ITU-R Study Group Activities

ITU Radiocommunication Seminar for the Arab Region

Abu Dhabi
22-26 April 2007

F. Leite, Deputy-Director, ITU-BR
Objectives of ITU-R Study Groups
Structure of Study Groups
Scope of Study Groups
CPM & WRC process
Radiocommunication Assembly
Study Groups products
Conclusions
“... to ensure rational, equitable, efficient and economical use of the spectrum by all services, ......
... to carry out studies and adopt Recommendations on radiocommunication matters”

**Mission achieved through** *(inter alia)*:

- World and Regional Radiocommunication Conferences
- Approval of Recommendations

Technical studies are required which are conducted in **Study Groups**
Groups of experts from ITU membership:

- Draft Recommendations (technical characteristics & operational procedures)
- Draft technical bases for WRCs and RRCs
- Compile Handbooks

**SG 1:** Spectrum management
**SG 3:** Radiowave propagation
**SG 4:** Fixed-satellite service
**SG 6:** Broadcasting service
**SG 7:** Science services
**SG 8:** Mobile services
**SG 9:** Fixed service

- Coordination Committee for Vocabulary (CCV)
- Special Committee (regulatory/procedural)
- Conference Preparatory Meeting (CPM)

Supported by Counsellors and Assistants in Study Group Department of BR

http://www.itu.int/ITU-R/go/rsg/en
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## Study Group 3 (Radiowave propagation)

### Scope

Propagation of radiowaves in ionized and non-ionized media and the characteristics of radio noise, and development of prediction methods.

### Key areas of study

- Characteristics and mapping of propagation medium
- Propagation prediction methods
  - terrestrial broadcasting (RRC-06)
  - slant path from satellites
  - mobile and personnel
  - ionospheric propagation

### Handbooks:

- Curves for Radiowave Propagation over the Surface of the Earth
- Radiometeorology
- Radiowave Propagation Information for Predictions for Earth-to-Space Path Communications
- Ionosphere and its Effects on Radiowave Propagation
- Terrestrial land mobile radiowave propagation in the VHF/UHF bands
Study Group 4 (Fixed-satellite service)

Scope

Systems and networks in the FSS and inter-satellite links (in the FSS), including associated tracking, telemetry and telecommand functions

Key areas of study

- Review of Appendix 30B
- IP over satellite
- HDFSS (definition and characteristics)
- Global broadband Internet access in FSS

Handbooks:

- Satellite Communications (FSS) - Third Edition
  - Supplement No. 1: Effect of WARC ORB-88 Decisions
  - Supplement No. 2: Computer Programs for Satellite Communications
  - Supplement No. 3: VSAT Systems and Earth Stations
- ITU-R SNG User's Guide
Radiocommunication broadcasting (terrestrial and satellite) of vision, sound, multimedia and data services primarily intended for delivery to the general public

Digital terrestrial broadcasting
- “planning parameters” for digital sound broadcasting at frequencies below 30 MHz.
- transition from analogue to digital terrestrial broadcasting
- multimedia and data broadcasting for mobile reception

Digital satellite broadcasting
- satellite return channel for interactive BSS
- system parameters for BSS between 17.3 and 42.5 GHz (including associated feeder-links)

Studies on advanced broadcasting technologies
- large screen digital imagery (LSDI) & interactive multimedia services
- objective measurement of perceptual image quality & image scanning formats

Handbooks:
- High-Definition Television
- Digital Television Signals: Coding and Interfacing within Studios
- DSB Handbook - Terrestrial and satellite digital sound broadcasting to vehicular, portable and fixed receivers in the VHF/UHF bands
- Subjective Assessment Methodology in Television
- HF Broadcasting System Design
- Technical Specifications of ITU-R Teletext Systems
- LF/MF system design
- DTTB Handbook - Digital terrestrial television broadcasting in the VHF/UHF bands
**Study Group 7 (Science services)**

### Scope

**Key areas of study**

- Systems for space operation, space research, Earth exploration and meteorology
- Radio astronomy
- Standard frequency and time signals

- EESS including meteorological satellite service for disaster prediction and detection
- Deep space research (e.g. Mars)
- Future of leap second

**Handbooks:**

- [Radio Astronomy](#)
- [Selection and Use of Precise Frequency and Time Systems](#)
- [Space Research Communications](#)
- [Use of Radio Spectrum for Meteorology](#)
Study Group 8 (Mobile services)

Scope

Systems and networks for the mobile, radiodetermination and amateur services, including related satellite services

Key areas of study

- IMT systems
  - update radio interface specifications for IMT-2000
  - IMT Advanced (systems beyond IMT-2000)
- New requirements for aeronautical mobile telemetry
- Use of digital technology in the MF and HF maritime mobile bands
- ITS (Intelligent Transportation Systems)
- Software-defined and cognitive radio systems
  - system standardization & regulatory considerations

Handbooks:
- Compatibility between the Broadcasting Service in the Band of about 87-108 MHz and the Aeronautical Services in the Band 108-137 MHz
- Land Mobile (including Wireless Access):
  - Volume 2: Principles and Approaches on Evolution to IMT-2000
  - Volume 3: Dispatch and Advanced Messaging Systems
  - Volume 4: Intelligent Transport Systems
- Mobile-satellite service (MSS)
- Migration to IMT-2000 Systems - Supplement 1 to the Handbook on Deployment of IMT-2000 Systems
## Study Group 9 (Fixed services)

### Scope

Systems and networks of the fixed service operating via terrestrial stations

### Key areas of study

- Fixed wireless systems providing fixed wireless access (FWA), including broadband (BWA), using point-to-point (P-P) or point-to-multipoint (P-MP) distribution systems
- High-density applications (HDFS)
- High altitude platform stations (HAPS)
- High-Frequency (HF) systems, including adaptive systems
- Use of FWS for disaster mitigation and relief operations

**Handbooks:**
- Digital Radio-Relay Systems
- Frequency adaptive communication systems and networks in the MF/HF bands
ITU-R Recommendations

Procedure

Agreement of text in WP or TG

Adoption by a Study Group

Approval by Member State

Rec

- contribution by membership
  - at meeting of SG
  - by correspondence
  - by correspondence
  - at Radiocommunication Assembly

✓ Used by spectrum planners and system designers
✓ Some referred to in the Radio Regulations
✓ Over 900 Recommendations in 16 series
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 is self-contained, require no familiarity with other ITU Radiocommunication texts or procedures, but does not duplicate the scope and content of publications readily available outside the ITU.

- Tutorial in nature
- Liaison with ITU-D (and ITU-T)
- Continuing Handbook programme in ITU-R
- Over 30 Handbooks published
Conference Preparatory Process & CPM-07

Radiocommunication Assembly + World Radiocommunication Conference

Res. ITU-R 4.4
Res. ITU-R 2.4
Res. ITU-R 38.3

WRC Agenda

ITU-R Study Group
- SG 1: Spectrum management
- SG 3: Radiowave propagation
- SG 4: Fixed-satellite service
- SG 6: Broadcasting services
- SG 7: Science services
- SG 8: Mobile, radiodetermination, amateur & related services
- SG 9: Fixed service

1st CPM
- Draft CPM Report to WRC

2nd CPM
- CPM Report to WRC

SCRPM

Contributions from membership

WRC

We are here
CPM Report to WRC-07

Structure

- Ch1: Mobile, Aeronautical Mobile, Radionavigation and Radiolocation services
- Ch2: Space Science Services
- Ch3: Fixed-Satellite, Mobile-Satellite and Broadcasting-satellite service below 3GHz
- Ch4: Fixed Services including HAPS and fixed-sat services above 3 GHz
- Ch5: Services in LF, MF and HF bands and Maritime service
- Ch6: Regulatory procedures and associated technical criteria applicable to satellite networks
- Ch7: Future WRC work programmes and other issues
Radiocommunication Assembly (RA)

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

Convened every 3-4 years; associated in time and place with WRCs.
(Article 13 of ITU Constitution)
Study Group Products

✓ ITU-R Recommendations
✓ Handbooks
✓ Technical bases for radio conferences
  - e.g., CPM Report
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