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**Radio Equipment and Systems (RES);
Open Network Provision (ONP) study on standards for mobile
services and paging**

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Foreword

This ETSI Technical Report (ETR) has been produced by the Radio Equipment and Systems (RES) Technical Committee of the European Telecommunications Standards Institute (ETSI).

ETRs are informative documents resulting from ETSI studies that are not appropriate for European Telecommunication Standard (ETS) or Interim European Telecommunication Standard (I-ETS) status.

An ETR may be used to publish material that is either of an informative nature, relating to the use or the application of ETSs or I-ETSs, or which is immature and not yet suitable for formal adoption as an ETS or an I-ETS.

Introduction

The Study and Investigation (SI) mandate, BC-T-023 SI, issued by the European Commission (EC), requests ETSI to provide an up to date inventory of the development of standards in the area of mobile telephony networks, mobile data networks and paging services.

The purpose of this inventory is to enable the EC, in conjunction with the Open Network Provision (ONP) committee, to consider the need for the definition of Network Termination Points (NTP) and for the provision of services, against the principles established in the ONP framework directive, 90/387/EEC [1].

Article 2 of the Directive defines "Open Network Provision conditions" as "the conditions, harmonised according to the provisions of this Directive, which concern the open and efficient access to public telecommunications services and the efficient use of those networks and services".

"Without prejudice to their application on a case by case basis, the open network provision conditions may include harmonised conditions with regard to:

- technical interfaces, including the definition and implementation of network termination points where required;
- usage conditions, including access to frequencies where required;
- tariff principles".

The references to "standards" are included in **Articles 4 and 5** of the Directive:

- **Article 4 (4) (c)**: "request where appropriate the European Telecommunications Standards Institute (ETSI) to draw up European Standards, taking account of international standardisation as a basis for setting up, where required, within specified time limits, harmonised technical interfaces and/or service features. In doing so, ETSI shall co-ordinate, in particular, with the Joint European Standards Institution CEN/CENELEC";
- **Article 5 (1)**: provides for voluntary standardisation;
 - **Article 5 (1)**: "Referenced to European standards drawn up as a basis for harmonised technical interfaces and/or service features for open network provision according to Article 4 (4) (c) shall be published in the Official Journal of the European Communities as suitable for open network provision";
- **Article 5 (3)**: provides the basis for mandatory standardisation;
 - **Article 5 (3)**: "If the implementation of European standards within the meaning of Article 5 (2) appears inadequate to ensure inter-operability of trans-frontier services in one or more Member States, reference to European standards may be made compulsory under the procedure laid down in Article 10, to the extent strictly necessary to ensure such inter-operability and to improve freedom of choice for users. The procedure provided for in this paragraph may in no way affect the implementation of Articles 85 and 86 of the Treaty".

The "ONP Committee" is established under Article 9 of the Directive, the Committee, which shall be of an advisory nature, is chaired by the EC and composed of representatives of the Member States.

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1 Scope

The ad hoc group studied the mandate, and as a parallel, the work undertaken by PA Consulting plc. The group considered that its work should relate to public services only and should also be limited, in the first instance, to terrestrial land mobile based radio and radio access systems and services.

The ad hoc group also noted that ETSI and the other bodies also provide standards for public maritime, aeronautical and satellite services in their activities. It was, however, determined that the group would not progress these aspects but limit its work to the terrestrial based land mobile services, i.e. those described by the PA Study report, namely:

- cellular radio (analogue and digital);
- wide area paging (International Radio Consultative Committee (CCIR) code No 1 and European Radio MESSaging System (ERMES));
- Public Access private Mobile Radio (PAMR);
- public radio access, (i.e. telepoint services (e.g. second generation Cordless Telephone (CT2) and Digital European Cordless Telecommunications (DECT));
- mobile data systems, (e.g. TETRA).

Subject to the wishes of the ONP Committee, an addendum to this study can be offered to cover also mobile satellite services (Satellite Personal Communications Network (S-PCN), satellite component of Universal Mobile Telecommunications System (UMTS) and Future Public Land Mobile Telecommunications Systems (FPLMTS)).

In addition, the group considered that radio based local area networks, i.e. wireless Local Area Networks (LANs), the Terrestrial Flight Telecommunications System (TFTS) and the terrestrial component of the future UMTS (under consideration as part of the Research and Development programme on Advanced Communications technologies for Europe (RACE) programme, ETSI, and International Telecommunications Union (ITU)), should be included.

The ad hoc group also questioned the relevance of a study limited to available or planned standardisation activities and noted that the PA Study had, in their view, more appropriately considered the wider implications including the market, the regulatory and commercial issues, together with technical interface issues.

It was unclear to the ad hoc group as to whom ONP should apply, e.g. to the mobile operator, to the fixed network operator, or to the interconnection?

In addition the service provider needs to be considered and also the support of Universal Personal Telecommunications (UPT).

The Directive can be read to provide for all of the above options, which may be appropriate, but some clarification is required.

The ad hoc group's real concern was that the placing of this mandate on ETSI, to advise on the available and planned standards, infers a "bottom up" approach, whilst the group considered that a "top down" approach to be the most beneficial.

This ETR supplements, in part, the information provided in the PA Consulting plc report, which also covered the regulatory, commercial and policy issues in its scope. Aspects such as interconnect agreements, are seen as equally fundamental to the principles of ONP.

It was also argued that ONP should be considered only for new services since it is unlikely to be feasible to apply these principles on a retrospective basis. This is due to the variations in the implementation of even ITU Recommendations in individual Member States.

Further issues of concern are the bases on which ONP can be made responsive, and hence open to innovation, whilst retaining backwards compatibility by users and operators alike, and the effects that such provision has on users and on the market place itself, beneficial or otherwise.

ONP should have no adverse affect on the spectral efficiency of equipment and systems.

2 References

For the purposes of this ETR the following references apply:

- [1] 90/387/EEC: "Council Directive of 28 June 1990 of the establishment of the internal market for telecommunications services through the implementation of open network provision".
- [2] PA Consulting plc. (1992): "Study on the Application of Open Network Provision to Mobile Telephony, Data Networks and Paging Services".

3 Abbreviations

For the purposes of this ETR the following abbreviations apply:

APC	Aeronautical Public Correspondence
CCIR	International Radio Consultative Committee (now forms part of ITU-R)
CCITT	International Consultative Committee for Telegraph and Telephone (now ITU-T)
CEN	Comité Européen de Normalization
CENELEC	Comité Européen de Normalization Electrotechnique
CEPT	Conférence des Administrations Européennes des Postes et Télécommunications
CT2	second generation Cordless Telephone
DCS	Digital Cellular System
DECT	Digital European Cordless Telecommunications
EC	European Commission
ECTRA	European Committee for Telecommunications Regulatory Affairs
EMC	Electro-Magnetic Compatibility
ERC	European Radio communications Committee
ERMES	European Radio MESSaging System
ERO	European Radio communication Office
ETACS	Extended Total Access Communication System
ETR	ETSI Technical Report
FPLMTS	Future Public Land Mobile Telecommunications Systems
GSM	Global System for Mobile communication
HIPERLAN	High PErformance Radio Local Area Network
IPR	Intellectual Property Rights
ISDN	Integrated Services Digital Network
ISO	International Standards Organization
ITU	International Telecommunications Union
LAN	Local Area Network
MoU	Memorandum of Understanding
MPT	Ministry of Posts and Telecommunications
NA	Network Aspects
NMT	Nordic (Scandinavian) Mobile Telephone system
NTP	Network Termination Point (User Interface)
ONP	Open Network Provision
PAMR	Public Access private Mobile Radio
PMR	Private Mobile Radio
PTT	Post, Telegraph and Telephone
QoS	Quality of Service
RACE	Research and Development programme on Advanced Communications technologies for Europe
RES	Radio Equipment and Systems
S-PCN	Satellite Personal Communications Network
SI	Study and Investigation
SIO	Scientific or Industrial Organisation
SMG	Special Mobile Group
STC	ETSI Technical Sub Committee
TACS	Total Access Communications System
TAPC	Terrestrial Aeronautical Public Correspondence

TBR	Technical Basis for Regulation
TDMA	Time Division Multiple Access
TETRA	Trans-European Trunked RAdio
TFTS	Terrestrial Flight Telecommunications System
UK	United Kingdom
UMTS	Universal Mobile Telecommunications System
UN	United Nations
UPT	Universal Personal Telecommunications
WARC	World Administrative Radio Conference

4 Study and Investigation (SI) mandate BC-T-023 SI

This mandate requests ETSI to provide a broad inventory of the relevant standardisation activities as indicated in the Introduction.

It is requested that the work covers relevant user network and network interconnection standards, and draft standards, including:

- interface and service specifications;
- performance and Quality of Service (QoS) aspects;
- frequency allocation and planning standards;
- other relevant standards in ETSI, Comité Européen de Normalization (CEN) and Comité Européen de Normalization Electrotechnique (CENELEC), Conférence des Administrations Européennes des Postes et Télécommunications (CEPT), International Telecommunications Union (ITU), International Standards Organization (ISO).

The ETSI Technical Committee TC-RES, responsible for this SI mandate, formed an ad hoc group to provide a way of servicing the Commission's request. It planned the recruitment of two experts to provide the ad hoc group with the necessary support. However, the ETSI Director was unable to recruit experts for this task, but at the same time it was noted that a study contract had also been placed by the EC with PA Consulting plc.

On examination of the task placed on PA Consulting plc. the ad hoc group determined that the PA Study covered much of the work requested of ETSI in its mandate. To avoid both duplication and the expenditure of nugatory effort by the ETSI members, and following the agreement of TC-RES when it met in Oslo in September 1992, it was agreed to defer the work pending the publication of the report from PA Consulting plc. The ad hoc group would then offer the ONP Committee its advice based on the PA report.

5 Inventory of mobile telephony and other standards

This clause is composed of a series of subclauses referring to annexes appended to this ETR that detail the relevant standards, and uses the PA Consulting report as a source of material.

Comments are made on the PA report where it is considered appropriate.

5.1 Cellular radio

5.1.1 Analogue cellular

This is not seen as a topic for retrospective standardisation. A range of analogue cellular radio systems are currently in operation in Europe that include:

- NMT 450 at a frequency of 450 MHz;
- NMT 900 at a frequency of 900 MHz;
- others at a frequency of 450 MHz;

- Total Access Communications System (TACS) and Extended Total Access Communication System (ETACS) at a frequency of 900 MHz.

The most common systems are NMT and TACS. Roaming is feasible, and is available for many of the NMT systems.

5.1.2 Digital cellular

The work on the elaboration of a pan-European digital cellular radio system commenced within CEPT, prior to the formation of ETSI. CEPT formed a Special Mobile Group (SMG), bringing together the essential expertise of the network, radio, terminal and services and facilities groups, collectively named Global System for Mobile communication (GSM).

Following ETSI's formation, it was transferred as a going concern into ETSI, and now operational 900 MHz GSM networks are in use in many European countries.

The further development of GSM has led to the Digital Cellular System (DCS) 1 800 standard, derived to satisfy the growing demand for cellular radio services. The latter specification is a derivative of the 900 MHz GSM standard.

The provision of "clean" harmonised spectrum for the GSM system in Europe (at 900 MHz) is supported by an EC Directive and this has enabled the system designers to offer an air interface protocol based on a Time Division Multiple Access (TDMA) structure using 200 kHz dual frequency channels. The non-availability of "clean" spectrum, e.g. in the United States of America, has required that their digital cellular systems retain the 30 kHz channel spacing of earlier analogue systems.

An inventory of the GSM and DCS 1800 standards prepared by ETSI is described in Annex A. In addition Annex A provides the relevant CEPT Recommendations governing the availability of spectrum, the resulting EC Directive and PA Report references.

5.2 Wide area paging

Wide area paging is similar to a broadcast service in that it is a one way data transmission between the radio transmitter sites and the paging receiver(s).

The structure and formats of the data transmission are designed to provide for essentially error free reception. Wide area paging systems also provide building penetration and to do so substantial field strengths are required.

5.2.1 CCIR radio paging code No. 1

This code, originally developed by the United Kingdom (UK) Post Office, provides for tone, numeric and alpha numeric paging facilities. Its adoption by the CCIR as radio paging code No 1 has resulted in its universal application, including the Eurosignal system.

5.2.2 ERMES

The European Radio Messaging paging system provides a more spectrally efficient system than that offered by CCIR radio paging code No 1. Like GSM the work on ERMES started in CEPT, prior to the formation of ETSI, and transferred to ETSI. The ETSI work is now complete.

Details of the relevant CCIR Recommendations, ETSI standards, CEPT Recommendation, EC Directive and PA Report references are given in Annex B. The ad hoc group felt that the recommendations given in the PA report for ERMES were ambiguous and required clarification.

5.3 Public Access Mobile Radio (PAMR)

PAMR, otherwise known as trunked Private Mobile Radio (PMR), is available in most European countries as an analogue variant e.g. Ministry of Posts and Telecommunications (MPT) 1327.

5.3.1 Trans-European Trunked Radio (TETRA)

The standardisation work for TETRA started in CEPT, transferred to ETSI, and is due for completion in the near future. This digital PAMR standardisation project provides for both conventional and packet mobile data facilities. The conventional aspects provide for real time speech services, using an appropriate codec, together with data services on the same channel.

Details of the relevant ETSI and CEPT documents and PA report references are given in Annex C.

The ad hoc group felt that the analysis offered by PA Consulting in their report was superficial and thus their recommendations inappropriate.

5.4 Public radio access

The availability of cordless products, for domestic and/or business use, enables public access to be offered as a value added service. The ability already exists for networks to offer one-way telepoint or two-way call set up procedures, albeit these features may not be available from all networks or permitted by the licence authorities.

Analogue and/or digital cordless apparatus are capable of offering public access services, but it is the digital platforms that offer the real prospect of ONP.

The concept that only public access is a standardised facility is seen as inappropriate. The prime business opportunity is seen to be in provision of cordless or wireless systems, not public access per se.

The conclusions offered by PA Consulting are not supported by the ad hoc group as they are based on outdated information.

5.4.1 CT2

This technology originally pursued nationally in the UK, has now been adopted as an Interim European Telecommunication Standard (I-ETS). CT2 operates at 900 MHz and provides for residential and small business needs.

5.4.2 DECT

The DECT system is a more sophisticated product than CT2. It operates at about 1 900 MHz where it is possible to provide more spectrum to facilitate the needs of the large corporate business user, and offer radio based local area network facilities in a single product family.

5.4.3 Other

Various local loop technologies are under investigation in ETSI and elsewhere in Europe.

Details of the relevant ETSI, CEPT, EC documents and PA report references are provided in Annex D.

5.5 Mobile data

There are a number of proprietary and national mobile data standards already in use in Europe, retrospective standardisation is thus not seen as appropriate.

The introduction of mobile data as a separate topic belies the capability that all digital transmission systems can offer a mobile data service. GSM for example provides a "short message service", or can offer a transparent data service. TETRA provides for conventional real time and packet data options, whilst many short range facilities can be satisfied by using DECT.

Details of the relevant ETSI activities and PA report references are provided in Annex E.

PA Consulting's consideration of this topic area is seen as extremely limited, as a much wider application was foreseen by the ad hoc group.

5.6 Wireless LANs

The radio connection of a terminal device into the Integrated Services Digital Network (ISDN) and/or an alternative digital network has many advantages. Radio access is already a feature of DECT, but it is also a potential feature of other local area or metropolitan network configurations.

The PA study did not include this form of radio access but the ad hoc group felt that it should be considered as part of the provisions for open networks. The remarks made by PA in their report on mobile data networks apply, in part, to such provision but it is anticipated that much higher data rate connections will be required to satisfy user demands.

The work in ETSI is carried out in STC-RES 02 and STC-RES 10. In the latter group data rates in excess of 20 Mbits/sec (High Performance Radio Local Area Network (HIPERLAN)) are being considered.

The overall limitation will be the availability of radio frequency spectrum. In many cases alternative methods of connection are available but the cordless feature provides for limited or real mobility. The probable applications include traffic control schemes, aircraft baggage security and similar applications.

Details of the relevant ETSI activities and those of CEPT are provided in Annex F.

5.7 Terrestrial Flight Telecommunication System (TFTS)

The standardisation activities for Aeronautical Public Correspondence (APC) facilities commenced in CEPT, prior to the formation of ETSI, the work transferred to ETSI as a going concern.

Frequency spectrum for these services was sought and achieved at international level in the 1989 mobile World Administration Radio Conference (WARC) held in Geneva, which allocated 1 MHz + 1 MHz to this system concept.

The 1992 WARC held in Malaga, revisited this topic and designated 5 MHz + 5 MHz as a global allocation for Terrestrial Aeronautical Public Correspondence (TAPC) in recognition that the earlier allocation was inadequate.

The public correspondence requirement in aircraft cabins is seen as a niche market primarily for the business traveller, it may also be provided by satellite.

Details of the relevant ETSI activities and the related CEPT Recommendation and Decision are given in Annex G.

5.8 UMTS/FPLMTS

The prospect of a UMTS has formed part of the RACE programme since its inception. The generally accepted view has been that UMTS is a third generation mobile system, not cellular per se, but likely to use a combination of cellular and cordless services.

The work in the ITU-Radio Study Group 8's Task Group, 8/1, on Future Public Land Mobile Telecommunication Systems (FPLMTS) has led to a number of recommendations, including "Services and Facilities" and "Network Architecture", with a view to providing an international framework, to which regional standardisation bodies, like ETSI, can add the necessary detail to provide for system implementation.

The ETSI STC-SMG 5 group has a mandate to develop, in collaboration with the international community, a standard for around the year 2 000 for UMTS and to assist with European co-ordination for the work in the international community.

Although the scope of this study does not cover directly Mobile Satellite Services (MSS), it should be noted that it is anticipated that both UMTS and FPLMTS will consist of a terrestrial and a satellite component and that greater integration is desirable, e.g. using the same hypothetical functional model and other technical parameters.

In recognition of the need for spectrum on a world-wide basis, the 1992 WARC, held in Malaga, designated significant areas of spectrum around 2 GHz for the provision of these systems on a global

basis. The frequency designations include a frequency band allocated to MSS to provide the satellite element of FPLMTS.

The FPLMTS concept will provide network capabilities to support the Universal Personal Telecommunication service (UPT), which is under consideration both within ETSI STC-NA 7 and the ITU-T Sector.

The structure of future intelligent public networks should provide for personal mobility where radio is one of a range of access technologies. ONP to an intelligent network offers tremendous scope in terms of access technologies and the potential economies that are feasible with an appropriate infrastructure, e.g. duplication of the network infrastructure is a feature of existing cellular radio systems.

The ad hoc group's conclusion was that a clearly defined ONP statement would assist STC-SMG 5's deliberations and that of the international communities.

Details of relevant information on the ITU-R Recommendations are provided in Annex H.

6 Application of standards in the radio environment

The use of radio is regulated by international agreement in which the sovereignty of individual member states is fully respected. ONP requires common spectrum together with the adoption of harmonised regulations and approval procedures and appropriate working agreements between operators.

6.1 Spectrum availability

The European administrations responsible for frequency management are represented collectively by the CEPT European Radio communications Committee (ERC).

The availability of radio frequency spectrum is a prerequisite for radio based systems. For harmonised services, where ONP can apply, harmonised spectrum is also a prerequisite.

The EC has, in the case of GSM, ERMES and DECT, issued Directives dealing with the provision of harmonised spectrum. This process has now been amended and harmonised spectrum (and associated regulatory provision) is to be provided by "the ERC Decision". CEPT members are required to commit themselves to the decision within a 2 month period of its approval. Council Resolution 92/C318/01 dated 19 November 1992, attached as Annex J, provides details of the new arrangements.

6.2 Regulations

CEPT-ERC and ETSI have recently reviewed their working relationships that resulted in a revised Memorandum of Understanding (MoU). In general the administrations in CEPT are looking towards ETSI for the preparation of standards for regulatory and voluntary purposes. In this respect it is agreed that future radio standards will be written in two parts (or as two documents), one of which will be used by administrations as a technical regulation for approval purposes, the other containing the voluntary standardisation features.

This procedure broadly mirrors that in the second Telecommunications Terminal Equipment Directive, 91/263/EEC, where ETSI's role is to offer a Technical Basis for Regulation (TBR), to support a Common Technical Regulation (CTR), that includes essential spectrum parameters.

The recently adopted CEPT/ETSI MoU, and the formulation of ERC Decisions supported by Council Resolution 92/C318/01, has stressed the importance of the need for an effective dialogue between CEPT and ETSI on all regulatory and frequency management issues to provide for the basis of ONP.

6.3 Memoranda of Understanding (MoU)

The provision of open networks via the use of voluntary or mandatory standards has been considered in subclause 6.2. However, from a user perspective, individual operators need to agree on a common approach to tariffs, roaming and other essentially commercial aspects.

The formation of MoU groups has been seen to be an effective method of co-ordinating operator activities. A number of MoU groups, e.g. GSM, ERMES, TFTS and CT2 already exist and it is probable that MoU groups will be formed for all future pan-European services.

7 Other comments on the PA Report

7.1 Pan-European co-ordination of current European standardisation

The structural diagram and representative bodies presented in the PA Report (Figure 8.14 - page 264) is inaccurate in a number of respects:

- the European Committee for Telecommunications Regulatory Affairs (ECTRA) and ERC form part of CEPT and represent the Telecommunications and Radio Regulatory administrative bodies, respectively. The European Radio communication Office (ERO) is the permanent office of CEPT-ERC;
- the CCIR and International Consultative Committee for Telegraph and Telephone (CCITT), now the ITU-Radio Study Groups (ITU-R) and ITU-Telecommunications Standardisation Study Groups (ITU-T), are United Nations (UN) bodies and their representation is by delegations at National level led by administrations. Post, Telegraph and Telephone (PTTs) organisations and SIOs are also able to attend as members of the ITU;
- representation in ETSI (unlike CEN/CENELEC) at European level is by individual members and not via National Standards bodies representing their members as indicated.

8 Other relevant EC Directives, standards and reports

Four EC Directives are seen as particularly relevant to this sector:

- Telecommunications Council Directive 91/263/EEC Terminal Equipment Directive;
- Electro-Magnetic Compatibility (EMC) Directive Council Directive 89/336/EEC as amended by Council Directive 92/031/EEC;
- Procurement Directive Council Directive 77/62/EEC as amended by 80/767/EEC and 88/295/EEC;
- Low Voltage Directive Council Directive 73/23/EEC.

The potential addendum to this ETR might consider also:

- Council Directive 93/97/EEC supplementing Directive 91/263/EEC in respect of Satellite Earth Station equipment;
- the "Green Paper" on satellite communications.

The procurement Directive has been included as its provision controlling the purchasing activities of public bodies effectively requires that those public bodies use the relevant voluntary European standards for their procurement purposes. This means that the "voluntary" standards are "mandated" by the Directive, which is especially relevant when a published standard contains essential Intellectual Property Rights (IPR).

Other Documents:

- ETSI TC-NA Document "Network support of Cordless Terminal Mobility" reference NA/TG/MOB(89)01 - Rev 2 dated 2 April 1993.

9 Conclusions

The ad hoc group has concluded that the work requested under BC-T-023-SI Study and Investigation mandate was, in part, covered by the report commissioned from PA Consulting plc. [2].

This ETR has used that document as a reference and wishes to draw the ONP committee's attention also to the following ETSI published documents:

- ETSI reference Documents Catalogue, Dated November 1992:
 - European Telecommunications Standards;
 - ETSI Technical Reports;
 - GSM Specifications;
- ETSI Work Programme - Issue No 3, Printed March 1993.

The ad hoc group also wishes to draw to the attention of the ONP committee the questions it asked itself in Clause 2, and would like clarification on:

"To whom should ONP apply:

- the mobile operator?
- the fixed network operator?
- the interconnection?
- the service providers?"

It also wishes to remind the committee that in the radio field the spectral management requirements for compatibility and inter-operability generally result in mandatory Air Interface (AI) standards. The principles of ONP have thus been practised, with a variable degree of success, in the mobile radio sector for some considerable time, as an essential part of spectrum management.

For radio access or radio-based products connected to the network, via a radio link, the AI could in some cases be identified as the NTP, as defined in 90/387/EEC [1], but this is not the present practice in public telecommunications networks and needs further clarification.

ONP in the radio sector requires:

- harmonised frequency bands;
- approval arrangements and regulations.

This may be achieved via EC Directives, Memoranda of Understanding and/or CEPT Recommendations and Decisions.

This ETR has addressed the majority of the issues discussed in the mandate, except Mobile Satellite Services and QoS standards. Spectrum availability will, in most cases, be the determining factor in both the provisions of services and their quality. Any extension of a fixed network into the mobile environment may need some adaptation when implemented, due to spectrum limitations.

It is not always feasible to directly translate the experience gained on wired networks to wireless networks or radio access. Spectral limitations need to be taken fully into account when determining future policy. The ad hoc group recommends that the ONP committee in their future consideration of radio based or wireless network access seeks the views of CEPT and ETSI at the earliest opportunity.

The ad hoc group also wishes to stress that ONP can only be achieved in future systems or services, retrospective harmonisation is not a feasible option.

UMTS/FPLMTS represents a unique opportunity for ONP. Harmonised spectrum, on a global basis, has been designated (including spectrum for the satellite component) by the ITU, and CEPT-ERC on a European basis; the RACE programme is providing the technology push.

A clearly defined ONP statement would assist ETSI STC-SMG 5's and STC-SES 5's deliberations and those in the international community regarding the definition of network interfaces and support of UPT for mobile networks.

The ad hoc group considers that this task should now be terminated with the publication of this ETR, but recognises that further consideration to the non-terrestrial services may be required at a later date.

Annex A (informative): Cellular radio

a) Analogue cellular:

Retrospective harmonisation is not seen as achievable.

PA Report:

- page 11 summary/recommendations;
- pages 46-50 description;
- page 118 interface standards.

CCIR Recommendation 622: "Technical and operational characteristics of analogue cellular systems for public land mobile telephone use".

CCIR Recommendation 624: "Public Land Mobile Communication Systems Location registration".

b) Digital cellular:

- GSM and DCS 1800 Standards;
- ETSI-GSM series documents 01, 02, through to 12;
- ETSI Reference Documents Catalogue - November 1992 pages 183 to 226 inclusive;

CEPT Recommendations concerning GSM:

- T/R 72-01: "Allocation of frequencies between 29,7 and 960 MHz", Innsbruck 1981;
- T/R 20-08: "Frequency planning and co-ordination for GSM", Lecce 1989;
- T/R 21-08: "Type approval and free circulation for GSM mobile stations", Lisbon 1991 and Madrid 1992;

EC Directive for GSM;

PA Report:

- pages 9-10 summary/recommendations;
- pages 50 - 54 description;
- page 98 GSM interface standards;
- page 116 DCS 1800 interface standards.

Annex B (informative): Wide area paging

a) CCIR code No 1:

PA Report:

- page 11 summary/recommendations;
- pages 42-46 description;
- page 130 interface standards.

CCIR Recommendation 539-2: "Technical and operational characteristics of future international radio paging systems";

CCIR Recommendation 584-1: "Standard codes and formats for international radio paging".

b) ERMES:

- ETSI-ETS 300-133 Parts 1 to 7;
- ETSI-ETR 050;
- ETSI Reference Document Catalogue - November 1992 pages 83-85 and page 181.

CEPT recommendations:

- T/R 25-07: "Frequency Co-ordination for ERMES" Lecce 1989, Athens 1990 and Madrid 1992.
- EC Directive for ERMES.

PA Report:

- page 11 summary/recommendations;
- pages 42-46 description;
- page 126 interface standards.

Annex C (informative): Public Access Mobile Radio (PAMR)

a) Analogue systems:

Retrospective harmonisation is not seen as achievable.

PA Report:

- pages 12-13 summary/recommendations;
- pages 54-56 description;
- page 133 interface standards.

b) Digital systems (TETRA):

Draft ETSs are being elaborated by ETSI STC-RES 6 for Voice plus Data systems and Data Only packet mode data systems under ETSI work programme items:

- DI/RES-06-01;
- DI/RES-06-02;
- DI/RES-06-04.

In addition there is an ETR covering the principles of TETRA:

- DTR/RES-06-03, ETR 086, parts 1, 2, and 3.

CEPT Recommendation:

- T/R 22-05: "Frequencies for Mobile Digital Trunked Radio Systems", Madrid 1992.

PA Report:

- page 12-13 summary/recommendations;
- pages 54-56 description;
- page 139 interface standards.

Annex D (informative): Public radio access

a) CT2:

- ETSI I-ETS 300 131;
- ETSI Reference Documents Catalogue - November 1992 - page 83.

PA Report:

- page 14 summary/recommendations;
- pages 57-59 description;
- page 144 interface standards.

b) DECT:

- ETSI-ETS 300 175 parts 1 to 9;
- ETSI-ETS 300 176;
- ETSI-ETS 300 323 parts 1 to 7;
- ETSI-TBRs 006, 010 and 011;
- ETSI-ETRs 015, 041, 042, 043 and 056.
- ETSI Reference Documents Catalogue - November 1992:
 - pages 104-110;
 - pages 158-159;
 - page 166;
 - pages 178-179.

CEPT Recommendation:

- T/R 22-02: "Frequency Band for DECT" Lecce 1989.

Further work is continuing in ETSI STC-RES 3 under the following ETSI Work Programme items:

- CT2:

RI/RES 03-015.

- DECT:

DECT Authentication module specification:	DE/RES 03-013;
DECT ISDN interworking profile:	DE/RES 03-014;
DECT-GSM interworking:	DE/RES 03-017.

PA Report:

- page 14 summary/recommendations;
- pages 57-59 description;
- page 144 interface standards;

Annex E (informative): Mobile data services

Refer to Annex A for GSM information.

Refer to Annex C for TETRA information.

Refer to Annex D for DECT information.

PA Report:

- page 13 summary/recommendations;
- pages 59 - 61 description;
- page 141 interface standards.

Annex F (informative): Wireless LANs

Work is being undertaken to elaborate an ETS for radio LAN products in ETSI STC-RES 02 and STC-RES 10 under the following ETSI work programme items:

- 2,4 - 2,5 GHz:

DE/RES-02-09;
ETSI/ETR 069.

- HIPERLAN:

DE/RES-10-01;
DE/RES-10-02;
DTR/RES-10-04;
DTR/RES-10-05;
DTR/RES-10-06.

CEPT Recommendations:

- T/R 10-01: "Wideband data transmission", Oslo 1991;
- T/R 22-06: "Frequency bands for HIPERLANs", Madrid 1992.

Annex G (informative): Terrestrial Flight Telephone System (TFTS)

Work is in hand in ETSI STC-RES 5 on the elaboration of a standard for the TFTS, known elsewhere as APC, under the following ETSI work programme items:

- Speech Services:
 - DE/RES-05-01/1.
- Facsimile:
 - DE/RES-05-01/2.
- Data Services:
 - DE/RES-05-01/3.
- CEPT Recommendation:
 - T/R 42-01: "Designation of frequency bands for TFTS", Helsinki 1991.
- CEPT Decision:
 - ERC/Dec(92)01: "Spectrum for TFTS", Madrid 1992.
- CCIR Report 1051-1: "Public Mobile Telephone Service with aircraft".

Annex H (informative): UMTS/FPLMTS

- CCIR Recommendation 687-1: "Future Public Land Mobile Telecommunications Systems (FPLMTS)".
- CCIR Recommendation 816: "Framework for services supported on Future Land Mobile Telecommunication Systems (FPLMTS)".
- CCIR Recommendation 817: "Future Public Land Mobile Telecommunication Systems (FPLMTS) - Network Architecture's".
- CCIR Recommendation 818: "Satellite operation within Future Public Land Mobile Telecommunication Systems (FPLMTS)".
- CCIR Recommendation 819: "Adaptation of Future Public Land Mobile Telecommunication Systems (FPLMTS) to the needs of developing countries".
- ETSI STC-SMG 5 Work Programme Items.
- ITU: Final Acts of the World Administrative Radio Conference.
- (WARC-92), Malaga-Torremolinos, 1992: RR 746A and Res. Com 4/4; Designation of frequency bands for FPLMTS, terrestrial and satellite components.

Annex J (informative): Council Resolution 92/C 318/01

4. 12. 92

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I

(Information)

COUNCIL

COUNCIL RESOLUTION

of 19 November 1992

on the implementation in the Community of the European Radiocommunications Committee Decisions

(92/C 318/01)

THE COUNCIL OF THE EUROPEAN COMMUNITIES

Having regard to the Treaty establishing the European Economic Community,

Whereas the Council resolution of 28 June 1990 ⁽¹⁾ calls for the strengthening of European cooperation in the field of radio frequency coordination with the objective of providing sufficient frequency spectrum for new services, according to market demand and taking account of the requirements of existing services and of different categories of users; whereas that resolution saw the development of the existing Conference of Postal and Telecommunications Administrations (CEPT) coordination mechanisms as a major policy goal, and noted with satisfaction in the context the creation of the European Radiocommunications Office (ERO);

Whereas the CEPT European Radiocommunications Committee (ERC) consists of representatives of the radio regulatory authorities in all CEPT Member countries, responsible for the allocation and assignment of radio frequencies within their respective countries;

Whereas the ERC is developing working methods to allow wide consultation with telecommunication organizations and other service providers, industry and users, and cooperation and interaction with the European Telecommunications Standards Institute (ETSI) and the Commission of the European Communities;

Whereas the Commission participates in the work of the ERC with the special status of Counsellor;

Whereas the ERC is establishing the ERO as centre for expertise to develop proposals especially for long-term plans for the use of the radio frequency spectrum in Europe;

Whereas the ERC has introduced a mechanism for the adoption of ERC decisions on significant harmonization measures in the field of radiocommunications;

Whereas the Commission has submitted to the Council proposals for directives on common frequency bands to be designated for the coordinated introduction of the Terrestrial Flight Telecommunications System (TFTS) and Road Transport Telematics (RTT) systems, in the Community;

Whereas the ERC has adopted decisions on the provision of suitable frequency bands for the introduction in Europe of TFTS and RTT systems;

Whereas these systems are important trans-European telecommunications developments;

Whereas the commitment of all Member States to the implementation of the ERC decisions on TFTS and RTT systems will ensure the provision of the necessary frequencies for these systems,

RESOLVES:

1. that in future, Member States should actively participate in the development of ERC decisions aimed at supporting the provision of significant Europe-wide radio services, taking account of the obligations of Member States under Community law, in particular the competition rules, and the general policy goals defined in the Council Resolution of 28 June 1990;
2. that Member States should commit themselves to implementing the ERC decisions on frequency bands to be designated for the coordinated introduction to the procedure adopted by the ERC,

INVITES THE COMMISSION:

to give full consideration in future to the mechanism of ERC decisions as the primary method of ensuring the provision of the necessary frequencies for new Europe-wide radio services.

⁽¹⁾ Council Resolution of 28 June 1990 on the strengthening of the European-wide cooperation on the radio frequencies, in particular with regard to services with a pan-European dimension (OJ No C 166, 7. 7. 1990, p. 4).

History

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