EUROPEAN COMMISSION

OVERVIEW
OF THE GREEN PAPER
ON MOBILE AND PERSONAL COMMUNICATIONS
AND EXTRACT OF THE POSITIONS PROPOSED

Directorate-General
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TOWARDS A PERSONAL COMMUNICATIONS ENVIRONMENT

OVERVIEW OF THE GREEN PAPER ON A COMMON APPROACH IN THE FIELD OF MOBILE AND PERSONAL COMMUNICATIONS IN THE EUROPEAN UNION (COM(94) 145 - final)

With the adoption of the Green Paper on mobile and personal communications on 27 April 1994, the European Commission has launched a broad debate, on the complete re-shaping of the telecommunications environment in the European Union. As such this represents a first key step in the process of preparing for the full liberalisation of telecommunications markets in the EU from 1 January 1998.

TOWARDS A PERSONAL COMMUNICATIONS ENVIRONMENT

I Introduction

I.1 The mobile communications market

Mobile communications is currently the fastest growing area within the telecommunications sector (see Table 1, p.6). Over the last few years it has experienced unprecedented growth in subscriber numbers, especially in cellular mobile telephony. Europe has now more than 8 million cellular mobile telephony users, over double the number three years ago. There are also more than 8 million users of other mobile communications services, (in particular, paging and so-called private mobile radio systems).

It is forecast that by the year 2000, there could be nearly 40 million users in the European Union, and with the growing expansion into personal communications services (PCS), up to 80 million users by the year 2010 [1].

The market is being driven by rapid advances in technology, by commercial opportunities and by falling prices [2]. Subscriber growth rates during the last few years in Member States with high growth cellular telephony markets (car telephones and handheld portables) have varied from 30 to 40%. Recent analysis shows that this trend is withstanding the current economic recession .

As well as accounting for greater than 45% of the total user base, cellular also accounts for around 90% of the value of the total European market for mobile services and 75% of that for mobile equipment.

I.2 The trend towards personal communications

Personal communications will ultimately allow person-to-person calling independent of location, the terminal used, the means of transmission (wired or wireless) and the choice of technology. The market potential for personal communications services is huge.

While the maximum density for fixed wireline telephones is not expected to exceed substantially an average penetration of 50% of the population, (i.e. approximately one connection per household, plus business use), personal communications penetration has the ultimate potential to reach near 80% of the population (i.e. up to one connection per adult).

Total user numbers could ultimately substantially exceed 200 million in the European Union - compared to a current total subscriber base for traditional fixed telephony of 153 million.

The growth of mobile communications will have a significant impact on the whole of the telecommunications industry. Mobile services themselves will continue to experience rapid growth, both in terms of subscriber numbers and traffic. This in turn will stimulate traffic in the fixed networks over which more than 95% of mobile calls pass.

The trend towards personal communications will be further reinforced by the current move towards portability in information technology, moving beyond laptop, notebook and pen-book computers towards full-scale *Personal Intelligent Communicators* (PICs) or *Personal Digital Assistants* (PDAs), which will integrate the features of telephone, agenda and organiser, combined with PC functions, eventually offering all the features of modern telephony, such as video-phone, fax and multimedia applications.

Ultimately, personal communications services are likely to be carried most economically via a single integrated technology concept - the so-called *UMTS* (the Universal Mobile Telecommunications System). The strong European position in digital mobile communications has made the Union a major actor in the work towards this future third generation system.

1 Market research predicts that 20 to 30% of the business users can be expected to have personal mobile communications by the year 2000, with slower penetration growth thereafter. By 2010 penetration would be 30 to 50%. In addition, 30 to 40% of the population would have personal communications for private use by 2010.

2 According to the studies carried out, it appears that the development towards mass-market use of mobile communications and the evolution towards mass-distributed personal communications services will accelerate substantially once terminal handset prices fall below 250 ECUs.

I.3 Europe is a technology leader for digital mobile communications

Digital technologies are now being introduced in both public and private mobile radio communications.

While the public mobile telephony market is still served mainly by analogue cellular systems, digital technology is now being introduced, in particular GSM 900 (the European Global System for Mobile communications) and DCS-1800 (so called Personal Communications Networks - PCN services) [3].

Only a little over one year after its effective launch, GSM accounts for well over 10% of the installed cellular mobile telephony base in the Union.

GSM has been adopted - or planned to be adopted - in more than 60 countries worldwide, in particular, throughout Europe including the countries of Eastern and Central Europe, and also in the Pacific Area with the exception of Japan, and in a number of other countries in Asia, the Middle East and Africa.

At the same time, GSM is providing pan-European mobilility which incompatible analogue systems in the Member States were unable to offer. It is developing into a major example of a market-led introduction of a trans-European network.

II The need for a Europe-wide approach

Mobility has a particular significance in the broader context of the European Union. On the one hand, mobility is at the very heart of the objective of the Union for the free movement of goods, people, services, and capital. On the other hand, the prospect of Europe-wide advanced mobile communications services, will support the commercial success of these services on the mass market.

Mobile communications also has an important role to play in stimulating massive private and public investment into telecommunications networks and services, and in contributing to maintaining and developing service in the less developed or peripheral regions of the Union.

While the Green Paper on the development of the Common Market for telecommunications services and equipment of 1987 [4] (the 1987 Green Paper) set mobile communications to one side for further consideration, the Union has already undertaken specific action to promote the introduction of digital technologies through standardisation and frequency initiatives. Studies carried out in preparation for the Green Paper have nevertheless indicated important barriers to maximising market potential to the full.

III The aims of the Green Paper

With the expansion of mobile communications into the future personal communications market, the Green Paper launches a debate on a coherent policy framework for the sector. It identifies basic principles and action lines for further discussion. The global aims of the positions and proposals in this paper are :

- to permit the development of a Union-wide market for mobile services, equipment and terminals ;
- to identify common principles where required, for achieving this objective, in relation to the provision of mobile infrastructure, the development of mobile networks and services, and the supply and operation of mobile terminals ;
- to promote the evolution of the mobile communications market into mass personal communications services, with particular emphasis on pan-European services ;
- to facilitate and promote the emergence of trans-European networks and services in the sector, and to ensure that the sector's development is achieved in a manner consistent with the public interest.

3 Other leading European digital technologies entering the market include DECT (Digital European Cordless Telecommunications), as well as Telepoint systems such as CT2; ERMES (the pan-European digital paging systems) and TFTS (the European digital Terrestrial Flight Telecommunications System).

4 Green Paper on the Development of the Common Market for Telecommunications Services and Equipment (COM(87)290 final, 30.7.1987)

IV Major changes required.

The European Union's mobile communications sector can move forward from a position of strength. Europe has become a world technology leader and has succeeded in attracting substantial public and private investment to mobile communications. However, the sector is now at a critical juncture, poised on the transition from analogue to digital technologies, and from niche to mass market player.

In order to fully use the potential and allow Europe's citizens, industry, investors, and the economy as a whole to reap the benefits, mobile markets must now be allowed to develop. Existing barriers must be lifted : freedom to use and to provide services must be ensured, the economies of scale and scope enjoyed by Europe's competitors must be replicated and a long term perspective opened.

Based on its analysis and the considerations above, the Commission considers **that five major changes are required** to remove the barriers to further development :

1 **abolishing remaining exclusive and special rights** in the sector, subject where required to the establishment of appropriate licensing conditions ;

2 **removal of all restrictions on the provision of mobile services** both for independent Service Providers and direct service provision by mobile network operators.
This should include the freedom to offer a combination of services provided under different licences, as well as the ability to provide services in different Member States, and the lifting of existing restrictions, thereby facilitating access of users to these services.

3 **full freedom for mobile network operators to operate and develop their networks** for the purpose of the activities provided for in their licence or authorisation.

This should include the right to self-provide infrastructure for use in carrying out these activities or to use third party infrastructure for that purpose, as well as the right to share infrastructure ;

4 **unrestricted combined offering of services via the fixed and mobile networks**, within the overall time schedule set by Council Resolution 93/C213/01 of 22 July 1993 for the full liberalisation of public voice services via the fixed network;

This would imply the right for mobile operators or independent Service Providers to bid for resale licenses on the fixed network, as well as for the lifting of all existing entry restrictions for fixed network operators in mobile markets, subject only to full application of the Treaty competition rules, in particular, Council Regulation 89/4064/EEC on the control of concentrations [5] and the provisions of the Treaty competition rules concerning abuse of dominant positions.

5 **facilitating pan-European operation and service provision.**

This should include further development of mutual recognition of type approval of mobile terminal equipment, as well as coordination of licensing and award procedures, where appropriate to facilitate development of trans-European networks.

The combination of these five changes would ensure a substantial acceleration of the development of the Union's mobile communications market, and speed progress towards true personal communications based on a combination of wired and wireless-services, with the market the ultimate arbiter of the balance between the two. This approach would prepare the Union for a smooth market-led transition to the future Universal Mobile Telecommunications Systems. Such systems will be the ultimate base for both narrow-band and broad-band personal communications, and consequently for the whole of the Union's telecommunications sector, and will combine mobility with voice, data and multimedia applications.

5 Council Regulation 4064/89 of 21st December 1989 on the control of concentrations between undertakings, OJ L395/1, 30.12.89.

V Proposed positions

The working out of detailed positions based on these five major changes represents an extension of the principles of the Union's existing telecommunications policy to the mobile communications sector, based, in particular, on the principles of transparency, non-discrimination, and proportionality.

The approach must address three main areas :

- regulation at national level of mobile systems providing services to the general public ;
- operation of systems intended for own use or use by closed user groups (so called private mobile radio), and
- conditions required at a European Community level.

The principle of proportionality requires that substantial public regulation should be limited to only those mobile systems providing services to the general public. Private mobile systems should not be subject to any constraints other than those currently applying to private systems or closed user groups operating via the fixed network with the possibility of additional sector specific safeguards, such as the requirement to avoid harmful interference and to ensure frequency efficiency.

In identifying detailed positions, the Green Paper has limited itself to fields where a common position is required at a European Community level. These positions concern :

- licensing conditions for mobile operators,
- conditions for service provision, interconnection, infrastructure, frequency and numbering issues, and
- launching the evolution towards personal communications.

As discussed above, these detailed positions are consistent with the principle of subsidiarity as representing action necessary at a Union and national level to ensure the further development of the internal market, the provision of pan-European services and the respect of the Treaty competition rules.

These positions are set out below in the extract from the Green Paper. This sets out, both, *the policy positions* proposed by the Commision and the *actions required in the short term* to implement these positions. *The longer term actions* needed to maximise the benefits of the proposals are also outlined.

Table 1
Background Data on European mobile communications (end 1993)

1. Users	
Total number of users of mobile communications in Europe [6]	15,800,000
on public networks [7]	70%
and on private networks [8].	30%
operating on analogue systems [9]	91%
and on digital systems [10]	9%
2. Service revenues	
Total public mobile service revenues in Europe [11]	8.5 Billion ECU
Mobile services as a percentage of all telecommunications services	10%
3. Equipment revenues	
Customer equipment sales	4.6 Billion ECU
Terminals for use on public cellular systems	75%
and other networks [12]	25%
4. Projected cumulative investment to 2000 [13]	
Projected investment in mobile infrastructure (lower bound [14])	27 Billion ECU
Projected investment in mobile infrastructure (upper bound [15])	45 Billion ECU
As a percentage of all telecommunications investment [16]	7 - 13%

Source: Published market research

6 Comprising 8,100,000 cellular telephony users, 4,500,000 private mobile radio (PMR) and public access mobile radio (PAMR) users, and 3,100,000 wide-area paging users.
The installed base of other services, such as telepoint and mobile data, remains small at present with an estimated100,000 subscribers in total.
Cordless telephone use in residential and/or business environments is excluded from this total.
Includes European Economic Area and Switzerland, equivalent figures for central and eastern Europe are not available.

7 Public networks include: analogue cellular telephony (NMT 900, NMT 450, TACS, C-NET, Radiocom 2000 and others), GSM, DCS 1800, paging and telepoint.

8 Private networks include: PMR, PAMR and dedicated mobile data networks.

9 Analogue systems include: analogue cellular telephony, analogue paging and PMR and analogue PAMR.

10 Digital systems are: GSM cellular telephony, DCS 1800 cellular telephony, digital PAMR and telepoint. GSM cellular telephony, currently undergoing very rapid expansion, represents the majority of digital users.

11 1993 service revenues for analogue and digital cellular telephony, and wide-area paging.

12 Includes paging terminal, private mobile radio terminals and private mobile radio base stations.

13 During this period, mobile telephony subscribers as a percentage of all telephony subscribers will increase from approximately 5% to 15%. Current annual cellular revenue per subscriber is 1,100 ECU per annu (compared to a PSTN annual revenue per subscriber of 450 ECU).With the advent of personal communications, and the as sociated widespread adoption of low-user tariff schemes, the difference in revenue generated per subscriber will narrow.

14 Based on public investment plans and on licences already allocated or planned.

15 Assuming widespread adoption of Personal Communications based on DCS 1800 technology.

16 Cumulative telecommunications investment in the European Union from 1991 to 2000 will be 345 to 401 Billion ECU according to Analysys' study «Performance of the Telecommunications Sector up to 2010 under different Regulatory and Market Options».

PROPOSED POSITIONS

The global objective of the proposed positions is to allow Europe-wide markets to develop and barriers to be lifted
They should ensure freedom of use and provision of services while opening the way to the development of mobile communications towards full personal communications for the European citizen.
They should provide a long-term perspective for the sector's industry as well as to the European economy as a whole, based on the extension of the principles of the European Union's telecommunications policy, in particular Council Resolution 93/C213/01 of 22nd July 1993.

I Licensing conditions for mobile network operators

1 **Abolition of exclusive and special rights in the sector concerning the operation of mobile communications systems. An exclusive right exists where the service is reserved by the Member State for a single public or private undertaking within a given area. A special right exists where, a Member State within a given area, designates, other than according to objective, proportional, transparent, and non-discriminatory criteria, several competing undertakings or limits the number other than according to such criteria or grants one or more of them a lasting particular advantage, other than those referred to in Article 92 of the Treaty.**

2 **Licensing conditions for mobile communications systems must be based on objective grounds, be transparent, non-discriminatory, and respect the principle of proportionality. These principles should also extend to fees payable in respect of licences (including any fees for use of radiofrequencies). Licensing conditions must not contain conditions other than those justified on the grounds of the essential requirements and, in the case of systems for use by the general public, public service requirements in the form of trade regulations.**

3 **Essential requirements to be taken into account should be limited to those identified in Commission Directive 90/388/EEC [1] and Council Directive 90/387/EEC [2], as well as Commission Directive 88/301/EEC [3] and Council Directive 91/263/EEC [4, 5].**

These concern in particular the effective use of the radiofrequency spectrum and electromagnetic compatibility requirements, as well as security of network operation, maintenance of network integrity, interoperability of services in justified cases, data protection in justified cases, and user safety and safety of employees.

4 **Conditions based on public service requirements in the form of trade regulations should be only those currently identified in Commission Directive 90/388/EEC for systems intended for use by the general public. These concern conditions of permanence, availability and quality of the service. The safeguarding of permanence, availability and quality of the service may imply fulfilling conditions relating to the technical competence and financial resources of the licensee.**

1 Commission Directive of 28th June 1990 in competition on the markets for telecommunications services (90/388/EEC ; OJ L192/10, 24.7.90)
2 Council Directive of 28th June 1990 on the establishment of the Internal Market for telecommunications services through the implementation of Open Network Provision (90/387/EEC ; OJ L192/1, 24.7.90)
3 Commission Directive of 16th May 1988 on the competition in the markets for telecommunications terminal equipment (88/301/EEC ; OJ L131/73, 27.5.88)
4 Council Directive of 29th April 1991 on the approximation of the laws of the Member States concerning telecommunications terminal equipment, including the mutual recognition of their conformity (91/263/EEC ; OJ L128/1, 23.5.91)
5 This includes the extension of these Directives to the satellite sector, which is of direct relevance to mobile satellite-based systems. See in particular , Council Directive of 29 October 1993 supplementing Directive 91/263/EEC in respect of satellite earth station equipment (93/97/EEC; OJ L290/01, 24.11.93)for services.

5 Systems not intended for use by the general public (in particular so-called private mobile radio systems, used by closed user groups) should be subject to no other conditions than those based on essential requirements, in particular, effective use of frequencies and electromagnetic compatibility.

6 In order to foster innovation of systems and services, and to ensure in particular efficient use of frequencies, the duration of licences should be based on the period required to pay back investment on reasonable terms.

7 Licences may not include conditions which restrict ownership by nationals of Member States or of the European Economic Area (EEA) or enterprises controlled by nationals of Member States or of the EEA. Subject to the European Community's commitments taken on a multilateral or bilateral basis, licences may include restrictions aiming at ensuring, at a Union level, equivalent access to third countries.

8 Licence awards must be based on open, non-discriminatory, and transparent procedures.

9 Where a limitation on the number of licences to be issued is established by Member States, such limitation must be based on essential requirements such as efficient use of frequencies, and/or conditions of public service requirements in the form of trade regulation, and must be consistent with the Treaty competition rules.

Any limitation should respect the principle of proportionality, by imposing the least limiting solution and giving priority to competitive provision.

10 Whichever method is used to award licences - first come-first served, comparative bidding, auctioning, lottery - the method should be chosen and implemented in a way that the final selection offers maximum guarantees in respect of the full implementation of the essential requirements and ensures the achievement of the aims of any public service requirements in the form of trade regulations. A particular priority should be maximising benefits for users (in particular, in terms of price and coverage).

11 Reliance on auctions should not lead to an excessive transfer to the public budget or for other purposes to the detriment of low tariffs for the users.

Lotteries do not seem to guarantee the achievement of the criteria set out under 10, in particular, concerning efficient use of frequencies, technical competence and financial resources.

12 The principle of full mutual recognition of licences should apply whenever relevant, in particular, in the case where licences are awarded on the basis of first - come-first served, subject to the availability of required frequency resources. This should concern, inter alia, mobile services based on satellite communications, as put forward in the proposal for a Council Directive on a policy for the mutual recognition of licences and other national authorisations for the provision of satellite network services and/or satellite communications services[6].

It should also apply to systems licensed in border regions between Member States where systems could provide services on a trans-frontier basis, for example, private mobile radio systems used by taxi businesses or haulage companies.

13 Where limitations are imposed on the number of licences on the grounds set out under 9 and the award of licences on the basis of comparative bidding or auctioning makes the principle of mutual recognition no longer fully applicable, national award procedures must ensure that licence applications by nationals or

6 To be published

companies controlled by nationals of Member States or of the EEA are possible on a non-discriminatory basis.

No limitations with regard to licence applications may be introduced, except if justified under Treaty competition rules, in particular Article 86.

14 Mobile terminal equipment should be subject only to type approval according to the principles of Directives 91/263/EEC and 93/97/EEC which allow the imposition of specific provisions ensuring electromagnetic compatibility.

Where the provisions of Directives 91/263/EEC and 93/97/EEC have still not been made applicable to specific types of mobile equipment, and specific licences or class licences are required in Member States to provide for the safe operation of equipment, the full mutual recognition of licences granted in another Member State should apply to ensure free circulation of such equipment in the Community.

15 Licensing conditions for mobile network operators must ensure the respect of competition rules and in particular, ensure transparent and non-discriminatory behaviour between fixed and mobile network operators in common ownership.

II Service provision

1 Commercial freedom should be guaranteed, allowing the provision of services by independent Service Providers, as well as direct service provision by mobile network operators. All existing restrictions in licences impeding such activity should be abolished.

2 Commercial freedom should include the opportunity for Service Providers, whether independent or integrated into or forming part of mobile network operations, to offer a combination of services provided under different mobile licences, as well as the ability to provide services in different Member States, subject only to the provision of the Treaty competition rules.

3 Service Providers should not be subject to licensing procedures and may be subject only to a requirement for declaration of their activities to the National Regulatory Authority(ies) of the Member State(s) where they choose to operate.

4 A Code of Conduct for Service Providers should be established. The Code should, in particular, identify on the basis of voluntary participation by Service Providers, measures to safeguard essential requirements and commitments with regard to permanence of service, availability, and quality of service. It should also provide guidelines concerning technical, financial, and commercial practices in the sector, consistent with competition rules.

5 Mobile network operators should, in line with their obligation to provide open, transparent and non-discriminatory conditions for interconnection (see point III.2), have an obligation to accept all reasonable requests by Service Providers to deal, within the limits of normal commercial practice and Community competition law (including requests from Service Providers integrated into other mobile network operations). It should be possible to challenge any refusal to deal before the National Regulatory Authority.

6 In order to guarantee open, transparent, and non-discriminatory conditions for independent Service Providers, mobile network operators should be required by their licence to provide for sufficient transparency, in particular concerning their accounting practices, to allow supervision of the service provision activities integrated into their operations.

7 **The commercial relationship established between Service Providers and mobile communications operators should be subject to full mutual recognition by Member States. No restrictions should be applied concerning any activity resulting from such relationships in one Member State on the activity in any other Member State.**

The provision of services in the context of cross-border roaming agreements represents the provision of a service by independent Service Providers or by Service Providers integrated into a mobile network operation in the territory of a Member State other than the Member State in which the original commercial activity was established.

Such activity should not be subject either to any restriction or to any surcharge or equivalent measure unrelated to the cost of the provision of the roaming facility itself, whether imposed as a result of regulatory or other action.

III Interconnection

1 **The basic framework for interconnection of mobile communications networks intended for use by the general public with the fixed network infrastructure operated for use by the general public is set out by Council Directive 90/387/EEC [7], and Proposal for a Council Directive concerning application of Open Network Provision to Voice Telephony and Council Directive 92/44/EEC [8], as well as through the Treaty competition rules [9].**

According to this framework, the National Regulatory Authorities carry the principal responsibility for ensuring interconnection in conformity with the Directives above.

2 **As far as other technical and commercial interfaces are concerned, in particular, between Service Providers and mobile network operators, and also access to intelligent network functions in the fixed network which are not covered by the specific Directives mentioned, the basic principles set by Council Directive 90/387/EEC apply.**

This implies in particular that interconnection conditions established at those interfaces must be set on the basis of objective criteria, be transparent and non-discriminatory, cost-oriented, and compatible with the principle of proportionality, as well as respecting the essential requirements [10].

The establishment of suitable interconnection agreements respecting these principles should be principally left to commercial agreements between market participants. At this stage, it is not considered necessary to establish further specific Directives at Community level, concerning these interfaces and related interconnection conditions, provided these are subject to strict supervision by National Regulatory Authorities to ensure full application of those principles and the establishment of suitable dispute resolution and control procedures.

3 **The requirement of transparency concerning such interconnection agreements implies in particular that full access to those agreements is given to National Regulatory Authorities and that such information is made available to the Commission on request.**

4 **In order to facilitate interconnection, the establishment of technical standards concerning these interfaces should be promoted and published, where required in accordance with the provisions set forth in Article 5(1) of Directive 90/387/EEC.**

7 Council Directive of 28th June 1990 on the establishment of the Internal Market for telecommunications services through the implementation of Open Network Provision (90/387/EEC ; OJ L192/1, 24.7.90)

8 Proposal for a Council Directive on the application of Open Network Provision (ONP) to Voice Telephony (COM(92)247, 27.8.92) (Common Position adopted 1st July 1993).

Council Directive of 5th June 1992 on the Application of Open Network Provision to Leased Lines (92/44/EEC ; OJ L165/27, 19.6.92).

9 See Annex D.6.1 and 6.2

10 Where an operator has both a fixed and a mobile network there needs to be sufficient transparency, in particular, concerning their accounting practices.

5 Standards regarding interfaces should only be made binding to the extent required by the Directive 92/44/EEC concerning application of Open Network Provision (ONP) to Leased Lines and the proposed Directive concerning application of Open Network Provision to Voice Telephony.

In accordance with Article 5(1) of Directive 90/387/EEC, in all other cases, the principle of voluntary application of standards should apply.

Only in cases where it is strictly necessary to ensure basic interoperability and freedom of choice for users and subject to the principle of proportionality, should references to standards be made binding under the provision of Article 5(3) of Directive 90/387/EEC.

6 As regards mobile networks licensed only for own use or use by closed-user groups (private mobile radio systems), interconnection with the public network must not be impeded, and is subject to application of Directive 90/387/EEC, Directive 92/44/EEC, and the proposed Directive on the application of Open Network Provision (ONP) to Voice Telephony, as regards the issue of access to fixed infrastructure operated for use by the general public.

The activities which may be carried on via such interconnections are subject to the provisions under which such mobile communications networks have been licensed. In principle, conditions applying to such communications networks must not be more onerous than those applying to other closed user groups operating by use of facilities of the public fixed networks.

IV Infrastructure

1 Mobile network operators should have full freedom to operate and develop their network for the purpose of the activities allowed in their licence or authorisations, including a free choice of facilities used to support such activities.

2 The provision of facilities and use of infrastructure forming part of the public fixed network is provided for and subject to the provisions of Council Directive 90/387/EEC, Council Directive 92/44/EEC, and the proposal for a Council Directive for application of Open Network Provision to Voice Telephony. Provisions relating to the interconnection of mobile and public fixed networks are set forth under III above.

3 In addition, mobile network operators should have full rights to establish their own infrastructure as well as to use infrastructure provided by third parties, subject to limiting the use of such infrastructure to those activities provided for in their licence or authorisation.

4 Mobile network operators should have the right to directly interconnect with other mobile network operators, either via facilities provided by the public fixed network, via their own infrastructure or infrastructure provided by third parties, both within Member States and between Member States.

Use of such direct connections should be permitted for all activities allowed for in the licences and/or authorisations of the respective mobile network operators, and should include transmission of signalling and control data to facilitate roaming between mobile networks. Where their own infrastructure requires the availability of radio resources such as links based on microwave transmission, Member States should make available suitable radiofrequencies.

5 Mobile network operators should be allowed to share infrastructure, other facilities and sites.

Arrangements must be transparent, non-discriminatory, and respect the essential requirements, as well as respecting the Treaty competition rules, in particular Articles 85 and 86 and Regulation 4064/89, and the general principles of

Council Directive 90/387/EEC [11]. National Regulatory Authorities must be kept informed of such arrangements. This information should be made available to the Commission on request.

6 Member States may require that mobile network operators share infrastructure and sites and conclude arrangements in line with the principles set out under 5 above, where overriding grounds of environmental policy, or public safety so require. Such requirements must respect the principle of proportionality, and must not substantially impede the activities allowed for in the respective licences or authorisations and they must be in line with the Treaty competition rules.

V Radiofrequencies

1 The basic principles concerning access to radiofrequencies should be those set by Council Directive 90/387/EEC which includes in its scope according to Article 2(10) usage conditions, including «access to frequencies where required».

2 This implies that conditions for access to frequencies must comply with a number of basic principles.

They must, in particular, be allocated based on objective criteria, procedures must be transparent and published in an appropriate manner and must guarantee equality of access and be non-discriminatory.

3 The basic approach to frequency planning, allocation, and co-ordination has been set out in Council Resolution 90/C 166/02 [12]. Resolution 90/C 166/02 requires, inter alia, that the co-ordination of radiofrequencies must respect the principle of separation of regulatory and operational duties, while timely opinions from service providers, industry, users, and standards bodies in researching the frequencies best suited for further applications should be sought.

Radiofrequency use must take place in accordance with the radioregulations of the International Telecommunications Union (ITU). Within this framework, work should proceed particularly towards the timely allocation of sufficient frequency resources to mobile and satellite applications.

The Resolution also calls for promoting the most efficient use of the frequency spectrum by taking timely account of service provider and user requirements against the background of industrial developments and development of standards.

4 The framework for carrying out frequency coordination in Europe is defined by Council Resolution 90/C 166/02, as complemented by Council Resolution 92/C 318/01 [13]. These two Resolutions identify the CEPT's European Radiocommunications Committee (ERC) (and the European Radiocommunications Office (ERO) linked to it) as a basic framework for European coordination in this area, subject to this framework being open to the opinions of frequency experts from national authorities responsible for frequency management, telecommunications operators and other Service Providers, industry, and users.

Council Resolution 92/318/01 calls for full consideration to be given 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, subject to the development of working methods allowing wide consultation with the categories mentioned above as well as cooperation and interaction with the European Telecommunications Standards Institute (ETSI) and the European Commission.

11 See Annex D.10.2

12 Council Resolution of 28th June 1990 on the strengthening of the Europe-wide co-operation on radiofrequencies, in particular with regard to services with a pan-European dimension (90/C 166/02 ; OJ C 166/4, 7.7.90)

13 Council Resolution of 19th November 1992 on the implementation in the Community of the European Radiocommunications Committee decisions (92/C 318/01 ; OJ C318/1, 04.12.92).

5 In response to the Council Resolution, the Commission has set out a New Approach to frequency coordination in Europe, integrating these elements [14]. It can conclude with the ERC/ERO, a Memorandum of Understanding and a framework contract allowing work to be entrusted to these bodies to establish common frequency bands, once a firm legal base has been created in order to ensure that Union interests are safeguarded. This new approach to frequency co-ordination, whilst fully taking into account the mechanisms provided by the ERC/ERO establishes minimum conditions necessary to comply with Treaty obligations [15]

6 Council Resolution 90/C166/02 also calls for developing common European positions in relation to the use of the frequency spectrum concerning international frequency harmonisation, in particular, with regard to the ITU and its relevant World Radio Conferences using these mechanisms.

The European Community used this approach during the World Administrative Radio Conference, held at Torremolinos in 1992 (WARC'92), where major decisions with regard to radiofrequencies to be allocated for mobile and satellite communications were taken. The Commission intends to follow the same approach during future World Radio Conferences, whilst ensuring that Union interests are safeguarded.

7 Major immediate priorities for radiofrequency co-ordination for mobile communications in Europe result from the requirement for the full and coordinated implementation of the decisions taken at WARC'92 in the Union.

As regards radiofrequencies for systems intended for the general public, short term priorities should concern the establishment and implementation of binding decisions concerning the designation of frequencies at the European and Community level for the frequency bands designated by WARC'92 for future use by terrestrial mobile communications and satellite based communications systems.

This should include in particular designation of binding common bands for DCS-1800 services, for the future Universal Mobile Telecommunications System (UMTS), as well as frequency bands for satellite-based personal communications systems (including so called Low Earth Orbit (LEO) Systems).

Decisions should also identify firm schedules for progressive availability, as well as standards to be used, either existing or in development in order to ensure their practical implementation by the Member States.

8 As regards systems intended for own use or for the use of closed user groups (so-called private mobile radio), an immediate priority should be a decision on designation of frequency bands as well as a time schedule for availability, for systems operating according to the European digital trunking standard (TETRA), which will gain major importance, inter alia, in the context of the implementation of the Schengen Agreement for communications between police forces and between public authorities.

VI Numbering

1 Beside radio frequencies, access to and allocation of numbers is an essential resource for both mobile network operators and service providers. The importance of this resource, and the potential bottle-neck it creates, will substantially increase with the evolution of mobile communications toward personal communications services.

14 A new approach to the coordination of radiofrequencies in the Community, Communication from the Commission concerning proposal for a Council Decision on the implementation by the Member States of measures concerning concerning radiofrequencies, COM(93)382, 10.9.93

15 See Annex D, section 4.

2 **Provisions for access to numbers and administration of numbering schemes have been set out in the proposed Directive on the application of Open Network Provision to Voice Telephony [16].**

By analogy with the application of basic principles of Open Network Provision to issues of access to radiofrequencies, the same principles should apply.

This implies, in particular, that numbers are allocated based on objective criteria, procedures must be transparent and published in an appropriate manner, must guarantee equality of access and be non-discriminatory.

3 **According to the provision of the proposed Directive on the application of Open Network Provision to Voice Telephony, Member States shall ensure that the control of national telephony numbering plans is the responsibility of National Regulatory Authorities. National Regulatory Authorities should ensure that national numbering plans, and all subsequent additions and/or amendments to them are published, subject only to limitations imposed on the grounds of national security, or privacy and data protection.**

4 **The basic approach to numbering planning, allocation and coordination has been set out in Council Resolution 92/C318/02 [17].**

By analogy with the basic approach in the field of radiofrequencies, Council Resolution 92/C318/02 requires, inter alia, that coordination of numbering schemes respect the principle of separation of regulatory and operational functions, while allowing account to be taken, in a timely manner, of the opinions of representatives of National Authorities concerned with network numbering schemes, network operators, service providers, industry, and users.

Council Resolution 92/C318/02 calls for the most efficient use of numbering space and indicates that Europe-wide mobile services are to be a high priority for the development of coordinated procedures for the management and allocation of telephony numbers from a European numbering space.

5 **Council Resolution 92/C318/02 defines the framework for coordination for numbering in Europe.**

The Resolution calls for the use of the mechanisms of coordination of the European Committee for Telecommunications Affairs (ECTRA) and requests the creation by ECTRA of a European Numbering Office (ENO), subject to allowing the opinions of all interested parties to be taken into account and involving the Commission as appropriate. In the meantime, ECTRA is creating a European Telecommunications Office (ETO), to be based in Copenhagen, which will include the numbering coordination function amongst its tasks.

In response, and mirroring the approach taken in the field of radiofrequencies, the Commission intends to conclude with the ECTRA/ETO a memorandum of understanding and a framework contract allowing work to be entrusted to these bodies to carry out the harmonisation of numbers and the creation of a common European numbering space, based on an appropriate legal basis which must ensure that Union interests are safeguarded.

6 **Council Resolution 92/C 318/02 also calls for common positions at ITU numbering fora.**

Common positions should in particular be developed with regard to the reform of the global numbering system, currently underway in the ITU. Preparation of common positions should take place in ECTRA/ETO, provided that safeguarding of Union interests is ensured.

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16 Proposal for a Council Directive on the application of Open Network Provision (ONP) to Voice Telephony (COM(92)247, 27.8.92). (Common Position adopted 1st July 1993).

17 Council Resolution of 19th November 1992 on the promotion of Europe-wide cooperation of numbering of telecommunications services (92/C 318/02 ; OJ C 318/2, 04.12.92).

7 In line with Council Resolution 92/C 318/02, global priority should be given in the European numbering coordination process to the creation of a European numbering space, with particular attention to the requirements for personal numbering.

8 An immediate priority should be harmonisation of current activities aiming at the reform of national numbering spaces, including issues of numbering for mobile communications purposes and for personal and portable numbers.

In this context, special attention should be paid to the harmonisation of access codes for mobile systems, for directory services, and for services of special public interest such as emergency and information services, as well as access codes of special relevance to the intelligent network environment This can build on the progress already achieved in the Union with the adoption of common emergency and international access codes.

VII Launching the evolution towards personal communications services

1 Personal communications services must be seen as services which ultimately will allow person-to-person calling, independent of location, the terminal used, the means of transmission (wired or wireless) and of the choice of technology. Personal communications services will be based on a combination of fixed and wireless/mobile services to form a seamless end-to-end service for the user.

2 To launch this evolution, and to allow current mobile services to move towards such a personal communications environment, the basic requirements are to remove initially, restrictions on the combination of multiple mobile technologies or services through a single service provider, and subsequently, to remove restrictions on the free combination of services provided via fixed and mobile networks.

3 In order to allow such development, mobile network operators, or independent service providers, should be allowed in a first phase to combine different mobile services, provided under different licences and/or on the basis of different technologies / standards.

No restrictions should be introduced into new licences in this regard and restrictions in existing licences should be lifted.

4 In a second stage, mobile network operators or independent service providers should be able to bid for licences for the provision of public voice via the fixed network, as those licences become available.

At the latest this should be in accordance with the schedule for full liberalisation of public voice services established in Council Resolution 93/C213/01, namely 1st January 1998, with additional transition periods of up to five years for Spain, Ireland, Greece, and Portugal, and, where justified, two years for Luxembourg, subject to the conditions which may be agreed for such licences concerning universal service obligations or sharing in the financing of such obligations, and subject to the Treaty competition rules, in particular Articles 85 and 86 and Council Regulation 4064/89.

5 In parallel and in order to give full opportunity for the development of personal communications services by existing public fixed network operators, such operators should not be prohibited ab initio from bidding directly or indirectly for licences for any mobile communications services.

Existing prohibitions on such bids should be abolished at the latest by the deadlines set for full liberalisation in Council Resolution 93/C213/01, namely, 1st January 1998, with additional transition periods for the Member States referred to in 4 above, subject to the Treaty competition rules, in particular Articles 85 and 86 and Council Regulation 4064/89.

6 **In order to prepare the mobile communications sector to play its role in the rapid transition towards a personal communications environment, Member States should allocate licences, in particular, for those technologies most suited for providing the wireless part of such services.**

In particular, Member States should allocate at least one licence for operating mobile systems according to the DCS-1800 standard, and allow for the development of micro-cellular extensions of current mobile systems licensed according to the GSM standard in the 900 MHz bands.

Member States should also allocate licences for so-called public access / telepoint applications, in particular, for systems operating according to the DECT standard.

7 **In order to promote the development of trans-European networks, in accordance with Article 129b of the Treaty, licences for future mobile communications systems directly impacting the development of such networks should be awarded, where required and most efficient, in a coordinated manner between Member States and/or at a Community level, taking due account of Member States interests and interest of existing licensees.**

In particular, and in accordance with the Council Resolution on the promotion of systems for satellite-based personal communications, including so-called Low Earth Orbit Satellites (LEOs) systems, licences for such future systems should be awarded at a Community level.

In order to maximise the potential of European developments in the field of the Universal Mobile Telecommunications Systems (UMTS), which can ultimately provide a unified and cost-efficient basis for personal communications services, licences for such future third generation services should, from the start, be awarded in the Community in a coordinated manner and/or at Community level.

Account should be taken of the need to ensure a smooth transition from the use of current technologies for the provision of personal communications services to the use of the UMTS technologies to provide such services in a more economic and universal manner, as well as of the need to take account of the specific situations in Member State and the interests of existing licensees.

MEASURES REQUIRED FOR IMPLEMENTATION

Building on the positions proposed and the analysis of the current situation and the measures to be taken, the range of action within the European Union to facilitate the achievement and smooth implementation of these goals is summarised below. In extending the existing telecommunications policy of the Union to the mobile communications sector the following measures can be anticipated :

■ MONITORING OF THE PROGRESS ACHIEVED IN THE INTRODUCTION OF COMPETITION IN THE SECTOR,

in order to implement the principles set out, and amendment of Directive 90/388/EEC [18] on competition in the markets for telecommunications services, where required in order to include those principles.

This would involve in particular :

- abolition of exclusive and special rights with regard to mobile and personal communications and replacement by licensing frameworks in line with conditions that are consistent with European Community law ;
- definition of criteria to guarantee that licence award procedures are carried out in an open, transparent, and non-discriminatory manner, in particular, in cases where there are justifiable technical limitations on the number of licences granted ;
- measures to ensure the necessary transparency between market participants, in particular, in cases where fixed network operators also operate mobile networks, and between the service provision function of mobile network operators and their other operations.

■ ADJUSTMENT OF THE OPEN NETWORK PROVISION FRAMEWORK

and amendment of Directive 90/387 /EEC [19], where required to include the principles set out in the positions. This concerns, in particular, adjustment of the scope of Directive 90/387/EEC, in order to ensure the general application of the principles of equality of access, transparency, non-discrimination and proportionality.

Such adjustment should be seen in the context of the general process of adaptation, called for by Council Resolution 93/C213/01 [20]

■ ACCELERATED APPLICATION OF MUTUAL RECOGNITION OF TYPE APPROVAL OF TERMINAL EQUIPMENT

and extension of Directive 91/263/EEC [21] to include mobile terminal equipment not capable of connection to the public network, which is currently outside its scope [22].

Accelerated application must include more rapid adoption of Common Technical Regulations (CTRs), in particular, for terminal equipment using new digital mobile technologies. CTR5 and CTR9, adopted in October 1993, will support the mutual recognition of type approval of terminal equipment using GSM technology, replacing the interim type approval based on NET10.

Accelerated application of Directives 91/263/EEC and 93/97/EEC should also include mutual recognition of terminal equipment on the basis of fulfilment of the essential requirements for those types of equipment for which CTRs have still not been adopted, in accordance with the procedures foreseen in the Directive and the principles of the Council Resolution on a New Approach to technical harmonisation and standards and the Communication on a Global Approach to Certification and Testing [23].

Further, establishment of interim-type approval procedures in the context of the European Radiocommunications Committee (ERC) should be encouraged in order

18 Commission Directive of 28th June 1990 on competition in the markets for telecommunications services (90/388/EEC ; OJ L192/10, 24.7.90)

19 Council Directive of 28th June 1990 on the establishment of the Internal Market for telecommunications services through the implementation of Open Network Provision (90/387/EEC ; OJ L192/1, 24.7.90)

20 Council Resolution of 22nd July 1993 on the review of the situation in the telecommunications sector and the need for further development in that market (93/C 213/01, OJ C213, 6.8.93)

21 Council Directive of 29th April 1991 on the approximation of the laws of the Member States concerning telecommunications terminal equipment, including the mutual recognition of their conformity (91/263/EEC ; OJ L128/1, 23.5.91)

22 as far as not covered by Directive 93/97/EEC

23 Council Resolution 85/C 136/01 of 7th May 1985, OJ C136/1, 4.6.85 and Communication of the Commission on a Global Approach to Certification and Testing of 15th June 1989, COM(89)209, OJ C267/3, 19.10.89.

to facilitate application of the Directive in the case set out above, where, in the absence of adopted CTRs, recognition is made on the basis of fulfilling the essential requirements.

■ DEVELOPMENT OF THE MUTUAL RECOGNITION OF LICENCES FOR THE OPERATION OF MOBILE COMMUNICATIONS NETWORKS, WHERE APPLICABLE

and adoption of a Directive for this purpose, including mechanisms for coordination of award and licensing procedures where appropriate in order to promote trans-European networks. This should concern, in particular, those cases where award on a first come-first served basis is appropriate, and therefore full mutual recognition, subject to availability of radiofrequencies, is possible, namely :

- satellite-based mobile communications networks. This situation will be covered by the proposed Directive for the mutual recognition of satellite service licences [24];
- terrestrial mobile communications networks in particular in border areas and in the case of mobile networks licenced for own use and for use by closed user groups (private mobile radio networks) ;
- mutual recognition of licences or class licences in those special cases, where the use of mobile terminal equipment may be subject to licensing, in conformity with Community law.

Coordination of award and licensing procedures between National Regulatory Authorities and/or at Community level should include licensing of experimental systems for services and technologies with Europe-wide needs, in particular, in relation to the creation of trans-European networks.

■ ESTABLISHMENT OF A EUROPE-WIDE CODE OF CONDUCT FOR SERVICE PROVIDERS

to identify on the basis of voluntary undertakings, appropriate principles to safeguard compliance with essential requirements as well as standards with regard to permanence, availability, and quality of service, and establishing guidelines concerning technical, financial and commercial practices in the sector [25], consistent with competition rules and respecting the need for a high level of consumer protection.

■ COMPLETION OF THE FRAMEWORK CONCERNING THE NEW APPROACH TO THE COORDINATION OF RADIOFREQUENCIES IN THE COMMUNITY [26]

in line with Council Resolution 90/C166/02 as complemented by Council Resolution 92/C318/01 [27], aiming at promoting close cooperation with the European Radiocommunications Committee (ERC) / European Radiocommunications Office (ERO) and recognising the role of ERC Decisions as the primary method of ensuring the provision of the necessary frequencies, while safeguarding the Union's interests.

Major elements of such a framework should be the conclusion of a Memorandum of Understanding and a Framework Contract allowing work to be entrusted to these bodies to elaborate common frequency bands, once an appropriate legal basis for such cooperation has been put in place.

■ CREATION OF A FRAMEWORK CONCERNING COORDINATION IN THE FIELD OF NUMBERING

reflecting the approach taken in relation to the coordination of radiofrequencies set out above. In line with Council Resolution 92/318/02 [28], such a framework should foresee close cooperation with the European Committee for Telecommunications Regulatory Affairs (ECTRA) / European Telecommunications Office (ETO), which is currently in the process of establishment. Major elements should be the conclusion of a Memorandum of Understanding and a Framework Contract allowing work to be entrusted to these bodies, with the primary objective of creating a European numbering space and undertaking necessary coordination of national num-

24 Proposal for a Council Directive on a policy for the mutual recognition of licences and other national authorisations for the provision of satellite networks services and/or satellite communications services (to be published)

25 Such guidelines could include measures designed to alleviate fraud.

26 A new approach to the coordination of radiofrequencies in the Community, Communication from the Commission concerning proposal for a Council Decision on the implementation by the Member States of measures concerning radiofrequencies, COM(93)382, 10.9.93

27 Council Resolution of June 1990 on the strengthening of the Europe-wide co-operation on radio frequencies, in particular with regard to services with a pan-European dimension (90/C 166/02 ; OJ C166/4, 7.7.90) and Council Resolution of 19th November 1992 on the implementation in the Community of the European Radiocommunications Committee decisions (92/C 318/01 ; OJ C318/1, 04.12.92).See also Council Conclusions of 7th December 1993.

28 Council Resolution of 19th November 1992 on the promotion of Europe-wide cooperation of numbering of telecommunications services (92/C 318/02 ; OJ C318/2, 04.12.92).

bering reforms, in particular, with regard to personal numbering.

ENSURING PROTECTION OF PERSONAL DATA AND PRIVACY IN THE CONTEXT OF DIGITAL MOBILE COMMUNICATIONS NETWORKS

and adopting in this context the proposed General Data Protection Directive and the proposed specific Directive on protection of privacy in the digital network environment [29]. This would strengthen the protection of personal data and privacy in the context of both fixed and mobile digital network services.

A central feature of the new environment must be maintaining privacy, in particular with regard to the handling of subscriber and call data, and the use of intelligent network services provided via fixed and mobile networks.

Major issues are the safeguarding of confidentiality of communications during transmission via radio links, automatic registration of the subscribers location in the data bases required for locating the position of subscribers in the cells of mobile cellular systems, as well as for the operation of intelligent network services.

This will be indispensable to safeguard public confidence in the future personal communications environment.

ACTION LINES FOR THE DEVELOPMENT OF A FAVOURABLE ENVIRONMENT

A number of action lines should be followed to draw maximum benefit from the proposals.

These action lines aim at :

- safeguarding the public interest within the sector.

This addresses the concerns over user safety. It also involves meeting the environmental issues which are fundamental to public acceptance of the future developments in the sector.

Finally, it concerns interconnection and interoperability which are essential preconditions to promoting market developments in a competitive environment ;

- ensuring optimum use of the basic resources needed by the sector, by agreeing on clear priorities both for coordination of radiofrequencies and for numbering, as well as supporting work towards these objectives ;

- promoting market and service development in the sector, in particular, through the development of trans-European networks and the promotion of mobile technologies in the less favoured regions, as well as in Central and Eastern Europe ;
- strengthening the position of European industry, operators and service providers by ensuring access to third country markets and re-inforcing Europe's position in advanced digital mobile technologies, in the transition towards the future Universal Mobile Telecommunications System.

These action lines should be carried out by the Union in cooperation with relevant organisations, in particular, the European Committee of Telecommunications Regulatory Affairs (ECTRA) and its future European Telecommunications Office (ETO) ; the European Radiocommunications Committee (ERC) and the European Radiocommunications Office (ERO) ; the European Telecommunications Standards Institute (ETSI) and the European Committee for Standardisation and Electrotechnical standardisation (CENELEC). Such cooperation should be on the basis of agreed procedures. Where appropriate, it could extend to the Memoranda of Understanding established by operators and/or equipment companies.

ENSURING SAFETY AND SAFEGUARDING ENVIRONMENTAL CONCERNS IN THE FUTURE MOBILE AND PERSONAL COMMUNICATIONS ENVIRONMENT.

Central issues which must be addressed are electromagnetic compatibility and the potential for health hazards through exposure to electromagnetic radiation. The

29 Amended proposal for a Council Directive on the protection of individuals with regard to the processing of personal data and on the free movement of such data, COM (92) 422, 15.12.92 («the general data protection directive») and the forthcoming modified Proposal for a Council Directive concerning the protection of personal data and privacy in the context of public digital telecommunications networks, in particular the Integrated Services Digital Network (ISDN) and public digital mobile networks (to be published).

Commission proposes setting in motion a comprehensive action programme to accelerate necessary safety standards, as well as providing general guidance in this field. This must involve in particular :

- rapid establishment of Europe-wide safety standards concerning thermal effects of radiation, in accordance with the mandate agreed with CEN-CENELEC for establishing European standards in this field, based on Directives 91/263/EEC and 93/97/EEC [30], 73/23/EEC [31], and 89/336/EEC [32] ;

- preparation of a work programme for the development of European standards and assessment of related activities and research on so-called athermal effects, based on existing CEN-CENELEC mandates ;

- integration of other research activity, in particular, the on-going work in the COST-framework ;

- monitoring of potential problems of electromagnetic compatibility encountered with other electrical equipment, such as hearing aids, heart pace makers, car-ABS-systems, and cable systems ; issuing of mandates to CEN-CENELEC to establish appropriate European standards for enhancing protection, where required and to the extent not covered by existing mandates.

- rapid integration of European standards in this field into TBRs (Common Technical Basis for Regulation), and CTRs (Common Technical Regulations) used in approval of mobile or related equipment.

In order to reduce overall electromagnetic exposure, low power emission characteristics, in particular for hand-held equipment, should become an important criterion in future standards development, systems design and systems deployment.

In order to safeguard the environment and to take account of town planning issues, standards should be designed to allow sharing of sites and radio infrastructure.

The Commission proposes to give special attention to these aspects in future standardisation mandates to the European Telecommunications Standards Institute (ETSI) and to CEN-CENELEC, as well as in the preparation of positions in the international standardisation fora.

PROMOTING STANDARDISATION TO ENSURE INTERCONNECTION AND INTEROPERABILITY,

both through the timely definition of interfaces and through facilitating mutual recognition of type approvals for mobile terminal equipment.

As regards interconnection and interoperability, an environment for future open interconnection of systems requires substantial progress in the definition of European standards. The standards should specify the most essential interfaces, while leaving flexibility for innovative approaches.

According to the studies undertaken, this should particularly concern :

- the interface between mobile networks and fixed network infrastructure, as far as not covered by the current standards work ;

- the interfaces, functionalities, and service elements made available by mobile network operators to independent Service Providers ;

- the interfaces made available to access the intelligent functionalities of the public fixed network(s) ;

- the interfaces to be offered to mobile networks operated for own use or for use by a closed user group (private mobile networks) to allow interconnection with the public fixed network(s) ;

- interfaces allowing direct interconnection of mobile networks based on either the same or different technologies.

The Commission intends to initiate a programme of standardisation mandates to

30 Council Directive of 29th April 1991 on the approximation of the laws of the Member States concerning telecommunications terminal equipment, including the mutual recognition of their conformity (91/263/EEC ; OJ L128/1, 23.5.91)Council Directive of 29 October 1993 supplementing Directive 91/263/EEC in respect of satellite earth station equipment (93/97/EEC; OJ L290/01, 24.11.93)

31 Council Directive of 19th February 1973 on the harmonisation of the laws of the Member States relating to electrical equipment designed for use within certain voltage limits (73/23/EEC ; OJ L77/29, 26.3.73)

32 Council Directive of 3rd May 1989 on the approximation of the laws of the Member States relating to electromagnetic compatibility (89/336/EEC , OJ L139/19, 23.5.89), and Council Directive of 28th April 1992 amending Directive 89/336/EEC on the approximation of the laws of the Member States relating to electro-magnetic compatibility (92/31/EEC ; OJ L126/111, 12.05.92).

ETSI to accelerate the definition of standards in this area. This will be based on, and will complement, current work within ETSI and within the various Memoranda of Understanding formed by mobile network operators and/or manufacturers for systems implementation.

As regards facilitating mutual recognition of type approvals, work should concentrate on :

- accelerating establishment and completion of standards in ETSI concerning the new digital technologies, in particular :
  - enhanced features of the GSM system, for both voice and data, and for DCS-1800 ;
  - DECT, Digital Cordless Telecommunications ;
  - TFTS, Terrestrial Flight Telecommunications System ;
  - ERMES, the pan European digital paging system ;
  - Mobile data ;
  - TETRA, the European digital trunking system ;
  - DSRR, Digital ShortRange Radio ;
  - Wireless LANs and wireless PABX ;
  - Satellite-based mobile and personal communications systems.
- rapid transposition of relevant parts of the respective standards into TBRs and CTRs ;
- stepping up support to conformance testing, validation, and setting up of accredited test laboratories in this area. This will take place in the context of existing Community programmes [33].

Accelerating the definition of interfaces and supporting the necessary steps for rapid mutual recognition of type approval in the key future mobile technologies is a pre-condition for realisation of the market's full potential. It is also the basis of the implementation of an open environment according to the principles of Directive 90/387/EEC [34] and implementation of Community-wide type approval according to Directives 91/263/EEC and 93/97/EEC [35].

The Commission intends to accord high priority to these objectives in its standardisation mandates to the European Telecommunications Standards Institute and to maintain close contacts in these matters, in particular, with ETSI TC SMG (Technical Committee, Special Mobile Group), TC RES (Technical Committee, Radio Equipment Standardisation), and TC SES (Technical Committee, Satellite Earth Stations, which also deals with mobile satellite-based terminals).

SETTING PRIORITIES FOR FREQUENCY COORDINATION RELATED TO MOBILE AND PERSONAL COMMUNICATIONS.

As set out in the positions, the major priorities of the Union for radiofrequency coordination for mobile communications reflect the requirement for the full and coordinated implementation of the decisions taken at the World Administrative Radio Conference at Torremolinos, 1992 (WARC'92).

At the same time, a number of short term bottle-necks in frequency allocation must be lifted to allow market development within the Union.

The Commission proposes therefore the following main priorities :

- specific action :
  - agreement on frequency bands for DCS-1800 in the Union and replacement of the current ERC Recommendation by an ERC Decision, including firm allocation schedules ;
  - establishment of an ERC Decision for the allocation of harmonised bands and sufficient frequency resources for the digital mobile trunking system (TETRA), including firm allocation schedule ;
  - within the implementation of the WARC'92 decisions, establishment of an ERC Decision concerning frequency bands for satellite-based personal communications systems (including so-called Low Earth Orbit (LEO) satellite systems).

33 In particular the Community's programme for supporting conformance testing (CTS programme)
34 Council Directive of 28th June 1990 on the establishment of the Internal Market for telecommunications services through the implementation of Open Network Provision (90/387/EEC ; OJ L 192/1, 24.7.90)
35 Council Directive of 28th April 1991 on the approximation of the laws of the Member States concerning telecommunications terminal equipment, including the mutual recognition of their conformity (91/263/EEC ; OJ L 128/1, 23.5.91), and Council Directive of 29th October 1993 supplementing Directive 91/263/EEC in respect of satellite earth station equipment (93/97/EEC ; OJ L 290/1, 24.11.93).

- global objective :

  • early designation and schedule of allocation for the bands set aside at WARC'92 for the future Universal Mobile Telecommunications System (UMTS) / Future Public Land Mobile Telecommunications System (FPLMTS) in the 1885 - 2025 and 2110 - 2200 MHz range.This should provide overall certainty for future sectoral developments in the Union.

The Commission intends to follow closely full implementation by the Member States of decisions in these priority areas as well as of Council Directives 87/372/EEC, 91/287/EEC, and 90/544-/EEC concerning frequency allocation for the Global System for Mobile Communications (GSM), Digital European Cordless Telecommunications (DECT), and the pan-European digital paging system (ERMES), as well as existing ERC Decisions such as the ERC Decision for the Terrestrial Flight Telephone System (TFTS), which should provide the basis for rapid introduction of public aeronautical correspondence services in the Union, and the ERC Decision on Digital Short Range Radio (DSRR).

■ INITIATING COORDINATION OF NUMBERING AND WORKING TOWARDS A EUROPEAN NUMBERING SPACE FOR PERSONAL COMMUNICATIONS.

As set out in the positions, the creation of a European numbering space is the key to the viable implementation of a personal communications environment in the Union.

At the same time, a number of immediate steps can be taken to facilitate the development of mobile communications.

The Commission therefore proposes the following main priorities in the coordination of numbering for mobile and personal communications :

- specific action :

  • harmonisation in the framework of ECTRA/ETO, and in close contact with ETSI and the respective MoUs set up for system implementation, of access codes for mobile systems ;

  • harmonisation of access codes for directory services ;
  • harmonisation of principles for allocation of numbers and number ranges of access codes for Service Providers or for special service features ;
  • harmonisation of access codes to emergency services, as far as not covered by Council Decision91/396/EEC [36], and other services of special public interest ;
  • harmonisation of access codes of special relevance to the intelligent network environment.

- global objective :

  • rapid creation of a European numbering space, as the only viable long-term base for personal and portable numbers and Europe-wide personal communications, in line with Council Resolution 92/C 318/02 [37]. This should be based on preparation by ECTRA and should use the opportunity for profound reform offered by the global reform of the world numbering system currently underway in the International Telecommunications Union.

The Commission intends to follow closely full implementation by the Member States of decisions in these priority areas.

■ FACILITATING THE DEVELOPMENT OF TRANS-EUROPEAN NETWORKS BASED ON MOBILE AND PERSONAL COMMUNICATIONS TECHNOLOGIES,

as well as their use to support the development of telecommunications in the less favoured regions, and in the countries of Central and Eastern Europe.

The development of Europe-wide mobile operations has been substantially assisted in the past by conclusion of Memoranda of Understanding between operators and/or manufacturers in key mobile system development areas. Examples include the MoU concerning introduction of GSM, and in relation to ERMES, telepoint services and more recently TFTS. In a number of cases, these MoUs have been extended to cover both EFTA countries and countries in Central and Eastern Europe and have sometimes extended beyond Europe.

36 Council Decision of 29th July 1991 on the introduction of a single European emergency call number (91/396/EEC ; OJ L 217/31, 6.8.91).

37 Council Resolution of 19th November 1992 on the promotion of Europe-wide cooperation on numbering of telecommunications services (92/C 318/02, OJ C318/2, 4.12.92).

This cooperation in the introduction of such mobile systems should be further encouraged.

The provisions of the Treaty concerning trans-European networks now present the opportunity to make a further step in promoting such cooperation through the establishment and development of such networks. According to the Treaty, particular account will be taken of the need to link peripheral regions with central regions of the Union. Furthermore cooperation may be extended to third countries to promote projects of mutual interest and to ensure the interoperability of networks. The Commission has proposed guidelines identifying projects of common interest in other telecommunications fields. It is proposed that in the field of mobile and personal communications priority should be given initially to the establishment of trans-European networks based on satellite-based personal communications including so-called Low Earth Orbit (LEO) satellite systems.

This should include, together with the Member States and the sector, the establishment of guidelines identifying projects of common interests, and identifying projects of mutual interest with third countries.

Further, special attention should be given to provision of telematics applications via mobile networks/services, in fields such as transport, health care, education and training where the use of mobile communications offer flexibility for new applications.

■ ELABORATING COMMON COMMUNITY POSITIONS WITH REGARD TO THIRD COUNTRIES AND ENSURING MARKET ACCESS TO THOSE COUNTRIES,

in order to ensure the Union's full contribution to the global development of mobile and personal communications and equivalent market access for European equipment industry players, network operators and service providers.

Main objectives should be :

- Common Community positions in the international fora where the major future standards, frequency, and numbering decisions will be taken.

This concerns coordination in the International Telecommunications Union and its World Radio Conferences, and with committees and working groups in the respective standards and numbering fields ;

- development of common procedures with regard to trade and circulation of services and equipment to/from third countries in line with any agreements by the European Union with those countries and based on the principles of the GATT ;

- Common Community positions on issues having a direct impact on trade and Community exports in this field, such as issues related to intellectual property rights, on restrictions on exports of encryption techniques and other sensitive technologies ;

- Common Community positions with regard to obtaining equivalent market access to third country markets, taking account of the Union's commitments on a multi-lateral or bilateral basis.

■ CONTINUING SUPPORT FOR THE EVOLUTION TOWARDS THE UNIVERSAL MOBILE TELECOMMUNICATIONS SYSTEM,

as a common future basis for personal communications.

The Universal Mobile Telecommunications System (UMTS), currently under development in Europe, aims at ultimately providing a unified cost-efficient basis for personal communications services.

It is proposed that :

- the Community continues its support for UMTS developments through its research programmes in the field of communications technologies, in the context of its R&D Framework Programme and by promoting telematics applications on UMTS. ;

- substantial support is provided to ETSI's Special Mobile Group (SMG). SMG is working on standards in this area and preparing a European position for the standardisation sector of the International Telecommunications Union which is dealing with this area under the title

Future Public Land Mobile Telecommunications System (FPLMTS) ;

- work in this area builds on European strength in current digital mobile technologies, in particular DCS-1800, GSM, and DECT. At the same time flexibility with regard to certain features must be maintained such as future coding techniques used for the air interface, depending on the outcome of comparative research currently being carried out in the framework of the Community's research and technological development programme ;

- the satellite component of UMTS should be carefully investigated, in view of the current proposals for satellite-based personal communications;

- whichever detailed options are finally chosen, care should be taken to ensure a smooth transition from the use of current technologies to UMTS technologies.

European Commission

Overview of the Green Paper on mobile and personal communications and extract of the positions proposed

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