-8 400 MHz to the maritime-mobile satellite service and additional regulatory measures, depending on the results of appropriate studies

WRC-15 Agenda Items

1.10: to consider spectrum requirements and possible additional spectrum allocations for the mobile-satellite service in the Earth-to-Space and Space to-Earth directions, including the satellite component for broadband applications, including International Mobile Telecommunications (IMT), within the frequency range from 22 GHz to 26 GHz, in accordance with Resolution 234 (WRC-12);

1.11: to consider a primary allocation for the Earth exploration-satellite service (Earth-to-space) in the 7-8 GHz range, in accordance with Resolution 650 (WRC-12);

1.12: to consider an extension of the current worldwide allocation to the Earth exploration-satellite (active) service in the frequency band 9 300-9 900 MHz by up to 600 MHz within the frequency bands 8 700-9 300 MHz

WRC-15 AGENDA

1.13: to review No. 5.268 with a view to examining the possibility for increasing the 5 km distance limitation and allowing space research service (space-to-space) use for proximity operations by space vehicles communicating with an orbiting manned space vehicle, in accordance with Resolution 652 (WRC-12);

1.14: to consider the feasibility of achieving a continuous reference timescale, whether by the modification of coordinated universal time (UTC) or some other method, and take appropriate action, in accordance with Resolution 653 (WRC-12);

1.15: to consider spectrum demands for on-board communication stations in the maritime mobile service in accordance with Resolution 358 (WRC-12);

WRC-15 Agenda Items

1.16: to consider regulatory provisions and spectrum allocations to enable possible new Automatic Identification System (AIS) technology applications and possible new applications to improve maritime radiocommunication in accordance with Resolution 360 (WRC-12);

1.17: to consider possible spectrum requirements and regulatory actions, including appropriate aeronautical allocations, to support wireless avionics intra-communications (WAIC), in accordance with Resolution 423 (WRC-12);

1.18: to consider a primary allocation to the radiolocation service for automotive applications in the 77.5-78.0 GHz frequency band in accordance with Resolution 654 (WRC-12);;

WRC-15 AGENDA

2: to examine the revised ITU-R Recommendations incorporated by reference in the Radio Regulations communicated by the Radiocommunication Assembly, in accordance with Resolution 28 (Rev.WRC-03), and to decide whether or not to update the corresponding references in the Radio Regulations, in accordance with the principles contained in Annex 1 to Resolution 27 (Rev.WRC-12);

3: to consider such consequential changes and amendments to the Radio Regulations as may be necessitated by the decisions of the Conference;

4: in accordance with Resolution 95 (Rev.WRC-07), to review the resolutions and recommendations of previous conferences with a view to their possible revision, replacement or abrogation;

WRC-15 Agenda Items

5: to review, and take appropriate action on, the Report from the Radiocommunication Assembly submitted in accordance with Nos. 135 and 136 of the Convention;

6: to identify those items requiring urgent action by the Radiocommunication Study Groups in preparation for the next world radiocommunication conference;

WRC-15 Agenda Items

7: to consider possible changes, and other options, in response to Resolution 86 (Rev. Marrakesh, 2002) of the Plenipotentiary Conference, an advance publication, coordination, notification and recording procedures for frequency assignments pertaining to satellite networks, in accordance with Resolution 86 (Rev.WRC-07) to facilitate rational, efficient, and economical use of radio frequencies and any associated orbits, including the geostationary-satellite orbit;

8: to consider and take appropriate action on requests from administrations to delete their country footnotes or to have their country name deleted from footnotes, if no longer required, taking into account Resolution 26 (Rev.WRC-07);

WRC-15 Agenda Items

9: to consider and approve the Report of the Director of the Radiocommunication Bureau, in accordance with Article 7 of the Convention:

9.1: on the activities of the Radiocommunication Sector since WRC-12;

9.2: on any difficulties or inconsistencies encountered in the application of the Radio Regulations; and

9.3: on action in response to Resolution 80 (Rev.WRC-07);

WRC-15 AGENDA

10: to recommend to the Council items for inclusion in the agenda for the next WRC, and to give its views on the preliminary agenda for the subsequent conference and on possible agenda items for future conferences, in accordance with Article 7 of the Convention

Thank you…

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