

# COMMISSION OF THE EUROPEAN COMMUNITIES

COM(89) 166 final - SYN 193

Brussels, 5 June 1989

Proposal for a  
COUNCIL RECOMMENDATION COM(89) 166 final  
ON THE COORDINATED INTRODUCTION OF PAN-EUROPEAN LAND-BASED  
PUBLIC RADIO PAGING IN THE COMMUNITY

and

Proposal for a  
COUNCIL DIRECTIVE COM(89) 166 final - SYN 193  
ON THE FREQUENCY BANDS TO BE RESERVED FOR THE COORDINATED INTRODUCTION  
OF PAN-EUROPEAN LAND-BASED PUBLIC RADIO PAGING  
IN THE COMMUNITY

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(presented by the Commission)

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## A. SUMMARY

Radiopaging provides a means by which a person can be contacted using radio. The person carries a small lightweight radio receiver which responds to a unique signalling code. Provided the person is within radio range, this receiver, on receipt of a radio signal containing that code, will emit a bleeping sound or other signal which will alert the wearer that he is being paged.

In addition to a simple tone alert, information in the form of numbers or alphanumeric characters can also be transmitted. More advanced current systems allow up to 90 alphanumeric characters to be transmitted, with storage and recall of as many as five 90 character messages.

Alphanumeric message paging, which is a selective one way data messaging facility, is known as "display paging". Messages may be sent in one of two ways ie. through bureau operators or directly via special customer terminals, telex, electronic mail, videotex, etc.

A number of radio paging systems are currently available in Member States but these systems are, in general, incompatible, using different frequencies and signalling codes. Citizens of the Community who use the system provided in their home state cannot use services provided in other states unless they subscribe separately to those services.

The Group for Analysis and Forecasting (GAP) - sub group of the Senior Officials Group for Telecommunications (SOG-T) has identified paging as a service whose harmonisation is necessary and recognised that a future harmonised European radiopaging system is needed around 1990.

The potential market for radio paging services in Europe is very substantial offering considerable opportunities to equipment manufacturers, network operators and users. This potential can be realised by the timely and coordinated establishment of a pan-European radio paging system in the Community, and the Commission is proposing the following instruments in order to meet this objective :

- a Council Recommendation on the coordinated introduction of the service.
- a Council Directive on the frequencies to be reserved for the service.

The proposed Recommendation and Directive will:

- initiate the transition from the present incompatible systems to an advanced, harmonised, Community-wide radio paging system which will provide a broader range of paging services at reasonable cost;

- contribute to the economic well-being of users and businesses through increased mobility and efficiency made possible by the Community-wide availability of advanced radio paging services;
- benefit manufacturers by opening up a European-wide market, enabling them to gain the benefits of volume production, namely reduced costs and increased competitiveness in world markets;
- benefit network operators by substantially increasing business opportunities.

## B. EXPLANATORY MEMORANDUM

### 1. INTRODUCTION

#### 1.1. Background

With its recommendation of 12th November 1984 [1], the Council confirmed the need for the introduction of telecommunications services from 1985 onwards "on the basis of a common harmonised approach". Shortly afterwards, on 17 December 1984, the Council approved the main objectives of a Community telecommunications policy [2] of which a major aim is speeding the development of advanced telecommunications services and networks in the Community.

In accordance with this aim, the Group for Analysis and Forecasting (GAP) has investigated the current state and future potential of pan-European mobile communications, including radiopaging, in the Community. The GAP report recognises that existing radio paging services in Europe are incompatible and that a harmonised European system which could be introduced around 1990 is needed. GAP therefore recommends that Telecommunications Administrations agree on the use of the same frequencies, a more advanced code and common radio interface by 1990, and establish a common position on tariff matters, numbering schemes, mutual accounting and the unrestricted circulation of terminals [3].

This Communication and the proposed Recommendation and Directive are based on the conclusions contained in the GAP report which SOG-T has endorsed.

Furthermore the Commission's Communication to the Council on mobile communications [4] and the Council Recommendation on the coordinated introduction of digital cellular radio [5] stated that the Commission would submit

further proposals in relation to radio paging.

For its part, the European Parliament has requested that the current general incompatibility of mobile communications systems be resolved and that work towards Community-wide mobile communications be undertaken [6].

Finally the European Conference of Postal and Telecommunications (CEPT) has charged its Radio Equipment Specifications Sub-Working Group 4 (RES 4) with specifying a pan-European paging system for introduction at the end of 1991. The work of CEPT RES 4 has now transferred to the European Telecommunication Standards Institute (ETSI).

## 1.2 The present state of radio paging services in the Community

Paging in Europe has developed in an uncoordinated manner in response to national needs. Most existing systems use different signalling standards and frequencies although some use the same code - see Table 1 - and (with the exception of Eurosignal in France, Federal Republic of Germany (FRG) and Switzerland) do not permit international roaming (ie. the ability to enjoy continuity of radio paging service, whilst carrying the same receiver, when crossing national boundaries). Eurosignal was specified by the CEPT but was introduced only in France, FRG and Switzerland. Eurosignal has not proved attractive due not only to the size and the cost of the receiver, but also because it cannot support display paging. Eurosignal will be phased out in France by 1990 and at a later date in the FRG .

This lack of standardisation has fragmented the European market. This fragmentation of the market, and the lack of competition has resulted in unnecessarily high receiver costs. A recent study carried out for the Commission [7] revealed that in the UK, where extensive use of a standard code is made and considerable competition exists, receiver costs are the lowest in Europe. For example, tone-only paging receiver retail prices in the UK are as low as 106 ECU compared with 776 ECU for Eurosignal and 217 ECU for Alphapage in France. Numeric pager retail prices in the UK are 214 ECU compared with 720 ECU for the Swedish MBS service.

The piece-meal development of paging, the multiplicity of incompatible systems and the resulting fragmentation of the market in Europe have led to a lower use of the service compared to the USA or Japan. Table 2 shows the percentage penetration of paging in terms of the working population in most European countries, as well as the

USA and Japan. From this, it can be seen that the USA and Japan have achieved respectively about seven and five times the paging penetration of Europe as a whole and more than twice the penetration of the UK which is the most advanced paging market in Europe. Europe has led the world in paging technology - POCSAG, Message paging etc. - but European manufacturers, network operators and users have not obtained the maximum benefit from the European paging market.

## 2. THE POTENTIAL MARKET FOR RADIO PAGING IN THE COMMUNITY

### 2.1 Market Study Findings

Studies undertaken for the Commission on the market requirements for pan-European paging up to the year 2000 and the means of satisfying them [7] indicate that :

- i) the installed base for pagers is projected to rise progressively from 1.3 million in 1987 to over 13 million by the year 2000 - see **Figure 1a**;
- ii) this represents a yearly market value for paging receivers rising from 115 M ECU in 1988 peaking to 415 M ECU in 1995 and settling to 350 M ECU in the year 2000 - see **Figure 1b**;
- iii) the yearly revenue earning potential to European paging operators, based on current prices and the forecast market is estimated to rise from 748 M ECU in 1988 to 5720 M ECU in the year 2000;
- iv) the proportion of customers requiring roaming facilities is projected to grow to about 5% of the total, representing at least 650,000 users by the year 2000.

### 2.2 Market opportunities

The coordinated introduction of advanced pan-European paging would create a large, homogeneous market making low cost paging receivers possible. This in turn would open up further opportunities for extending the potential customer base for radio paging to include, for instance, small businesses and domestic use. Possible small business users include plumbers or appliance repairers who are essentially mobile and need a low cost, wide area mobile communication system which is not generally available at present. Paging, although one way, could satisfy this need. Moreover, studies have shown that among users of private mobile radio, as much as 70% of

messages are one way from base to mobile. Paging could meet this need also; if an acknowledgment is necessary, public telephones are readily available. There is also a latent domestic market which needs to be stimulated; possible applications include the "kiddiepager" providing a means for a parent to call a child home, and babysitters sending emergency messages to parents.

### 2.3 Conditions favouring the growth of radio paging in Europe

To date, radio paging growth in Europe, whilst satisfactory, has been constrained by a number of factors. These include outmoded systems, lack of capacity and high prices. Moreover, the growth of display paging has in particular been hampered by the shortage of access facilities such as suitable customer keyboard terminals.

Display paging is, however, becoming more widely available. Services have recently been introduced in France and FRG and are scheduled for introduction in Ireland, Belgium, Spain and Greece within the next two years.

These developments are expected markedly to improve the prospects for radio paging growth throughout Europe. For instance, in France where until recently only Eurosignal has been available, the market has been somewhat static. However, the introduction of two new services, offering message paging at lower prices is stimulating growth, with considerable migration being anticipated from existing systems.

There will also be positive developments for radio paging in relation to Telepoint (or Phonepoint) services. Telepoint is a service which enables users of cordless telephones to make calls within about 200 meters of receiver points (usually located at airports, railway termini, etc). Radio paging could be associated with Telepoint, providing an alert to the Telepoint customer who could then use his cordless telephone to respond. A frequency is likely to be made available for Telepoint at a future competent World Administrative Regional Conference, which would fit in well with initiatives regarding pan-European radio paging.

### 3. **POTENTIAL BENEFITS OF PAN-EUROPEAN RADIO PAGING**

A recent survey revealed unanimous agreement among European manufacturers that a pan-European paging system would provide a major business opportunity and would confer the following benefits:-

- i) increased potential market volumes which would encourage the use of more advanced technology by manufacturers to make pagers more competitive in

world markets;

- ii) a spur to the development of a new, more advanced paging code, superseding the present recommended standard code, POCSAG - necessary since the forecast demand for pan-European paging will exceed the capacity of POCSAG. This will provide more advanced facilities and make more efficient use of radio frequencies;
- iii) an opportunity to acquire expertise in international network paging operations. This and the availability of competitively priced paging equipment and receivers could lead to volume export sales.

#### **4. CEPT INPUT TO PAN-EUROPEAN RADIO PAGING**

RES-4 of CEPT (ETSI/RES/RES4 since 1 November 1988) has been charged with specifying a pan-European paging system for introduction at the end of 1991. Thirteen administrations, including eight Member States, are actively supporting this development as is the European manufacturing industry through ECTEL, its collective forum. The system is called European Radio MESSaging System (ERMES) and it will operate within the 169MHz frequency band using 25KHz radio channels.

RES-4 are specifying a new paging code, a faster signalling method including modulation, services and facilities, network infrastructure, user access interfaces, etc. It is CEPT's intention that the new paging code will eventually supercede POCSAG as the CCIR - recommended standard code for international paging world-wide.

It is clear from the Commission's consultations with manufacturers and network operators that the RES-4 time-scale for the introduction of ERMES is reasonable and achievable. ECTEL have moreover confirmed that equipment can be made available in the time-scale envisaged.

#### **5. MATTERS RELEVANT TO THE DEVELOPMENT AND TIMELY IMPLEMENTATION OF A HARMONISED PAN-EUROPEAN PAGING SERVICE**

There is general support for pan-European radio paging and much work has already been done, particularly by RES-4, to make it a reality.

It is essential however, that the momentum which has built up so far is maintained and that particular attention is paid to the following matters :-

- i) the reservation and timely release of sufficient common frequencies necessary to provide for the service's introduction and growth towards the year 2000;



- ii) the evolution of current national systems and, in particular, the introduction and future expansion of interim systems;
- iii) the timely completion of the ERMES specification;
- iv) the timely availability and provision of equipment by manufacturers.

#### 5.1 Availability of radio frequencies

A prerequisite of a pan-European radio paging service is the availability of common frequencies. RES4 has calculated that ERMES will require sixteen 25kHz radio channels up to the year 2000 - a total frequency requirement of 400 kHz. Member States will have varying difficulty in clearing channels for the ERMES system, and some will have less incentive following the recent introduction of interim radio paging systems. The coordinated and timely availability of the necessary common frequencies is vital, however, if a harmonised system is to be introduced.

#### 5.2 The evolution of current national systems

The timely and coordinated introduction of ERMES within Member States is essential for the success of pan-European paging. The year 1991/92 represents a crucial window of opportunity; failure to take full advantage of it may effectively preclude for all time the introduction of a harmonised system in Europe.

Delay will in any case have serious implications for manufacturers. ERMES represents an opportunity to create a mass market, so reducing manufacturing costs. It is essential that it is introduced at the earliest opportunity, hastening the achievement of the necessary "critical mass" in volume production which will reduce costs and, in turn, prices.

The prospects for timely and unified introduction of ERMES do not appear good without action at Community level. Paging is at sharply differing stages of development in Member States and **Table 3** provides an indication of the likely implementation dates for ERMES if no action is taken at Community level. Of the four largest Member States, the UK, Italy and France are likely to implement the system by 1991/2 and FRG after 1993. One likely reason that some Member States are planning to introduce ERMES between 1993 and 1995, rather than 1991/2, is that these Member States are now introducing interim systems operating in the 466MHz UHF band.

However, it is likely that, if growth in these countries continues at the present rate, the UHF channel assigned to these interim systems will be saturated before 1991. This

proposition is based on experience in the UK where a single radio channel supports between 15,000 and 20,000 message pagers.

Moreover, the planned introduction of competition in the provision of radiopaging services in FRG and France is likely further to stimulate demand and accelerate growth. The introduction of ERMES will therefore be justified in 1991/2 in the light of conservative growth forecasts even in countries where interim systems are being introduced.

### **5.3 The timely completion of a single system standard**

Harmonisation implies use of a single standard. The ERMES specification will cover all aspects of the system and a time-table for the various parts of the specification has been produced by RES-4 in consultation with the Commission. A critical path of activities has been identified which is achievable in practice and is acceptable to the manufacturing industry. Member States should accept and agree on each and every stage of the specification production process and ensure that the time-scales on the critical path are adhered to so that progress towards the introduction of ERMES can be maintained.

### **5.4 The timely provision of equipment by manufacturers**

Manufacturers should continue to monitor closely the work of RES-4 as they do at present through the auspices of ECTEL and must gear themselves to manufacture equipment against the RES-4 specification in the shortest possible time-scale.

## **6. NEED FOR COMMUNITY ACTION TO ENSURE THE TIMELY INTRODUCTION OF ERMES**

Community action is necessary to maintain progress in the areas described above and in particular to ensure :-

- i) the timely completion of the ERMES specification;
- ii) the coordinated introduction of ERMES according to a strict timetable;
- iii) the timely availability of the necessary common frequencies in sufficient quantities.

## **7. THE AIM OF THE PROPOSED RECOMMENDATION**

A Council Recommendation is seen as a necessary encouragement to all parties involved in establishing pan-European radio paging to continue to use every endeavour to ensure its timely introduction.

The proposed Recommendation on the Coordinated Introduction of pan-European land-based public paging in the European Community thus aims to focus the activities of Member States, Telecommunications Administrations and manufacturers on the completion of the actions necessary to the development, introduction and progressive extension of pan-European radio paging. A brief overview of these actions is given in Table 4A.

The Recommendation follows on from the expert conclusions and recommendations of the Telecommunications Administrations within the framework of GAP, and the consultations within SOG-T. The general provisions of the Recommendation have been discussed with RES-4 and industry, and wide agreement has been reached.

The Recommendation addresses in particular the following :-

- the choice of transmission system and network interfaces which should be exercised so as to maximise business opportunities for all concerned;
- commencement of service from January 1992 at the latest. A firm commitment to the coordinated European-wide introduction of ERMES is essential for the credibility of a pan-European system the transition to which users, network operators, and manufacturers can plan and implement with confidence;
- progressive extension of service coverage from the commencement of service in January 1992 such that at least 80% coverage of the population of each Member State will be achieved by January 1995.

The necessary capital investment for the implementation of pan-European radio paging will largely fall to the network operators who, together with users and manufacturers, will derive major commercial benefits from the service. However, it is recognised in the Recommendation that the Community's financial instruments could play a role in the establishment of this major Community wide infrastructure. For example, for certain less-favoured regions of the Community, assistance in this effort could be provided by a special programme, in accordance with the agreed objective of improved access for these regions to advanced mobile communications services and networks.

The Recommendation is proposed on the basis of Article 235 of the Treaty.

#### **8. THE AIM OF THE PROPOSED DIRECTIVE**

The availability of sufficient common radio frequencies is the indispensable resource requirement for ERMES. CEPT has identified the frequency band 169.4-169.8MHz

as being suitable for ERMES.

However, these frequencies must be made progressively available in all Member States in a coordinated manner and at the appropriate time. An overview of the frequency requirements for ERMES is given in Table 4B. As indicated previously, certain Member States are using some of these frequencies for other services.

There is a possibility that these frequencies may not be available when they become necessary for the introduction of ERMES. Therefore Community action is necessary to ensure their timely availability. This is the primary aim of the proposed Council Directive on the frequencies to be reserved for the coordinated introduction of pan-European public radio paging in the Community. The Directive is proposed on the basis of Article 100a of the Treaty.

#### 9. PROPOSED ADDITIONAL COMMUNITY ACTIONS

The following additional Community actions are proposed to accelerate the development and introduction of pan-European paging :-

- the Commission will give high priority to the question of the paging receiver specification having regard to the Directive on initial stage of mutual recognition of telecommunications equipment type approval [8] and the drawing up of the appropriate NETS [9]. This will facilitate international roaming and promote the European market for paging receivers.
- the Commission will ensure the strict application in this area of Council Directive 83/189/EEC, laying down a procedure for the provision of information in the field of technical standards and regulations and of the Council Decision 87/95 on standardisations in the field of information technology and telecommunications.
- the Commission will investigate together with the telecommunications administrations and the customs authorities the necessary measures for ensuring the free circulation and unrestricted usage of paging receivers within the Community in advance of 1992. The Commission's Green Paper identifies the provision of efficient harmonised Europe-wide communications, as an important element in the development of a common market for telecommunications services and equipment [10]. The Commission will propose appropriate measures as required to achieve this objective.
- finally, the Commission in association with interested parties will consider such

developments as are necessary to ensure the ready availability of the appropriate technology and will propose whatever measures are required in order to achieve this, in relation not only to radio paging but mobile communications generally.

## 10. CONCLUSIONS

GAP has identified radio paging as a service which would benefit from Community-wide harmonisation. Present radio paging systems in the Community have been developed separately and, except on a very limited basis, are not compatible. It is not generally possible therefore, for radio paging customers, using a single paging receiver, to enjoy continuity of service when crossing national boundaries within the Community.

A new pan-European radio paging system called ERMES is being defined by CEPT RES-4. In order to ensure that rapid progress is made towards the development and introduction of ERMES, the following actions at Community level are necessary:-

- the timely agreement by all participants to a common system specification;
- the timely introduction of the system on a coordinated basis throughout the Community;
- the timely availability of the necessary common frequencies in all Member States.

Action at Community level is considered necessary to ensure that progress in these areas is made at an appropriate pace. The Commission is proposing a Recommendation and a Directive which aim to ensure that the above objectives are achieved.

The Council is therefore requested :-

- to adopt the attached proposal for a Recommendation;
- to adopt the attached proposal for a Directive.

\* \* \*

## REFERENCES

- [1] Council Recommendation of 12 November 1984 concerning the implementation of harmonisation in the field of telecommunications, 16.11.1984 (OJL217/21)
- [2] See conclusions of the Council of 17 December 1984 (ref/11477/84) and Communication by the Commission to the Council on telecommunications of 18.5.1984 [Com(84)277].
- [3] Proposals by the Analysis and Forecasting Group (GAP) for the Coordinated Introduction of Public Mobile Communications in the Community 5.12.1985.
- [4] Proposal for a Council Recommendation on the coordinated introduction of pan-European digital mobile communications in the Community.  
Proposal for a Council Directive on the frequency bands to be made available for the coordinated introduction of public pan-European digital mobile communications in the Community.  
COM (87) 35
- [5] Council Recommendation on the coordinated introduction of public pan-European cellular digital land-based mobile communications in the Community.  
(87/371/EEC)
- [6] Report of the European Parliament on Telecommunications in the Community (Leonardi Report), doc 1-1477/3, 3.3.1984.
- [7] "The Market Requirement up to the year 2000 for Wide Area Paging Products in Europe and the means to satisfy these market needs".  
Study prepared by BIS Mackintosh for the Commission of the European Communities, Directive General XIII/D/1 Brussels.
- [8] Council Directive of 24th July 1986 on the initial stage of the mutual recognition of type approval for telecommunications terminal equipment, 5.8.1986.
- [9] NET (Norme Européenne de Télécommunications) is a standard

established by ETSI or part or parts thereof which the signatories of the Memorandum of Understanding established at the meeting of Directors - General of CEPT Administrations, in Copenhagen on 15 November 1985, adopted in accordance with the procedure set down in that Memorandum.

[10] "Towards a dynamic European Economy"

Green Paper on the development of the Common Market for Telecommunications Services and Equipment.

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TABLE 1  
EXISTING EUROPEAN PUBLIC RADIOPAGING SYSTEMS

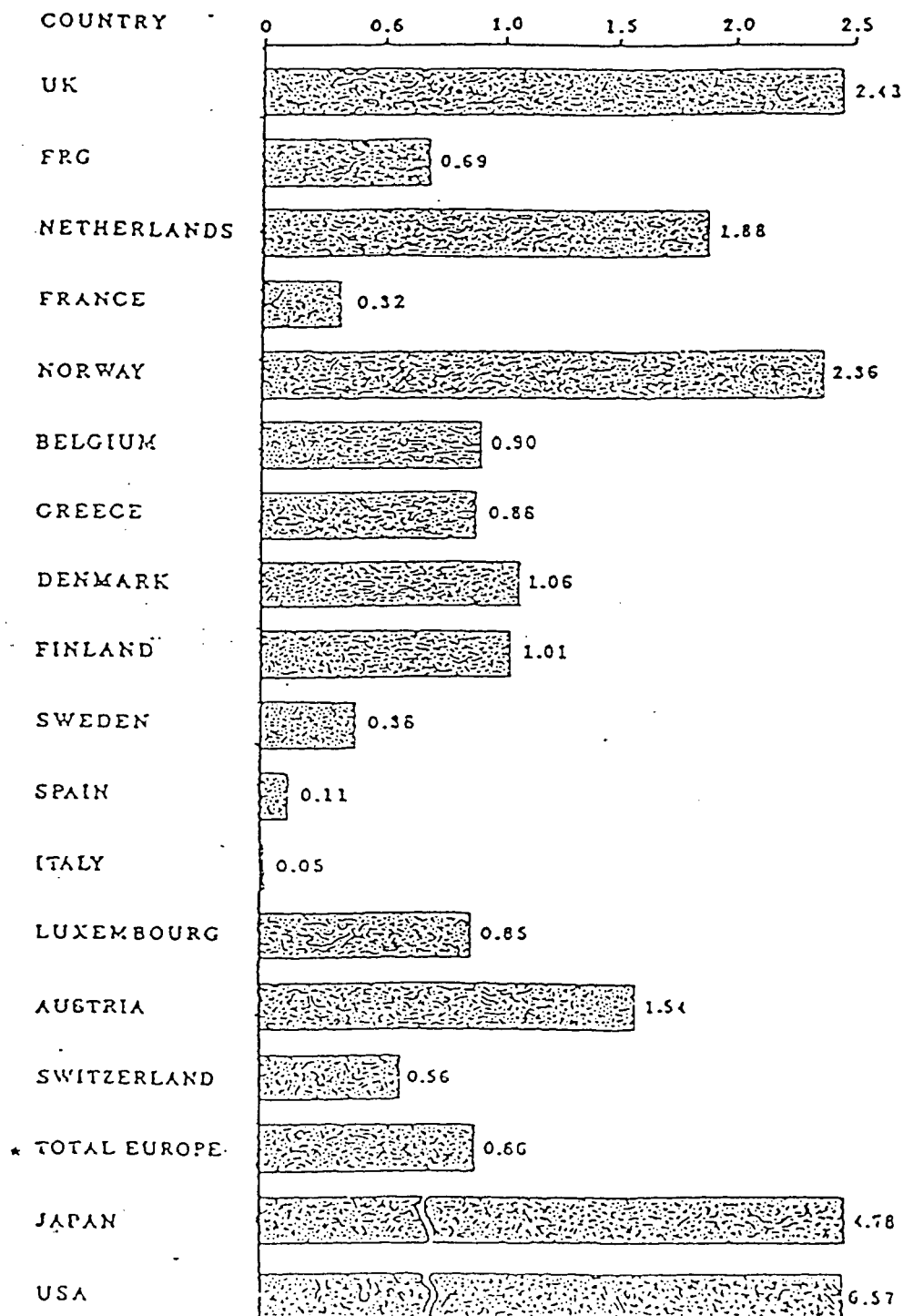
Country	Pop'n in millions	Year of Introduction	Capacity in thousands	Number of Receivers		Alpha	Frequency		Code
				Tone	Numeric		M	Band	
DENMARK	5.1	1983	30-90	-	16500	-	3	469	POCSAG
FINLAND	5.0	1985	100	3522	8510	-	1	146	POCSAG
				-	5000	-	1	450	GOLAY
FRANCE	55	1975	200	77000			4	87	EUROSIGNAL
		1987		2000	3000*	2000	3	466	POCSAG/RDS
FR GERMANY	60	1974	300	135000			2	87	EUROSIGNAL
GREECE	9.5	1987	200	1700			1	155	POCSAG
UK (BT System)	60	1975	-	340000	30000	30000	3	153	POCSAG 512/1200
ITALY	56	1981	1000	25000	-	-	4	160	GOLAY
							1		
NORWAY	4.1	1984	100	5,867	20,546		1	148	POCSAG
SPAIN	38.5	1972	16 250.1	12,500	-	-	4	160	HENSAFONICO POCSAG
SWEDEN	8.3	1976	300		72,300		1	87	MBS/RDS
		1985	160	83.00			1	170	POCSAG
SWITZERLAND	6.0	1958	10	9000			1	72	ANALOGUE
		1982		2000			1	147	ANALOGUE
		1986	30	9000			1	87	EUROSIGNAL
		1982			4500		1	147	POCSAG
NETHERLANDS	14	1978	120	105,000					
PORTUGAL	10.09	1989	60	-	-	-	1	164	POCSAG

\* Numbers for RDS and POCSAG combined.



TABLE 2

WIDE AREA PAGING : PERCENTAGE PENETRATION OF THE WORKING POPULATION IN EUROPE, JAPAN AND THE USA



\* Countries included are : Belgium, Netherlands, UK, Italy, FRG, France, Spain, Greece, Denmark, Finland, Norway, Sweden, Austria and Switzerland

TABLE 3

LIKELY INTRODUCTION OF ERMES IN THE MEMBER STATES

(PRELIMINARY FIGURES)

COUNTRY	DATE
BELGIUM	1993/94
DENMARK	1991/2
FRANCE	1992
FRG	1993/4
GREECE	1995
ITALY	1995
NETHERLANDS	1992/3
SPAIN	1991/2
UNITED KINGDOM	1991/2
IRELAND	
PORTUGAL	
LUXEMBOURG	

**TABLE 4A**

**OVERVIEW OF THE ACTIONS SPECIFIED IN THE RECOMMENDATION  
NECESSARY TO THE DEVELOPMENT, INTRODUCTION AND PROGRESSIVE  
EXTENSION OF ERMES**

**COMPLETION OF SPECIFICATION MILESTONES**

Decision on radio sub-system	<b>AUGUST 1989</b>
Completion of services and facilities specification	<b>DECEMBER 1989</b>
Optimisation of radio sub-system completed	<b>JANUARY 1990</b>
Completion of system specification	<b>JANUARY 1990</b>
Completion of paging receiver and transmitter specifications	<b>MARCH 1990</b>

**SYSTEM INTRODUCTION AND EXTENSION MILESTONES**

Signature of memorandum of understanding	<b>JANUARY 1990</b>
Introduction of service	<b>JANUARY 1992</b>
Achievement of at least 30% population coverage	<b>JANUARY 1993</b>
Achievement of at least 60% population coverage	<b>JANUARY 1994</b>
Achievement of at least 80% population coverage	<b>JANUARY 1995</b>

**TABLE 4B**

**OVERVIEW OF THE FREQUENCY REQUIREMENTS SPECIFIED IN THE  
DIRECTIVE NECESSARY FOR THE INTRODUCTION AND PROGRESSIVE  
EXTENSION OF ERMES**

**EXCLUSIVE FREQUENCY RESERVATION AND RELEASE MILESTONES**

200 KHz in the frequency band 169.6-169.8 MHz	<b>1 JANUARY 1992</b>
200 KHz within the frequency band 169 - 170 MHz	<b>1 JANUARY 1995</b>

### EUROPEAN INSTALLED BASE FOR RADIOPAGING RECEIVERS

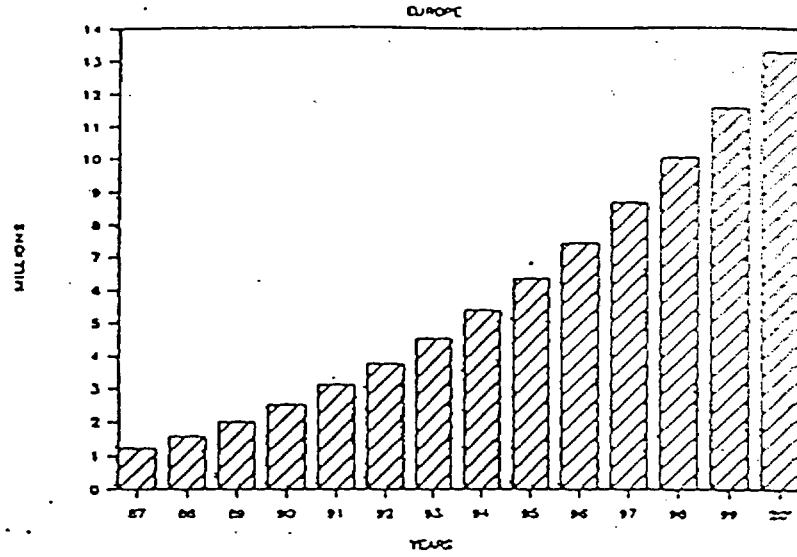


FIGURE 1A

### EUROPEAN MARKET VALUE FOR RADIOPAGING RECEIVERS

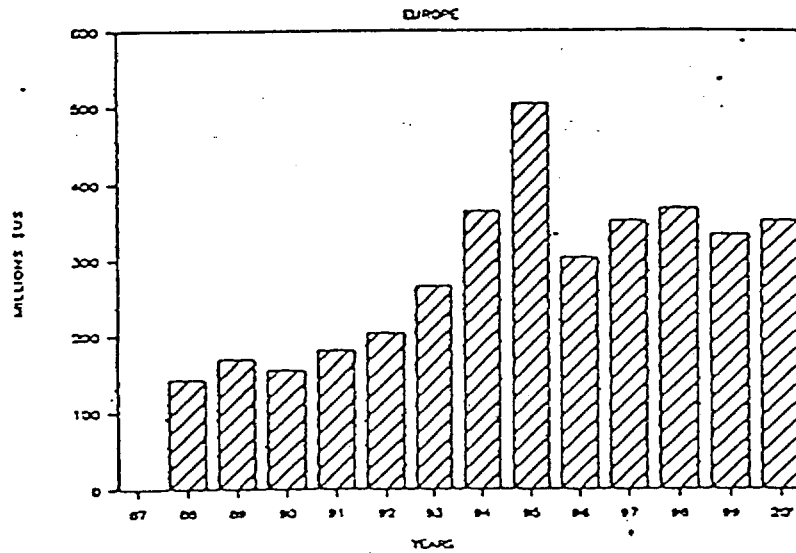


FIGURE 1B

## APPENDIX

### GLOSSARY OF TECHNICAL TERMS AND ABBREVIATIONS

The following list of technical and specialist terms is included for better understanding of the Communication.

#### CCIR

International Radio Consultative Committee - a committee of the International Telecommunication Union

#### CEPT

European Conference of Postal and Telecommunications Administrations

#### Display Paging Alphanumeric message paging

A selective one way data messaging facility

#### DTMF

Dual Tone Multi-Frequency signalling Standard used for signalling numbering digits from telephone instrument into the PSTN. Can also be used for end-to-end signalling over an established telephone network connection.

#### ECTEL

The name for the European Telecommunication and Professional Electronics Industry Association.

#### ERMES

European Radio Message System. The acronym for the pan-European paging system which is being specified by the CEPT.

#### EFTA

European Free Trade Association Membership outside the Community includes Sweden, Iceland, Switzerland, Austria, Norway and Finland.

#### ETSI

European Telecommunication Standards Institute.

#### GAP

Group for Analysis and Forecasting. A subgroup of the Senior Officials Group for Telecommunications (SOG-T).

### ISDN

Integrated Services Digital Network. Network, providing end-to-end connectivity to support a wide range of services, including voice and non-voice services, to which users have access by a limited set of multi-purpose user network interfaces.

### Land-based Paging System

A paging system which uses terrestrial base station transmitters, as opposed to satellite paging systems which use satellite to provide a direct link with the paging receiver.

### MBS

Swedish version of RDS

### POCSAG

An acronym for a standard wide area paging code specified by the Post Office Code Standardisations Advisory Group which was adopted by CCIR and is known as CCIR radio paging code N°1.

### Phonpoint/Telepoint

The British and French tradenames of a service which enables users of cordless telephones to make calls within about 200m of receiver points usually located at busy points such as railway and airport terminals.

### PSDN

Packet Switched Data Network

### PSS

Packet Switched Service

### PSTN

Public Switched Telephone Network

### Radio Paging

A non-speech, one way, selective calling system using radio for the purpose of contacting a person whose precise whereabouts within a given area are unknown.

Radio paging divides into three main categories :-

- Tone-only radio paging : this is the simplest form of paging; paging signals to a tone-only pager cause it to generate a simple alert signal, usually a "bleep". Alternatively or additionally, the alert signal may take the form of vibration or flashing light.

- Numeric paging : this is the second category of paging, providing for the transmission of numeric characters or special signs in addition to an alert signal.
- Alphanumeric paging : this is the most sophisticated form of paging, providing for the transmission of letters as well as numeric characters, special signs and an alert signal. Alphanumeric pagers usually have a storage capability enabling messages to be retained at the time of receipt and stored for consultation later.

#### Radio paging receiver

The small lightweight radio receiving unit carried on the person. Also called a pager.

#### Radio frequency

Those radio frequencies allocated by the appropriate national authority for the purposes of providing radiopaging services.

#### RDS

Radio Data System. A system which transmits data using a sub-carrier within the passband of a Band II FM Broadcast Signal.

#### RES4

Radio Equipment Specifications Sub-Working Group 4. A group of the CEPT previously known as R35 charged with specifying the pan-European paging system.

#### Roaming

The ability of a radiopaging receiver to move from one paging area to another whilst enjoying continuing radiopaging service coverage.

#### Signalling code

A code which is used on the radio path to convey the identity of the receiver, the alert and/or message and any additional information for transmission management. Transmission management information includes receiver synchronisation, transmission error-protection and paging network management information.

#### SOG-T

Senior Officials Group - Telecommunications. A Group of the Commission of the European Communities dealing in telecommunications consisting of senior officials from the Commission and the Member States.

WARC

World Administration Radio Conference. Administrative conference of the International Telecommunications Union, the purpose of which is to agree regulations for the use of the Radio Frequency Spectrum.



**C. PROPOSAL FOR A COUNCIL RECOMMENDATION ON THE COORDINATED  
INTRODUCTION OF PAN-EUROPEAN LAND-BASED PUBLIC RADIO  
PAGING IN THE COMMUNITY**

**Proposal for a  
COUNCIL RECOMMENDATION**

**ON THE COORDINATED INTRODUCTION OF PAN-EUROPEAN LAND-BASED  
PUBLIC RADIO PAGING IN THE COMMUNITY.**

**THE COUNCIL OF THE EUROPEAN COMMUNITIES,**

Having regard to the Treaty establishing the European Economic Community, and in particular Article 235 thereof,

Having regard to the proposal from the Commission [1],

Having regard to the opinion of the European Parliament [2],

Having regard to the opinion of the Economic and Social Committee [3]

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[1] .....

[2] .....

[3] .....

Whereas Council Recommendation 84/549/EEC [4] calls for the introduction of services on the basis of a common harmonised approach in the field of telecommunications;

Whereas the resources offered by modern telecommunications networks should be utilised to the full for the economic development of the Community;

Whereas paging services are the only low-cost means of alerting and/or sending messages to people on the move;

Whereas the land-based public paging systems currently in use in the Community do not in general allow people on the move throughout the Community to reap the benefits of European-wide paging services and European-wide markets;

Whereas the European Conference of Postal and Telecommunications administrations (CEPT) set up a special Sub-Working Group referred to as Radio Equipment Specifications Sub-Working Group 4 (RES-4) since transferred to the European Telecommunication Standards Institute (ETSI) for planning all system aspects of a more advanced public display paging system named European Radio Messaging System (ERMES);

Whereas the change to a truly advanced paging system named ERMES being specified by CEPT will provide a unique opportunity of establishing a truly pan-European paging service;

Whereas a coordinated policy for the introduction of a pan-European land-based public display paging service will make possible the establishment of a European market in mobile terminals (paging receivers) which will be capable of creating, by virtue of its size, service features and costs, the necessary development conditions to enable undertakings to maintain and improve their presence in world markets;

Whereas it is necessary to allow unrestricted access to paging services and free circulation of paging receivers throughout the Community;

Whereas in this context Community law and in particular the competition rules should be respected;

Whereas the implementation of Council Directive 86/361/EEC of 24 July 1986 on the initial stage of the mutual recognition of type approval for telecommunications terminal equipment (5) will make an important contribution towards this goal;

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(4) OJ No L 298, 16.11.1984, p. 49.

(5) OJ No L 217, 5.8.1986, p. 21.

Whereas consideration should be given to Council Directive 83/189/EEC of 28 March 1983 laying down a procedure for the provision of information in the field of technical standards and regulations [6] and to Council Decision 87/95/EEC of 22 December 1986 on standardisation in the field of information technology and telecommunications [7];

Whereas it is appropriate to make use of the potential of the Community's existing financial instruments in order to promote the development of the telecommunications infrastructure in the Community;

Whereas consideration should be given to Council Recommendation 87/371/EEC (8), which points out that special attention should be paid to the urgent requirement of certain users for pan-European land-based communications and that the Commission will in the future submit other proposals in the field of mobile communications, including radiopaging systems ;

Whereas the implementation of such a policy will lead to closer cooperation within Europe between the public telecommunications administrations and the recognised private operating agencies offering public mobile telecommunications services, hereinafter referred to as "telecommunications administrations";

Whereas a favourable opinion has been delivered by the Senior Officials Group on Telecommunications (SOG-T), on the basis of the detailed recommendations drawn up by the Analysis and Forecasting Group (GAP) which provide a strategic basis for the development of public mobile communications in the Community with a view to enabling European users on the move to communicate efficiently and economically [9];

Whereas on the basis of the detailed recommendations drawn up by the SOG-T, the Commission recommended that CEPT should reach an agreement by 1990, related to a more advanced code and a common radio interface in order to introduce a European service as soon as possible afterwards;

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[6] OJ No L 109, 26.4.1983, p. 8.

[7] OJ No L 36, 7.2.1987, p. 31.

[8] OJ No L 196, 17.7.1987, p. 81.

[9] Proposals by the Analysis and Forecasting Group (GAP) for the Coordination Introduction of Public Mobile Communications in the Community-5.12.85

**Whereas** favourable opinions on these recommendations have been delivered by the telecommunications administrations, and by CEPT;

**Whereas** the envisaged measures will allow the economic benefit and rapidly increasing market potential of public display paging to be fully realised in the Community;

**Whereas** the Treaty has not provided the necessary specific powers to this end,

**HEREBY RECOMMENDS:**

1. that the telecommunications administrations implement with due respect to Community law the detailed recommendations as described in the Annex concerning the coordinated introduction of pan-European land-based public radio paging service in the Community. For the purposes of this Recommendation, a pan-European land-based public radio paging service shall mean a public radio paging service based on terrestrial infrastructure, provided in each of the Member States to a common specification which allows persons wishing to send and/or to receive an alert and/or numeric or alphanumeric messages anywhere within the coverage of the service in the Community;
2. that the telecommunications administrations continue the cooperation within the CEPT and ETSI, particularly concerning the objectives and time schedule set out in the Annex for the completion of the specifications and service implementation of the pan-European land-based public radio paging system;
3. that the telecommunications administrations plan for a gradual evolution from existing public paging systems to the pan-European land-based public radio paging system so as to ensure a transition which meets the needs of users, telecommunications administrations and manufacturers;
4. that Member State Governments and telecommunications administrations complete the technical arrangements for the implementation of the means of call routing and processing, so that tone, numeric and alphanumeric messages can be sent from anywhere in the Community, to a paging receiver anywhere in the geographical coverage of the ERMES service by January 1992;
5. that the Commission take appropriate initiatives, within the application of existing Directives, to encourage the completion of the specifications and the implementation of the pan-European land-based public radio paging system, within the time schedule set out in the Annex;
6. that the Community's financial instruments take this Recommendation into account within the framework of their interventions, particularly as regards capital investments required for the implementation of the infrastructure for the pan-European land-based

public radio paging system, and that the Community's technological research and development programmes do likewise as regards the development of the required technological base;

7. that the telecommunications administrations prepare and sign by January 1990 at the latest a memorandum of understanding on the implementation of pan-European land-based public radio paging;
8. that Member State Governments inform the Commission at the end of each year, from the end of 1989 onwards, of the measures taken and problems encountered in the course of implementing this Recommendation. The progress of work will be examined by the Commission and the Senior Officials Group on Telecommunications (SOG-T) set up by the Council on 4 November 1983.

Done at Brussels .....

For the Council  
The President

**ANNEX TO THE RECOMMENDATION**

**DETAILED REQUIREMENTS ON THE COORDINATED INTRODUCTION  
OF PAN-EUROPEAN LAND-BASED PUBLIC RADIO PAGING IN THE COMMUNITY**



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6. TARIFF CONSIDERATIONS
7. GEOGRAPHICAL COVERAGE
8. SCHEDULE FOR THE COMPLETION OF THE PAN-EUROPEAN PAGING SPECIFICATION AND SERVICE PROVISION
9. SPECIAL REQUIREMENT

## 1. GENERAL REQUIREMENTS

The future pan-European public radio paging system should fulfill the following general requirements :-

- be suitable for operation in the frequency band 169MHz to 170 MHz with 25KHz radio channels;
- permit an increase in the number of paging users which can be supported per paging area per unit of spectrum and for the same grade of service compared to systems based on CCIR radiopaging code N°1 (POCSAG), assuming the same mix of tone, numeric and alphanumeric pagers;
- permit easy access via PSTN, PSS, Videotex terminals, telex and other forms of direct access such as via ISDN.
- permit simultaneous operation of two or more independent systems in the same geographic area and permit several independent systems in areas where several national boundaries meet.

The cost of the system should be considered in terms of the cost of the fixed infrastructure, met by the network operator, and the cost of the paging receiver, met by the users. Both costs should be within affordable limits and should not exceed current costs. The cost of using the home paging service should not be more than the costs of current home paging services.

Access facilities should be provided for a calling party to initiate a paging request from service areas anywhere in the Community in the most cost effective and easy manner.

## 2. Choice of Radio Sub-system

Considerable experience in designing, manufacturing and operating public paging systems already exists in Europe. Much of this experience derives from the successful development and exploitation of the European POCSAG paging code (now CCIR Radio Paging Code N°1) by manufacturers and telecommunications administrations. This accumulated experience and knowledge should speed the task of selecting a suitable radio sub-system for the pan European paging system. On the basis of the work underway within ETSI and in particular the RES 4 group, final decisions on the radio sub-system should be made by August 1989. The system specification should be decided by January 1990. The radio sub-system specification covers the modulation method, channel coding, the radio system structure and the pager's radio identity code

structure (RIC).

3. **The Paging Receiver Specification**

The specification of the paging receiver will cover the radio-performance, services and facilities and physical characteristics. The receiver specification should be finalised by **March 1990**. However, the optimisation and commencement of production of prototype paging receivers should begin with or before the decision on the radio sub-system in **August 1989**. This will provide a lead time for the testing and production of equipment before the start of service in **January 1992**. This early start to development should be ensured by the close relationship and cooperation between manufacturing industry and ETSI.

4. **System Implementation**

National operators and telecommunication administrations should be responsible for the implementation of the paging system in their countries. The largest proportion of traffic on each national system will be national traffic, but implementation should support full roaming. Furthermore, the system specification should allow flexibility to enable economic implementation both in areas of low traffic density and areas of very high traffic density. To enable the service to commence in **January 1992**, the system specification should be completed by **January 1990**. The manufacture of the system or parts of it may commence before completion of the specification and this will depend on a close working relationship between industry and ETSI.

The system specification should include system access, call routing and processing, numbering scheme, and specification of paging network controller.

5. **Services and Facilities specified and supported by the pan-European paging system**

The services and facilities specification should be completely specified by **December 1989**, and should fall into two categories : mandatory and optional

Mandatory services and facilities :

Mandatory services and facilities should define the minimum features available on each national system and hence the pan- European system as a whole.

Optional services and facilities :

The optional services are value added services and should be provided at the discretion of each operator under the conditions of open-competition. The non-provision of an optional service or facility should not affect in any way the functioning of the pan-European service at a basic level. The provision of an optional service or facility on one national system should not increase the cost of the basic service on that system, or require an increase in functionality or an increase in cost on any other national system.

6. Tariff Considerations

Telecommunication Administrations should establish the principles of charging, taking full account of the competition rules of the Treaty, for the European service and of cross charging between national operators for the handling of roaming traffic. These principles should be established so that the network implications can be identified and resolved, and provision should be made in the functional specification for the network controller. This functional specification should be finalised by January 1990.

7. Geographical Service Coverage

The Pan-European public radio paging system should be introduced by January 1992 at the latest. Geographical service coverage in each Member State should progressively extend as follows :-

January 1992	Start of service
January 1993	At least 30% of population
January 1994	At least 60% of population
January 1995	At least 80% of population

The coverage obligation should include the provision of service on the main travel routes between areas where service has been provided.

Administrations should study priorities for service coverage in order to stimulate the maximum pan-European traffic demand at the earliest possible stage compatible with commercial strategies.

8. Schedule for the completion of the pan-European paging specification and service provision

Figure 1 of this Annex gives the important milestones for the production of specifications by the CEPT, the schedule for the implementation of the system and the coverage obligation by the Member States.

9. **Special Requirement**

Consideration should be given to providing within the ERMES system, the ability to have displayed on the radio paging receiver characters in all official Community languages where appropriate.

\* \* \*

FIGURE 1 TO THE ANNEX

**SCHEDULE FOR THE COMPLETION OF PAN-EUROPEAN PAGING  
SPECIFICATION BY THE CEPT AND SERVICE PROVISION, BY THE  
TELECOMMUNICATIONS ADMINISTRATIONS**

**D. PROPOSAL FOR A COUNCIL DIRECTIVE ON THE FREQUENCY BANDS TO  
BE RESERVED FOR THE COORDINATED INTRODUCTION OF PAN-  
EUROPEAN LAND-BASED PUBLIC RADIO PAGING IN THE COMMUNITY**

**Proposal for a  
COUNCIL DIRECTIVE**

**ON THE FREQUENCY BANDS TO BE RESERVED FOR THE COORDINATED  
INTRODUCTION OF PAN-EUROPEAN LAND-BASED PUBLIC RADIO PAGING IN  
THE COMMUNITY**

**THE COUNCIL OF THE EUROPEAN COMMUNITIES,**

Having regard to the Treaty establishing the European Economic Community, and in particular Article 100a thereof;

Having regard to the proposal from the Commission [1];

In cooperation with the European Parliament [2];

Having regard to the opinion of the Economic and Social Committee [3];

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[1] .....

[2] .....

[3] .....



Whereas Council Recommendation 84/549/EEC [4] calls for the introduction of services on the basis of a common harmonised approach in the field of telecommunications;

Whereas the resources offered by modern telecommunications networks should be utilised to the full for the economic development of the Community;

Whereas radio paging services are the only low cost means of alerting and/or sending messages to users on the move;

Whereas radio paging services depend on the allocation and availability of frequency bands in order to transmit and receive between fixed-base stations and radio paging receivers respectively;

Whereas the frequencies and land-based public radio paging systems currently in use in the Community vary widely and do not allow all users on the move to reap the benefits of European wide services and European wide markets;

Whereas the change-over to the more advanced radio paging system codenamed European Radio Messaging System (ERMES) being specified by the European Conference of Postal and Telecommunications Administrations (CEPT), will provide a unique opportunity of establishing a truly pan-European radio paging service;

Whereas CEPT has identified the unpaired frequency band 169.4-169.8 MHz as the most suitable band for public radio paging;

Whereas parts of the frequency band are being used or are intended for use by certain Member States for other radio services;

Whereas the progressive availability of the full range of the frequency band set out above will be indispensable for the establishment of a truly pan-European radio paging service;

Whereas the implementation of Council Recommendation ..../EEC of ..... on the coordinated introduction of pan-European land-based public radio paging in the Community [5], will ensure the start of a pan-European system by 1 January 1992 at the latest;

Whereas on the basis of present technological and market trends, it appears realistic to envisage the exclusive occupation of the 169.4-169.8 MHz frequency bands by the pan-European public radio paging system by 1 January 1995;

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[4] OJ No L 298, 16.11.1984, p. 49.

[5] .....

**Whereas** Council Directive 86/361/EEC of 24 July 1986 on the initial stage of the mutual recognition of type approval for telecommunications terminal equipment [6] will allow the rapid establishment of common conformity specifications for the pan-European land-based public radio paging system;

**Whereas** the report on public mobile communication drawn up by the Analysis and Forecasting Group (GAP) for the Senior Officials Group of Telecommunications (SOG-T), strongly recommends that Administrations reach an agreement to use the same radio frequencies as a precondition for pan-European public radio paging [7];

**Whereas** favourable opinions on this report have been delivered by the telecommunications administrations and by CEPT;

**Whereas** radio paging is a particularly spectrum-efficient communications method for alerting and/or sending messages to users on the move,

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[6] OJ No L 217, 5.8.1986, p. 21.

[7] Proposals by the Analysis and Forecasting Group (GAP) for the Coordinated Introduction of Public Mobile Communications in the Community - 5.12.1985.

**HAS ADOPTED THIS DIRECTIVE :**

**Article 1**

For the purposes of this Directive, pan-European land-based public radio paging service shall mean a public radio paging service based on a terrestrial infrastructure, provided in each of the Member States to a common specification which allows persons wishing to send and/or receive an alert and/or numeric or alphanumeric messages anywhere within the coverage of the service in the Community.

**Article 2**

1. Member States shall ensure that the band 169.6-169.8 MHz is reserved exclusively and is made available for use by the pan-European land-based public radio paging service by 1 January 1992.
2. The Commission after consulting Member States shall take a decision defining a further block of 200 kHz within the band 169-170 MHz by 1 January 1990 at the latest to be reserved exclusively for the pan-European land-based public radio paging service.
3. Member States shall ensure that the 200 kHz block of frequencies defined in paragraph 2, is made available for the exclusive use of the pan-European land-based public radio paging service by 1 January 1995.

**Article 3**

The Commission shall report to the Council on the implementation of this Directive not later than the end of 1996.

**Article 4**

1. Member States shall bring into force the provisions necessary to comply with this Directive by 1 January 1990 for Article 2, paragraph 1 and by 1 January 1993 for Article 2, paragraph 3. They shall forthwith inform the Commission thereof.

The provisions adopted pursuant to the first subparagraph shall make express reference to this Directive.

2. Member States shall communicate to the Commission the text of the provisions of national law which they adopt in the field governed by this Directive.

**Article 5**

This Directive is addressed to the Member States.

Done at Brussels .....

For the Council

The President

## FINANCIAL OUTLINE

### 1. Budget Line

7700 : Actions related to advanced telecommunications infrastructure.

### 2. Legal Basis

- Council Recommendation on the coordinated introduction of public pan-European cellular digital land-based mobile communications in the Community (87/371/EEC)
- Council Recommendation on the Coordinated Introduction of Pan-European Land-based public radio paging in the Community (Proposed)
- Council Directive on Frequency Bands to be made available for the Coordinated Introduction of Public Pan-European Land-Based Radiopaging in the Community (proposed).

### 3. Classification

Non-obligatory spending.

### 4. Description

This action aims at ensuring the timely implementation in the Community of the pan-European public land-based radio paging system known as ERMES, and its promotion and extension within and beyond the Community to the benefit of the Community's paging manufacturing industry, operators and users.

This action will include the following specific activities:

- contributions to the development of the technical and operational specifications in ETSI
- contributions to the identification in CEPT of suitable frequency spectrum for the expansion of the service
- application in this area of Council Directive 83/189/EEC, laying down a procedure for the provision of information in the field of technical standards and regulations, and of the proposed Council Directive on standardisations in the field of information technology and telecommunications

- sponsorship of conferences, seminars and newsletters for the dissemination of information on the system and the promotion of the system by increasing the awareness of its potential benefits
- conduct studies of the means of ensuring transborder operation of paging receivers, identifying the necessary licencings and customs arrangements to permit free circulation of paging receivers
- conduct studies into the availability of the appropriate technology in Europe, and assist industry as necessary to ensure its timely availability
- monitor the implementation and roll-out of the service in the Member States
- promote the system in CCIR as a world standard, and encourage its implementation in countries beyond the Community
- promote the extension of the service by investigating the possibility of the provision of various value-added facilities, its wider application to special user requirements, and its integration with other future pan-European mobile communications services.

#### 5. Costs and Methods of Calculation

The credits involved concern budget line 7700. The costs were calculated for each of the specific activities listed in Section 4 above, in relation to the following:

- the effort in man-months, for experts, ancillary and temporary staff;
- travel and subsistence;
- publication costs;
- funding of studies;
- sponsorship of seminars, conferences etc.,
- provision of conference facilities.

#### 6. Financial Implications for the Intervention Credits

##### 6.1 Timetable for commitments and payments (millions of ECU)

I	Year	I	Commitments	I	Payments	I
I	1989	I	0.75	I	0.5	I
I	1990	I	1.0	I	0.7	I
I	1991	I	1.5	I	1.2	I
I	1992	I	0.85	I	1.2	I
I	1993	I	-	I	0.5	I
TOTAL			4.1	4.1		

6.2 Share of Community financing in total cost of action.

The Community's financial contribution will vary between 30 to 100%, according to specific activity.

6.3 Methods of financing during the current year

The initiation of this action in 1988 will be financed from line 7700 of the 1989 budget.

7. Financial Implication of Staff Costs and Running Expenses

7.1 Staff required exclusively for this action :

1 official - category A

1 official - category B

1 official - category C

7.2 The additional staff requirement will be provided either by internal re-arrangement, or in the framework of the Rolling Plan (posts).