

MEMORANDUM OF UNDERSTANDING

ON

THE IMPLEMENTATION OF A PAN EUROPEAN 900 MHz DIGITAL
CELLULAR MOBILE TELECOMMUNICATIONS SERVICE BY 1991

7 September 1987

MEMORANDUM OF UNDERSTANDING BETWEEN THE SIGNATORIES COMMITTING THEMSELVES TO IMPLEMENTING A 900 MHz PAN EUROPEAN PUBLIC DIGITAL CELLULAR MOBILE TELECOMMUNICATIONS SERVICE IN 1991 WITH FULL INTERNATIONAL ROAMING

The purpose of this Memorandum of Understanding is to provide a framework for a specific commitment to procure 900 MHz digital mobile cellular telecommunications networks in each of the countries of the signatories and the opening of a pan European public service by a specific date.

The signatories,

recognising:

- that CEPT formed the Groupe Spécial Mobile (GSM) in 1982, entrusting the group with the task of developing the basis of a common European mobile telecommunications service which would allow roaming in all of the CEPT countries;
- that the objectives of the 'agreement on co-operation in the field of digital cellular radiocommunications' signed in Nice on 20 June 1985 by France, the Federal Republic of Germany and Italy and extended on 2 July 1986 to the United Kingdom will continue to be worked for but within a framework more specifically targeted at opening a service in 1991;
- that the European Community Heads of State in December 1986 asked the Commission and the Council to make a special effort to secure ... the commitment of operators necessary to enable Europe to compete in the development and marketing of digital cellular radio in the 1990s;
- that the GSM evaluation trials, carried out in the autumn of 1986, have proved that digital transmission methods allow a system which meets the requirements of a new system originally set out by the GSM group;

- that the mounting of a new technology requires concerted action by a number of parties in order to achieve early economies of scale and thus achieving a competitive digital mobile telecommunications cellular system;
- that a pan European service offering significant benefit for users requires the early participation of the greatest possible number of countries;
- that an early date for a commercial service is essential for Europe both in terms of ensuring enough network operators are ready to move in concert to open a service and creating the new digital cellular mobile telecommunications technology equipment market timed to maximise benefit to European manufacturing industry;
- that the risks are such as to require a specific statement of commitment by several network operators agreeing to open a pan European digital cellular mobile telecommunications service in 1991;
- that if the network operators approach the opening of a public digital cellular mobile telecommunications service by different paths there is a risk of arriving at the opening of a service at different times and possibly with incompatible implementations and as such a certain harmonisation of the approach to implementation is desirable;
- that the development of the pan European public digital cellular mobile telecommunications system may have a significant impact on European telecommunications, technical standards and development of the European telecommunications market;
- that the meeting of Ministers or their representatives of France, the Federal Republic of Germany, Italy and the United Kingdom in Bonn on 19 May 1987 called for the agreement between network operators to be formalised in a Memorandum of Understanding open to all authorised operators in CEPT countries to join.

Agree to the following Articles:

Article 1

The purpose of this MoU is to provide a framework for all the necessary measures to be taken by the signatories together to ensure the opening of a commercial pan European public digital cellular mobile telecommunications service in their respective countries in 1991. This shall provide amongst other things an international roaming service whereby a user provided with a service in one country by one of the network operators can also gain access to the service of any of the other network operators in their respective countries.

Article 2

This MoU may be signed by any telecommunications administration and/or any public telecommunications operator within CEPT authorised in his country to provide public digital cellular mobile telecommunications services. Such public telecommunications operators are referred to in this MoU as network operators.

Article 3

The MoU will replace the 'agreement on co-operation in the field of digital cellular radio communications' signed in Nice on 20 June 1985 by France, the Federal Republic of Germany and Italy and extended on 2 July 1986 to the United Kingdom when signatories from the four countries to that agreement have signed this MoU.

Article 4

The work of CEPT/GSM shall be actively supported by the signatories and priority accorded to ensuring the technical resources are provided to enable the establishment of all necessary CEPT recommendations for the digital mobile cellular telecommunications system to be produced in a timely manner.

Article 5

The signatories shall support the open (non proprietary) definition of at least the following interfaces in the form of CEPT recommendations:

Mobile/Base Station (air interface) based on the narrowband TDMA concept defined by CEPT at its Madeira meeting in Feb 1987 enhanced in the areas of modulation and coding to provide the greatest flexibility in receiving equipment implementation as agreed by CEPT GSM at its Brussels meeting 9-12 June 1987.

Base Station/Mobile services Switching Centre

Mobile services Switching Centre/Mobile services Switching Centre/Location Register

Article 6

Operational networks shall be procured in each of the countries by the network operators based on the CEPT recommendations with the objective of providing public commercial service during 1991.

Article 7

The network operators shall coordinate network implementation phases and related milestones including requests for proposals from industry in 1988, testing the compatibility of the equipment and procedures for international roaming and validation of the CEPT recommendations. The milestones to be coordinated between the network operators are set out in the Annex to this MoU.

Article 8

The procurement policies of the network operators shall be to encourage a strong competitive European industrial manufacturing base for 900 MHz digital cellular mobile telecommunications

technology within the constraints of commitments to GATT and the obligations of the individual network operators to secure the most cost effective solution for their respective organisations. Competition shall be encouraged in each of the markets for mobile stations, base stations and mobile switching equipment.

Article 9

To the extent necessary to ensure the viability of the pan European digital cellular mobile telecommunications system and particularly in the areas of the open interfaces defined in Article 5 the signatories shall coordinate their policies on Intellectual Property Rights as far as possible.

Article 10

The network operators shall plan the progressive implementation of the networks in each country so that transport routes between the countries of the signatories are brought early into the coverage of the respective systems. Priority shall be given to encouraging coverage of all capital cities of the countries of all CEPT Administrations by 1993 including the principal airport and then aiming at transport routes between capital cities by 1995.

Article 11

Meetings of the signatories shall be convened at regular intervals or on special occasions by a Chairman who shall also supervise any voting. The first Chairman shall be nominated by the Federal Republic of Germany and shall hold office for six months after coming into operation of this MoU. Thereafter, each network operator in turn shall nominate a Chairman for a period of six months. The network operator nominating the Chairman shall be responsible in the six month period for providing the Administrative support needed to implement this MoU unless the signatories so decide that certain functions will be funded some other way.

Article 12

Every effort shall be made by the signatories within the CEPT/GSM to arrive at timely unanimous agreements on the content of the recommendations mentioned in Article 5 based on technical, operational and commercial considerations. The signatories agree to support a common position in the CEPT where efforts to achieve unanimity have not succeeded. Where any differences of view exist amongst the signatories on any aspects of the interfaces given in Article 5 a meeting of signatories shall be convened at not less than two weeks notice where a vote shall be taken amongst the authorised representatives of the signatories using the voting arrangements set out in the Addendum to the Annex of the Memorandum of Understanding on European Telecommunication Standards. Each country shall have the number of votes indicated irrespective of the number of signatories from that country. The signatories agree to support the result of that vote within CEPT in the establishment of the CEPT/GSM recommended specifications including action by the TRAC. In future maintenance/updating of the specifications of these interfaces the same voting procedures will be applied as required. Signatories shall also endeavour to arrive at unanimous agreements on matters essential for the implementation of a pan European roaming service. However where agreement on such matters does not prove possible in a timely manner decisions may be taken following the voting procedure above.

Article 13

The network operators shall agree within three months of the coming into force of this MoU an Action Plan of activities necessary to support the opening of compatible services in 1991. This shall include setting precise dates on the milestones given in the Annex to this MoU. The signatories shall support with the necessary resources the activities being carried out within this MoU and within CEPT in pursuance of this Action Plan. This shall include technical requirements for type approval specifications, a compatible approach to numbering, routing, tariff and accounting

principles and inter-system accounting, operational issues and the services/supplementary services to be provided at the beginning of public commercial service in 1991. For the avoidance of doubt this MoU may not provide for co-operation on the levels of tariffs or any other matter which may be regarded as anti-competitive in countries where network operators are in competition. How the levels of tariffs are set is a matter of individual national

Article 14

The signatories shall, collectively as mutually agreed or individually, make efforts through encouragement, advice and consultation to extend a 900 MHz pan European digital cellular mobile telecommunications service to cover the territories of all CEPT Administrations.

Article 15

The network operators shall consult on the commercial promotion of the launch of the 900 MHz pan European digital cellular mobile telecommunications service and take active steps in their respective countries to provide information to the public on the services available and otherwise encourage the take up of the new service from 1991 onwards.

Article 16

Bearing in mind the technical development and the need to adopt new enhanced technology for future systems the signatories shall co-operate in the promotion of the CEPT/GSM 900 MHz digital cellular mobile telecommunications standard as a worldwide standard recognised by the International Telecommunications Union and provide, collectively as mutually agreed or individually, advice and other appropriate support to Administrations outside of CEPT considering the introduction of a 900 MHz digital cellular mobile telecommunications system to the CEPT/GSM standard.

Article 17

This Memorandum of Understanding shall come into operation when the number of votes of the signatories when taken together and using the weightings in the Addendum to the Annex of the Memorandum of Understanding on European Telecommunication Standards, equals or exceeds thirty.

Article 18

A signatory may withdraw from the MoU at any time after 31 December 1991 by giving two years notice in writing to all other signatories.

Article 19

This MoU exist in French and English. Both texts shall be authoritative.

ANNEX - NETWORK IMPLEMENTATION PHASES
AND RELATED MILESTONE

1. DEFINITION OF PHASES

Four phases are agreed for the implementation of the 900 MHz digital mobile telecommunication system:

Phase 0:- Review and validation of GSM recommendations: (based on established national activities)

Objectives

- checking of consistency, completeness and feasibility
- validation of all major critical parts of technical specifications

Method

- critical reviewing by one or more teams of experts
- simulation on computers
- laboratory test models
- feeding of these results into the responsible GSM group(s)

Phase 1:- Procurement Activity:

- production and issuing of the request for proposal
- evaluation of bids and selection of contractor(s)
- letter(s) of intent and/or placing of contract(s)

Note: Phases 0 and 1 will overlap

Phase 2:- System Component Development, Validation and Implementation

Phase 2.1 - Air interface validation and preliminary BS/MSC interface validation

Objectives

- air interface specification validation
- preliminary BS testing
- preliminary BS/MSC interface specification validation

Equipment configuration

To allow testing of air and BS/MSC interfaces

Phases 2.2 - System validation and field trials

Objectives

- system interfaces validation. MSC/Location Register - MSC/Location Register, MSC/LR - Fixed network, BS-MSC
- equipment and system integration validation
- validation of all intra-PLMN operation and maintenance functions
- validation of inter PLMN operation and maintenance functions if any, (in cooperation between several network operators)
- field trials

Equipment configuration

- To allow testing of all system functions and also a subset of the first operational work

Note: All the above are considered to be normal outputs of the development process.

Phase 3 - Opening of commercial service

Objectives

- validation of actual operation
- training of personnel
- monitoring of quality of service and reliability
- provision of reliable service to customers

Equipment configuration

- capacity and coverage sufficient to attract enough paying customers

Phase 4 - Expansion of commercial services

Objectives

- coverage of all capital cities including the principal airport and transport routes between capital cities

Equipment configuration

- based on commercial considerations

2 PROCUREMENT ACTIONS

2.1 Network implementation

Network operators may initially contract for phases 2.1, 2.2 and 3. However orders for phases 2.2 and 3 can be conditional, ie subject to confirmation when sufficient progress has been achieved in the previous phase.

Some network operators may decide to by-pass phase 2.1 and/or 2.2 and, instead, to rely on the validation carried out by another network operator having selected the same equipment manufacturers. Experiments for validation of interfaces carried out outside this co-ordinated programme will be taken into account.

2.2 Simulators

Simulators will preferably be procured from sources independent of the network suppliers. Separate actions will therefore be undertaken for the coordinated procurement of simulators, bearing in mind the necessity of having them available in time for the completion of the successive phases of the network implementation programme.

3 NETWORK IMPLEMENTATION MILESTONES

The network operators whilst acting in their respective procurement capacities, shall act in concert to achieve the following milestones within an agreed timescale:

1. Request for proposals for phases 2 and 3.
2. Letter of intent and/or placing of contract(s) for (1), including firm order for phase 2.1.
3. Completion of phase 2.1.
4. Completion of phase 2.2.
5. Delivery of the equipment for phase 3.
6. Opening of commercial service (1991).

This MoU has been deposited in two originals, one in the French language and one in the English language.

The MoU was signed in Copenhagen on 7 September 1987 by the following signatories:

ALLEMAGNE, R.F. d'

For Deutsche Bundespost

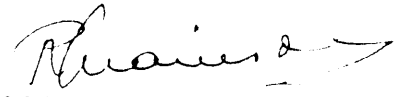
.....*W. Haist*.....

W. HAIST

Ministerialdirektor

BELGIQUE

For la Régie des Télégraphes
et des Téléphones, Belgique



.....
R. Grainson
Conseiller général

DENMARK

For the Ministry of
Public Works,
General Directorate of
Posts and Telecommunications

H. Würtzen
.....
H. Würtzen
Generaldirektør for P&T

ESPAGNE

For Dirección General de
Telecomunicaciones

J. Nadal
.....

J. Nadal
Directeur Général des Télé-
communications

For Compañía Telefonica Nacional
de España

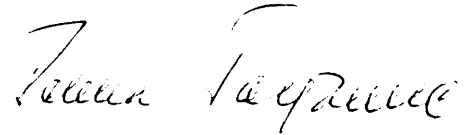
A. Hernandez
.....

A. Hernandez
Deputy Director
Network Operation Department

10-SEPTEMBER-1987

FINLANDE


For Posts & Telecommunications
of Finland



.....
Dr. Pekka Tarjanne
Dir. gen., Posts and
Telecommunications,
Finland

FRANCE

For le Ministère de la poste
et des télécommunications


.....
Marcel Roulet
Directeur général
des télécommunications

IRLANDE

For Telecom Eireann

..........

Conán J. Rafferty
Head of Commercial Affairs
Department
Bord Telecom Eireann

ITALIE

For the Ministero delle
Poste e Telecomunicazioni

[Handwritten signature]
.....

Mr. A. Vighi
Direttore dell'Istituto
Superiore Poste e
Telecomunicazioni

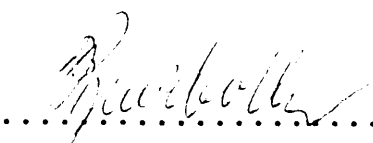
For the Società Italiana
per l'Esercizio delle
Telecomunicazioni p.A.

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Mr. R. Failli

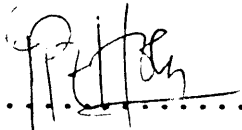
NORVEGE

For the Norwegian
Telecommunications Administration


.....
Kjell Holler
Director general

PAYS-BAS

For Netherlands Postal and
Telecommunications Administration




.....

Paul P. 't Hoen
Deputy Senior Director
PTT Telecommunications

PORTUGAL

For Correios Telecomunicações
de Portugal


.....

Mr. Iriarte Esteves
Director General of
Telecommunications

ROYAUME-UNI

For the Department of Trade
and Industry


.....

Mr. R.J. Priddle
An Under Secretary in the
Department of Trade and
Industry

For Telecom Securicor Cellular
Radio Ltd.


.....

Mr. C. Davis
Managing Director

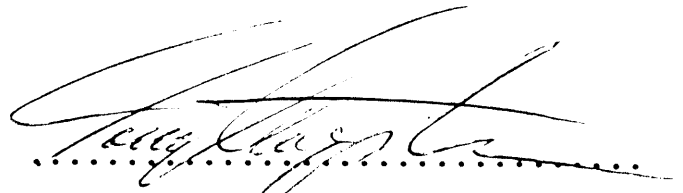
For Racal Vodafone Ltd.


.....

Mr. C. Gent
Managing Director

SUEDE

For the Swedish
Telecommunications
Administration

A handwritten signature in black ink, appearing to read 'Tony Hagström', written over a horizontal dotted line.

Dr. Tony Hagström
Director General