

International Telecommunication Union

193 Member States
579 Sector Members
175 Associates
52 Academia

Member States
Sector Members
Associates
Academia

Regional/National
SDO's
e.g. ETSI, IEC



UN bodies
e.g. WIPO, WMO

Telecom related
Regional organisations
e.g. CEPT

Industry fora
e.g. WiMAX

ITU Governance

The ITU is governed by the Plenipotentiary Conference (PP) and the Administrative Council. The Plenipotentiary Conference is the 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; next one at Busan, Korea, October 2014



ITU Governance

The Council, on the other hand, acts as the Union's governing body in the interval between Plenipotentiary Conferences. Its role is to consider broad telecommunication policy issues to ensure that the Union's activities, policies and strategies fully respond to today's dynamic, rapidly changing telecommunications environment.

- Council Membership
- Council Troika

ITU Governance

ITU Council also prepares a report on the policy and strategic planning of the ITU and responsible for ensuring the smooth day-to-day running of the Union, coordinating work programs, approving budgets and controlling finances and expenditure.

ITU Governance

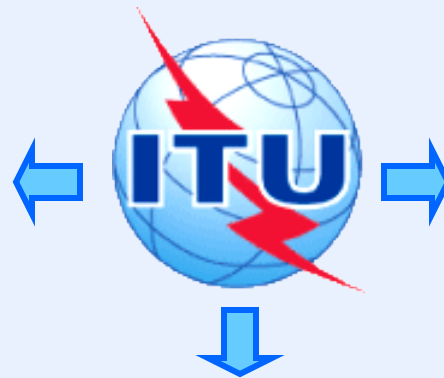
The Council also takes all steps to facilitate the implementation of the provisions of the ITU Constitution, the ITU Convention, the Administrative Regulations (International Telecommunications Regulations and Radio Regulations), and the decisions of Plenipotentiary Conferences and; where appropriate, the decisions of other conferences and meetings of the Union.

ITU Overview

Helping the World Communicate!

ITU-T

Telecommunication
standardization
- network and service
aspects



ITU-D

Assisting
implementation and
operation of
telecommunications in
developing countries

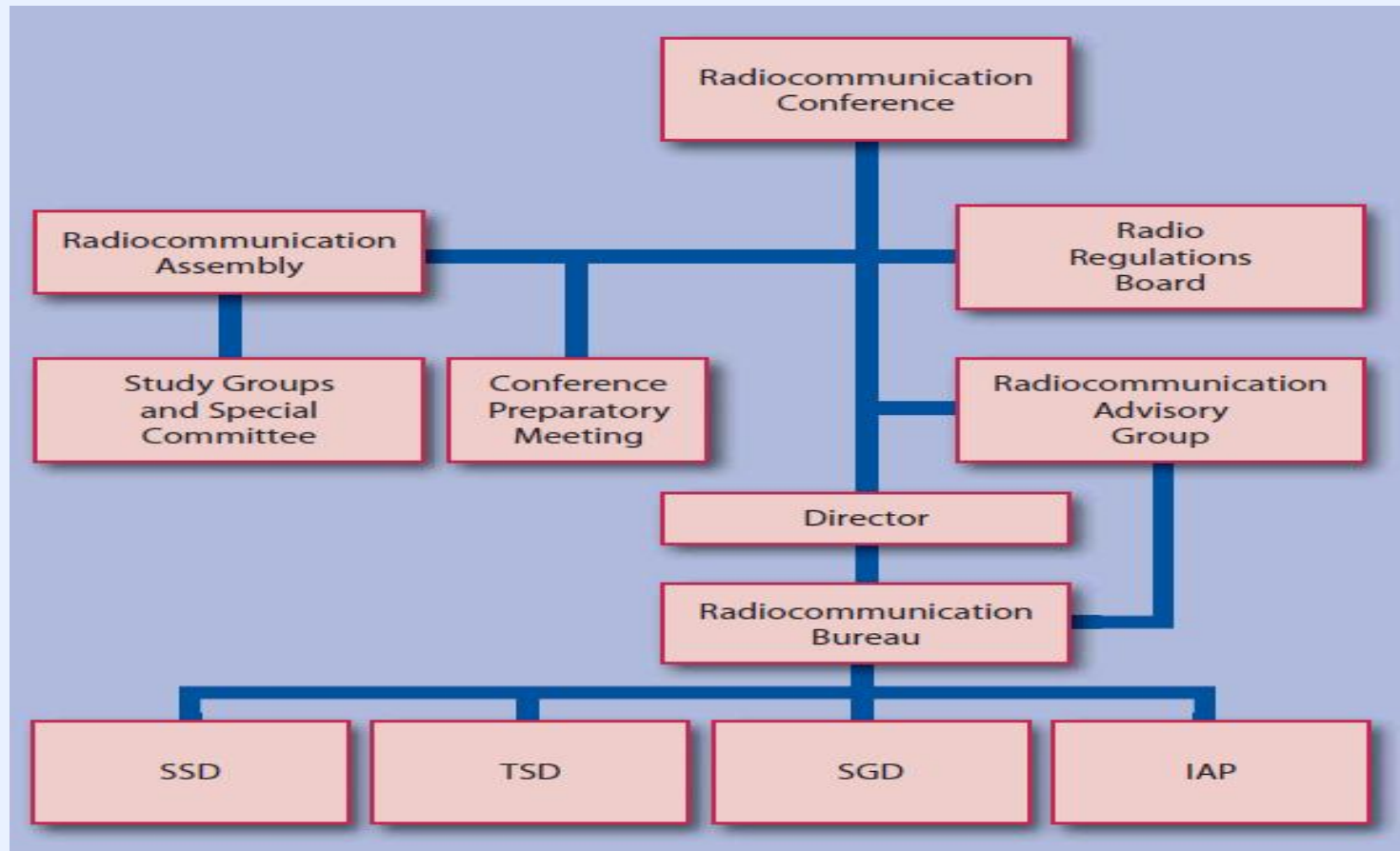
ITU-R

Radiocommunication
standardization and
global spectrum
management

Radiocommunication Sector (ITU-R)

The ITU Radiocommunication Sector (ITU-R) plays a vital role in the global management of the radio-frequency spectrum and satellite orbits - limited natural resources which are increasingly in demand from a large and growing number of services such as fixed, mobile, broadcasting, amateur, space research, emergency telecommunications, meteorology, global positioning systems, environmental monitoring and communication services - that ensure safety of life on land, at sea and in the skies.

Structure of the Radio Sector of ITU (ITU-R)



Objectives of ITU-R

- Global coordination of radiocommunications
- International focal point for standardization of wireless systems
- Promote the world-wide development of radiocommunications
- Strategic plan

**To promote the development and use
of radiocommunications for the
benefit of all**

Objectives of ITU-R

- **Global coordination of radiocommunications**

- ITU Radio Regulations
- International Spectrum Management
- Frequency Plans



Objectives of ITU-R

- Global coordination of radiocommunications
- International focal point for standardization of wireless systems**

- **Recommendations - *de facto* Standards on:**

- spectrum management issues
- radiocommunication system characteristics and operation

- **Example topics:**

- radiowave propagation
- wireless access systems
- EESS systems
- broadcasting

Objectives of ITU-R

The objectives are achieved through (*inter alia*):

- World and Regional Radiocommunication Conferences
- Approval of Recommendations by Member States
 - by correspondence
 - at Radiocommunication Assembly
- Technical studies are required which are conducted by Study Groups

ITU-R Radio Regulations

Radio Regulations, RR

The RR contains Articles, Appendices (detailed technical annexes), aimed at defining the technical and operational conditions of the various services and stations, to ensure they can operate without interference. It is complemented by resolutions on specific issues, often transient. For purposes of technical specifications of its contents, may incorporate by reference ITU-R Recommendations. In this case, this recommendation becomes part of the RR, and is binding on government.

ITU-R Radio Regulations

It is constituted as an international treaty with binding on member states to adhere to it. The regulation classifies the various services that use radio communications, according to several parameters, namely:

1. Link type: Terrestrial (ground to ground) or satellite (Earth-satellite and satellite-ground)
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

ITU-R 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 astronomy, radio-, etc..

ITU-R Radio Regulations

Four Volumes

- Articles (Volume 1),
- Appendices (Volume 2),
- WRC Resolutions and Recommendations (Volume 3),
- ITU-R Recommendations incorporated by reference (Volume 4).



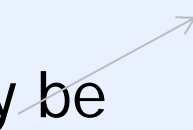
- *World-wide Table of Frequency Allocations ("Article 5")*
- *Definition of services (e.g. Fixed, Mobile-satellite)*
 - *Technical constraints (Power limits etc.)*
- *International registration / co-ordination procedures*

ITU-R Radio Regulations

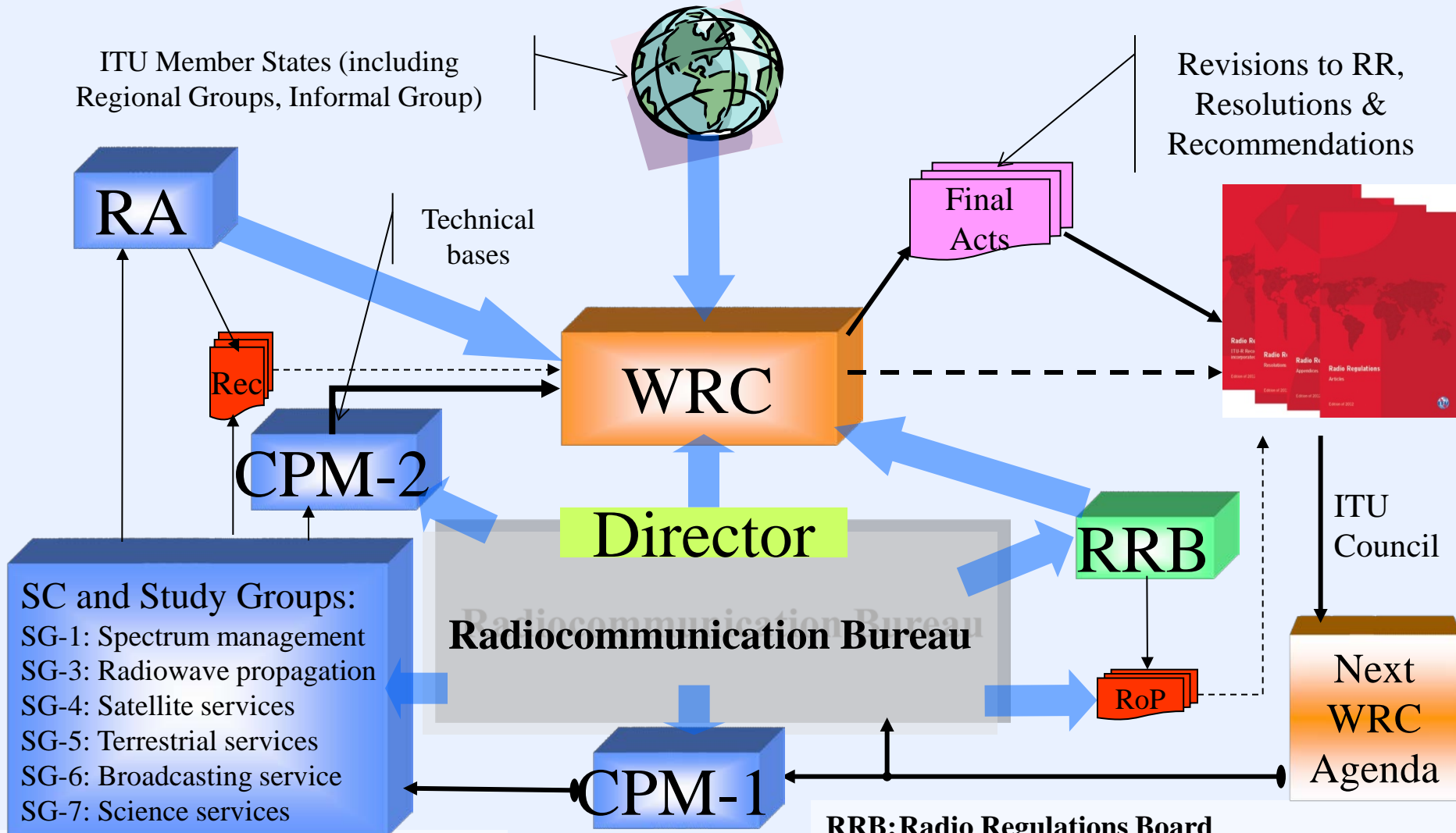
Amending the Radio Regulations

- As new technologies / applications appear, new frequency allocations may be required.
- Similarly, old technologies / applications may disappear.
- For a new frequency allocation, it may be necessary to undertake **sharing studies** to demonstrate that the new service will not cause unacceptable interference to the existing Services.
- Results of those studies are collated into a single Report by the **“Conference Preparatory Meeting”**.

Such studies are undertaken within the Study Groups



ITU-R Radio Regulations



CPM: Conference Preparatory Meeting
Rec: ITU-R Recommendation
RoP: Rules of Procedure
RR: Radio Regulations (treaty status)

RRB: Radio Regulations Board
SGs: Radiocommunication Study Groups
SC: Special Committee (Regulat. & Procedural)
RA: Radiocommunication Assembly
WRC: World Radiocommunication Conference

World Radiocommunication Conferences (WRC)

World radiocommunication conferences (WRC) are held every three to four years. It is the job of 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. Revisions are made on the basis of an agenda determined by the ITU Council, which takes into account recommendations made by previous world radiocommunication conferences.

World Radiocommunication Conferences (WRC)

Under the terms of the ITU Constitution, a WRC can:

- 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.

Radiocommunication Assembly

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

- Establishes ITU-R Study Groups (and elects their chairmen/vice-chairmen)
- Adopts SG work programmes
- Approves ITU-R Recommendations, ITU-R Questions
- Approves Resolutions
 - working procedures
 - specific aspects of SG responsibility

Radio Regulations Board (RRB)

The twelve members of the Radio Regulations Board (RRB) are elected at the Plenipotentiary Conference. They perform their duties independently and on a part-time basis, normally meeting up to four times a year, in Geneva.

The Director of the Bureau is the Executive Secretary of the Radio Regulations Board.

Radio Regulations Board (RRB)

The board:

- approves Rules of Procedure, used by the Radiocommunication Bureau in applying the provisions of the Radio Regulations and registering frequency assignments made by the Member States;
- addresses matters referred by the Bureau which cannot be resolved through application of the Radio Regulations and Rules of Procedure;

Radio Regulations Board (RRB)

- considers reports of unresolved interference investigations carried out by the Bureau at the request of one or more administrations and formulates Recommendations;
- provides advice to Radiocommunication Conferences and the Radiocommunication Assemblies;
- considers appeals against decisions made by the Radiocommunication Bureau regarding frequency assignments;
- performs any additional duties prescribed by a competent conference or by the Council.

Radiocommunication Advisory Group (RAG)

According to the ITU Constitution (CS 84A) and Convention (CV 160A-160H), the Radiocommunication Advisory Group (RAG) is tasked to:

- review the priorities and strategies adopted in the Sector;
- provide guidance for the work of the Study Groups
- recommend measures to foster cooperation and coordination with other organizations and with the other ITU Sectors.

ITU-R Study Groups

- Groups of experts from ITU membership
- Develop technical bases for WRCs and RRCs
- Develop Recommendations
 - technical characteristics
 - operational procedures
- Compile Handbooks

ITU-R Study Groups

New Study Group structure

Former SG structure

New SG structure

Spectrum Management

SG 1

SG 1

Spectrum Management

Radiowave Propagation

SG 3

SG 3

Radiowave Propagation

Fixed Satellite Services

SG 4

SG 4

Satellite Services (FSS + BSS, MSS & RDSS)

Broadcasting Services

SG 6

SG 6

Broadcasting Service

Science Services

SG 7

SG 7

Science Services

Mobile, amateur, radiodetermination and related satellite services

SG 8

SG 5

Terrestrial Services (fixed, mobile, radiodetermination, maritime, aeronautical, amateur & amateur-satellite)

Fixed Service

SG 9

WPs 9B, 9C, 9D

WPs 8A, 8B, 8F

WP 8D

WP 6S

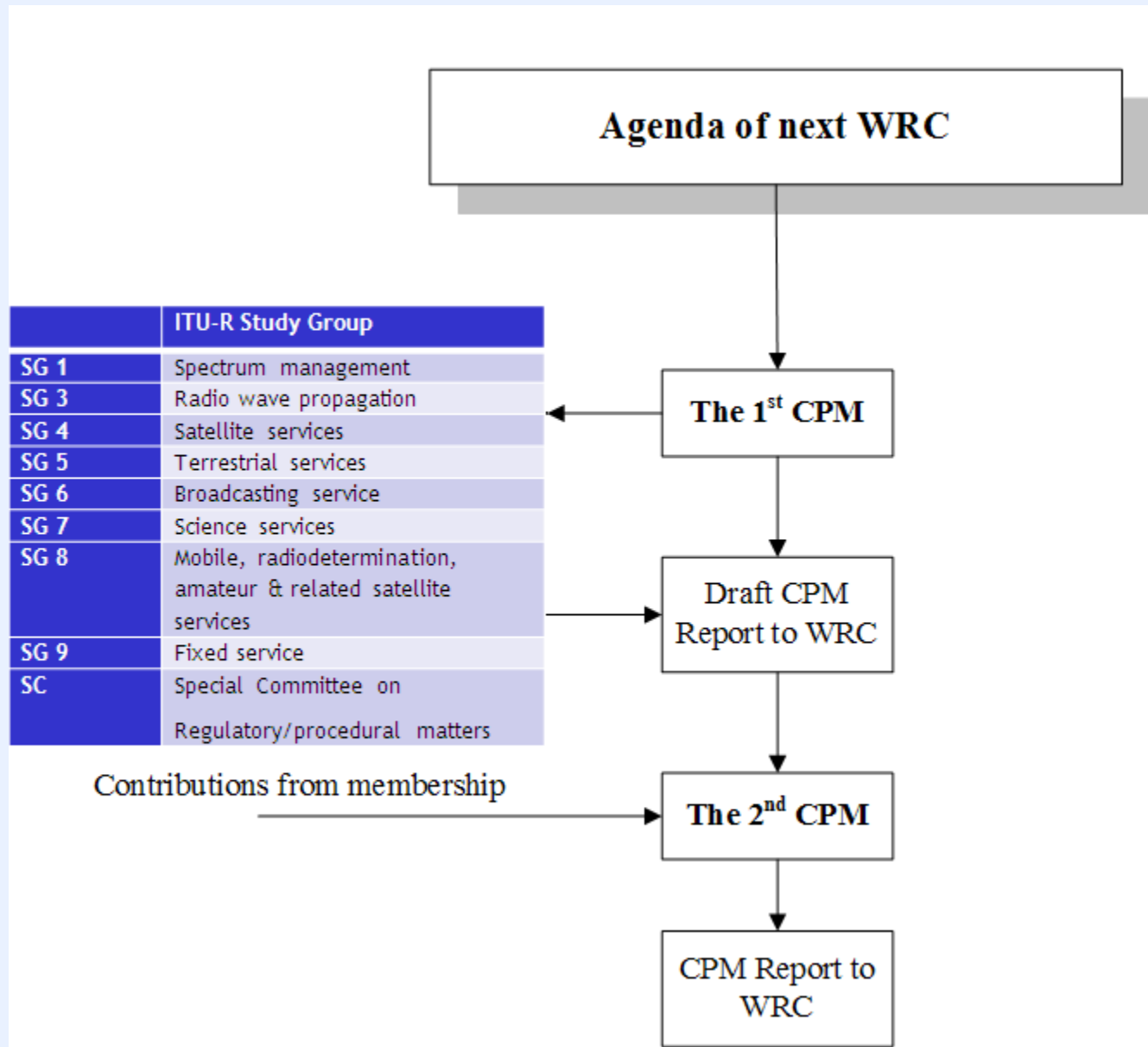
ITU-R Study Groups

- Subordinate groups
 - Working Party
 - Task Group
 - Rapporteur Group
 - Joint
- Coordination Committee for Vocabulary
- CPM - Conference Preparatory Meeting
- Special Committee (regulatory/procedural)
- Joint Task Group 4-5-6-7 (JTG 4-5-6-7) -
WRC-15 Agenda items 1.1 and 1.2

ITU-R Study Groups

- Technical bases for WRC and RRC
 - **CPM Report**
- ITU-R Recommendations
- Handbooks

Preparation of CPM Report





Structure and Contents of CPM Report

	Agenda Items	Part of CPM Report
Mobile and Amateur issues	1.1, 1.2, 1.3, 1.4	Chapter 1
Science issues	1.11, 1.12, 1.13, 1.14	Chapter 2
Aeronautical, Maritime and Radiolocation issues	1.5, 1.15, 1.16, 1.17 1.18	Chapter 3
Satellite services		Chapter 4
	1.6, 1.6.1, 1.6.2, 1.7, 1.8, 1.9.1	Sub-Chapter 4.1
	1.9.2, 1.10	Sub-Chapter 4.2
Satellite Regulatory issues	7, 9.1.1, 9.1.2, 9.1.3, 9.1.5, 9.1.8, 9.3	Chapter 5
General issues	2, 4, 9.1.4, 9.1.6, 9.1.7, 10	Chapter 6

Chapter 2 of CPM Report

WRC-15 Agenda items

Science issues

Rapporteur: Mr. Alexandre V. VASSILIEV (RUS)

1.11, 1.12, 1.13, 1.14

-
- 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);

Resolution 650 (WRC 12): Allocation for the Earth exploration satellite service (Earth to space) in the 7-8 GHz range

Chapter 2 of CPM Report

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 and/or 9 900-10 500 MHz, in accordance with Resolution 651 (WRC 12);

Resolution 651 (WRC 12): Possible 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 and/or 9 900-10 500 MHz

Chapter 2 of CPM Report

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);

Resolution 652 (WRC 12): Use of the band 410-420 MHz by the space research service (space to space)

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

Resolution 653 (WRC 12): Future of the Coordinated Universal Time time-scale

ITU-R Study Groups

- Technical bases for WRC and RRC
→ **CPM Report**
- **ITU-R Recommendations**
- Resolutions
- Handbooks

ITU-R Recommendations

The ITU-R Recommendations constitute a set of international technical standards developed by the Radiocommunication Sector (formerly CCIR) of the ITU. They are the result of studies undertaken by Radiocommunication Study Groups on:

- the use of a vast range of wireless services, including popular new mobile communication technologies;
- the management of the radio-frequency spectrum and satellite orbits;
- the efficient use of the radio-frequency spectrum by all radiocommunication services;
- terrestrial and satellite radiocommunication broadcasting;
- radiowave propagation;
- systems and networks for the fixed-satellite service, for the fixed service and the mobile service;
- space operation, Earth exploration-satellite, meteorological-satellite and radio astronomy services.

ITU-R Study Groups

- Technical bases for WRC and RRC
CPM Report
- ITU-R Recommendations
- **Resolutions**
- Handbooks

ITU-R Resolutions

- The ITU-R Resolutions give instructions on the organization, methods or programs of Radiocommunication Assembly or Study Group work.
- These are also called RA Resolutions or Radiocommunication Assembly Resolutions.
- Not of technical nature but more of defining methodologies, working methods and procedures.

www.itu.int/publ/R-RES

ITU-R Study Groups

- Technical bases for WRC and RRC
→ **CPM Report**
- ITU-R Recommendations
- Resolutions
- **Handbooks**

Handbooks (Manuals)

ITU-R Handbook is a text which provides a statement of the current knowledge, the present position of studies, or of good operating or technical practice, in certain aspects of radiocommunications, which should be addressed to a radio engineer, system planner or operating official who plans, designs or uses radio services or systems, paying particular attention to the requirements of developing countries. It should be self-contained, require no familiarity with other ITU Radiocommunication texts or procedures, but should not duplicate the scope and content of publications readily available outside the ITU.

www.itu.int/pub/R-HDB

Concluding remarks on Study Groups

- The **Study Groups** represent a major aspect of ITU-R activities
- Technical forum for discussion amongst experts
- Technical bases for Radio Conferences
- Recommendations, Reports and Handbooks

ITU-R Rules of Procedure

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

These rules are to be used by administrations and the Radiocommunication Bureau in applying the Radio Regulations. The Rules of Procedure 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

ITU-R regions

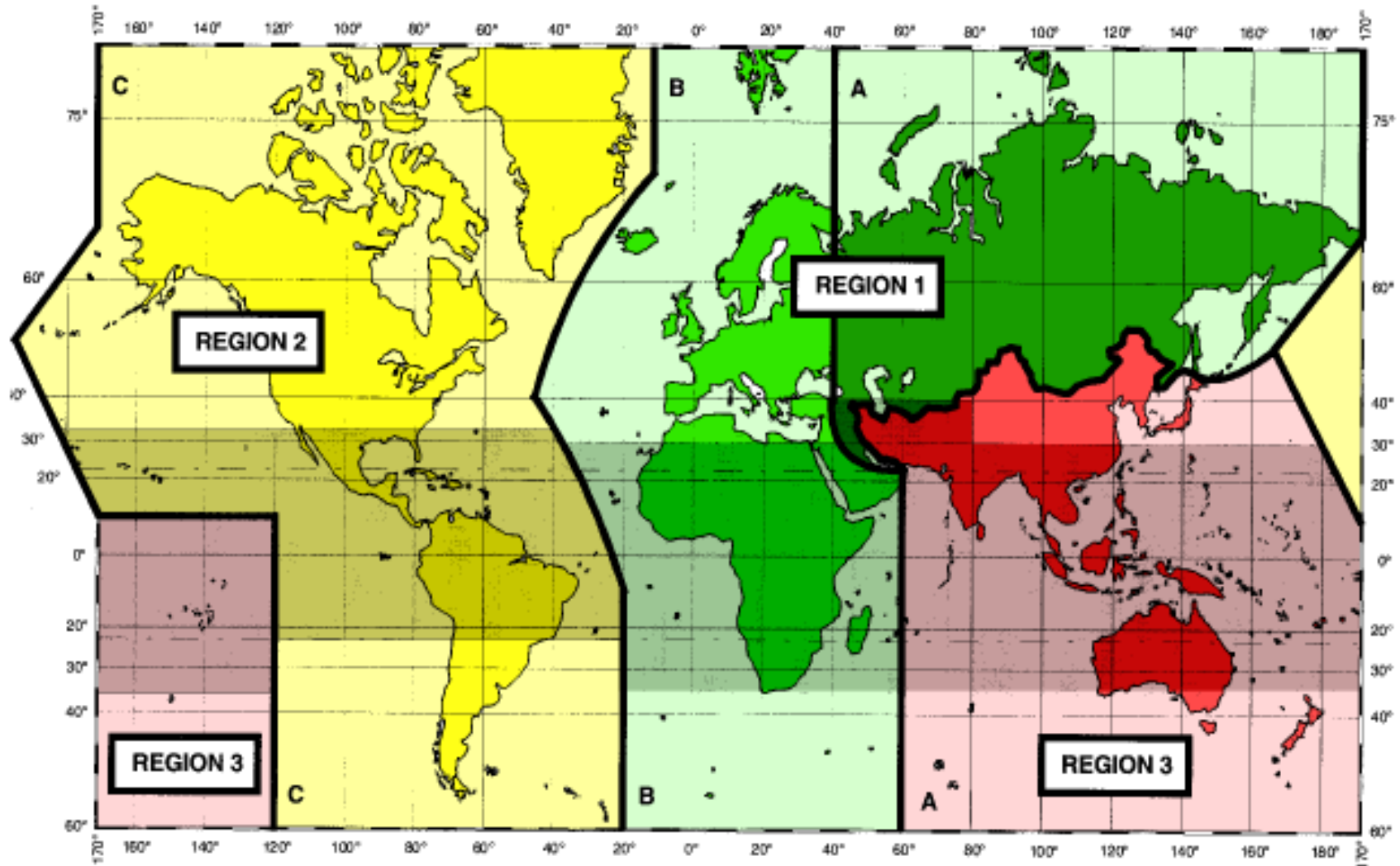
Radio Regulations, divides the world into three ITU regions for the purposes of managing the global radio spectrum. Each region has its own set of frequency allocations, the main reason for defining the regions;

Region 1: Europe, Africa, the Middle East west of the Persian Gulf including Iraq, the former Soviet Union and Mongolia.

Region 2: Americas, Greenland and some of the eastern Pacific Islands.

Region 3: Asia, east of and including Iran, and most of Oceania

ITU-R regions



Frequency Management

Spectrum management is the process of regulating the use of radio frequencies to promote efficient use and gain a net social benefit. The term radio spectrum typically refers to the full frequency range from 3 kHz to 300 GHz that may be used for wireless communication. Increasing demand for services such as mobile telephones and many others has required changes in the philosophy of spectrum management. Demand for wireless broadband has soared due to technological innovation, such as 3G and 4G mobile services, and the rapid expansion of wireless internet services. Since the 1930s, spectrum was assigned through administrative licensing.

Frequency Management

The assignment is autonomous and sovereign power of each administration to issue the authorization of the entity that makes use of the respective frequency. Moreover, the powers and awards are part of the Radio Regulations, with binding on states, and do regarding the use of these bands. In other words, states undertake to reserve frequencies and channels for specific purposes under the conditions defined in the RR, but keep the absolute power to define the processes by which select and authorize various entities, public or private, to use of these bands for defined services.

Frequency Management

For the purpose of coordinating the spectrum allocated to each of the services and stations, the RR defined 3 types of processes, namely:

1. Allocation (of a frequency band): Entry in the Table of Frequency Allocations of a given frequency band, to be used by one or more radio services, under specified conditions. This term also applies to the frequency band considered.

Frequency Management

2. Allotment (of a frequency or a radio channel):
Registration of a given channel in a plan adopted by a competent conference, for use by one or more administrations for a specific radio service in one or more specific countries or regions and under specified conditions.
3. Assignment (of a frequency or a radio channel):
Authorization given an administration for a radio station to use a frequency or a specific radio channel under specified conditions.

Categories of services and allocations

When a band is attributed to more than one service, such services are listed in the following order in the tables of frequency allocation on a global or regional chapter 5 of the Radio Regulations:

- a. Services whose names are printed in "capitals" (example: FIXED) are called services "primary";
- b. Services whose names are printed in "normal characters" (example: Mobile) services are called "secondary"

Categories of services and allocations

Stations of a secondary service:

- 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;

- 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;

Categories of services and allocations

- 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.

List of radio service abbreviations

Abbre-viations	Radio services	RR definition
AMS	aeronautical mobile service	No. 1.32
AM(R)S	aeronautical mobile (route) service	No. 1.33
AMSS	aeronautical mobile-satellite service	No. 1.35
AMS(R)S	aeronautical mobile-satellite (route) service	No. 1.36
ARNS	aeronautical radionavigation service	No. 1.46
ARNSS	aeronautical radionavigation-satellite service	No. 1.47
ARS	amateur service	No. 1.56
ARSS	amateur-satellite service	No. 1.57
BS	broadcasting service	No. 1.38
BSS	broadcasting-satellite service	No. 1.39
EESS	Earth exploration-satellite service	No. 1.51
FS	fixed service	No. 1.20
FSS	fixed-satellite service	No. 1.21
ISS	inter-satellite service	No. 1.22
LMS	land mobile service	No. 1.26
LMSS	land mobile-satellite service	No. 1.27
MetAids	meteorological aids service	No. 1.50

List of radio service abbreviations

Abbre-viations	Radio services	RR definition
MetSat	meteorological-satellite service	No. 1.52
MMS	maritime mobile service	No. 1.28
MMSS	maritime mobile-satellite service	No. 1.29
MRNS	maritime radionavigation service	No. 1.44
MRNSS	maritime radionavigation-satellite service	No. 1.45
MS	mobile service	No. 1.24
MSS	mobile-satellite service	No. 1.25
RAS	radio astronomy service	No. 1.58
RDS	radiodetermination service	No. 1.40
RDSS	radiodetermination-satellite service	No. 1.41
RLS	radiolocation service	No. 1.48
RLSS	radiolocation-satellite service	No. 1.49
RNS	radionavigation service	No. 1.42
RNSS	radionavigation-satellite service	No. 1.43
SOS	space operation service	No. 1.23
SRS	space research service	No. 1.55

Thank you!