

Draft CEPT Brief on Agenda Item 7.1 (Resolution 951 (WRC-03))

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to consider and approve the Report of the Director of the Radiocommunication Bureau:

- **on the activities of the Radiocommunication Sector since WRC-03;**
- **including also Resolution 951 (WRC-03)**

Issue

Under its Agenda Item 7.1, WRC-07 is to consider and approve the Report of the Director of the Radiocommunication Bureau on the activities of the Radiocommunication Sector since WRC-03. This includes the results of the studies requested by Resolution 951 (WRC-03) for the purposes of considering whether to place this subject on the agenda of a future conference.

Resolution 951 (WRC-03) requests that studies be carried out by ITU-R to examine the effectiveness, appropriateness and impact of the Radio Regulations, with respect to the evolution of existing, emerging and future applications, systems and technologies, and to identify options for improvements in the Radio Regulations that address various considerations contained in this Resolution, most of them relating to the introduction of more flexibility in the current international spectrum regulatory framework.

Preliminary CEPT position

CEPT recognises the importance of flexibility in allocating frequency bands to services defined in the broadest possible way, under technical, operational and regulatory provisions to ensure technology neutrality as far as possible¹.

CEPT supports the ITU-R studies with the aim of identifying the following.

- How the current international regulatory structure has evolved in order to respond to technical and operational requirements
- What flexibility has been achieved under this structure
- What changes may be required/feasible to improve this flexibility and ensure that the introduction of new applications is not delayed

¹ No. 0.10 of the RR: “provide for and, where necessary, regulate new applications of radiocommunication technologies”.

- How this structure could be made more responsive to new requirements
- The potential drawbacks of the possible changes to this structure

CEPT agrees that, while the current service definitions in Article 1 of the Radio Regulations seem to be sufficiently flexible for the present, the pace and unpredictability of convergence means that they need to be kept under review. The Annex to Recommendation ITU-R SM.1265-1 may be considered in this review.

Background

VGE

In Recommendation 34 (WRC-95), the Voluntary Group of Experts (VGE) recommended that future world radiocommunication conferences:

- 1 should, wherever possible, allocate frequency bands to the most broadly defined services with a view to providing the maximum flexibility to administrations in spectrum use, taking into account safety, technical, operational, economic and other relevant factors;
- 2 should, wherever possible, allocate frequency bands on a worldwide basis (aligned services, categories of service and frequency band limits) taking into account safety, technical, operational, economic and other relevant factors;
- 3 should take into account relevant studies by the Radiocommunication Sector and the reports of the relevant Conference Preparatory Meetings (CPM).

These recommendations have been followed with reasonable success by subsequent WRCs since 1995, recognizing that it is sometimes difficult for countries or groups of countries to agree on worldwide allocations in situations where large investments exist in systems and infrastructures, which may be affected.

TWIMs

WRC-03 considered the technical and regulatory requirements of Terrestrial Wireless Interactive Multimedia applications, with a view to facilitating global harmonization. This attempt to improve the flexibility of the international regulatory framework resulted into a request to the ITU-R to continue its studies and identify any regulatory impediments that may arise in relation to the introduction of terrestrial wireless interactive multimedia applications on a global basis.

European activities

European Union

The Radio Spectrum Policy Group (RSPG) considers that European harmonisation of spectrum use through CEPT will continue to be a key element in securing maximum economic and social benefits from use of the radio spectrum, provided that it is sufficiently flexible, technology-neutral and dynamic enough to encourage innovation, competition and the European Single Market. The RSPG considers that European harmonisation of spectrum use should continue to be pursued actively with these objectives in mind.

The following recent Opinions from the RSPG and Communications from the EU Commission should be noted:

- Communication from the Commission to the Council, the European Parliament, the European Economic and Social Committee and the Committee of the Regions - Rapid access to spectrum for wireless electronic communications services through more flexibility
http://eur-lex.europa.eu/LexUriServ/site/en/com/2007/com2007_0050en01.pdf
- Revised RSPG Opinion on WRC-07
http://rspg.groups.eu.int/doc/documents/opinions/rspg07_162_final_rev_op_wrc_07.pdf
- Opinion on secondary trading of rights of use of radio spectrum (November 2003) - RSPG04-54
http://rspg.groups.eu.int/doc/documents/meeting/rspg5/rspg04_54_opinion_second_trading.pdf
- Opinion on spectrum implications of switchover to digital broadcasting (November 2004) – RSPG04-55
http://rspg.groups.eu.int/doc/documents/meeting/rspg5/rspg04_55_opinion_digit_switchover.pdf
- Opinion on WAPECS (November 2005) - RSPG05-102
http://rspg.groups.eu.int/doc/documents/meeting/rspg8/rspg_05_102.pdf
- Opinion on “The Introduction of Multimedia Services in particular in the frequency bands allocated to the broadcasting services” RSPG06-143
http://rspg.groups.eu.int/doc/documents/opinions/rspg06_143_final_rspg_opinion_multimedia_services.pdf

CEPT

ECC/PT8 was established to study, *inter alia*, the overall direction of harmonization policy bearing in mind that harmonizing measures should be technology neutral, flexible and include review stages, investigate ways and possibilities of improving the flexibility of spectrum management. PT8 final Report was approved by the 13th ECC meeting held during 20-24 March 2006. This Report addresses the national, European and international levels of the spectrum regulatory framework. It also takes into account the conclusions of the RSPG on the particular issue of secondary trading.

CPG-PT1 has taken into account the work of ECC/PT8 and RSPG in order to develop draft Briefs and ECP's on this agenda item, and will respond appropriately to further developments.

The Radio Regulations allocate the frequency bands to various services in a way that provides maximum flexibility to the administrations to develop national policies for using spectrum. The only limitation that WRCs take into account in making new allocations is to ensure that the flexibility given to an administration to decide on the type of service it wants to use in its own territory will not hamper the flexibility of other administrations to operate the same or different choices in the same band. Also, WRC decisions are taken by consensus, i.e. there is no sustained opposition by any administration to a decision. This is made necessary by the objective that every administration will sign the final acts of the WRC and will therefore be bound by treaty.

Within this framework, WRCs decisions could be considered as achieving the maximum degree of flexibility that is possible at the time they meet.

The relatively flexible framework of the RR has the advantage of respecting the wide range of countries' spectrum needs and their sovereign right to meet those needs as long as it does not place undue constraints on other countries. Within this framework, a major effort has been made in the past few years to harmonize spectrum use at regional, or even global, level, in particular with regard to mobile communication, in order to benefit from economies of scale and ensure interoperability. The activity towards harmonization has been to identify specific frequency bands for applications, corresponding to specific standards. The purpose of this harmonization is to facilitate roaming and free circulation, to enable economies of scale and regulatory certainty for the large investments required in equipment manufacturing and network deployment and to decrease the risk of interference and incompatibilities between systems using the same or adjacent frequency bands. The challenge is how to reap the benefits of harmonisation in terms of interoperability, roaming and economies of scale without imposing undue restrictions on flexibility that hold back innovation and competition, especially if designated services are unsuccessful commercially. PT8 concluded that flexibility and harmonisation are not incompatible and that a high degree of uniformity in spectrum usage can, in some cases, for some applications be achieved *de facto* on an industry-led basis without the need for exclusive harmonisation.

It should be emphasized that most sharing studies have to rely on an assessment of the protection requirements and characteristics of both incumbent services and new services for which an allocation is proposed to a WRC. This assessment is generally based on the inputs from the administrations participating in the associated ITU-R studies. In some cases, it is also based on the responses received from questionnaires issued by the ITU-R. In order to ensure compatibility between the incumbent and new services, these characteristics however, have to be narrowed down to a subset of “realistic” parameters, and studies seek to avoid focusing on worst case situations which would preclude the possibility of sharing with new proposed services. In general, sharing is therefore possible only by limiting the spread of characteristics of incumbent and new services, which may be at the detriment of the flexibility in using the new regulatory framework with services that were not foreseen at the time when this framework was developed.

In other words, increasing the flexibility of the regulatory framework to address a wider range of future unforeseen uses may lead to the impossibility of addressing currently foreseen uses or adopting new sharing schemes in the future.

In order to identify the scope for additional flexibility of international regulatory framework, there is a need to ascertain to what extent past WRC decisions have dealt with this problem and how they have addressed it.

There is also a need to clearly assess the differences, if any, that exist in the coordination, notification and recording procedures that are applicable to different services, since any potential change to the current service definitions may have implications on these procedures.

Activities within ITU-R

Among the options considered in ITU-R studies to address this agenda item, is the introduction of a new provision in the Radio Regulations in order to apply, in the context of the fixed and mobile (except maritime and aeronautical mobile) services, the possibility of substituting these services, under certain conditions yet to be developed. CEPT accepts the rationale of this style of provision in order to provide additional flexibility without making new allocations in specific situations, especially where interference is clearly predictable (such under No. 5.485 or No. 5.492). However, the introduction of such a provision with general applicability would require a considerable amount additional work to define the matrix of technical parameters and criteria that would be needed to

assess compatibility and so avoid undermining the international regulatory framework, or limiting the flexibility to develop new services.

The ITU-R studies also considered the strategy of merging service definitions but, after recognising that convergence is taking place and is indeed accelerating for both terrestrial and space services, concluded that radical measures were unnecessary at the present time, especially if flexibility was enhanced by other means such as the principle of “substitutability”. CEPT, while recognizing the sensitivity outside CEPT surrounding the allocation of spectrum to broadcast services, considers that digital convergence is making it increasingly difficult to distinguish between traditional modes of broadcasting and new multi-media applications

Working Party 1B

WP 1B is the responsible group for ITU-R studies on this Agenda Item . A preliminary draft report to the Director of the Radiocommunication Bureau has been developed, taking into account the responses received so far from other interested working parties, and was reviewed at its meeting, 9-13 October 2006, taking into account the inputs from the WP of the Special Committee at its December 2005 meeting. The output of WP 1B was not adopted by Study Group 1 and the issue will be discussed further at its next meeting in June 2007:

Conference Preparatory Meeting (CPM)

The following text was agreed at the CPM in order on to provide information to the Director and the administration. The Director may wish to take into consideration, when drafting his report, any further progress of the studies under this Resolution at the next WP 1B meeting in June 2007.

7/7.1/1 Issue A – Resolution 951 (WRC-2003)

Resolution 951 (WRC-03) – Options to improve the international spectrum regulatory framework

The results of the ITU-R studies in response to Resolution **951 (WRC-03)** will be included in the Director’s Report. The current status of the ITU-R studies is reported hereafter.

In response to Resolution **951 (WRC-03)**, three possible options have been identified so far for improving the effectiveness, appropriateness and impact of the RR with respect to the evolution of existing, emerging and future applications, systems and technologies. A combination of these options, as well as other options, may also be considered.

Option 1 – Current practice

Under this option, it is considered that there is sufficient flexibility within the present RR and the WRC processes to meet any current or likely future requirements within the time-frame typically set forth for WRCs, 3-4 years.

Although new applications may be introduced in a shorter time-frame, e.g. under RR No. **4.4**, this would be without protection against harmful interference, which may not be practical for the vast majority of emerging wireless applications, including advanced mobile (IMT), scientific, public safety, radiolocation, radionavigation, broadcast, and fixed/mobile/broadcast satellite systems.

The current service definitions in RR Article **1** appear to have generally enabled the RR to be adapted dynamically to latest technology evolution such as IMT, RLANs, Digital TV, PPDR, scientific community interests.

It was noted that, in spite of different definitions for the fixed and mobile (except aeronautical and maritime) services, in most frequency bands where one of the two services is allocated, the other one is also allocated. This indicates that convergence is already achieved in the ITU allocation table, except in some frequency bands, where joint allocations to both services may be considered on a band-by-band basis by future WRCs, as required.

Option 2 – Reviewing and possibly revising some of the current service definitions

Under this option, the current service definitions in RR Article 1 would be reviewed in order to ensure that they adequately and unambiguously cover actual use and emerging technologies. After an extensive consultation within the ITU-R Study Groups, this review may encompass the fixed and mobile (except aeronautical and maritime mobile) services and possibly other services if considered appropriate^{2,3}. It may lead to:

- reviewing the current definitions for these services; and modifying them as necessary; and/or
- adding a new service to the list of service definitions, which would encompass several of the existing ones. If such a new service definition was to be included in RR Article 1, it is understood that any allocation to this new service could only be made by a future WRC.

If this review led to changes in the definitions of the corresponding stations, there may also be a need for consequential changes in the definition of mobile earth stations.

Possible changes to the service definitions would also need to be addressed from the point of view of their regulatory implications in the assignment and use of frequencies, in particular in the ITU coordination, notification and recording process, and impact on assignments made under the current definitions.

Option 3 – The introduction of a new provision in the RR enabling substitution⁴ between assignments of specific services

Under this option, a new provision would be introduced in the RR in order to enable substitution between assignments of specific services. For example in the context of fixed and mobile (except maritime and aeronautical mobile) services, substitution could be applied in the same way as it is applied by Nos. 5.485 or 5.492 in the context of the fixed-satellite and broadcasting-satellite services.

Using the example of fixed and mobile services, this could reflect the current convergence between the services, address the current ambiguities between the definitions of these services, facilitate timely implementation of new applications, provide adequate regulatory protection for such applications and protect the rights of other administrations against interference caused by them. An example of such a new provision could be the following:

ADD

5.XXX Assignments to stations of the fixed service which have been recorded in the MIFR with favourable finding may also be used for transmissions in the mobile (except aeronautical or

² In relation to the possible need to include the broadcasting service in this review, the corresponding definition might be affected by this review.

³ The ITU-R studies indicated that the current definition of the fixed-satellite service has been able to accommodate new technologies and applications in the fixed-satellite service.

⁴ This term needs to be defined properly.

maritime mobile) service, provided that such transmissions do not cause more interference, or require more protection from interference, than the corresponding assignments in the fixed service recorded in the MIFR. Assignments to stations of the mobile (except aeronautical or maritime mobile) service which have been recorded in the MIFR with favourable finding may also be used for transmissions in the fixed service, provided that such transmissions do not cause more interference, or require more protection from interference, than the corresponding assignments to the mobile (except aeronautical or maritime mobile) service recorded in the MIFR.

It is recognized that implementation of this approach would require necessary tools for the Bureau to assess the compliance of a proposed use of this provision. In the absence of such tools, the provision could only be applied in cases where the interference situation is obviously unchanged (e.g. when the same parameters are used for both services).

Regulatory/procedural aspects

Some administrations reported difficulties in classifying certain applications under one service or another due to different views on the scope of the definitions and the emergence of new technologies and applications. Hence, administrations may not always be clear on the best course of action to be followed in the current ITU regulatory procedures. In order to resolve these difficulties, one possible option was proposed which was to review and possibly amend the service definitions in RR Article 1.

The objective of changing or merging service definitions to reflect technological evolution may affect the rights of administrations under the existing procedures and may require modifications to them, as well as transitional arrangements.

Focusing on the differences in the notification procedures applicable to the fixed service, the land mobile service and the broadcasting service, the following conclusions were reached⁵:

- 1) It is important to stress the need for a timely adaptation of the RR to respond to changes in technology and demand for content, infrastructure and service provision.
- 2) In the RR, the rights of administrations to deploy, operate and protect different services in various bands are derived from the application of the relevant coordination and notification procedures, in particular RR Article 11 and the associated RR Appendix 4, to stations belonging to these services. These procedures are dependant on the service, which highlights the importance of classifying applications into appropriate service definitions and to review definitions and procedures jointly in order to reflect technological evolution.
- 3) Under the current situation, when an improvement in the RR is required, the present WRC process allows adjustments to the needs of Member States within a 3-6 year time-frame. The current allocation Table may lead to the following limitations in view of the convergence of services:
 - a) in frequency bands where the fixed, mobile and broadcasting services have different status, the application of the relevant ITU procedures to networks encompassing applications relating to each of the three services may lead to a situation where these applications have different rights, hence limiting the deployment of such networks.
This is a significant limitation in an era where these services with different allocation status appear to be converging;

⁵ In this document, for simplicity reasons “land mobile” is to be understood as “mobile except aeronautical or maritime mobile”.

- b) such situations may be resolved by reviewing the corresponding allocations with a view to obtain the same status for these three services in specific frequency bands, as necessary (e.g. 790-862 MHz, 3.4-3.8 GHz, according to the allocations);
 - c) although new applications may be introduced in shorter time-frames in specific bands (ISM), or under specific regulatory conditions (RR No. 4.4, or special agreements under RR Article 6), their wider deployment may be constrained by a lack of protection, spectrum or harmonization.
- 4) The differences in the notification process at the practical level give an indication of how the existing rights of administrations may be affected by changes to the underlying regulatory definitions. This indication is an important step in assessing the merits of making such changes.
 - 5) The essential differences in the definitions of the fixed service, the land mobile service and the broadcasting service, relate to the fact that fixed stations, base stations in the mobile service and transmit broadcasting stations are intended to be operated at specified points, whereas mobile terminals or broadcasting receivers are intended to be operated at unspecified points, i.e. their exact location within a given geographic area is not known and they may be operated anywhere within the relevant service area.
 - 6) In these three services, similar situations arise with point-to-multipoint (or point to area) networks, for which the treatment in the notification forms is similar and the RR therefore already reflect convergence from a procedural perspective.
 - 7) In the case of multipoint-to-point networks, convergence between the fixed service and the mobile service is not reflected in the procedures. In this case, convergence from a procedural perspective may be achieved by the adoption of modified or new notification forms enabling bulk notification of unspecified fixed transmit stations. In this respect, the Director of the Bureau indicated in his report to the CPM that suitable notice forms could be generated easily.
 - 8) In order to respond to the pace of technological development, it may be considered desirable to revise or merge the current service definitions, as proposed under **Option 2** above, so as to accommodate changes in demand, attributes and usage in radiocommunication services. This may require modifications to the current procedures so as to match the modified service definitions. Inevitably such changes would affect the current rights of administrations and before deciding on such changes, a proper evaluation would need to be made in this respect.

Other possible approaches under **Option 2** would be:

- to add a new service definition which would encompass several of the existing ones. Once a competent WRC would have added this new service, it is understood that subsequent WRCs may consider band by band allocations, taking into account the results of the relevant compatibility studies;
 - to revise the fixed service definition to permit certain fixed applications with ubiquitous transmit terminals which would be operated at unspecified points;
 - to revise the fixed and/or mobile definitions to allow certain applications which may not fit in either definition.
- 9) A change in the format of notification forms as described in 7) or a change in the service definitions as described in 8) (**Option 2** above) would, however, be equivalent to a global allocation to the land mobile service in all frequency bands where the fixed service is currently allocated, with the same status as the fixed service, and vice-versa.

Since most of the frequency bands currently allocated to the fixed service but not to the land mobile service are shared with other terrestrial or space services, such a change may affect such services⁶ and would be more appropriately addressed through band-by-band allocation decisions in future competent WRCs, taking into account the results of the relevant compatibility studies.

To enable the possible changes referred to in § 7 and 8, their implications in technical, regulatory and procedural terms would therefore need to be properly evaluated.

- 10) Another option (**Option 3** above) would be to operate fixed and land mobile services under each other's allocations within the envelope of existing assignments. This option may be seen as an alternative way of enabling convergence between services, which derives from commonality in regulatory treatment.

However, in the case of multipoint-to-point networks, using land mobile under the umbrella of a fixed service assignment would be difficult since a specified point of reference covering a fixed service application cannot simply be made unspecified to cover the substitution of a mobile network while keeping the same interference envelope. Further study would be needed in such situations in order to include appropriate geographical factors when setting the criteria to enable substitution of assignments within two services.

Conclusion

Consistent with Resolution 71 (PP-06), which contains the Strategic Plan of the Union for 2008-2011, in order to meet the requirements of the membership for spectrum, orbit access and operations in application of the Constitution, in light, *inter alia*, of the accelerating convergence of radiocommunication services, the RR should continue to be re-appraised periodically. The ITU-R studies in response to Resolution **951 (WRC-03)** have shown that any change intended to improve the flexibility of administrations in accommodating converging services has to rely on a combination of service definitions, allocations and procedures. Improving flexibility of the RR and the timeliness of their implementation will therefore require continuation of the studies, with more focus on the allocation and sharing issues.

In considering the results of the ITU-R studies in response to Resolution 951 (WRC-03,), if WRC-07 decides to place this subject on the agenda of WRC-11, it is suggested that appropriate sharing studies be requested to the ITU-R in specified frequency bands, as considered appropriate, so that the potential impact in technical, regulatory and procedural terms is properly evaluated.

Further work in ITU-R

The CPM Report and further work done by WP 1B should serve to define areas where further work can usefully proceed in preparation for WRC-07.

List of relevant documents

⁶ In bands shared with space services, notification of fixed stations operating at unspecified points is currently not permitted.

Actions to be taken

Resolution 951 under A.I. 7.1 provides an important opportunity to debate at WRC-07 the strategic direction for the future of spectrum management. Although specific action in terms of changes to the Radio Regulations may not be possible at WRC-07, the debate should be opened and a specific agenda item placed on the agenda of WRC-11 to address any allocation, regulatory and procedural issues which would be identified by WRC-07, taking into account the conclusions of the ITU-R studies and contributions from Member States. In developing a European position, the results of RRC-06, the opinions of the RSPG, in particular the WAPECS Opinion and the Opinion on digital dividend, should be taken into account⁷.

These studies should be undertaken consistent with the Objective 2 for the ITU-R 2008-2011 Strategic Plan adopted by the Plenipotentiary Conference, which reads: “Meet the requirements of the membership for spectrum, orbit access and operations in application of the ITU Constitution, in light, inter alia, of the accelerating convergence of radiocommunication services”.

WRC-11 should also be invited to review bands where administrations have encountered difficulties in implementing flexibility and take appropriate actions, such as allocating bands to services which are not currently allocated.

Taking these points into account, the scope of the agenda item for WRC-11 will have to include:

- the possible development of broader approaches for improving the international spectrum management framework, through further development of the options noted in the Director’s Report not excluding the development of new options; and
- the possible co-allocation of specific frequency bands to converged services where needed.

CPG should define a list of study issues, objectives, and candidate bands to support such an agenda item for WRC-11.

Proposals from outside CEPT

Regional telecommunication organisations

APT (January 2007)

APT Preliminary View

Based on the discussion on the matter and outcome of the CPM07-2, APT Members are encouraged to review the matter with a view to prepare a possible common proposal at APG2007-5.

CITEL (October 2006)

Preliminary Views:

Canada

- There is a need to review the service definitions and modify them as appropriate in order to ensure sufficient flexibility to accommodate new radio technologies and applications.

⁷ http://rspg.groups.eu.int/doc/documents/opinions/rspg07_162_final_rev_op_wrc_07.pdf

- Support further study of Options 2 and 3, as described in the WP1B report to the Director of the Radiocommunication Bureau for inclusion in his report to WRC-07.
- Further study needs to take place on which approach would provide the needed flexibility to embrace the introduction and deployment of new technologies and services in a responsive and timely manner taking into account the impact on other services.
- Support placing this subject on a future conference agenda. In particular, support tasking WRC-10 with taking action to improve the regulatory procedures and framework for allocating spectrum.
- The Radio Regulations should be in step with evolving spectrum management practices such as the need to accommodate technology neutral licensing requirements which provide users with flexibility to meet and adjust to market demands.

International organizations

NATO (February 2007)

NATO Military Position

Safeguard military applications while supporting simplification of Radio Regulations.