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**ISSUES AT THE WORLD RADIOCOMMUNICATIONS CONFERENCE 1999  
(WRC-99)**

**IN THE CONTEXT OF COMMUNITY POLICIES**

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## 1. INTRODUCTION

The World Radiocommunications Conference 1997 (WRC-97) took place in Geneva from 27 October to 21 November 1997. After four weeks of negotiations, 131 ITU member countries, including the EU Member States, signed the Final Acts<sup>1</sup> of the WRC-97. This document contains the agreed modifications of the Radio Regulations, the Appendices to the Radio Regulations, as well as revised and new Resolutions and Recommendations approved by the Conference.

In general terms, and from a telecommunication policy point of view, WRC-97 proved to be a successful conference and made some important provisions which will contribute to the establishment of Global Information Infrastructures. For example, the results of WRC-97 comply with Europe's plans for the further development of third generation terrestrial mobile communications into UMTS (Universal Mobile Telecommunications System) and for the competitive provision of satellite broadband services while respecting the frequency requirements of other radiocommunications services. It should be noted, however, that the forthcoming conference in 1999 will address both issues in further detail. This is also the case with respect to frequency requirements for broadcasting satellites, radionavigation satellites, and Earth exploration satellites for which European positions need to be established on both commercial and public policy considerations.

WRC-97 adopted a Resolution on the agenda of the forthcoming conference in 1999<sup>2</sup>. The agenda comprises over 40 separate issues, many of which concern a review of provisional WRC-97 decisions. The forthcoming WRC-99 will deal with frequency requirements for radiocommunications systems which are essential for the implementation of Community policies on satellite and mobile communications, broadcasting, aeronautical and radionavigation services and Earth observation. The implementation of these policies to a large extent depends upon the availability of radio spectrum. It is therefore essential to relate the technical decisions taken at WRCs to such broader policy aspects.

This document provides background information on the issues dealt with at WRC-99. The aim of this document is to contribute to the preparation for WRC-99 by elaborating upon the issues for WRC-99 which are relevant in a Community context. The results of WRC-97 are outlined where of relevance to fully assess the issue to be dealt with by WRC-99.<sup>3</sup>

## 2. MAIN COMMUNITY POLICIES AFFECTED BY SPECTRUM AVAILABILITY

This chapter highlights the political background for a number of Community policies which in one way or another depend on the availability of frequencies and for which common European positions and concrete proposals for WRC-99 need to be established. As will be demonstrated, certain Community policies are directly affected by WRC decisions. This is most apparent in the areas of mobile and satellite communications. However, the implementation of other Community policies also depend on frequency availability, for instance in the cases of broadcasting, radionavigation, and Earth observation.<sup>4</sup>

The agenda items for WRC-99 as decided by WRC-97 are grouped under detailed technical headings familiar to frequency managers only. However, most of the apparent technical matters to be

<sup>1</sup> International Telecommunications Union, Final Acts of the WRC-97, Geneva 1997.

<sup>2</sup> Resolution GTPLEN1-3 (WRC-97): Agenda for the 1999 World Radiocommunications Conference, ITU, Final Acts of the WRC-97, Geneva, 1997. It should be noted that the ITU Council will have to decide whether the budget available for the WRC-99 allows for the inclusion of agenda items 8.1-8.8. are indicated in this document in brackets.

<sup>3</sup> The Conference Preparatory Group (CPG) of the CEPT has produced a detailed report on the results of WRC-97 which can be obtained from the European Radiocommunications Office (ERO) in Copenhagen. See ANNEX 2 for details.

<sup>4</sup> In addition, certain other Community policies, such as concerns RTD, competition, and trade, have a bearing on frequencies. For further details, see Communication from the Commission to the European Parliament and the Council on the World Radiocommunications Conference 1997 (WRC-97), COM(97)304 final, 18.06.97.

considered at WRC-99 in fact constitute important operational conditions for the implementation of the Community policies mentioned above. Other items are only indirectly linked to Community policies, but are nevertheless of importance to individual Member States, companies, or organisations.

The agenda of WRC-99 includes many issues for which no definitive agreement could be established at WRC-97. This is due to the fact that the issues dealt with at WRCs are technically so complex that, prior to taking definitive decisions, further technical studies are needed or further consultation with, and instructions from relevant political authorities is required. It is therefore important that all interested parties, including (potential) spectrum users, equipment manufacturers, regulatory authorities, and political instances take note of the WRC-99 agenda, assess to which extent their respective activities may be affected by the decisions to be taken, and take part in the process for the establishment of common European positions for WRC-99.

ANNEX 1 provides an annotated overview of the items on the WRC-99 agenda.

### **3. MOBILE COMMUNICATIONS/IMT-2000/UMTS**

#### **3.1 Mobile communications/UMTS/IMT-2000 in the Community context**

Decisions need to be taken on frequency availability for third-generation terrestrial mobile communications systems which will provide Internet-type, mobile, multi-media broadband services. As such, third-generation mobile communications systems will be one of the building blocks of the wireless Information Society. In Europe, such systems are developed under the name UMTS – Universal Mobile Telecommunications System. In the ITU, work on UMTS is being carried out under the name IMT-2000 (International Mobile Telecommunications, with 2000 referring to the expected date of introduction of the service). The amount of spectrum available for UMTS will directly affect growth prospects for multi-media mobile communications in Europe and the position of Europe's mobile communications industry in the global context.

Estimates suggest that the annual market revenues in Europe for cellular mobile services could amount over 100 billion ECU and for mobile multimedia services approximately 34 billion ECU in 2005.<sup>5</sup> The huge economic potential of the mobile market is reflected in Community funding under the RACE and ACTS projects on mobile communications (176 million ECU in the period 1996-1998).

As regards standardisation of third generation mobile communication systems, and in accordance with the request of the Community institutions<sup>6</sup>, agreement was reached in ETSI in January 1998 on the elaboration of a common air interface standard for UMTS. The compromise solution, called UTRA (UMTS Terrestrial Radio Access), draws on both W-CDMA and TD-CDMA technologies.<sup>7</sup>

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<sup>5</sup> UMTS Forum Report no 1: A Regulatory Framework for UMTS, 25.06.1997.

<sup>6</sup> Communication to the European Parliament and the Council on strategy and policy orientations with regard to the further development of mobile and wireless communications (UMTS) -- outcome of the public consultation and proposals for creating a favourable environment, COM(97)513 final, 15.10.1997. Council Conclusions on UMTS, December 1997. Report of the European Parliament on the Communication from the Commission on the further development of mobile and wireless communications: challenges and choices for the European Union and on the Communication from the Commission 'Strategy and policy orientations with regard to further development of mobile and wireless communications (UMTS), A4-0027/98, 22.01.1998.

<sup>7</sup> Under the terms of the compromise solution on the radio interface for UMTS, called UTRA, in the paired band (FDD, Frequency Division Duplex) the W-CDMA (Wide-band Code Division Multiple Access) radio access technique will be applied and in the unpaired band (TDD, Time Division Duplex), the TD-CDMA (Time Division/Code Division Multiple Access) radio access technique will be applied. See: ETSI SMG, Consensus Decision on the UTRA concept to be refined by ETSI SMG2, Document: TDOC SMG 39/98; ETSI Press Release 40/98: Agreement reached on radio interface on radio interface for third generation mobile systems, UMTS, 29 January 1998.

The importance of the development of UMTS in terms of frequency co-ordination, standardisation, and international co-ordination has been acknowledged in the Community.<sup>8</sup> In December 1997, the Council invited the Commission to submit a proposal for a Decision on UMTS in order to facilitate the early licensing of UMTS services and pan-European roaming on the basis of co-ordinated allocation of frequencies in the Community. In January 1998, the European Parliament adopted a Resolution inviting the Commission to take appropriate measures to ensure binding implementation of frequencies to be made available for UMTS.

On 11 February 1998, the Commission adopted a proposal for a Council and European Parliament Decision on UMTS<sup>9</sup>. The aim of this proposal is to facilitate the rapid introduction of compatible UMTS networks and services in the Community on the basis of internal market principles and in accordance with commercial demand. The proposed Decision lays down a time table for the granting of mandates to the CEPT to harmonise frequency use and the conditions attached to authorisations for UMTS networks and services.<sup>10</sup> The availability of sufficient and harmonised spectrum is an essential factor for the successful deployment of UMTS. Furthermore, the global character of UMTS suggests a world-wide co-ordination of spectrum allocation.

The European Radiocommunications Committee (ERC) of the CEPT adopted in June 1997 an ERC Decision on the frequency bands to be reserved for the introduction of UMTS by 2002.<sup>11</sup> The ERC also decided to establish a specific Task Group 1 (TG 1) to address all relevant UMTS frequency issues in a co-ordinated and focused manner.<sup>12</sup> The UMTS Forum<sup>13</sup> has evaluated the spectrum requirements and made proposals for the regulatory framework of UMTS. In addition to the frequency allocations in the ERC Decision, the UMTS Forum estimates that there will be a need for additional spectrum beyond allocations already made by previous WRCs to meet expected market demand. The UMTS Forum has calculated that the total demand for terrestrial spectrum in 2010 will be 580 MHz in Europe. Out of this, WRC-92 designated 155 MHz of spectrum for IMT-2000/UMTS, whilst 240 MHz is reserved in Europe for second generation terrestrial mobile communications. It further identified the need for an additional allocation of 185 MHz of spectrum at ITU level to meet future demand for UMTS by 2010 in Europe. The calculated spectrum demand for the satellite component of UMTS is 50 MHz by 2005 and 90 MHz by 2010 for coverage of Europe. Given the universal potential of UMTS, global availability of such services will need to be ensured through appropriate decisions regarding frequencies at the ITU/WRC level.

### 3.2 WRC-97 results

WRC-97 decided to include spectrum requirements for IMT-2000/UMTS on the agenda of WRC-99. The radiocommunications conference in 1992 already identified a significant amount of spectrum

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<sup>8</sup> Communication to the European Parliament and the Council on the further development of mobile and wireless communications. Challenges and choices for the European Union. COM(97) 217 final, 29.05.1997. See also footnote 5.

<sup>9</sup> Proposal by the Commission for a Decision of the European Parliament and of the Council on the co-ordinated introduction of mobile and wireless communications (UMTS) in the Community, COM(1998)58 final, 11.02.1997.

<sup>10</sup> On the harmonisation of frequency use, the proposal foresees that mandates will be submitted to CEPT on further spectrum allocation including availability of additional spectrum beyond WARC-92 FPLMTS bands and freeing or re-farming of the 900, 1800, 1900 MHz bands for UMTS.

<sup>11</sup> ERC Decision of 30 June 1997 on the frequency bands for the introduction of the Universal Mobile Telecommunications System (UMTS), ERC/DEC(97)07. The decision designates the frequency bands 1900-1980 MHz, 2010-2025 MHz and 2110-2170 MHz to terrestrial UMTS applications and the bands 1980-2010 MHz and 2170-2200 MHz for the satellite component of UMTS.

<sup>12</sup> At its meeting in July 1997, the ERC decided to set up a Task Group to take a pro-active role on appropriate UMTS issues. The Task Group will deal with all relevant UMTS issues related to harmonisation, sharing and compatibility, essential requirements, spectrum requirements and free circulation. It also co-ordinates and prepares ERC positions for ITU-R Task Group 8/1 which deals with UMTS issues at the global level.

<sup>13</sup> In 1996, the European Commission supported the set-up of the UMTS Forum which comprises over 100 members from the part of regulators, operators, manufacturers and other interested parties. The UMTS Forum develops common views for the development and implementation of UMTS, and provides advice on the development of a policy framework for the introduction of UMTS.

(155 MHz) for third generation mobile communications, now called IMT-2000, and whose European component is known as UMTS. However, the mobile communications industry<sup>14</sup> in Europe has identified a further need for spectrum to accommodate the growth foreseen in mobile multi-media services in time-frame 2005-2015. Industry has requested the relevant authorities to take timely action to make sufficient spectrum available for IMT-2000/UMTS to satisfy market demand and to ensure the competitive introduction of these services.

### **3.3 Issue at WRC-99**

WRC-99 will consider the following issues (*WRC-99 agenda Item 1.6*):

- spectrum and regulatory issues for advanced mobile communications applications in the context of IMT-2000 with the aim to identify additional frequency bands to satisfy market demand by 2005-2010;
- studies on technical characteristics for IMT-2000 facilitating world-wide roaming.

## **4. SATELLITE SERVICES**

### **4.1 Satellite communications in the Community context**

Satellite communications systems have the potential to reach global markets and in fact constitute the wireless building blocks for the establishment of the Information Society. The deployment of such important international satellite systems raises, however, a whole set of technical and regulatory, as well as economic and political issues, the full dimensions of which can only be addressed at the international level. European interests need to be adequately represented in this context. As far as frequencies are concerned, the international satellite communications industry has fully acknowledged the importance of the issues at stake at WRCs and lobbies impressively on their own behalf and with and through national administrations to satisfy their requirements.

The value of (planned) satellite personal and broadband systems is expected to reach 350 billion ECU.<sup>15</sup> Taking the importance of satellite communications into account, the fifth Framework Programme for RDT foresees a funding of Information Society technologies of 3.3 billion ECU in the period 1998-2002.

The importance of satellite communications for Europe, including Trans-European Networks (TENs), has been acknowledged at numerous instances at the highest political level.<sup>16</sup>

The Commission Communication on an "EU action plan: Satellite Communications in the Information Society"<sup>17</sup> put forward a set of priority actions to be undertaken at EU level and calls upon the Commission to ensure an appropriate interface with industry in view of supporting the Commission in the implementation of the Action Plan. The importance of frequency availability for

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<sup>14</sup> UMTS Forum Report no 1: A Regulatory Framework for UMTS, 25.06.1997. According to UMTS Forum calculations there is need for an additional 185 MHz allocation of spectrum by 2010. The total demand for terrestrial spectrum in 2010 is calculated to be 580 MHz of which 155 MHz was designated by WRC-92 and 240 MHz is defined for second generation standards. The calculated spectrum demand for the satellite component of IMT-2000/UMTS is 90 MHz by 2010.

<sup>15</sup> Communication on the EU Action Plan: Satellite Communications in the Information Society, COM(97)91, 05.03.1997.

<sup>16</sup> See : Communication from the Commission to the European Parliament and the Council on Satellite Personal Communications, COM(93) 171 final, 27.4.1993; Council Resolution of 7 December 1993 on the introduction of satellite personal communications services in the Community, OJ 93/C 339/01; Council Resolution of 22 December 1994 on the further development of the Community's satellite communications policy, especially with regard to the provision of, and access to, space segment capacity, (94/C 379/04, OJ C 379/5, 31.12.94). The European Parliament and Council Decision 710/97/EC of 24 March 1997 on a co-ordinated authorisation approach in the field of satellite personal-communication services in the Community OJ 97/L105/4.

<sup>17</sup> Communication on the EU Action Plan: Satellite Communications in the Information Society, COM(97)91, 05.03.1997.

satellite communications is underlined in the Communication. Under the implementation of the Satellite Action Plan, a satellite Regulatory Working Group has been set up by the sector players aimed at facilitating the interface with the Commission as regards regulatory aspects of satellite communications. The Regulatory Working Group has recently produced a report entitled "Market access : problems and solutions"<sup>18</sup> which address spectrum related issues at length and call for further actions to be taken.

The Council and European Parliament Decision on S-PCS aims at facilitating the rapid introduction of compatible satellite personal communications services in the Community through the harmonisation of frequency bands and usage conditions attached to general authorisations as well as to remove remaining barriers to the free movement of terminal equipment. Furthermore, since S-PCS services are to be provided at a global level, the ITU World Policy Forum of 1996 resulted in the set-up of a Memorandum of Understanding on GMPCS (Global Mobile Personal Communications Services, which comprises S-PCS) to address international regulatory issues, such as type approval and marking, terminal licensing, access to traffic data, and customs issues.<sup>19</sup>

Satellites will play a major role to offer world-wide access to enhanced interactive broadband communications services and are both a complement to, and may compete with terrestrial mobile systems.

The WRCs in 1995 and 1997 took important decisions for the provision of satellite-based broadband services which will allow for high-speed Internet access and video conferencing to take place anywhere in the world. The value of the planned satellite broadband projects is estimated to be worth around 50 billion ECU<sup>20</sup>. Satellite broadband systems are essential elements for the establishment of TENs and Global Information Infrastructures and in view of to the enormous economic and political benefits to be gained from such systems, the issue was subject of intense technical and political negotiations at the WRCs of 1995 and 1997. Since the issue will be discussed at WRC-99 as well, it is important to reach European positions which will secure appropriate coverage of Europe by such systems. Furthermore, appropriate representation of Europe's industry in the deployment of such systems and services should be secured while respecting the need for global competition in this important sector of the Information Society.

The previous conferences in 1995 and 1997 have made allocations to fixed and fixed satellite services. Provision of these services using fixed radio links over satellites have the advantages of economical and rapid installation and flexibility in deployment. Further allocations for the fixed (satellite) service will be considered at WRC-99.

Although not making use of satellites, high altitude platforms are also of crucial importance to Europe. High altitude platforms will be used for a variety of applications, including full-motion video-phone services for consumers and high-speed networking for business users. In addition, Internet access will be one of the primary uses. The European participation in the deployment of high altitude platforms should be noted: European companies are contracted to provide the airships and will produce portions of the telecommunications networks, the communications payload, and the ground stations.

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<sup>18</sup> Report by the Satellite Action Plan (SAP) Regulatory Working Group: Market Access – Problems and Solutions, 15.01.1998 See: ISPO Web-site at <http://www.ispo.cec.be/infosoc/telecompolicy/en/Study-en.htm> or the ACTS Web-site at <http://www.infowin.org/ACTS/IENM/CONCERTATION/MOBILITY/index.htm>.

<sup>19</sup> The benefits of GMPCS will be fully realised when a significant number of administrations offer the necessary authorisation for service provision and access to spectrum. At the end of 1997, 74 administrations, organisations and companies have signed the GMPCS MoU. There is a need to ensure that the arrangements proposed in the GMPCS MoU are compatible with Community legislation.

<sup>20</sup> DTT Consulting, Multimedia Satellite Communications, The Ka-Band Report, 1997.

## 4.2 WRC-97 results

WRC-97 dealt with several agenda items concerning satellite communications. In most of the cases further technical studies were requested before definitive decisions can be taken. The main results of WRC-97 related to satellite communications:

### *Satellite broadband services:*

- WRC-97 decided to allow access to spectrum for the provision of satellite broadband services, i.e. non-Geostationary Satellite Orbit Fixed Satellite Service (NGSO FSS) operating in the so-called Ku and Ka bands (10-18 GHz and 18-31 GHz respectively). The provisions relating to access to spectrum in the Ku bands by NGSO FSS are subject to strict power limits to ensure protection of other services that are already operating in those bands;
- WRC-97 decided to provide 100 MHz allocation for NGSO FSS in the bands 18.8-19.3 GHz and 28.5-29.1 GHz in addition to some 400 MHz of spectrum identified for NGSO FSS systems by WRC-95.

### *Fixed (satellite) services (including high altitude platforms):*

- WRC-97 identified the frequency band between 30-50 GHz to satisfy the requirements for high-density applications in the fixed service and requested studies to be carried out on the characteristics of high-density systems in the fixed service and sharing criteria between high-density systems in the fixed service and other services;
- WRC-97 decided to add a primary allocation to the fixed-satellite service (space-to-Earth) in Regions 2 and 3 and in certain countries of Region 1 in the band 40.5-42.5 GHz. This allocation may be extended to Region 1, pending studies to be carried out;
- WRC-97 decided that in all Regions the primary broadcasting service allocation is maintained in the frequency band 40.5-42.5 GHz and the secondary fixed service allocation is upgraded to primary;
- WRC-97 decided to make a provision for operation of high altitude platform stations within the fixed service in the bands 47.2-47.5 GHz and 47.9-48.2 GHz and a five year notification period for high altitude platform stations to cater for the longer lead times (implementation and potential co-ordination problems). WRC-97 also agreed on a Resolution freezing the 47.2-47.5 GHz and 47.9-48.2 GHz bands with the exception of high altitude platform stations and broadcasting satellite feeder links and requesting further ITU-R studies to be reviewed at WRC-99;
- WRC-97 requested studies to be undertaken on sharing criteria between non-GSO MSS and GSO FSS in the frequency band 19.3-19.7 GHz and 29.1-29.5 GHz as well as on the feasibility of non-GSO MSS feeder links in the frequency bands 15.43-15.63 GHz.

## 4.3 Issue at WRC-99

WRC-99 will consider the following issues:

### *Satellite broadband services:*

- studies relating to sharing criteria to be applied when determining the need for coordination between non-GSO FSS systems as well as review and possibly revise the power limits provisionally agreed upon by WRC-97 (*WRC-99 agenda item 1.13*);

### *Fixed (satellite) services (including high altitude platforms):*

- allocations for high density applications in the fixed service above 30 GHz, especially in the frequency band 31.8-33.4 GHz; criteria and sharing methods between different services in



the frequency bands 37-40 GHz, 40.5-42.5 GHz, and 41.5-42.5 GHz (*WRC-99 agenda item 1.4*);

- allocations for high altitude platform stations(*WRC-99 agenda item 1.5*);
- regulatory and technical provisions to enable earth stations located on board vessels to operate in the fixed-satellite service networks in the bands 3700-4200 MHz and 5925-6425 MHz (*WRC-99 agenda item 1.8*);
- studies on the sharing criteria between non-GSO MSS and GSO FSS in the bands 19.3-19.7 GHz and 29.1-29.5 GHz (*WRC-99 agenda item 1.12*);
- feasibility of non-GSO MSS feeder links in the frequency band 15.43-15.63 GHz (*WRC-99 agenda item 1.14*).
- regulatory and technical provisions for the quasi-Geostationary-satellite networks (*WRC-99 agenda item [8.1]*);
- spectrum requirements for telemetry, tracking and control of fixed-satellite service networks operating with service links in the frequency bands above 17 GHz (*WRC-99 agenda item [8.2]*);
- changes to the allocations in Region 3 for the frequency band 1350-1400 MHz to permit co-primary use by the fixed service (*WRC-99 agenda item [8.8]*).

## **5. BROADCASTING (APPENDICES 30/30A)**

### **5.1 Broadcasting in the Community context**

The expansion of satellite television broadcasting and pay TV in particular are part of the expansion of the European demand for audio-visual products. Estimates suggest that there is a rapidly increasing market potential for European audio-visual products. Projected increase is from 32 billion ECU in 1995 to approximately 54 billion ECU in 2005.<sup>21</sup> Pay television is potentially the fastest growing segment of the broadcasting market. European annual pay TV revenues are currently \$6bn from a base of 17m households according to a recent report. Compound annual growth rate over the next 8 years is forecast to be 20%, reaching 41m households with revenues of \$26bn in 2005.<sup>22</sup>

Because satellite broadcasting is leading the introduction of digital television and digital radio services (DAB - Digital Audio Broadcasting, for which an ITU Recommendation exists) in Europe, its continuing expansion is essential for the market development of digital television in Europe. In particular the fast growing pay television segment depends on satellite delivery of broadcasting, which, as compared with terrestrial broadcasting, achieves much wider area coverage, including trans-frontier broadcasting.

Moreover, the availability of substantially more spectrum in the satellite bands means much higher channel capacity than by terrestrial means. This enables satellite broadcasters to use the full potential of digital television, which often requires more spectrum than is currently available for terrestrial transmission,<sup>23</sup> and thereby to realise the full potential for service differentiation that digital television offers. Digital television offers innovative ways to deliver both traditional services as well

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<sup>21</sup> See study by Norcontel - *Economic implications of New Communication technologies on the audio-visual markets*, April 1997

<sup>22</sup> See N. Bertolotti for JP Morgan Securities Ltd January 1998, *The European Pay-TV Industry*

<sup>23</sup> For instance, Near Video on Demand entails the repeated transmission of a bouquet of films at different intervals throughout the evening. This pay-per-view service frees the consumer from the constraints of the broadcast schedule. It is also more practicable to offer theme channels by satellite and cable than to transmit them on scarce terrestrial frequencies.

as new multimedia services.<sup>24</sup> This trend is explored further in the Commission's recent Green Paper on Convergence.<sup>25</sup> It follows that the satellite television sector needs room to expand.

Community policy on advanced television and digital broadcasting aims at facilitating the market-led introduction of digital and wide-screen television.<sup>26</sup> In this context, the Directive on the use of television transmission standards<sup>27</sup> set up a regulatory framework to support the start of digital television services, providing certainty for investors, and ensuring that public interest requirements are met. Furthermore, the Commission has supported the activities of the Digital Video Broadcasting (DVB) group.<sup>28</sup> The group has defined the European digital broadcasting standards for cable, satellite and terrestrial television which are increasingly used all over the world.

WRC-97 addressed the question of updating the so-called broadcasting Plans for Regions 1 (including Europe) and 3 (Asia-Pacific) for the broadcasting-satellite service (BSS). These plans are contained in Appendices 30 and 30A of the Radio Regulations. The conference decided to study the possibility of extending the assignment of resources (orbital slots, footprints and frequencies) with a view to providing assignments to up to 10 channels per country (currently 5 per country).<sup>29</sup> This requirement (by mainly developing nations) for the allocation of 10 channels per country may, however, jeopardise the flexibility achieved by the WRC-97. Whereas prior to WRC-97, the planning of the BSS bands only accounted for the deployment of analogue systems on a national basis, the results achieved at WRC-97 have opened these bands for easier competition (particularly in allowing pan-European systems to be implemented with relaxed technical parameters) and take into account the possible deployment of digital systems in the BSS bands.

Following a proposal by certain countries outside Europe, WRC-97 adopted a legally non-binding Resolution<sup>30</sup> on broadcasting satellites serving other countries which stipulates that bilateral agreements need to be reached before service can be provided. This is appropriate in an ITU context for reasons of technical co-ordination, aiming at avoidance of harmful interference, but should be questioned where 'prior consent' is required with regard to the content of television broadcasts.<sup>31</sup>

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<sup>24</sup> Note that broadcasters can provide other non-broadcast services like electronic retailing and Internet access through digital television decoders when they contain a modem for a PSTN return path.

<sup>25</sup> Green Paper on the convergence of the telecommunications, media and information technology sectors, and the implications for regulation COM (97)623, Brussels 3 December 1998 (see chapters 1 and 2 in particular).

<sup>26</sup> See Council Decision on an Action Plan for the Introduction of Advanced Television Services in Europe, 93/424/EEC, OJ No L196/48 5.8.93. This Action Plan has facilitated the market introduction of the 16:9 wide-screen format ready for digital TV.

<sup>27</sup> European Parliament and Council Directive 95/47/EC of 24 October 1995 on the use of television transmission standards OJ 95/L28/51, 23.11.1995.

<sup>28</sup> The Digital Video Broadcasting group (DVB) is an association of broadcasters, transmission companies as well as consumer and professional electronics manufacturers. The group comprises over 200 organisations in more than 30 countries. The DVB group has developed a complete family of interrelated television systems for all transmission media (including terrestrial, cable, satellite) and at all quality levels (standard definition through to high definition) and with the possibility to offer new convergent services like Internet access. DVB systems have been standardised by ETSI and are recognised by the ITU at the global level.

<sup>29</sup> The Commission intends to co-ordinate better usage of the WARC-77 bands in order to ensure that unused capacity is exploited. This will enable Member States to pursue further capacity for satellite television at forthcoming conferences. To this end, the Commission will request information on usage from Member States and investigate the growth potential for digital satellite delivery of television and new, convergent services.

<sup>30</sup> Resolution COM4-23 on the operation of broadcasting satellites serving other countries. ITU, Final Acts of the WRC-99, Geneva 1997.

<sup>31</sup> With regard to the content of the broadcasts, the requirement of 'prior consent' is not compatible with the Community legislation, i.e. with the so-called Television Without Frontiers Directive (European Parliament and Council Directive amending Council Directive 89/552/EEC on the co-ordination of certain provisions laid down by law, regulation, or administrative action in Member States concerning the pursuit of television broadcasting activities, 97/36/EC, OJ L 202/36, 30.7.1997).

## 5.2 WRC-97 results

WRC-97 agreed on the updating of the plan for the Broadcast Satellite Service (BSS) in Regions 1 and 3 (i.e. not in the Americas). The revision of BSS Plans in Regions 1 and 3 is required regarding the needs of new ITU member countries and those countries which have geographically or administratively changed since 1977. The conference also decided to study the possibility of extending the number of assignments to up to 10 channels per country.

The BSS comprises broadcasting services, such as direct-to-home television. The BSS frequency band is between 11.7-12.5 GHz. This band is known as the WARC-77 band because the BSS Plan was developed in 1977. The band is virtually unused due to changes in the use and nature of the services offered today and in the future.<sup>32</sup> The BSS Plan provides an assignment of resources (orbital slots, footprints and frequencies) only to national administrations and leaves the implementation of pan-European systems to national administrations.

## 5.3 Issue at WRC-99

WRC-99 will consider the following issues:

- results of the studies on the technical feasibility of future re-planning with the aim of providing a greater number of channels per country (*WRC-99 agenda item 1.19*);
- amendment of Appendices S30 and S30A of Radio Regulations with a view to possible deletion of Articles 6 and 7 concerning procedures for co-ordination, notification and recording in the frequency band between 11.7-12.7 GHz (*WRC-99 agenda item 1.20*);
- results of the analyses on the compatibility of the revised Plans of Regions 1 and 3 with the Plan of Region 2 and with the other services which have primary allocations in the planned bands in all three Regions (*WRC-99 agenda item 1.21*).

# 6. AERONAUTICAL AND SATELLITE-RADIONAVIGATION/GNSS SERVICES

## 6.1 Aeronautical services in the Community context

The Community has initiated in the 1980s several actions<sup>33</sup> aimed at applying the fundamental freedoms enshrined in the Treaty to the aviation sector. This has led over time to the establishment of a single air transport market based on the principle of free market access<sup>34</sup>, which in turn stimulated air transport attractiveness and triggered a steady strong increase in air traffic. Evolution is such, however, that the Community's airspace and airport infrastructures are under severe strain and can hardly cope with demand.<sup>35</sup>

In case demand for air-space capacity is not met, there may be a risk that congestion and delays may compromise the harmonious development of the air transport policy of the Community. Therefore, new concepts for Air Traffic Management (ATM), which include satellite technologies, are currently designed and implemented, taking into account the work of ICAO (International Civil Aviation Authority) in this area. However, the frequency bands currently reserved or identified for use by the aviation community are subject to claims by other potential users and it is therefore important to

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<sup>32</sup> Notably the improvement in reception equipment during the 1980s that allowed FSS reception on small antennae, unforeseen by the WARC 77 conference; also the attractiveness to broadcasters and consumers of the benefits of cheaper, co-located satellites offering many channels with pan-European coverage to a fixed antenna.

<sup>33</sup> Commission's memorandum on progress towards a common air transport policy, COM(84)72 final, 15.3.1984.

<sup>34</sup> Third liberalisation package adopted in 1992, in particular Regulation 2408/92 EEC of 23.7.1992, O.J. No. L240/1, 24.8.1992.

<sup>35</sup> Communication from the Commission on congestion and crisis in air traffic, COM(95)318 final, 5.7.1995.

ensure that WRCs adequately take into account current and future frequency requirements of the Community's aviation sector.

### **6.1.1 WRC-97 results**

WRC-97 discussed the possibility of introducing mobile satellite service (MSS) into the frequency bands allocated for aeronautical and maritime mobile-satellite services, which met with objections from the part of the aviation and maritime communities, including the international organisations ICAO, IMO, and IALA.

WRC-97 made the following decisions concerning aeronautical mobile services and their coexistence with mobile-satellite service:

- WRC-97 decided to allow a generic allocation to MSS in the band 1525-1559 MHz and 1626.5-1660 MHz, while maintaining however priority access to aeronautical and maritime safety communications.
- WRC-97 requested the ITU to conduct studies, in co-operation with ICAO, IMO, IALA and other interested organisations, such as the Commission with the technical support of EUROCONTROL, in order to determine the future requirements for joint use of these bands, while ensuring the necessary protection of, and priority to safety related services. Assuming that the necessary requirements can be established, generic allocation of these bands raises the question of the availability of appropriate frequencies for aeronautical mobile services. These could be a need to consider how these needs can be satisfied in the future.

### **6.1.2 Issue at WRC-99**

WRC-99 will consider the following issues:

- use of the HF bands by aeronautical mobile and maritime-mobile services (*WRC-99 agenda item 1.7*);
- studies on the technical, operational and safety requirements to determine whether sharing between MSS and navigation systems is feasible (*WRC-99 agenda item 1.9*);
- use of new digital technology for the maritime-mobile service in the band 156-174 MHz (*WRC-99 agenda item 1.18*);
- use of frequency band 415-526,5 kHz by aeronautical and maritime-mobile services (*WRC-99 agenda item [8.3]*);
- use of the HF bands by mobile services for changing needs (*WRC-99 agenda item [8.4]*);
- extension of the allocation to the mobile-satellite service on a secondary basis in the 14.0-14.5 GHz band to cover aeronautical applications (*WRC-99 agenda item [8.5]*).

## **6.2 Satellite-radionavigation/GNSS services in the Community context**

In the next few years, satellite navigation and positioning systems will generate a market revolution as far-reaching as the recent advances in telecommunications, and have so many domestic and industrial applications that GNSS will be as ubiquitous as GSM is now. The potential for major improvements in the safety and efficiency of all modes of transport is huge and for the first time in history people from all walks of life will benefit from space technology. Global navigation satellites can be used to improve sustainable mobility, the transport efficiency and the safety in general; for example, they can be used for applications such as VTMISS (Vessel Traffic Management and Information Systems), railway traffic control, to track dangerous goods, to provide guidance to the blind, to recover oil and gas, to identify fishing grounds, locate ship wrecks and to enhance the capacity of air control systems world-wide. Estimates suggest that the world market could be worth 50 billion dollars by 2005. In addition to these applications, the use of such systems also involves

security and defence considerations. Therefore, major strategic, political, and commercial interests are at stake in relation to Europe's capacity to control the positioning and navigation services for its own territory and to the access of European industry to the technology. The deployment of GNSS is therefore of particular relevance for Community policies such as concerns transport, employment, industry, cohesion, environment, as well as co-operation and development.

Against this background, Council adopted in 1994 a Resolution<sup>36</sup> on the European contribution to the development of the Global Navigation Satellite System (GNSS). Furthermore, on 21 January 1998, the Commission adopted a Communication on the development of a trans-European positioning and navigation network, which includes a European strategy for Global Navigation Satellite Systems (GNSS).<sup>37</sup> The aim of the European strategy on GNSS is to move away from a system owned and controlled by a single military authority to one that affords adequate control to civilian users.<sup>38</sup> The Council has expressed its support for the European strategy on GNSS as outlined in the Communication through the adoption on 17 March 1998 of a number of conclusions.<sup>39</sup>

### 6.2.1 *WRC-97 results*

WRC-97 discussed the possibility of introducing mobile satellite service (MSS) into the frequency bands allocated for radionavigation-satellite, which met with objections from the part of the aviation and maritime communities, including the international organisations ICAO, IMO, and IALA.

WRC-97 made the following decision concerning radionavigation-satellite services and their coexistence with mobile-satellite service:

- WRC-97 decided to study in detail the possibility to allow generic allocation to MSS of part of the band 1559-1627 presently used for aeronautical radionavigation satellite services. Such studies, which are going to be conducted by the ITU, need a complete involvement of all interested parties. As in the previous case, the use of this band by MSS raises the question of the future availability of frequencies for aeronautical radionavigation satellite services, including GNSS-2.

### 6.2.2 *Issue at WRC-99*

WRC-99 will consider the following issues:

- new allocations to the radionavigation-satellite service in the range 1-6 GHz (*WRC-99 agenda item 1.15.1*);
- addition of the space-to-space direction to the radionavigation-satellite service allocation in the frequency band 1215-1260 MHz and 1559-1610 MHz (*WRC-99 agenda item 1.15.2*);

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<sup>36</sup> Council Resolution of 19 December on the European contribution to the development of a Global Navigation Satellite System (GNSS), OJ 94/C 379/02.

<sup>37</sup> Communication from the Commission: Towards a Trans-European Positioning and Navigation Network, including a European strategy for Global Navigation Satellite Systems (GNSS), COM(98)29 final, 21.01.1998.

<sup>38</sup> To this end, the Commission has suggested a two-step approach. The first step, which the Commission is co-ordinating with its Europe Tripartite partners the European Space Agency (ESA) and Eurocontrol, is getting an initial European component – European Geostationary Navigation Overlay Service (EGNOS)—of the first generation global satellite system up and running. This means relying on the basic US and Russian signals (GPS and GLONASS respectively), but augmenting their integrity by additional ground and space-based infrastructure. This system is intended to be in operation from 2000. Early benefits from EGNOS will be to air, land, and waterborne users. EGNOS signals will be broadcast via INMARSAT III Geostationary satellites. A second step (GNSS-2), taken in parallel, aims at developing a second generation satellite-based system providing an enhanced service and fully meeting the needs of the civilian community. It is the design and operation of this new generation of satellite technology that Europe must urgently decide or risk losing out on the considerable benefits in terms of jobs, wealth, and applications.

<sup>39</sup> Council Conclusions of 17 March 1998 on a European Strategy for Global Navigation

- status of allocations to services other than radionavigation-satellite service in the frequency band 1559-1610 MHz (*WRC-99 agenda item 1.15.3*).

## 7. EARTH EXPLORATION AND SPACE SCIENCE SERVICES

### 7.1 Earth observation in the Community context

In the field of Earth observation, Europe has over the past two decades developed an outstanding technological base through the co-operative programmes of Member States in ESA (European Space Agency), and through national programmes. EUMETSAT successfully operates weather satellites for European meteorological services and contributes to related activities world-wide. The European Commission is making a substantial effort in stimulating Earth observation applications through its Research and Technological Development (RTD) programmes, including the major contribution of the Centre for Earth Observation. It is estimated that the Commission has under its Fourth Framework Programme spent around 275 MECU on Earth observation applications and RTD.

The potential social, economic and strategic importance of Earth observation is considerable and comprises applications in the areas of global scale measurements<sup>40</sup>, implementation of environmental and civil protection policies<sup>41</sup>, and agricultural policies<sup>42</sup>. For these reasons, the Commission's proposal for the Fifth Framework Programme of the European Communities for Research and Development Activities (1998-2002)<sup>43</sup> includes research activities on the development of generic Earth observation technologies, notably satellite technologies for environmental monitoring and resources. RTD activities on Earth observation are also considered in the Communication on space applications and their market perspective.<sup>44</sup> Finally, Earth observation will also form a key input to new environmental monitoring requirements in the context of international agreements, such as the Montreal Protocol, The Kyoto Protocol, the Biodiversity Convention and the Framework Convention on Climate Change.

At this critical stage of the further opening up of the potential of space research and Earth observation, it is important that the WRC negotiations closely follow the development of the initiatives described above. It is particularly important to identify the necessary frequencies for this use of general interest and to avoid possible impediments restricting such optimum use. In this context, it is important that the relevant organisations, such as EUMETSAT, ESA, national weather agencies, and space agencies, are fully involved in the preparations for WRC-99.

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<sup>40</sup> Earth observation (EO) aiming at global scale measurements of parameters such as ocean colour, sea surface temperature, weather forecasts, continental land cover and biomass burning, vital for initiating and validating models of global change, heavily rely on satellite EO. Earth system science entails a global partnership in which Europe has clear obligations.

<sup>41</sup> EO can be a cost-effective tool for the implementation of environmental and civil protection policies. EO is already used pre-operationally for monitoring changes in land cover for the Natura 2000 network as part of the Habitats Directive, and for detecting oil spills in the context of the Bonn Convention. The information offered from space can help in the management and even prediction of natural hazards such as floods, storms and forest fires. Particularly if the frequency and magnitude of these events increase with a changing climate or effects such as the "El Nino", the contribution of EO to their mitigation can have considerable economic impact.

<sup>42</sup> EO is already used in the EU to check claims for agricultural subsidy, and for gathering statistics. EO will also play a role in the context of an evolving Common Agricultural Policy, particularly with an increasing emphasis on environmental impact.

<sup>43</sup> COM(97)142 final, The Commission proposal for the Fifth Framework Programme of the European Community for Research and Development Activities (1998-2002), 30.4.1997.

<sup>44</sup> COM(96)617 final, Communication from the Commission the European Parliament and the Council on the European Union and Space: Fostering Applications, Markets and Industrial Competitiveness, 4.12.1996.

## 7.2 WRC-97 results

WRC-97 discussed the world-wide allocations to the Earth exploration satellite and space research services in the frequency band 18.6-18.8 GHz. Europe could not accept a primary allocation to the Earth exploration satellite and space science services due to existing and planned usage by fixed, and fixed satellite, services in that band. After extensive debate it was decided that this subject will be reviewed at WRC-99.

WRC-97 examined several other issues concerning space science services, which encompass meteorological, active and passive sensing systems, and environmental monitoring systems, to bands where it would be possible to establish common world-wide allocations. WRC-97 decided in particular to update to primary status the allocations of meteorological satellite and Earth exploration satellite services in the 401-402 MHz and 404-404 MHz, and of the Earth exploration satellite service in the bands 1215-1300 MHz and 5250-5350 MHz.

## 7.3 Issue at WRC-99

WRC-99 will consider the following issues:

- passive allocations to Earth exploration and radio astronomy services above 71 GHz (*WRC-99 agenda item 1.16*);
- world-wide primary allocation to the Earth exploration satellite and space science services in the frequency band 18.6-18.8 GHz (*WRC-99 agenda item 1.17*);
- allocation to telecommand links in the space research services in the frequency range between 100 MHz and 1 GHz (*WRC-99 agenda item [8.6]*);
- allocation to the Earth exploration satellite service in the frequency band 420-470 MHz (*WRC-99 agenda item [8.7]*).

# 8. OTHER MOBILE-SATELLITE SERVICES

## 8.1 WRC-97 results

WRC-97 recognised the need to make additional spectrum available on a world-wide basis for non-Geostationary Mobile Satellite Systems (non-GSO MSS) below 1 GHz. However, the frequency bands below 1 GHz are already extensively used. The conference considered that the frequency band between 138-470 MHz would be the most appropriate one to introduce non-GSO MSS. However, conference considered that studies were required to consider the sharing between non-GSO MSS and other services in this frequency band.

## 8.2 Issue at WRC-99

WRC-99 will consider the following issues (*WRC-99 agenda item 1.11*):

- studies on the performance requirements, sharing criteria and technical and operational issues relating to sharing criteria between the existing services and non-GSO MSS below 1 GHz;
- feasibility of additional allocations for non-GSO MSS in the band 138-470 MHz.

# 9. "PAPER" SATELLITES (RESULT OF WRC-97)

WRC-97 dealt with the issue of 'paper satellites' - that is, satellite systems which have been notified to the ITU, but which in reality have never been (and may never be) launched - was addressed by the adoption of procedures of administrative due diligence. The objective of such procedures should be proportionate to the objective of avoiding 'paper satellites' and not lead to reduced access to frequencies by competing users of orbital slots and radio frequencies. Even though paper satellites are not on the agenda of WRC-99, the administrative due diligence procedures agreed upon now need to be applied to filings for a satellite networks or satellite system of the fixed-satellite service, mobile-satellite service or broadcasting-satellite service.

Paper satellites have largely come about because of a desire to 'hoard' satellite slots for future use. However, the increasing number of these 'paper' systems, along with the fast-growing demand for satellite slots, is leading to difficulties in satellite co-ordination which in turn is resulting in lengthy co-ordination processes.

The *administrative due diligence* concept requires the regular disclosure of implementation data for satellite systems, such as the name of the spacecraft manufacturer, the name of the satellite operator, the contractual date of delivery and the number of satellites procured, the name of the launch vehicle provider, the name of the customer and the contractual launch date. This aims at minimising the number of paper satellites by requiring information which becomes available when systems have reached an advanced stage of development and are soon to be deployed.

A further option to implement procedures of *financial due diligence*, which would have required additional measures such as a filing fee for satellite networks, an annual registration fee, and a refundable deposit system for new satellite networks which could reimburse operators when their system enters into service, was not endorsed by the conference. However, a number of delegates indicated their intention to bring the matter up to the next ITU Plenipotentiary Conference so as to open the way for a future competent conference to consider the possible adoption of financial due diligence.

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## ANNEX I

### Annotated agenda for WRC-99

	AGENDA ITEM	ISSUES	Relevant resolutions
<b>Mobile communications</b>	1.6	IMT-2000/UMTS	212 (Rev.WRC-97)
<b>Satellite communications, including fixed and fixed-satellite services</b>	1.4	High density applications in the fixed service above 30 GHz; High density applications in the frequency band 31.8-33.4 GHz; Use of fixed satellite service in the frequency band 40.5-42.5 GHz and sharing conditions with other services; Fixed satellite service in the frequency band 41.5-42.5 GHz; Sharing between the fixed service and other services in the band 37-40 GHz	126 (WRC-97) 726 (WRC-97) 128 (WRC-97) 129 (WRC-97) 133 (WRC-97) 134 (WRC-97)
	1.5	High altitude platforms	122 (WRC-97)
	1.8	Earth stations located on board of vessels in 3700-4200 MHz and 5925-6245 MHz	
	1.12	Sharing between feeder links of non-GSO MSS and GSO FSS in 19.3-19.7 GHz and 29.1-29.5 GHz	121 (Rev. WRC-97)
	1.13	Review and revision of power limits in relation to the sharing conditions between satellite broadband services and other services	130 (WRC-97) 538 5WRC-97) 131 (WRC-97)
	1.14	Feasibility of non-GSO MSS feeder links in 15.43-15.63 GHz	123 (WRC-97)
	[8.1]	Quasi-Geostationary-satellite networks	
	[8.2]	Spectrum requirements for telemetry, tracking and control of fixed-satellite service networks operating in the frequency bands above 17 GHz	
	[8.8]	Changes to the allocations in Region 3 for the band 1350-1400 MHz to permit co-primary use by fixed service	
	<b>Review of the BSS plans (Appendices S30 and S30A)</b>	1.19, 1.20, 1.21	Progress report from the Director of ITU-R; Progress report on ITU-R studies; Re-planning of Appendices S30 and S30A
<b>Radionavigation-satellite, aeronautical mobile and maritime mobile services</b>	1.7	Use of HF bands by aeronautical and maritime mobile services	
	1.9	Use of the frequency band 1559-1567 MHz and 1675-1710 MHz by the MSS	213 (Rev. WRC-97) 220 (WRC-97)
	1.10	Use of the band 1.5-1.7 GHz by the MSS (Generic Allocation)	218 (WRC-97)
	1.15.1	New allocations to radionavigation satellite from 1-6 GHz	
	1.15.2	Addition of space-to-space direction to radio-navigation-satellite in 1215-1260 MHz and 1559-1610 MHz	
	1.15.3	Status of allocations to services other than radionavigation-satellite service in 1559-1610 MHz	
	1.18	Digital technology in 156-174 MHz for maritime mobile service	342 (WRC-97)
	[8.3]	Use of 415-526.5 kHz by aeronautical radionavigation and maritime -mobile services	
	[8.4]	Use of HF band by mobile services for changing needs	
<b>Earth exploration and space science services</b>	[8.5]	Mobile-satellite in 14.0-14.5 GHz to cover aeronautical services	216 (WRC-97)
	1.16	Passive allocations above 71 GHz	723 (WRC-97)
	1.17	Passive allocations at 18.6-18.8 GHz	
	[8.6]	Up to 3 MHz for telecommand between 100 MHz and 1000 MHz	723 (WRC-97)
	[8.7]	Up to 6 MHz to earth exploration satellite service between 420 and 470 MHz	727 (WRC-97)
<b>Other mobile-satellite services</b>	1.11	Constraints on existing allocations and additional allocations for non-GSO MSS below 1 GHz	214 (Rev. WRC-97) 219 (WRC-97)
<b>Other services</b>	1.2	Finalise review of Appendix S3 with respect to spurious emissions for space services	Rec. 66 (Rev. WRC-97)
	1.3	ITU-R study results of App. S7	
	2	Incorporation by reference	27 (Rev. WRC-97) 28 (Rev. WRC-97)

## ANNEX II

### ORGANISATION OF CEPT/CPG IN PREPARATION FOR WRC-99

#### • Background

European preparations for World Radiocommunications Conferences are co-ordinated within the European Conference of Postal and Telecommunications Administrations (CEPT), comprising 43 European countries, including the 15 Member States of the European Union. In order to effectively deal with the continuous programme of specialised work and tight deadlines imposed by the two-yearly cycle of conferences, a permanent and largely autonomous working group known as the Conference preparatory group (CPG) was established in 1994 to plan and co-ordinate European preparations for WRCs.

The main tasks of the CPG are to develop European Common Proposals (ECPs) for WRCs and the CEPT Brief for WRCs and Radiocommunication Assemblies.

#### • Organisation of CPG in view of WRC-99

In order to deal with the various issues at the agenda of the WRC-99, the CPG has structured its work as follows:

Body	Terms of Reference/WRC-99 agenda items
CPG <sup>45</sup>	Adoption of ECPs and the CEPT Brief
<b>Project Team 1:</b> <i>Regulatory issues</i>	1.1, 1.6, 1.8, 1.13, 1.20, 1.21, 2, 7.2, [8.1] <sup>46</sup>
<b>Project Team 2:</b> <i>Appendices 30/30A (broadcasting)</i>	1.19, 1.20, 1.21
<b>Project Team 3:</b> <i>Satellite issues</i>	1.3, 1.4, 1.5, 1.6, 1.9, 1.10, 1.11, 1.12, 1.13, 1.14, 1.15, 1.16, 1.17; [8.2, 8.5, 8.6, 8.7]
<b>Project Team 4:</b> <i>Maritime/radio-navigation services</i>	1.7, 1.10, 1.18; [8.3, 8.4]

#### • Contact

Further information on the organisation of the CPG can be obtained from the European Radiocommunications Office (ERO, Midtermolen 1, DK-2100 Copenhagen, Denmark, Telephone: +45 35 25 03 00, Telefax +45 35 25 03 30, E-mail: [ero@ero.dk](mailto:ero@ero.dk), Web Site: <http://www.ero.dk>).

<sup>45</sup> The CPG will meet six times in preparation for WRC-99 (CPG1: 10-12.02/98; CPG2: 08-10.06/98; CPG3: 10-13.11/98; CPG4: 22-25.02/98; CPG5: 17-21.05/98; CPG6: 27/9-1/10/98. The ITU/WRC Conference Preparatory Meeting (CPM) will be held from 12-23.04/98 to discuss the results of studies carried out in the ITU-R Study Groups and at national level on the various WRC-99 agenda items and to produce a Report which represents the best information on technical, operational and regulatory/procedural issues relevant to the WRC-99 agenda. WRC-99 is expected to be held from 7/11-5.12/99.

<sup>46</sup> The ITU Council will decide whether the WRC-99 budget allows for inclusion of the agenda items indicated in brackets.

## ANNEX III

### GLOSSARY

<b>APT</b>	Asia-Pacific Telecommunity
<b>BSS</b>	Broadcast Satellite Service
<b>CEPT</b>	European Conference of Postal and Telecommunications Administrations
<b>CITEL</b>	Commission of Inter-American Telecommunications Administrations
<b>CPG</b>	Conference Preparatory Group of CEPT
<b>DTH</b>	Direct-to-Home
<b>ECP</b>	European Common Proposal, to be adopted by CEPT/CPG
<b>ECTEL</b>	Association of the European Telecommunications and Professional Electronics Industry
<b>EITIRT</b>	European Information Technology and Telecommunications Industries Roundtable
<b>EO</b>	Earth observation
<b>ERC</b>	European Radiocommunications Committee of CEPT
<b>ERO</b>	European Radiocommunications Office of CEPT
<b>ESA</b>	European Space Agency
<b>ETP</b>	European Technology Platform
<b>ETSI</b>	European Telecommunications Standardisation Institute
<b>EU</b>	European Union
<b>EUMETSAT</b>	European Meteorological Satellite
<b>EUROCONTROL</b>	European Organisation for Air Traffic Control
<b>FDD</b>	Frequency Division Duplex, transmission technique used in wide-band cellular environments (see W-CDMA)
<b>FPLMTS</b>	Future Public Land Mobile Telecommunications Systems, now called IMT-2000
<b>GLONASS</b>	Global Orbiting Navigation Satellite System of the Russian Federation
<b>GMPCS MoU</b>	Global Mobile Personal Communications Services Memorandum of Understanding
<b>GNSS</b>	Global Navigation Satellite System
<b>GPS</b>	Global Positioning System of the United States
<b>GSM</b>	Global System for Mobile Communications
<b>GSO FSS</b>	Geostationary Orbit Fixed Satellite Service
<b>IALA</b>	International Association of Lighthouse Authorities

<b>ICAO</b>	International Civil Aviation Organisation
<b>IMO</b>	International Maritime Organisation
<b>IMT-2000</b>	International Mobile Telecommunications with 2000 referring to the expected date of introduction of the service
<b>ITU</b>	International Telecommunications Union
<b>MoU</b>	Memorandum of Understanding
<b>MSS</b>	Mobile Satellite Service
<b>NON-GSO FSS</b>	Non-Geostationary Orbit Fixed Satellite Service
<b>RTD</b>	Research & Technological Development
<b>S-PCS</b>	Satellite Personal Communications Services
<b>TD-CDMA</b>	Time Division/Code Division Multiple Access
<b>TDD</b>	Time Division Duplex, transmission technique of applications using TDMA (Time Division Multiple Access) radio interface
<b>TEN</b>	Trans-European Network
<b>TG1</b>	Task Group 1 of the CEPT/ERC
<b>VTMIS</b>	Vessel Traffic Management and Information Systems
<b>W-CDMA</b>	Wide-band Code Division Multiple Access
<b>WRC</b>	World Radiocommunications Conference
<b>UMTS</b>	Universal Mobile Telecommunications System
<b>UTRA</b>	UMTS Terrestrial Radio Access