

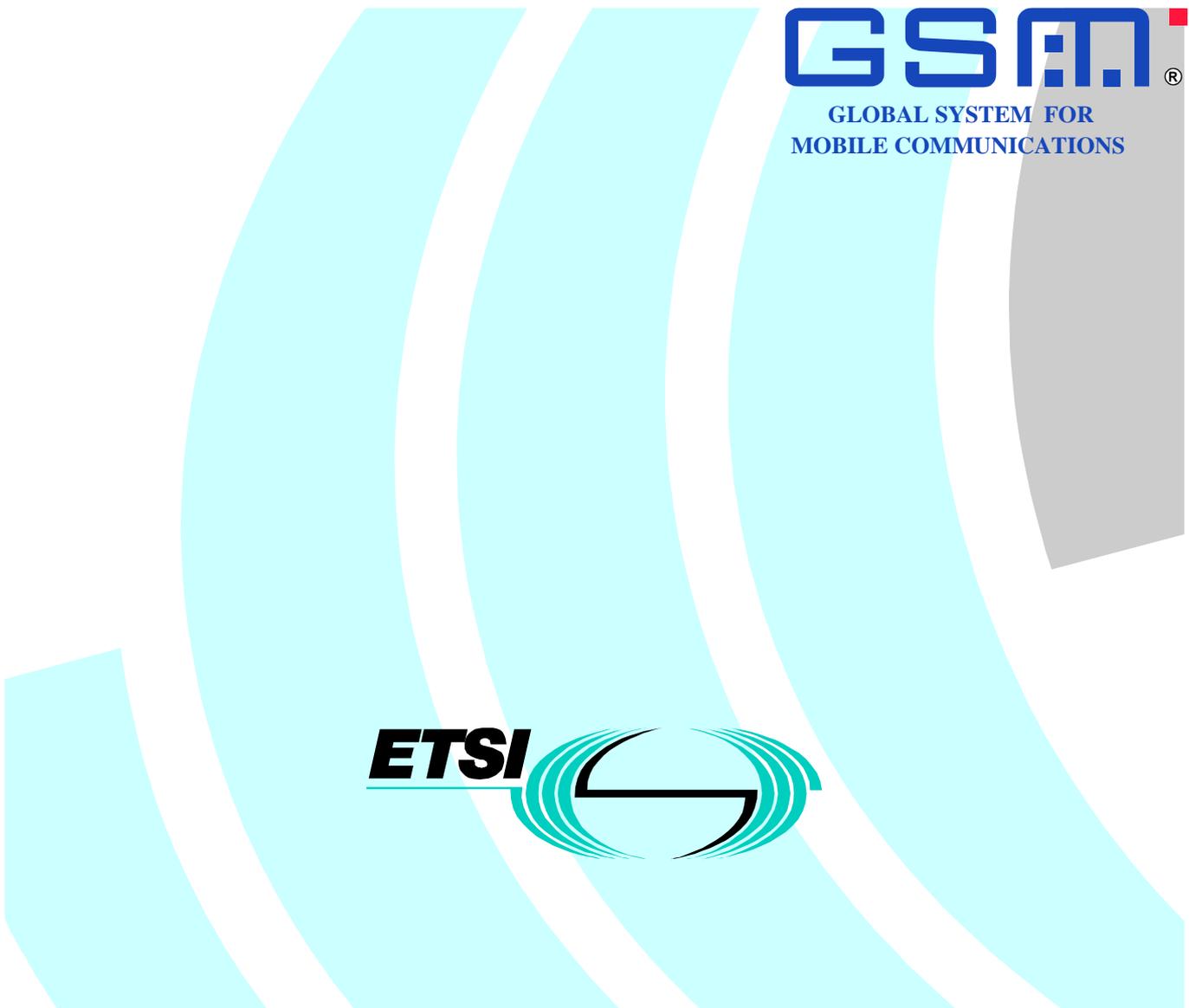
# ETSI TS 101 715 V7.1.0 (2000-04)

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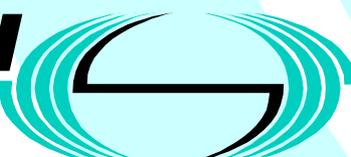
*Technical Specification*

**Digital cellular telecommunications system (Phase 2+);  
Support of Mobile Number Portability (MNP);  
Service description;  
Stage 1  
(GSM 02.66 version 7.1.0 Release 1998)**

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**GSM**®  
GLOBAL SYSTEM FOR  
MOBILE COMMUNICATIONS

**ETSI** 

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Reference

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RTS/TSGS-010266Q7R1

Keywords

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Digital cellular telecommunications system,  
Global System for Mobile communications (GSM)

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# Contents

Intellectual Property Rights .....	5
Foreword .....	5
1 Scope .....	6
2 References .....	6
3 Definitions and abbreviations .....	7
3.1 Definitions .....	7
3.2 Abbreviations .....	7
4 Applicability .....	8
5 Description .....	8
6 Normal procedures with successful outcome .....	9
7 Exceptional procedures .....	9
8 Addressing .....	9
9 Supplementary Services and Service Interworking .....	9
9.1 Calling line identification presentation (CLIP) .....	9
9.2 Calling line identification restriction (CLIR) .....	9
9.3 Connected line identification presentation (COLP) .....	10
9.4 Connected line identification restriction (COLR) .....	10
9.5 Call Forwarding Unconditional (CFU) .....	10
9.6 Call Forwarding on mobile subscriber Busy (CFB) .....	10
9.7 Call Forwarding on No Reply (CFNRy) .....	10
9.8 Call Forwarding on mobile subscriber Not Reachable (CFNRc) .....	10
9.9 Call Waiting (CW) .....	10
9.10 Call hold (HOLD) .....	10
9.11 Multiparty services (MPTY) .....	10
9.12 Closed User Group .....	10
9.13 Advice of Charge services .....	10
9.14 Barring of All Outgoing Calls (BAOC) .....	10
9.15 Barring of Outgoing International Calls (BOIC) .....	11
9.16 Barring of Outgoing International Calls except those directed to the Home PLMN Country (BOIC-exHC) .....	11
9.17 Barring of All Incoming Calls (BAIC) .....	11
9.18 Barring of Incoming Calls when roaming outside the home PLMN country (BIC-Roam) .....	11
9.19 Explicit Call Transfer (ECT) .....	11
9.20 Completion of Calls to Busy Subscriber (CCBS) .....	11
9.21 Support of Private Numbering Plan (SPNP) .....	11
9.22 Multiple Subscriber Profile (MSP) .....	11
9.23 enhanced Multi-Level Priority and Pre-emption (eMLPP) .....	11
10 Interworking with other network features .....	12
10.1 Customised Applications for Mobile network Enhanced Logic (CAMEL) .....	12
10.2 Support of Optimal Routing (SOR) .....	12

11 Networking interworking .....12

12 Charging aspects .....12

13 Lawful Interception Issues .....12

**Annex A (Informative): List of informative documents.....13**

**Annex B (Informative): Change history .....14**

History .....15

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## Foreword

This Technical Specification (TS) has been produced by the Special Mobile Group (SMG).

The present document defines the stage one description of the Support of Mobile Number Portability between GSM networks in the same country.

The contents of the present document is subject to continuing work within SMG and may change following formal SMG approval. Should SMG modify the contents of the present document, it will be republished by ETSI with an identifying change of release date and an increase in version number as follows:

Version 7.x.y

where:

- 7 indicates GSM Phase 2+ Release 1998;
- y the third digit is incremented when editorial only changes have been incorporated in the specification;
- x the second digit is incremented for all other types of changes, i.e. technical enhancements, corrections, updates, etc.

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# 1 Scope

The present document defines the stage one description of the Support of Mobile Number Portability between GSM networks in the same country as well as PCS-1900 cross-sector portability (i.e., number portability between fixed and PCS-1900 mobile networks). Stage one is an overall service description, primarily from the service subscriber's and user's points of view, but does not deal with the details of the human interface itself.

The present document is in response to a study mandate agreed between the European Commission and ETSI under order voucher ESTI/97/M-251 and the mandate by the US Federal Communications Commission for Service Provider Portability in North America.

Mobile Number Portability (MNP) is applicable only to those telecommunication services identified by an MSISDN.

The present document includes information applicable to network operators, service providers and terminal, switch and database manufacturers.

The present document contains the core requirements for the Support of Mobile Number Portability between GSM network operators in the same country as well as PCS-1900 cross-sector portability which are sufficient to provide a complete service.

Other cross-sector portability options (e.g. number portability between fixed and mobile networks) are outside the scope of the present document. It is highly desirable however, that technical solutions for MNP should be sufficiently flexible to allow for possible enhancements, e.g. cross-sector number portability, and MNP between analogue and digital mobile networks. Additional functionalities not documented in the present document may implement requirements which are considered outside the scope of the present document. This additional functionality may be on a network-wide basis, nation-wide basis or particular to a group of users. Such additional functionality shall not compromise conformance to the core requirements of the service.

Porting between Service Providers (i.e. service provider portability) which does not involve a change of Network Operator is outside the scope of the present document.

The relationship between Service Providers and Network Operators is outside the scope of the present document.

The relationship between a Service Provider and subscriber is outside the scope of the present document. The interface between the Mobile Station (MS) and any external applications are outside the scope of the present document. Charging principles are outside the scope of the present document except where explicitly stated in the text.

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# 2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies.
- A non-specific reference to an ETS shall also be taken to refer to later versions published as an EN with the same number.
- For this Release 1998 document, references to GSM documents are for Release 1998 versions (version 7.x.y).

[1] GSM 01.04 (ETR 350): "Digital cellular telecommunications system (Phase 2+); Abbreviations and acronyms".

## 3 Definitions and abbreviations

### 3.1 Definitions

For the purposes of the present document, the following terms and definitions apply.

**number range owner network:** The network to which the number range containing the ported number has been allocated.

**directory number:** Any E.164 dialable number assigned to a wireline or a wireless subscriber. A DN can be a 10-digit number in the context of the North American Numbering Plan (without a country code) or up to 15 digits for an international number(country code included).

**donor network:** The subscription network from which a number is ported in the porting process. This may or may not be the number range owner network.

**mobile number portability:** The ability for a mobile subscriber to change the digital mobile subscription network within the same country or within an FCC regulated geographical area within North America whilst retaining their original DNs.

**network operator:** A GSM PLMN operator.

**PCS-1900 number portability:** The ability for a subscriber to change subscription between PCS-1900 and other subscription networks within an FCC regulated geographical area within North America.

**originating network:** The network where the calling party is located.

**ported number:** Is a MSISDN that has undergone the porting process.

**ported subscriber:** The subscriber of a ported number.

**porting process:** A description of the transfer of a number between network operators.

**recipient network:** The network which receives the number in the porting process. This network becomes the subscription network when the porting process is complete.

**service provider:** An entity which offers service subscriptions to individual subscribers and contracts with a network operator to implement services for a specific DN. A service provider may contract with more than one network operator.

**service provider portability:** The transfer of numbers between two unique Service Providers.

**subscription network:** The network with which the customer's Service Provider has a contract to implement the customer's services for a specific DN.

NOTE: The term "recipient network" is used during the porting process. The recipient network becomes the "subscription network" after the completion of the porting process.

### 3.2 Abbreviations

For the purposes of the present document, the following abbreviations apply:

DN	Directory Number
MMI	Man Machine Interface
MNP	Mobile Number Portability
MSISDN	Mobile Station ISDN number
PNP	PCS-1900 Number Portability
PLMN	Public Land Mobile Network
SIM	Subscriber Identity Module

Further GSM related abbreviations are given in GSM 01.04.

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## 4 Applicability

Mobile Number Portability cannot be offered to a subscriber as a stand alone service. Mobile Number Portability is applicable to all GSM teleservices (e.g. SMS, voice fax) and bearer services (e.g. data), except for TS12 (emergency call).

The implementation of MNP shall be flexible enough to apply to each DN of a subscriber separately. Where the DNs used in the donor network are ported to different recipient mobile networks then a new IMSI (and SIM) will be required for each recipient network. The basic and supplementary services provisioned in the recipient network shall not be dependent on those that were provisioned in the donor network.

---

## 5 Description

Mobile Number Portability (MNP) is the ability for a mobile subscriber to change the digital mobile subscription networks within the same country or within an FCC regulated geographical area within North-America whilst retaining her original DN or DNs.

PCS-1900 Number Portability (PNP) is the ability for a subscriber to change subscription between PCS-1900 and other subscription networks within an FCC regulated geographical area within North-America.

The IMSI shall not be ported, hence the recipient mobile network of the porting process will issue a new IMSI for the ported subscription. The porting process may, but need not, include a change in service provider.

The ported subscriber can use exactly the same services as non-porting customers in the same subscription network. That is: whether the DN of a subscriber belongs to a subscription network or is ported to the subscription network shall have no influence on the services offered to the customer by that subscription network.

The services offered by the number range owner network and/or the donor network have no influence on the services offered by the subscription network. When a subscriber ports a DN to a new network then the donor network no longer provides support for the services of the ported number (this includes supplementary and value added services).

**NOTE:** This also implies that if a service supported in the donor network is not available on the recipient network then number portability mechanisms need not provide that service for the ported subscriber.

A network can be a donor of numbers and a recipient of numbers. A DN can be ported more than once; a ported number can be ported back to its number range owner network. Even after multiple portings, the technical solution shall involve only the number range owner network and recipient network.

The solution for MNP/PNP shall have a minimal adverse effect upon the quality of service offered to ported and non-porting subscribers. It may be the case that the quality of service for ported and non-porting subscribers differs slightly (e.g. due to additional call set-up delay).

Any additional delay in call set-up to ported numbers shall be minimised.

The process of porting a number may involve a disruption in service to the customer. The time that no service is available shall be minimised.

The technical implementation of the support of MNP/PNP in a network should not impede number availability and efficient use of numbers.

The technical implementation for the support of MNP/PNP shall not involve loss of functionality in the number range owner, donor or subscription network.

The technical implementation of MNP/PNP shall support optimisation of the use of network and inter-network resources so as to minimise costs associated with transport of traffic and/or appropriate signalling and/or processing activities (e.g. optimal routing).

In addition, for the porting process an efficient and effective way is needed to exchange porting information between all types of GSM network operators.

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## 6 Normal procedures with successful outcome

Mobile Number Portability is offered to all subscribers of telephone services subject to regulatory requirements.

A porting process is initiated at a subscriber's request on their selected DN(s) with the relevant networks. Initiation of the porting process is an off-line administrative process and cannot be invoked via a specific MMI on the hand-set.

After successful porting the subscriber, is able to use the provisioned telephone services and network specific services of the subscription network as offered to non-porting subscribers on that network. Porting will effectively initiate a new subscription.

As part of the porting process, the donor, number range owner and recipient networks shall update their relevant network elements in order to perform the porting. After the porting process is complete, the subscription details related to the ported DN on the donor network shall not be required and can be deleted. Therefore, only the number range owner network and the recipient network are involved in the MNP/PNP solution for support of service to the ported subscriber.

The originating network may not be aware of the ported nature of the number; therefore the technical solution shall work even if networks other than the number range owner and recipient have no knowledge of the ported nature of the number.

NOTE: Other networks may be involved to increase the efficiency of call-set-up to ported numbers.

When a ported subscriber takes an additional DN at her subscription network that additional DN should not have to come from the number range owner network(s) of the subscriber's ported numbers.

Where number ranges are assigned to network operators, the number range owner network shall receive the ported number back from the recipient network when the subscriber relinquishes the ported number, i.e. when the ported number ceases to be an active service number.

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## 7 Exceptional procedures

Service related data (e.g. numbers used in the call-forwarding service, etc.) may not be transferred to the recipient network during the porting process.

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## 8 Addressing

As a consequence of MNP, the DN of a subscriber may no longer explicitly identify the subscription network of that subscriber.

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## 9 Supplementary Services and Service Interworking

The support of mobile Number Portability in a network shall not affect the handling of supplementary service for the subscribers, i.e. there shall be no difference in the handling of the supplementary services between ported in and normal subscribers of the same network.

### 9.1 Calling line identification presentation (CLIP)

No impact.

### 9.2 Calling line identification restriction (CLIR)

No impact.

### 9.3 Connected line identification presentation (COLP)

No impact.

### 9.4 Connected line identification restriction (COLR)

No impact.

### 9.5 Call Forwarding Unconditional (CFU)

No impact.

### 9.6 Call Forwarding on mobile subscriber Busy (CFB)

No impact.

### 9.7 Call Forwarding on No Reply (CFNRy)

No impact.

### 9.8 Call Forwarding on mobile subscriber Not Reachable (CFNRc)

No impact.

### 9.9 Call Waiting (CW)

No impact.

### 9.10 Call hold (HOLD)

No impact.

### 9.11 Multiparty services (MPTY)

No impact.

### 9.12 Closed User Group

No impact.

### 9.13 Advice of Charge services

No impact.

### 9.14 Barring of All Outgoing Calls (BAOC)

No impact.

## 9.15 Barring of Outgoing International Calls (BOIC)

No impact.

## 9.16 Barring of Outgoing International Calls except those directed to the Home PLMN Country (BOIC-exHC)

No impact.

## 9.17 Barring of All Incoming Calls (BAIC)

No impact.

## 9.18 Barring of Incoming Calls when roaming outside the home PLMN country (BIC-Roam)

No impact.

## 9.19 Explicit Call Transfer (ECT)

No impact.

## 9.20 Completion of Calls to Busy Subscriber (CCBS)

No impact.

## 9.21 Support of Private Numbering Plan (SPNP)

No impact.

## 9.22 Multiple Subscriber Profile (MSP)

The porting process may apply on a per profile basis.

## 9.23 enhanced Multi-Level Priority and Pre-emption (eMLPP)

No impact.

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## 10 Interworking with other network features

### 10.1 Customised Applications for Mobile network Enhanced Logic (CAMEL)

No impact.

### 10.2 Support of Optimal Routing (SOR)

No impact.

NOTE: This is a service requirement. However, it may be difficult to find an MNP solution with no impact on Optimal Routing.

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## 11 Networking interworking

All services offered in co-operation with other types of networks shall still be offered in combination with MNP. This includes the basic services, all supplementary services and all network features.

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## 12 Charging aspects

No additional charging mechanisms relating to the calling party are to be standardised.

Enough information should be collected to allow the involved networks to workout inter-network charging.

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## 13 Lawful Interception Issues

Lawful interception shall be possible on a ported MSISDN.

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## Annex A (Informative): List of informative documents

The following documents are listed for information and as such do not count as normative references:

- [1] European Commission DG XIII "Equal access & interconnection" Final Report.
- [2] Study Mandate to ETSI Concerning the Introduction of Number Portability in the GSM System Family.
- [3] TR NA-010063 Version: Issue 1: "Number Portability Task Force: High Level Description of NP".
- [4] MNPTG-CP(97)22 Version 10: "Technical Feasibility Study UK Mobile Number Portability".
- [5] MNPTG-CP(97)0 Version4: "High Level Service Description UK Mobile Number Portability".
- [6] Federal Communications Commission (FCC) Second Order and Report, CC Docket No. 95-116, August 18, 1997.
- [7] CTIA report on Wireless Number Portability, Version 2.0.0.

## Annex B (Informative): Change history

Change history					
SMG No.	TDoc. No.	CR. No.	Section affected	New version	Subject/Comments
07/1997				0.0.1	Presented at NP Workshop on 16 July, 1997 in Schiphol, The Netherlands.
08/1997				0.0.2	Document more closely aligned with EC Study Mandate
09/1997				0.0.3	Changes made after ad-hoc meeting centred on this document and held in Slough.
10/1997				1.0.0	Presented for information at SMG#23, Budapest
10/1997				1.1.0	Comments from Vodafone and CNET included
10/1997				1.2.0	Changes made after ad-hoc meeting on stage 1 service description of MNP held in Vienna
10/1997				1.2.1	Editorial Changes from Vodafone included
11/1997				1.3.0	Comments from SMG1 Dresden.
11/1997				1.4.0	Modification of section 12; version will be forwarded to SMG3 and SMG6; version will be sent to SMG#24 as version 2.0.0 for approval (if no other modifications are made)
12/1997				2.0.0	SMG#24 for approval
02/1998				5.0.0	
SMG#29				7.0.0	Creation of version 7.0.0 as part of GSM release 1998
SA #07	SP-000061		Foreword, 1,3, 4, 5, 6, 8, A	7.1.0	PCS-1900 Service Provider Number Portability impacts for Mobile Number Portability

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# History

<b>Document history</b>		
V7.0.1	August 1999	One step Approval Procedure: OAP 9954: 1999-08-11 to 1999-12-10
V7.0.2	December 1999	Publication
V7.1.0	May 2000	One-step Approval Procedure OAP 20000908: 2000-05-10 to 2000-09-08
V7.1.0	April 2000	Publication