

# ITU-R Radiocommunication Assembly 2007

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The main objective of the Radiocommunication Sector of the International Telecommunication Union (ITU-R) is to ensure rational, equitable, efficient and economical use of the radio-frequency spectrum by all radiocommunication services, including those using satellite orbits. ITU-R held its Radiocommunication Assembly (RA-07) in Geneva, 15-19 October 2007. A major outcome was the change of Study Group (SG) structure by reducing the number of SGs from seven to six, for example creating one large new SG (SG 5) on terrestrial services by merging fixed and mobile services, previously SGs 9 and 8, respectively. RA-07 also decided to include a sixth terrestrial air interface in the International Mobile Telecommunications (IMT) family by including the OFDMA TDD WMAN technology, a WiMAX derived technology. Mobile telecommunications were at centre stage at this RA as the Assembly adopted flexibility by choosing IMT as the root name for IMT collectively. IMT-2000 technologies as well as coming evolutions of the future IMT are now referred to as IMT. This had a major consequence for the following World Radiocommunication Conference (WRC-07) as spectrum both previously allocated to IMT-2000 and future allocations to IMT-Advanced in the Radio Regulations (RR) will now be collectively referred to as IMT. The ITU-R and its RAs play a major role for the development of global radiocommunications and make very important decisions for international telecommunications business.

## 1 Introduction

The International Telecommunication Union (ITU) is an intergovernmental organisation and a specialised agency of the United Nations for telecommunications with 191 Member States and some 600 Sector Members. ITU carries out its tasks in three sectors; i.e. the Radiocommunication Sector (ITU-R), the Telecommunication Standardization Sector (ITU-T), and the Telecommunication Development Sector (ITU-D).

The mission of the ITU-R is to ensure the rational, equitable, efficient and economical use of the radio frequency spectrum by all radiocommunication services and to carry out studies and approve Recommendations on radiocommunications matters. One

of the primary objectives is to ensure interference free operation of radiocommunications systems. The Radiocommunication Sector plays a central role in the technological progress of telecommunications. In ITU-R standardisation is made through the ITU-R Recommendations and the objective is to ensure the necessary performance and quality in operating radiocommunication systems. Recommendations are also intended to provide flexibility for future expansion and new technological developments. At the same time considerations of regulatory and procedural issues cannot be separated from the technological studies. ITU-R needs to balance technological needs against those of compatibil-



Centre International de Conférences de Genève (CICG), Geneva, venue of RA-07



ity between the various services, at the same time seeking innovative means to optimise the use of the frequency spectrum for the good of all.

ITU-R comprises several parts, most importantly the World Radiocommunication Conference (WRC), the Radiocommunication Assembly (RA), and the ITU-R Study Groups (SG), see illustration in Figure 1 and below for further details.

Whereas the WRC treats issues of a global nature covering all three Radio Regions of the ITU, the Regional Radiocommunication Conference (RRC) has a more limited task and deals with topics for one or two Radio Regions. The Radio Regulations Board (RRB), the Conference Preparatory Meeting (CPM), the Radiocommunication Advisory Group (RAG) and some other functions are set up to assist ITU in performing its work and preparing for the World Radiocommunication Conference. The Radiocommunication Bureau (BR) with its director is responsible for coordinating and organising the work in the R-Sector.

In the R-Sector, the Radiocommunication Assembly (RA) normally convenes in conjunction with a World Radiocommunication Conference (WRC). Since 1992, the RA has met every three to four years associated in time and place with the WRC to improve the efficiency and the effectiveness of the R-Sector.

The Radiocommunication Assemblies provide the necessary technical bases for the work for the WRCs and respond to all requests from the WRCs. The role of the RA is a vital part of the structure of ITU-R, fulfilling a number of the essential purposes of the Union. One of the objectives of the RA-07 is to ensure that the structure and terms of reference of the Study Groups keep pace with technological developments and associated spectrum issues and to optimise the efficiency of the Radiocommunication Sector.

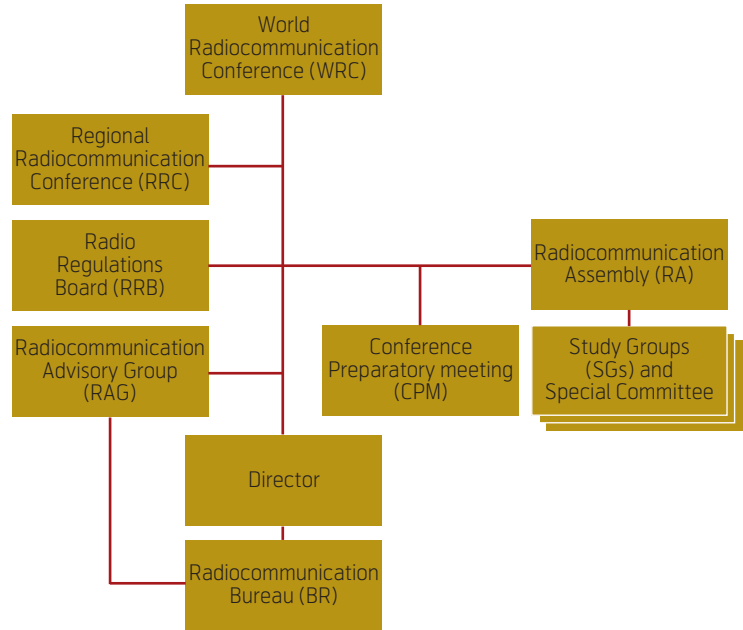


Figure 1 ITU-R organisation

This paper is organised in six sections: Introduction, Radiocommunication Assembly main duties, New study group structure, International Mobile Telecommunications (IMT) development, Future work and other issues, and Conclusions.

## 2 Radiocommunication Assembly Main Duties

RA-07 met in Geneva from 15 to 19 October 2007 followed by the WRC-07. The RA-07 was chaired by Bruce Gracie, Canada. Issues high on the agenda were the approval of Draft Recommendations enabling WiMAX derived technology to become part of the IMT family, Resolutions on IMT as the root name and the use of ICT in disaster mitigation as well as reviewing and updating of ITU-R Resolution 1: “Working methods” with the detailed working procedures of the ITU-R.



Kevin Hughes, ITU-R Councillor; Bruce Gracie, Canada, Chairman of RA-07; Valery Timofeev, BR Director

The principal duties of the Radiocommunication Assembly are:

- To provide the necessary technical basis for the work of World Radiocommunication Conferences and to respond to all requests from such Conferences;
- To establish future work programmes for the Study Groups;
- To review the Study Group structure;
- Appoint chairmen and vice-chairmen of the Study Groups;
- Update and review the working methods and procedures and relevant resolutions for the work in the ITU-R;
- Approve ITU-R Recommendations developed by the Study Groups.

The main issues at the RA-07 were:

- Approve Draft Recommendations on new radio interface for IMT (WiMAX derived technology);
- Adopt an updated SG structure merging former SG8 and SG9 into an SG for terrestrial services;
- Establish and agree on the work programme for the next study period;
- Review ITU-R Resolution 1 – Working methods Approve Resolutions pertinent to future work of ITU-R such as a naming of IMT, principles for the development of IMT-Advanced and emergency communications and disaster relief.

### 3 New Study Group Structure

RA must ensure that the structure and terms of reference for the SGs keep pace with technological devel-



*Eirik Bliksrud (NPT), Head of the Norwegian Delegation*

opments and associated spectrum issues and optimise the efficiency of the radiocommunication sector. The technical, operational and procedural work is carried out in the various SGs where Member States, Sector Members and Associates of the ITU-R develop Recommendations and reports on the basis of the study of Questions (areas of study).

The ITU-R SGs carry out the work in the R-Sector. The SGs develop Recommendations for the various fields of international radiocommunications on the basis of the study of Questions, as well as reports and handbooks. The recommendations are regularly updated in accordance with the developments in the field. The reports and handbooks are also revised and updated, but not so often.

Members of the ITU-R have discussed a restructuring of the SGs for a number of years with the objective of arriving at a more efficient distribution of the work load and a structure which better reflects today's radiocommunication technologies. Two options were developed for a potential new structure that would include only six Study Groups as compared to seven Study Groups in the last study period.



*Eirik Bliksrud, Head, Norwegian Delegation, and Anne Lise Lillebø, Terje Tjelta, Telenor Delegation*

From RA-07 onwards the ITU-R Study Groups are:

Study Group	Scope
SG1 Spectrum management	Spectrum management principles and techniques, general principles of sharing, spectrum monitoring, long-term strategies for spectrum utilisation, economic approaches to national spectrum management, automated techniques and assistance to developing countries in cooperation with the Telecommunication Development Sector.
SG3 Radiowave propagation	Propagation of radio waves in ionised and non-ionised media and the characteristics of radio noise, for the purpose of improving radiocommunication systems.
SG4 Satellite services	Systems and networks for the fixed-satellite service, mobile-satellite service, broadcasting-satellite service and radiodetermination-satellite service.
SG5 Terrestrial services	Systems and networks for fixed, mobile, radiodetermination, amateur-satellite services.
SG6 Broadcasting service	Radiocommunication broadcasting, including vision, sound, multimedia and data services principally intended for delivery to the general public. Broadcasting makes use of point-to-everywhere information delivery to widely available consumer receivers. When return channel capacity is required (e.g. for access control, interactivity, etc), broadcasting typically uses an asymmetrical distribution infrastructure that allows high capacity information delivery to the public with lower capacity return link to the service provider. This includes production and distribution of programmes (vision, sound, multimedia, data, etc) as well as contribution circuits among studios, information gathering circuits (ENG, SNG, etc.), primary distribution to delivery nodes, and secondary distribution to consumers. The Study Group, recognising that radiocommunication broadcasting extends from the production of programmes to their delivery to the general public, as detailed above, studies those aspects related to production and radiocommunication, including the international exchange of programmes as well as the overall quality of service.
SG7 Science services	<ol style="list-style-type: none"> <li>1 Systems for space operation, space research, Earth exploration and meteorology, including the related use of links in the inter-satellite service.</li> <li>2 Systems for remote sensing, including passive and active sensing systems, operating on both ground-based and space-based platforms.</li> <li>3 Radio astronomy and radar astronomy.</li> <li>4 Dissemination, reception and coordination of standard-frequency and time-signal services, including the application of satellite techniques, on a worldwide basis.</li> </ol>

A vast majority of the RA-07 supported the option which merges former SG8 (mobile) and SG9 (terrestrial fixed services) into a Terrestrial Services Study Group, whereas SG4 (Satellite), the satellite service aspects of former SG6 and SG8 were merged into a new Satellite Services Study Group. This solution was supported both by the Norwegian Post and Telecommunications Authority (NPT) representing Norway and Telenor. The current scope and responsibilities of SG1 Spectrum management, SG3 Radio wave propagation, and SG7 Science services were maintained.

Before RA-07 there were seven SGs, but in order to economise, mainly due to translation costs as ITU works in six languages, the RA-07 decided to reduce the number of SGs to six as listed above. The transition was basically done as sketched in Figure 2 where the solid lines represent the main part of transfer and the broken lines a minor part of an SG's responsibility.

The scope and responsibilities of Study Group 6, Broadcasting Services, remained almost intact, but the activities on satellite broadcasting undertaken in

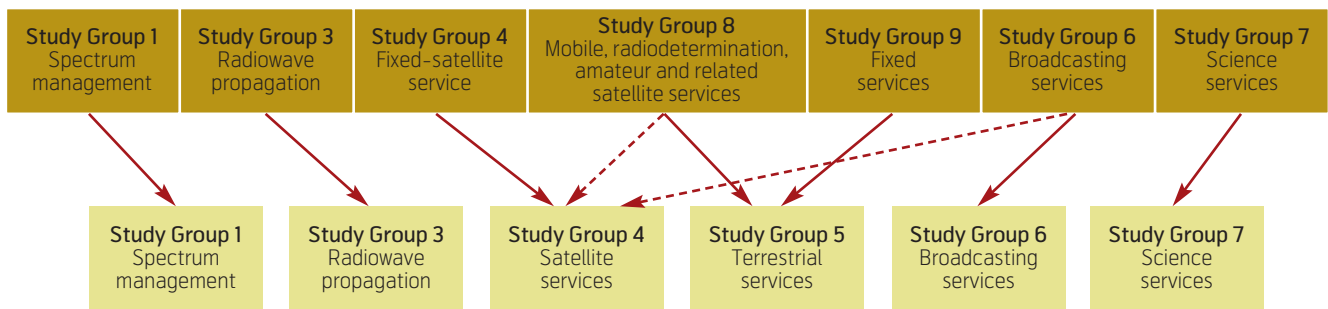


Figure 2 Change of SG structure from RA 2003 to RA 2007 reducing total number of SGs from seven to six SGs. The solid lines represent the transfer of an SG's main responsibility and the broken lines a minor part



Ross Bateson and Robert Ercole, GSM Association

Working Party 6S were aligned with other activities relating to satellite matters in SG4 Satellite Services.

The ITU-R community represents a world leadership in spectrum management and radiowave propagation. For the other areas, the service groups in the ITU-R gather a global community for international harmonisation of technical issues. This is very important for many areas, in particular satellite communication that is global in nature, e.g. geostationary locations and satellite orbits. In addition, the future development needs for various large regions, and globally, are also very well dealt with in the ITU-R. An example is the study of necessary bandwidth for future mobile broadband communication systems [4] that played such an important role for the WRC-07.

## 4 International Mobile Telecommunications (IMT) Development

There is a major interest world-wide in the use and further developments of IMT. The growth of mobile telecommunication has been remarkable in all parts of the world, and now it is noted that IMT is increasingly being adopted. It is of vital importance for the mobile telecommunications business area to prepare for new generations of systems, in particular with respect to identification of type of systems and radio spectrum resources [5].

### 4.1 New Generic Root Name IMT

In its Resolution ITU-R 56 *Naming for International Mobile Telecommunications* RA-07 agreed on a common naming scheme for the present IMT-2000 technologies (3G) and those being developed for the 4th generation (4G) of mobile telecommunications – IMT-Advanced.

- The term “IMT” should be the root name to cover the capabilities of “IMT-2000, future development

of IMT-2000 and systems beyond IMT-2000” collectively;

- That the term “IMT-Advanced” should be applied to systems that include new radio interfaces that support the new capabilities of systems beyond IMT-2000 (4G);
- That “IMT-2000” encompasses its enhancements and future developments (3G).

This decision gives increased flexibility and will enable refarming for spectrum previously allocated to 3G technologies in all bands identified for IMT. It implies that spectrum identified for 3G technologies can be used in the future for 4G technologies and spectrum identified for 4G can be used for any IMT technology.

Resolution ITU-R 57 *Principles for the process of development of IMT-Advanced* establishes guiding principles that underpin the process for specifying the radio interfaces for IMT-Advanced such as developing Recommendations and Reports for IMT-Advanced including Recommendations for radio interface specifications.

### 4.2 WiMAX – New Air Interface for IMT-2000

Most Draft Recommendations are normally approved according to a written procedure based on a two-step process whereby the Study Group concerned adopts the draft Recommendation and the Member States approve the Draft Recommendation by written consultation, the so-called Traditional Approval Procedure (TAP) or the faster Procedure for Simultaneous Adoption and Approval (PSAA). By exception, some of the Draft Recommendations are forwarded to RA for approval, either because of lack of time in the Study Group or because the Draft Recommendations in question are of a contentious nature requiring important policy decisions.

The Recommendations submitted to RA-07 for approval were directly linked to the discussions at the WRC-07 and constitute the technical basis for decisions at the WRC-07 which started immediately after the RA-07.

Three Draft Recommendations regarding the inclusion of WiMAX derived technology based on IEEE 802.16e in the IMT 2000 family were submitted by Study Group 8 to the RA-07 for approval. Since many members considered that approval of these recommendations should be done before the WRC, there was not enough time to use the written approval procedure.

RA agreed to expand the IMT-2000 3G radio interface with OFDMA technology and the three recommendations were approved on a consensus basis:

- Recommendation ITU-R M.1457-6 Detailed specification of the radio interfaces of International Mobile Telecommunications-2000 (IMT-2000);
- Recommendation ITU-R M.1580-1 Generic unwanted emission characteristics of base stations using the terrestrial radio interfaces of IMT-2000;
- Recommendation ITU-R M.1581.1 Generic unwanted emission characteristics of mobile stations using the terrestrial radio interfaces of IMT-2000.

China was initially opposing the revision of Recommendation ITU-R M.1457, but accepted the new revision after the inclusion of a footnote in the Recommendation stating that China did not agree to the approval of the revision of the recommendation for inclusion of OFDMA TDD WMAN during RA-07.

Germany and Sweden had concerns with the approval of the Draft Recommendations ITU-R.M.1580-1 and ITU-R M.1581-1, but accepted the Recommendations after the inclusion of noting C in both Recommendations. Noting C emphasises that additional urgent study on WiMAX TDD is needed and should start urgently.

Both the Norwegian Administration (NPT) and Telenor endorsed the approval of the recommendations. This approval means that the WiMAX technology is recognised as the sixth terrestrial IMT-2000 radio interface.

With the decision to include OFDMA TDD WMAN in the IMT-2000 family, WiMAX derived technology enjoys the same spectrum access as any other IMT technology in bands identified for IMT in the Radio Regulations. With an ITU IMT family consisting of six technologies it can be expected that regulators will open future spectrum intended for IMT to a number of IMT technologies and there will be an increased competition for spectrum among operators and vendors. ITU agreements are normally very influential although an ITU Recommendation does not compel national administrations to grant spectrum access to WiMAX. However, there is a global manufacturing market and many countries follow the ITU Recommendations.

The six IMT-2000 terrestrial radio interfaces are now:

- IMT-2000 Direct Spread (WCDMA/UTRA FDD)
- IMT-2000 Multi Carrier (CDMA2000)



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- IMT-2000 Time Code (UTRA TDD, TD-SCDMA)
- IMT-2000 Single Carrier TDMA (UWC-136)
- IMT-2000 Frequency Time (DECT+)
- IMT-2000 OFDMA TDD WMAN (Mobile WiMAX).

## 5 Future Work and Other Issues

RA-07 dealt with several other issues in addition to IMT and the SG structure. Most importantly among these were the future Work Programme, updating of Resolutions, adoption of new Resolutions and the approval of some other proposed Draft Recommendations.

### 5.1 Work Programme in the Study Period 2007 – 2011

The work programme for the next study period encompassing some 300 Questions was approved and the complete list of questions and their priority is included in Resolution ITU-R 5-5, Annex 1.

The Questions are grouped according to subject matter within the remit of the individual Study Group and are categorised according to the priority and urgency

- “C” indicates the highest priority and is granted to Questions associated with tasks related to preparations for World and Regional Radiocommunication Conferences (WRC/RRC);
- “S” indicates Questions that are referred to the RA by the Plenipotentiary Conference, any other conference, the Council or the Radio Regulations Board (RRB).

Questions identified as being suitable for approval by the alternative approval process (AAP) must be within the category “S” and are marked as AP.

Regarding future IMT work the new SG5 *Terrestrial services* (former SG8 Mobile services and SG9 Ter-

restrial services) will be responsible. This work will be performed by SG5 WP5D (former WP8F). Based on the RA-07 Resolution on principles for developing IMT-Advanced, ITU-R will invite relevant organisations external to ITU to propose candidate radio interface technologies for IMT-Advanced. ETSI – the European Standards Institute – is now developing a plan enabling the institute to make technical contributions to the ITU-R process.

## 5.2 Resolutions of ITU-R

In his opening speech to the RA-07, Mr Valery Timofeev, Director of the Radiocommunication Bureau, noted that the ITU-R Resolutions are key to increasing the efficiency both in the working methods of the Study Groups and when planning future work programmes and that it is of great importance that the ITU-R resolutions provide clear guidance on which the SGs can pursue their activities without imposing unnecessary bureaucracy which might retard progress in the studies.

Through the instrument of ITU-R Resolutions RA provides future orientation on specific topics such as spectrum management, IMT, propagation, disaster relief etc. The RA-07 agreed on a number of ITU-R Resolutions which are also of high relevance for the WRC-07.

### Use of Radiocommunications in Disaster Mitigation and Relief – ICT in Disaster Relief

Following the tsunami in Asia in 2004 there is now increased attention on the important role that telecommunications can play in disaster relief and emergency situations. Resolution ITU-R 53: *The use of radiocommunications in disaster response and relief*, and Resolution ITU-R 55: *ITU studies of disaster prediction, detection, mitigation and relief*, urge the ITU-R Study Groups to undertake studies regarding management of radiocommunication in disaster prediction, detection, mitigation and relief within ITU and with organisations external to ITU. The BR Director is instructed to cooperate with the directors of the T- and D-Sector to assist Member States in their emergency radiocommunication preparedness activities.

### Harmonisation for SDRs

Resolution ITU-R 54 *Studies to achieve harmonisation for short-range radiocommunication devices (SRDs)* recognises the importance of short range devices (SDRs) which in general utilise the unlicensed bands. The Resolution encourages ITU-R to continue its studies to enable implementation of advanced technologies for SDRs, focusing in particular on a strategy for the future.



*Fatih M. Yurdal, European Radiocommunications Office (ERO)*

## 5.3 Other Issues

### Earth Stations onboard Vessels (ESV)

SG 4 had worked out a revision to Recommendation S-1487-1 “Technical characteristics of earth stations on board vessels communicating with FSS satellites in the frequency bands 5 925–6 425 MHz and 14–14.5 GHz which are allocated to the fixed-satellite service”. The revisions had not yet been agreed due to opposition from the Arab States. With some changes suggested to the RA-07 and additional remarks that further studies on the topic of ESVs should be undertaken in ITU-R, the revision was adopted.

### Influence of Power Line Telecommunication (PLT) on Broadcasting Systems

SG 6 presented a draft new Recommendation on protection requirements for broadcasting systems operating in the LF, MF, HF and VHF bands below 80 MHz against the impact of power line telecommunication (PLT). RA-07 decided to send the material back to SG 6 for further consideration and to consider the possibility of developing a Report on the subject.

## 6 Conclusions

ITU-R Radiocommunication Assembly (RA) is the highest level with respect to studies and organisation of the work that forms the basis for a large number of important recommendations within radio based telecommunication business. Most importantly, RA-07 prepared the ground for the World Radiocommunication Conference 2007 held right afterwards, especially as regards mobile communications.

The RA-07 was a breakthrough for the WiMAX derived technology which was acknowledged as a

new member of the IMT-2000 family of terrestrial air interfaces. WiMAX technology now enjoys the same access to spectrum as the other technologies recognised by ITU-R. The ensuing WRC-07 endorsed RA-07's Resolution to use the term IMT generically as root name both for IMT-2000 and IMT Advanced. This provides a large degree of flexibility and all the six members of the IMT family can be used in any Recommendation referring to IMT or in a reference in the Radio Regulations.

The RA-07 reduced the number of Study Groups from seven to six, by merging the former SG8 Mobile services and SG9 Fixed services into a new SG5, Terrestrial Services. This may enable ITU-R to carry out its work within this field in a more efficient way and will save costs relating to translation and interpretation.

## 7 References

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## Annex A RA-07 Organisation and ITU-R Working Methods

### RA – Organisation and Management

The Assembly was chaired by Bruce Gracie from Canada and the work was organised in five committees:

- Committee 1: Steering committee
- Committee 2: Budget control
- Committee 3: Editorial committee
- Committee 4: Structure and work programme of the Study Groups
- Committee 5: Working methods of the Study Groups

### Updating of ITU-R Working Methods

A large majority of ITU-R's detailed working methods are contained in Resolution ITU-R 1-5 *Working methods for the Radiocommunication Assembly, the Radiocommunication Study Groups, and the Radiocommunication Advisory Group*. The RA-07 reviewed a number of provisions and updated them in order to make ITU-R's working methods more efficient.

In addition, Resolution ITU-R 1-5, para 8 refers to Guidelines issued by the Director of the BR which provide additional information on contribution to the ITU-R SGs and on aspects of the current working procedures, particularly those relating to meetings and documentation. The guidelines also address practical matters concerning the effective distribution of documents by electronic means

### AAP (Alternative Approval Procedure)

The Alternative Approval Procedure was agreed by RA in 2003 as a permanent procedure in Resolution ITU-R 45-1: *Application of an alternative approval procedure (AAP) for Recommendations* and enables



Bruce Gracie, Chairman of RA-07



*Terje Tjelta, Telenor and Håkan Lilja, TeliaSonera*

Sector Members to be consulted and take part in the approval procedure for ITU-R recommendations. This procedure is a “fast track procedure” which saves a lot of time and has become a big success in the ITU-T Sector. At the RA-07 there was a formal proposal to suppress this Resolution as it was claimed that it had not been used since 2003. This may well be the case since any Member State may argue that the Draft Recommendation contains issues of a regulatory nature and in such cases the procedure in Resolution 45-1 cannot be used.

Since the decision of the Plenipotentiary Conference in 1998 which opened the possibility of changing the approval procedures of Recommendations in the Sectors, CEPT and Sector Members have fought for many years to have the so-called AAP procedure in place. A number of CEPT countries and Sector Members such as Telenor did not support the proposal to suppress the AAP in ITU-R altogether. Suppressing the possibility of using AAP in the R-Sector would be considered as a very negative signal from ITU to the industry. In our opinion, the R-Sector should keep the procedure as an alternative for approval of recommendations.

After a CEPT consultation where Norway raised the question, CEPT members were encouraged to support the retention of the AAP and Resolution 45. At the last plenary meeting of the RA-07 the proposal was withdrawn, but it is noted in the minutes that if the procedure is not used until the next RA Resolution 45 should be suppressed. Reconsidering and possibly changing or suppressing ITU-R Resolutions is the prerogative of any RA and it is up to the next RA to reconsider the matter.

Telenor is pleased with this result and appreciated the active support from the Norwegian Administration during the CEPT consultation.

### **Number of Working Parties in SGs**

A proposal to limit the number of Working Parties established by a Study Group was not supported. Many members found that limiting the number of WPs that an SG might like to establish in order to perform its duties was unnecessary micro management and should in principle be left to the SG to decide taking into account the views of the members of the SG. It is important for the SG to develop an efficient internal structure in order to perform its tasks in the best way possible. The provision now states that Study Groups should establish only the minimum number of Working Parties, normally three or four Working Parties.

### **Term of Office for Vice-Chairmen in SGs**

The term of office for chairmen and vice-chairmen of the Study Groups was aligned and now cover chairmen and vice-chairmen of Study Groups, the coordination committee for Vocabulary and the Radiocommunication Advisory Group. The maximum term of office is two consecutive terms.

## **Annex B Appointment of Chairmen and Vice-Chairmen**

### **Appointment of Chairmen and Vice-Chairmen**

The candidatures for chairmen and vice-chairmen of the Study Groups, the Coordination Committee for Vocabulary (CCV), the Radiocommunication Advisory Group (RAG), the Conference Preparatory Meeting (CPM) and the Special Committee for Regulatory/Procedural matters are discussed at the meetings of Heads of Delegation of Member State where Sector members are not authorised to take part. The RA finally appoints the list of candidates.



*Anders Frederich, Sweden, Vice-Chairman of CPM and Head of Swedish Delegation*

According to the provisions in the Resolution ITU-R 15-4, candidates for these posts should be identified by Member States and Sector Members of the ITU-R preferably three months before the opening of the Assembly, and their nominations should be accompanied by a biographical profile highlighting the qualifications of the individuals proposed which will be circulated to the Heads of Delegation present at the Assembly. Despite these clear procedures, the selection of Chairmen and Vice-Chairmen has become an overwhelmingly political and sensitive issue and there were many changes of candidates up to the very

last minute, and the RA-07 saw a record number of Vice-Chairmen for a number of Study Groups with SG5 Terrestrial services having a total of 10 Vice-Chairmen.

Anders Frederich, National Post and Telecom Agency, Sweden, was appointed Vice-Chairman of the Conference Preparatory Committee (CPM). It should be noted that Mr Frederich is the only representative from the Nordic countries among the Chairmen and Vice-Chairmen of ITU-R.

In the next study period (2007 – 2011) the ITU-R will have six Study Groups with the following scope and Chairmen:

Study Group (SG)	Chairman
SG 1 "Spectrum management"	R Haines (USA)
SG3 "Radiowave propagation"	B Arbesser-Rastburg (European Space Agency)
SG 4 "Satellite services"	V Rawat (Canada)
SG 5 "Terrestrial services"	A Hashimoto (Japan)
SG 6 "Broadcasting services"	C Dosch (Germany)
SG 7 "Science services"	V Meens (France)
CCV "Coordination committee for vocabulary"	N Kisrawi (Syrian Arab Republic)
Radiocommunication Advisory Group (RAG)	J-B Yao Kouakou (Côte d'Ivoire)
CPM – Conference Preparatory Meeting	A Nalbandian (Armenia)
Special Committee	M Ghazal (Lebanon)

Anne Lise Lillebø is Director in Group Regulatory, Telenor ASA. Her main responsibilities include spectrum management and policy matters related to international telecommunications organisations. She has represented Televerket/Telenor at the ITU Radiocommunication Assemblies in 1993, 1995, 1997, 2000, 2003 and 2007. She holds a Master of Arts degree from the University of Oslo.

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Terje Tjelta is Senior Research Scientist in Telenor R&I. He received the MSc degree in physics from the University of Bergen, Norway, in 1980, and Dr.Philos. from the University of Tromsø in 1997. He joined Telenor Research and Innovation in 1980 and has been there since except for one year (1984/85) as visiting researcher at Centre Nationale des Études des Télécommunications (CNET) in France. His research covers radio communication systems, in particular high capacity links and broadband wireless access. He has experience from several international co-operative research projects and standardisation activities for the International Telecommunication Union.

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