



# SLOVENSKI STANDARD

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8 [[ ]HJbc`ca fYy`Y`n`]bH[ f]fUb]a ]glcf]h] Ua ]`fG8 BŁ!`G][ bU]nUW`U`yh`+`fGG+Ł!  
8 [[ ]HJb]`W`] b]`h`Y`\_ca i b]\_UW`g\_]`g]ghYa `fU`hU`&Ł!`5 d`]\_UW`U`Xfi [ Y`fUh`] ]W`=G8 B  
!i dcfUVb]y`\_Y[ UXYU`fG] DŁ`nUg][ bU]nUW`g\_]`j a Ygb]\_`=G8 B!`Uj bc`\_cdYbg\_c  
a cV]bc`ca fYy`Y`fD@A BŁ!`%`XY.`GdYW`Z]\_UW`U`dfcfc\_c`Uf] GA`\$-`%&žfUh`] ]WU  
(`&`&Ł

Integrated Services Digital Network (ISDN); Signalling System No.7 (SS7); Digital cellular telecommunications system (Phase 2); Application of ISDN User Part (ISUP) version 2 for the ISDN-Public Land Mobile Network (PLMN) signalling interface; Part 1: Protocol specification (GSM 09.12 version 4.2.2)

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# EN 300 646-1 V4.2.2 (1999-05)

*European Standard (Telecommunications series)*

**Integrated Services Digital Network (ISDN);  
Signalling System No.7;  
Digital cellular telecommunications system (Phase 2);  
Application of ISDN User Part (ISUP) version 2 for the  
ISDN-Public Land Mobile Network (PLMN) signalling interface;  
Part 1: Protocol specification  
(GSM 09.12 version 4.2.2)**

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## Foreword

This European Standard (Telecommunications series) has been produced by ETSI Technical Committees Signalling Protocols and Switching (SPS) and the Special Mobile Group (SMG).

The present document is part 1 of a multi-part standard covering Signalling System No.7; Digital cellular telecommunications system (Phase 2); Application of ISDN User Part (ISUP) version 2 for the ISDN-Public Land Mobile Network (PLMN) signalling interface as described below:

**Part 1: "Protocol specification";**

Part 2: "Protocol Implementation Conformance Statement (PICS) proforma specification";

Part 3: "Test Suite Structure and Test Purposes (TSS&TP) specification";

Part 4: "Abstract Test Suite (ATS) and partial Protocol Implementation eXtra Information for Testing (PIXIT) proforma specification".

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The present document corresponds to GSM Technical Specification (GSM-TS) GSM 09.12 version 4.2.2.

ETS 300 303 (1994) covers the application of ISUP version 1 for the ISDN-PLMN interface.

<b>National transposition dates</b>	
Date of adoption of this EN:	30 April 1999
Date of latest announcement of this EN (doa):	31 July 1999
Date of latest publication of new National Standard or endorsement of this EN (dop/e):	31 January 2000
Date of withdrawal of any conflicting National Standard (dow):	31 January 2000

# 1 Scope

The present document specifies the second version of the Integrated Services Digital Network (ISDN) - Global System for Mobile communications (GSM) Public Land Mobile Network (PLMN) signalling interface. The present document is applicable to the interconnection of PLMN and ISDN.

The ISUP interface defined is the trunk signalling interface between the PLMN and the ISDN. It is assumed that the interface between PLMN and ISDN can occur at any point in a national network, provided that the exchange in the national network has this ISDN-PLMN signalling interface.

This signalling interface is based on ISUP version 2 (as given in ETS 300 356-1 to ETS 300 356-19 ([1] to [18])). The functionality in the GSM system is based on GSM Phase 2.

NOTE 1: Support of new functionality in the GSM system applicable for this interface may be included in the present document as amendments or be published as a new EN.

Connection types:

The following ISUP version 2 connection types can be supported:

- speech;
- 3,1 kHz audio;
- 64 kbit/s unrestricted;
- 64 kbit/s unrestricted preferred;
- $2 \times 64$  kbit/s unrestricted;
- 384 kbit/s unrestricted;
- 1 536 kbit/s unrestricted;
- 1 920 kbit/s unrestricted.

NOTE 2:  $2 \times 64$  kbit/s, 384 kbit/s, 1 536 kbit/s, 1 920 kbit/s unrestricted and 64 kbit/s unrestricted preferred connection types are not supported by the GSM access, however the connection types may be used in order to support other access methods via the GSM network.

Supplementary services:

The following ISUP version 2 supplementary services can be supported:

- Calling Line Identification Presentation (CLIP)/Calling Line Identification Restriction (CLIR);
- Connected Line Identification Presentation (COLP)/Connected Line Identification Restriction (COLR);
- Terminal portability (TP);
- User-to-User Signalling (UUS);
- Closed User Group (CUG);
- Subaddressing (SUB);
- Malicious Call Identification (MCID);
- Conference call, add-on (CONF);
- Explicit Call Transfer (ECT);
- Call Forwarding Unconditional (CFU)/Call Forwarding on Busy (CFB)/Call Forwarding on No Reply (CFNR);
- Call Deflection (CD);



- Call Hold (HOLD);
- Call Waiting (CW);
- Completion of Calls to Busy Subscriber (CCBS);
- Three party (3PTY).

The support of supplementary services on this interface does not necessarily imply that the supplementary services are supported in one or the other of the networks interconnected.

The Direct Dialling In (DDI) supplementary service and Multiple Subscriber Number (MSN) supplementary service have no impact on this interface.

This interface can be used within national networks, however messages and parameters that are marked for national use (@) in ETS 300 356-1 [1] are not described in the present document.

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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.

- Standard Preview*  
*(standards.iteh.ai)*
- SIST EN 300 646-1 V4.2.2:2005
- [1] ETS 300 356-1 (1995): "Integrated Services Digital Network (ISDN); Signalling System No.7; ISDN User Part (ISUP) version 2 for the international interface; Part 1: Basic services [ITU-T Recommendations Q.761 to Q.764 (1993), modified]".
- [2] ETS 300 356-2 (1995): "Integrated Services Digital Network (ISDN); Signalling System No.7; ISDN User Part (ISUP) version 2 for the international interface; Part 2: ISDN supplementary services [ITU-T Recommendation Q.730 (1993), modified]".
- [3] ETS 300 356-3 (1995): "Integrated Services Digital Network (ISDN); Signalling System No.7; ISDN User Part (ISUP) version 2 for the international interface; Part 3: Calling Line Identification Presentation (CLIP) supplementary service [ITU-T Recommendation Q.731, clause 3 (1993), modified]".
- [4] ETS 300 356-4 (1995): "Integrated Services Digital Network (ISDN); Signalling System No.7; ISDN User Part (ISUP) version 2 for the international interface; Part 4: Calling Line Identification Restriction (CLIR) supplementary service [ITU-T Recommendation Q.731, clause 4 (1993), modified]".
- [5] ETS 300 356-5 (1995): "Integrated Services Digital Network (ISDN); Signalling System No.7; ISDN User Part (ISUP) version 2 for the international interface; Part 5: Connected Line Identification Presentation (COLP) supplementary service [ITU-T Recommendation Q.731, clause 5 (1993), modified]".
- [6] ETS 300 356-6 (1995): "Integrated Services Digital Network (ISDN); Signalling System No.7; ISDN User Part (ISUP) version 2 for the international interface; Part 6: Connected Line Identification Restriction (COLR) supplementary service [ITU-T Recommendation Q.731, clause 6 (1993), modified]".

- [7] ETS 300 356-7 (1995): "Integrated Services Digital Network (ISDN); Signalling System No.7; ISDN User Part (ISUP) version 2 for the international interface; Part 7: Terminal Portability (TP) supplementary service [ITU-T Recommendation Q.733, clause 4 (1993), modified]".
- [8] ETS 300 356-8 (1995): "Integrated Services Digital Network (ISDN); Signalling System No.7; ISDN User Part (ISUP) version 2 for the international interface; Part 8: User-to-User Signalling (UUS) supplementary service [ITU-T Recommendation Q.737, clause 1 (1993), modified]".
- [9] ETS 300 356-9 (1995): "Integrated Services Digital Network (ISDN); Signalling System No.7; ISDN User Part (ISUP) version 2 for the international interface; Part 9: Closed User Group (CUG) supplementary service [ITU-T Recommendation Q.735, clause 1 (1993), modified]".
- [10] ETS 300 356-10 (1995): "Integrated Services Digital Network (ISDN); Signalling System No.7; ISDN User Part (ISUP) version 2 for the international interface; Part 10: Subaddressing (SUB) supplementary service [ITU-T Recommendation Q.731, section 8 (1992), modified]".
- [11] ETS 300 356-11 (1995): "Integrated Services Digital Network (ISDN); Signalling System No.7; ISDN User Part (ISUP) version 2 for the international interface; Part 11: Malicious Call Identification (MCID) supplementary service".
- [12] ETS 300 356-12 (1995): "Integrated Services Digital Network (ISDN); Signalling System No.7; ISDN User Part (ISUP) version 2 for the international interface; Part 12: Conference call, add-on (CONF) supplementary service [ITU-T Recommendation Q.734, clause 1 (1993), modified]".
- [13] ETS 300 356-14 (1995): "Integrated Services Digital Network (ISDN); Signalling System No.7; ISDN User Part (ISUP) version 2 for the international interface; Part 14: Explicit Call Transfer (ECT) supplementary service".
- [14] ETS 300 356-15 (1995): "Integrated Services Digital Network (ISDN); Signalling System No.7; ISDN User Part (ISUP) version 2 for the international interface; Part 15: Diversion supplementary services [ITU-T Recommendation Q.732, clauses 2 to 5 (1993), modified]".
- [15] ETS 300 356-16 (1995): "Integrated Services Digital Network (ISDN); Signalling System No.7; ISDN User Part (ISUP) version 2 for the international interface; Part 16: Call Hold (HOLD) supplementary service [ITU-T Recommendation Q.733, clause 2 (1993), modified]".
- [16] ETS 300 356-17 (1995): "Integrated Services Digital Network (ISDN); Signalling System No.7; ISDN User Part (ISUP) version 2 for the international interface; Part 17: Call Waiting (CW) supplementary service [ITU-T Recommendation Q.733, section 1 (1992), modified]".
- [17] ETS 300 356-18 (1995): "Integrated Services Digital Network (ISDN); Signalling System No.7; ISDN User Part (ISUP) version 2 for the international interface; Part 18: Completion of Calls to Busy Subscriber (CCBS) supplementary service".
- [18] ETS 300 356-19 (1995): "Integrated Services Digital Network (ISDN); Signalling System No.7; ISDN User Part (ISUP) version 2 for the international interface; Part 19: Three party (3PTY) supplementary service [ITU-T Recommendation Q.734, clause 2 (1993), modified]".
- [19] ETS 300 121 (1992): "Integrated Services Digital Network (ISDN); Application of the ISDN User Part (ISUP) of CCITT Signalling System No.7 for international ISDN interconnections (ISUP version 1)".
- [20] ETS 300 008 (1991): "Integrated Services Digital Network (ISDN); Signalling System No.7; Message Transfer Part (MTP) to support international interconnection".
- [21] ETS 300 540: "Digital cellular telecommunications system (Phase 2); Transmission planning aspects of the speech service in the GSM Public Land Mobile Network (PLMN) system (GSM 03.50)".
- [22] ITU-T Recommendation Q.763 (1993): "Formats and codes of the ISDN User Part of Signalling System No. 7".
- [23] ETS 300 542: "Digital cellular telecommunications system (Phase 2); Line identification supplementary services - Stage 2 (GSM 03.81)".

- [24] ETS 300 543: "Digital cellular telecommunications system (Phase 2); Call Forwarding (CF) supplementary services - Stage 2 (GSM 03.82)".
- [25] ETS 300 544: "European digital cellular telecommunications system (Phase 2); Call Waiting (CW) and Call Hold (HOLD) supplementary services - Stage 2 (GSM 03.83)".
- [26] ETS 300 545: "European digital cellular telecommunications system (Phase 2); MultiParty (MPTY) supplementary services - Stage 2 (GSM 03.84)".
- [27] ETS 300 546: "Digital cellular telecommunications system (Phase 2); Closed User Group (CUG) supplementary services - Stage 2 (GSM 03.85)".
- [28] ETS 300 547: "European digital cellular telecommunications system (Phase 2); Advice of Charge (AoC) supplementary services - Stage 2 (GSM 03.86)".
- [29] ETS 300 548: "European digital cellular telecommunications system (Phase 2); Call Barring (CB) supplementary services - Stage 2 (GSM 03.88)".
- [30] ETS 300 549: "Digital cellular telecommunications system (Phase 2); Unstructured Supplementary Service Data (USSD) - Stage 2 (GSM 03.90)".
- [31] ETS 300 601: "European digital cellular telecommunications system (Phase 2); Interworking between the Public Land Mobile Network (PLMN) and the Circuit Switched Public Data Network (CSPDN) (GSM 09.04)".
- [32] ETS 300 602: "European digital cellular telecommunications system (Phase 2); Interworking between a Public Land Mobile Network (PLMN) and a Packet Switched Public Data Network (PSPDN) for Packet Assembly/Disassembly facility (PAD) access (GSM 09.05)".
- [33] ETS 300 603: "European digital cellular telecommunications system (Phase 2); Interworking between the Public Land Mobile Network (PLMN) and the Packet Switched Public Data Network/Integrated Services Digital Network (PSPDN/ISDN) for the support of packet switched data transmission services (GSM 09.06)".
- [34] ETS 300 604: "Digital cellular telecommunications system (Phase 2); General requirements on interworking between the Public Land Mobile Network (PLMN) and the Integrated Services Digital Network (ISDN) or Public Switched Telephone Network (PSTN) (GSM 09.07)".
- [35] ETS 300 599: "Digital cellular telecommunications system (Phase 2); Mobile Application Part (MAP) specification (GSM 09.02)".
- [36] ETS 300 303 (1994): "Integrated Services Digital Network (ISDN); ISDN - Global System for Mobile communications (GSM) Public Land Mobile Network (PLMN) signalling interface".

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## 3 Definitions and abbreviations

### 3.1 Definitions

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

**gateway:** exchange which switches the call to or from another network

**Gateway Mobile-service Switching Centre (GMSC):** GMSC is an exchange with the functional entity which performs interrogation to the Home Location Register (HLR)

**international gateway:** exchange (at the end of an international circuit) which switches a call destined to or originating from another country

**Public Land Mobile Network (PLMN):** PLMN is in the present document referring to the GSM network

## 3.2 Abbreviations

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

3PTY	Three-Party
ACM	Address Complete Message
AoC	Advice of Charge
CB	Call Barring
CCBS	Completion of Calls to Busy Subscriber
CD	Call Deflection
CFB	Call Forwarding on Busy
CFNR	Call Forwarding on No Reply
CFNRc	Call Forwarding on Mobile Subscriber Not Reachable
CFU	Call Forwarding Unconditional
CLIP	Calling Line Identification Presentation
CLIR	Calling Line Identification Restriction
COLP	Connected Line Identification Presentation
COLR	Connected Line Identification Restriction
CONF	Conference call
CPG	Call Progress message
CUG	Closed User Group
CW	Call Waiting
DDI	Direct Dialling In
ECT	Explicit Call Transfer
GMSC	Gateway Mobile-service Switching Centre
GSM	Global System for Mobile communications
HLC	High Layer Compatibility
HLR	Home Location Register
HOLD	Call Hold
HPLMN	Home Public Land Mobile Network
IAM	Initial Address Message
ISDN	Integrated Services Digital Network
ISUP	ISDN User Part
MAP	Mobile Application Part
MCID	Malicious Call Identification
MS	Mobile Station
MSC	Mobile-service Switching Centre
MSISDN	Mobile Station ISDN number
MSN	Multiple Subscriber Number
MSRN	Mobile Station Roaming Number
MTP	Message Transfer Part
NI	Network Indicator
PLMN	Public Land Mobile Network
SUB	Subaddressing
TP	Terminal Portability
USSD	Unstructured Supplementary Service Data
UUS	User-to-User Signalling
UUS1	UUS service 1
UUS2	UUS service 2
UUS3	UUS service 3
VLR	Visitor Location Register
VMSC	Visited Mobile-service Switching Centre

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## 4 General principles

The gateway exchanges in both networks behave like international incoming or outgoing gateways in the relevant cases as described in ETS 300 356-1 to ETS 300 356-19 ([1] to [18]), with the exceptions indicated within the present document.