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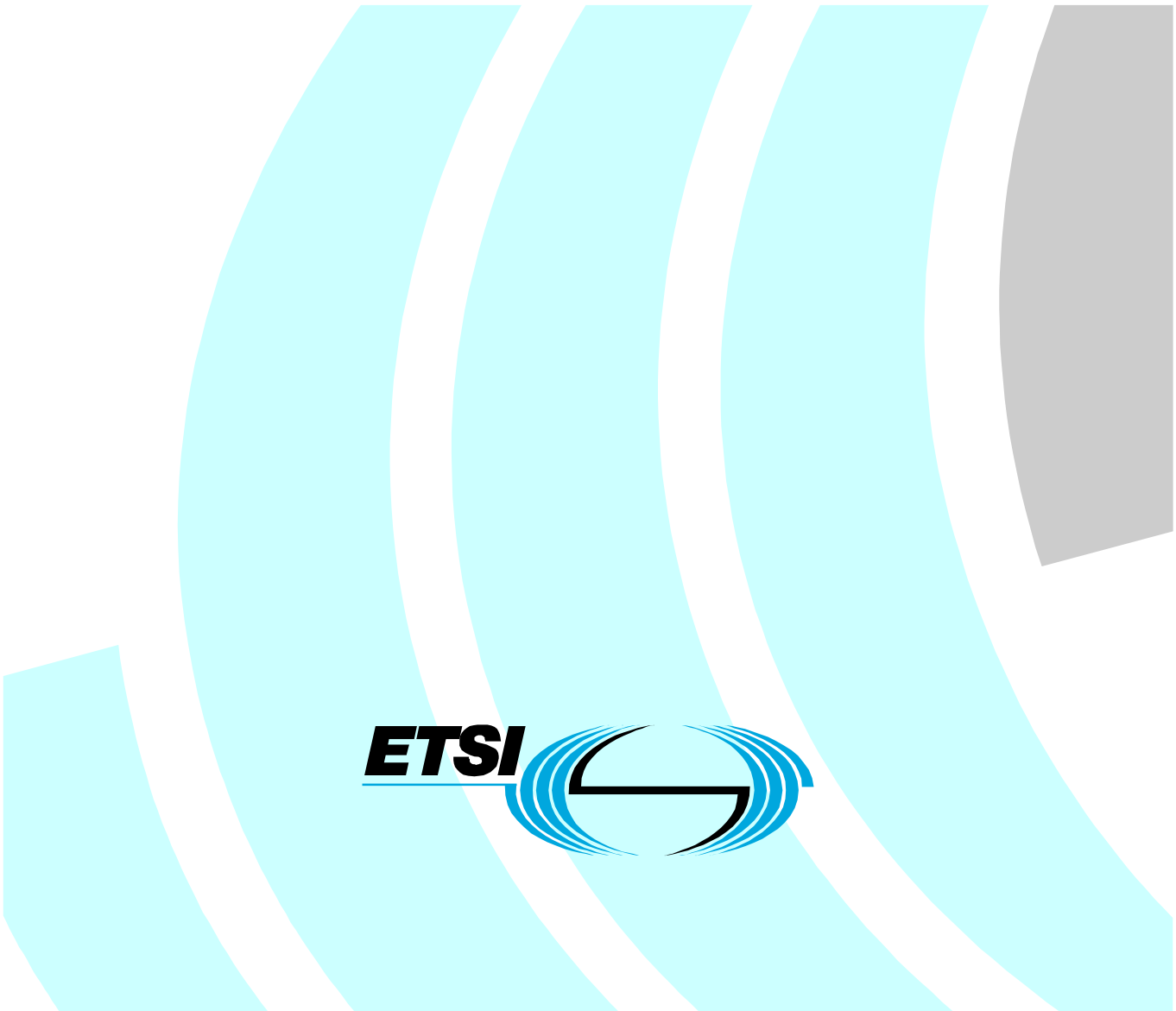
European Standard (Telecommunications series)

Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 12: Supplementary services stage 3; Sub-part 1: Call Identification (CI)



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Foreword

This European Standard (Telecommunications series) has been produced by ETSI Project Terrestrial Trunked Radio (TETRA), and is now submitted for the ETSI standards One-step Approval Procedure.

The present document is part 12, sub-part 1 of a multi-part deliverable covering the Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D), as identified below:

EN 300 392-1: "General network design";

EN 300 392-2: "Air Interface (AI)";

EN 300 392-3: "Interworking at the Inter-System Interface (ISI)";

ETS 300 392-4: "Gateways basic operation";

EN 300 392-5: "Peripheral Equipment Interface (PEI)";

EN 300 392-7: "Security";

EN 300 392-9: "General requirements for supplementary services";

EN 300 392-10: "Supplementary services stage 1";

EN 300 392-11: "Supplementary services stage 2";

EN 300 392-12: "Supplementary services stage 3";

EN 300 392-12-1: "Call Identification (CI)";

ETS 300 392-12-2: "Call Report (CR)";

ETS 300 392-12-3: "Talking Party Identification (TPI)";

EN 300 392-12-4: "Call Forwarding (CF)";

ETS 300 392-12-5: "List Search Call (LSC)";

EN 300 392-12-6: "Call Authorized by Dispatcher (CAD)";

ETS 300 392-12-7: "Short Number Addressing (SNA)";

EN 300 392-12-8: "Area Selection (AS)";

ETS 300 392-12-9: "Access Priority (AP)";

EN 300 392-12-10: "Priority Call (PC)";

ETS 300 392-12-11: "Call Waiting (CW)";

EN 300 392-12-12: "Call Hold (CH)";

ETS 300 392-12-13: "Call Completion to Busy Subscriber (CCBS)";

EN 300 392-12-14: "Late Entry (LE)";

ETS 300 392-12-16: "Pre-emptive Priority Call (PPC)";

EN 300 392-12-17: "Include Call (IC)";

EN 300 392-12-18: "Barring of Outgoing Calls (BOC)";

EN 300 392-12-19: "Barring of Incoming Calls (BIC)";

ETS 300 392-12-20: "Discreet Listening (DL)";

EN 300 392-12-21: "Ambience Listening (AL)";

ETS 300 392-12-22: "Dynamic Group Number Assignment (DGNA)";

ETS 300 392-12-23: "Call Completion on No Reply (CCNR)";

ETS 300 392-12-24: "Call Retention (CRT)";

ETS 300 392-13: "SDL model of the Air Interface (AI)";

ETS 300 392-14: "Protocol Implementation Conformance Statement (PICS) proforma specification";

TS 100 392-15: "TETRA frequency bands, duplex spacing and channel numbering";

TS 100 392-16: "Network Performance Metrics";

TS 100 392-17: "TETRA V+D and DMO Release 1.1 specifications".

Proposed national transposition dates	
Date of latest announcement of this EN (doa):	3 months after ETSI publication
Date of latest publication of new National Standard or endorsement of this EN (dop/e):	6 months after doa
Date of withdrawal of any conflicting National Standard (dow):	6 months after doa

1 Scope

The present document specifies the stage 3 description of the Supplementary Services CLIP, CLIR and COLP all part of Call Identification for the Terrestrial Trunked Radio (TETRA). The term "Line" is used in the present document to design either the line of a "LS" Line Station or by extension the TETRA Air Interface.

NOTE 1: In order to use the same name for supplementary services as ECMA.

Calling Line Identification Presentation (SS-CLIP) is a supplementary service which is offered to the called user and which provides the calling user identity.

Connected Line Identification Presentation (SS-COLP) is a supplementary service which is offered to the calling user and which provides the connected user identity.

Calling/connected Line Identification Restriction (SS-CLIR) is a supplementary service offered to a user to restrict presentation of that user's identity to another user.

Man-Machine Interface and charging principles are outside the scope of the present document.

The supplementary service stage 3 description is preceded by the stage 1 and the stage 2 description of the service, according to the method described in ITU-T Recommendation I.130 [1]. The stage 1 description specifies the service from the user's point of view. The stage 2 description identifies the functional capabilities of each SS and the information flows needed to support the supplementary service as specified in its stage 1 description. The present stage 3 description specifies the protocols at the air interface and at the various Inter-System Interfaces (ISI) to support each Supplementary Service.

NOTE 2: According to ITU-T Recommendation I.130 [1], the stage 3 description of any telecommunication service addresses the network implementation aspects. Consequently it comprises two steps: the specifications of all protocols at the various reference points involved in any of the service procedures (notably the service operation) are the first step of the stage 3 description, and the specifications of the functions of the corresponding network entities are its second step. The latter have not been provided since they can be derived from the specification of the functional entity actions in the stage 2 description.

The present document is applicable to Voice plus Data individual call or group call; the present document is neither applicable to Packet Mode of Operation nor to DMO; more specifically to the following entities:

- the MS/LS of either the calling user or the connected user during an individual call or a group call;
- the originating Switching and Management Infrastructure (SwMI) in an individual call or a group call;
- the group controlling SwMI and the participating SwMI for a group call;
- the terminating SwMI in an individual call;
- the interworking SwMI for either an individual call or a group call.

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 and/or edition number or version number) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies.

Referenced documents which are not found to be publicly available in the expected location might be found at http://docbox.etsi.org/Reference.

[1] ITU-T Recommendation I.130 (1988): "Method for the characterization of telecommunication services supported by an ISDN and network capabilities of an ISDN".

[2] ETSI EN 300 171: "Private Integrated Services Network (PISN); Service description, functional capabilities and information flows; Circuit-mode 64 kbit/s bearer services [ISO/IEC 11574 (2000) modified]".

[3] ETSI EN 300 392-1: "Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 1: General network design".

[4] ETSI EN 300 392-2: "Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 2: Air Interface (AI)".

[5] ETSI EN 300 392-3: "Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 3: Interworking at the Inter-System Interface (ISI)".

[6] ETSI EN 300 392-9: "Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 9: General requirements for supplementary services".

[7] ETSI EN 300 392-10-1: "Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 10: Supplementary services stage 1; Sub-part 1: Call identification".

[8] ETSI EN 300 392-11-1: "Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 11: Supplementary services stage 2; Sub-part 1: Call Identification (CI)".

[9] Standard ECMA-148: "Private Integrated Services Network (PISN) - Specification, Functional Model and Information Flows- Identification Supplementary Services".

[10] ITU-T Recommendation Z.100: " Specification and Description Language (SDL)".

[11] ITU-T Recommendation E.164: "The international public telecommunication numbering plan".

[12] Void.

[13] ITU-T Recommendation X.121: "International numbering plan for public data networks".

[14] ETSI EN 300 392-3-2: "Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 3: Interworking at the Inter-System Interface (ISI); Sub-part 2: Additional Network Feature Individual Call (ANF-ISIIC)".

[15] ETSI EN 300 392-3-3: "Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 3: Interworking at the Inter-System Interface (ISI); Sub-part 3: Additional Network Feature Group Call (ANF-ISIGC)".

[16] ETSI EN 300 392-3-5: "Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 3: Interworking at the Inter-System Interface (ISI); Sub-part 5: Additional Network Feature for Mobility Management (ANF-ISIMM)".

[17] ETSI ETS 300 392-10-3: "Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 10: Supplementary services stage 1; Sub-part 3: Talking party identification".

3 Definitions, symbols and abbreviations

3.1 Definitions

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

affected user: In the case of SS-CLIP it is the calling user (even in a group), in the case of SS-COLP it is the connected user, in the case of SS-CLIR it is the connected user and in the case of SS-COLR it is the calling user.

calling user identity: See in EN 300 392-1 [3], clause 7.2 where ITSI and SSI are defined.

NOTE: When the connected user and the calling user belongs to the same home SwMI, and according to clause 8.4.1 of EN 300 392-9 [6], this identity may be given using only the SSI part of the ITSI. In all other cases, the identity will be the full ITSI. In the case of a group call, the calling user identity shall be the individual ITSI setting up the group call

connected user: user that answers a call

NOTE: Different from ECMA-148 [9] and may be different from called user.

connected user identity: identity of the connected user for identification purposes

NOTE 1: As defined in EN 300 392-1 [3], clause 7.2 where ITSI and SSI are defined.

NOTE 2: When the connected user and the calling user belongs to the same home SwMI, and according to clause 8.4.1 of EN 300 392-9 [6], this identity may be given using only the SSI part of the ITSI. In all other cases, the identity will be the full ITSI. In the case of a group call, the connected user identity is defined as the GTSI.

served user: served user in the case of SS-CLIP is the connected user; the served user in the case of SS-COLP is the calling user; in the ECMA terminology, SS-CLIR includes the SS-CLIR restriction of SS-CLIP and the SS-COLR restriction of SS-COLP

NOTE: In the present document SS-CLIR and SS-COLR will be used preferably to a generic SS-CLIR term; thus in the case of SS-CLIR as applicable to the present document, the served user is the calling user and in the case of SS-COLR, the served user is the connected user.

3.2 Symbols

For the purposes of the present document, the symbols defined in ITU-T Recommendation Z.100 [10] relating to SDL apply.

3.3 Abbreviations

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

CC	basic service Call Control functional entity
CCA	basic service Call Control functional entity Agent

NOTE: CC and CCA are applied as defined in EN 300 171 [2].

ANF-ISIGC	Additional Network Feature - Inter-System Interface Group Call
ANF-ISIIC	Additional Network Feature - Inter-System Interface Individual Call
ANF-ISIMM	Additional Network Feature - Inter-System Interface Mobility Management
CGLI	CallinG Line Identification (ECMA)
CLIP	Calling Line Identification Presentation
CLIR	Calling Line Identification Restriction

CMCE	Circuit Mode Control Entity
COLI	COnnected Line Identification
COLP	COnnected Line Presentation
COLR	COnnected Line Restriction
GTSI	Group TETRA Subscriber Identity
ISI	Inter System Interface
ITSI	Individual TETRA Subscriber Identity
LS	Line Station
MS	Mobile Station
PDU	Protocol Data Unit
SDL	(Functional) Specification and Description Language
SS	Supplementary Service

NOTE: The abbreviation SS is only used when referring to a specific supplementary service.

SSI	Short Subscriber Identity
SwMI	Switching and Management Infrastructure
TNSS-SAP	Tetra Network layer Supplementary Service- Service Access Point

4 Signalling protocol for the support of SS-CLIP and SS-CLIR

4.1 SS-CLIP and SS-CLIR description

4.1.1 SS-CLIP service description

4.1.1.1 General

SS-CLIP is a supplementary service offered to the connected user; it provides the calling user's identity (without any calling user's sub address information in the case of TETRA call) to the connected user. The information presented to the connected user shall consist of the identity of the calling user in a form sufficient to return the call (SSI, ITSI for TETRA call; National, International number for interworking call).

This clause describes SS-CLIP specific services offered by the Circuit Mode Control Entity (CMCE) at the Supplementary Services service access point (TNSS-SAP) of the TETRA voice plus data layer 3 service boundary in a TETRA Mobile Station (MS) or TETRA Line Station (LS). The SS-CLIP service access point is used in conformance testing as a normative boundary in MSs and LSs.

NOTE: All the service primitives have been shown without a TNSS-CLIP-prefix.

4.1.1.2 SS-CLIP services offered over the TNSS-SAP

NOTE: As man-machine interface or user applications are outside the scope of the present document service primitives are used to define information exchange to and from the standardized part of the MS/LS. Those primitives may be only indirectly accessible.

The SS-CLIP service primitive at the served user MS/LS TNSS-SAP shall be:

- INFORM1 indication.

4.1.1.3 INFORM1 indication

The INFORM1 indication primitive shall be sent to the connected user application by the MS/LS CMCE over TNSS-SAP as a result of SS-CLIP operation. The INFORM1 indication primitive shall contain the SS-CLIP parameters listed in table 1. Normal use of SS-CLIP INFORM1 will be with SS-CLIR not invoked, override not implemented or not invoked.

Table 1: Parameters for the primitive INFORM1 indication

Parameter	Indication
SS-CLIR invoked for calling user	M
CallinG Line Identity (CGLI)	C (see note 1)
SS-CLIR overridden by connected user	O (see note 2)
NOTE 1: Conditional on SS-CLIR not having been invoked for calling user. NOTE 2: When override is implemented, INFORM1 may be presented with the indication that the identity of the calling user is provided due to override.	

4.1.2 Parameter description

SS-CLIR invoked for calling user:

- 00 not implemented or default mode;
- 10 no restriction;
- 11 restriction.

SS-CLIR overridden by connected user:

- 1 overridden;
- 0 not overridden.

Calling Line Identity:

- Short Subscriber Identity (SSI);
- Short Subscriber Identity (SSI) + Address extension;
- Gateway identity;
- External subscriber number.

NOTE: The numbering plan, the type of number and the screening indicator are available to the connected user SwMI, not to the connected user application.

4.1.3 SS-CLIR description

4.1.3.1 General

SS-CLIR is a supplementary service offered to the calling user. It restricts presentation of the calling user's identity to the connected user. When SS-CLIR has been invoked for a call, the originating SwMI shall provide the destination SwMI with the indication that the calling user's identity is not allowed to be presented to the connected user (exception for the case of override). In this case no calling user identity shall be included in the SET-UP PDU sent to the connected user.

Whether or not SS-CLIR has been invoked for that call, the calling user identity within SwMIs or over the ISI as part of the basic (individual or group) call procedures.

This clause describes SS-CLIR specific services offered by the Circuit Mode Control Entity (CMCE) at the Supplementary Services service access point (TNSS-SAP) of the TETRA voice plus data layer 3 service boundary in a TETRA Mobile Station (MS) or TETRA Line Station (LS). The SS-CLIR service access point is used in conformance testing as a normative boundary in MSs and LSs.

NOTE: All the service primitives have been shown without a TNSS-CLIR-prefix.

4.1.3.2 SS-CLIR services offered over the TNSS-SAP

NOTE: As man-machine interface or user applications are outside the scope of the present document service primitives are used to define information exchange to and from the standardized part of the MS/LS. Those primitives may be only indirectly accessible.

The SS-CLIR service primitives at the served user MS/LS TNSS-SAP shall be:

- INVOCATION request;
- INFORM2 indication (SS-CLIR overridden);
- INFORM3 indication (SS-CLIR overridden).

4.1.3.2.1 INVOCATION request

The INVOCATION request primitive shall be sent by the calling user application to the MS/LS CMCE over TNSS-SAP to invoke SS-CLIR in the case where SS-CLIR is provided with a temporary mode provision (non permanent). The INVOCATION request primitive shall contain the SS-CLIR parameters listed in table 2.

Table 2: Parameters for the primitive INVOCATION request

Parameter	Request
SS-CLIR invocation by calling user	M

4.1.3.2.2 INFORM2 indication

The INFORM2 indication primitive shall be sent to the calling user application by the MS/LS CMCE over TNSS-SAP as a result of SS-CLIR operation. The INFORM2 indication primitive shall contain the SS-CLIR parameters listed in table 3. This INFORM2 indication is presented only in the case has taken place for the call.

Table 3: Parameters for the primitive INFORM2 indication

Parameter	Indication
SS-CLIR invoked by calling user	M
Call reference (identifier)	M
SS-CLIR Overridden by Connected User	M

4.1.3.2.3 INFORM3 indication

The INFORM3 indication primitive may be sent to the connected user application by the MS/LS CMCE over TNSS-SAP as a result of SS-CLIR operation to indicate that presentation of CGLI is due to override. In the case where this primitive is implemented, the INFORM3 indication primitive shall contain the SS-CLIR parameters listed in table 1 (identical to SS-CLIP when CGLI presentation result from an override of SS-CLIR).

NOTE 1: This primitive exists only if SS-CLIP has been invoked.

NOTE 2: In the case where override is not implemented, there will be one INFORM1 primitive for SS-CLIP, one INFORM2 primitive for SS-CLIR and no INFORM3 primitive.

4.1.4 Parameter description

SS-CLIR invocation by calling user:

- SS-CLIR not implemented or invoked according to default mode;
- no restriction;
- restriction.

SS-CLIR overridden by connected user:

- overridden;
- not overridden;

Calling Line Identity.

- Short Subscriber Identity (SSI);
- Short Subscriber Identity (SSI) + Address extension;
- Gateway identity;
- External subscriber number.

NOTE: The numbering plan, the type of number and the screening indicator are available to the connected user SwMI, not to the connected user application.

4.2 SS-CLIP and SS-CLIR operational requirements

4.2.1 SS-CLIP operational requirements

4.2.1.1 Served user MS/LS

The served user MS/LS shall comply with the requirements in clause 14 of EN 300 392-2 [4] which apply to the tele-services and bearer services which it supports for incoming calls.

4.2.1.2 Originating SwMI

In case of an individual call over the ISI, the originating SwMI shall support the requirements set in EN 300 392-3-2 [14] for establishing an outgoing call.

In case of a group call over the ISI, the originating SwMI shall support the requirements set in EN 300 392-3-3 [15] for establishing an outgoing call.

4.2.1.3 Group controlling SwMI

If the served user MS/LS is registered in the group controlling SwMI, that SwMI shall support this MS/LS complying with the requirements for participating in a group call set in clause 14 of EN 300 392-2 [4].

If the served user MS/LSs is not registered in the group controlling SwMI, that SwMI shall comply with the ISI requirements necessary to establish group calls, set in EN 300 392-3-3 [15].

4.2.1.4 Terminating SwMI

The terminating SwMI is also the served user SwMI. That SwMI shall support the served user MS/LS complying with the requirements for individual calls set in clause 14 of EN 300 392-3-2 [14].

It shall also support the served user MS/LS complying with the requirements for group call set in EN 300 392-3-3 [15] if it is different from the group controlling SwMI.

4.2.2 SS-CLIR operational requirements

4.2.2.1 Served user MS/LS

The served user MS/LS shall comply with the requirements in clause 14 of EN 300 392-2 [4] which apply to the tele- and bearer services which it supports. In addition it shall comply with the relevant call related requirements in clauses 7 and 11 of EN 300 392-9 [6] restricted to outgoing calls.

4.2.2.2 Originating SwMI

The originating SwMI is also the served user SwMI. That SwMI shall support the served user MS/LS complying with the requirements for individual or group calls in clause 14 of EN 300 392-2 [4]. If the call is over ISI, the served user SwMI/originating SwMI shall also comply with the corresponding requirements for establishing outgoing calls set in EN 300 392-3-2 [14] for individual calls and in EN 300 392-3-3 [15] for group calls. It shall also comply with the relevant call related requirements in clauses 9 to 11 of EN 300 392-9 [6] for outgoing calls.

4.2.2.3 Group controlling SwMI

The group controlling SwMI shall support the group call set-up by complying with the group call requirements contained in clause 14 of EN 300 392-2 [4].

In the case where the group controlling SwMI is different from the terminating SwMI, it shall also comply with the requirements contained in group calls over ISI EN 300 392-3-3 [15].

4.2.2.4 Terminating SwMI

For an individual call, that SwMI shall support the possibility for the connected user MS/LS to participate in the call as defined in EN 300 392-2 [4] for individual calls. That SwMI shall also comply with the relevant call related requirements in clauses 7 to 11 of EN 300 392-9 [6].

The same shall apply for group calls if that SwMI is different from the group controlling SwMI.

If the call is over the ISI, the connected user SwMI shall comply with the corresponding ISI requirements, set in EN 300 392-3-2 [14] for individual calls and in EN 300 392-3-3 [15] for group calls. It shall also comply with the relevant call related requirements in clauses 9 to 11 of EN 300 392-9 [6] for outgoing calls.

4.3 SS-CLIP and SS-CLIR coding requirements

The purpose of the calling user identity information element is to identify the origin of a call. In the case of a group call, the calling user identity information shall be the identity of the user originating the group call.

EN 300 392-1 [3] clause 7.2 gives the coding for the calling user identity which is required to support this service.

4.3.1 General on coding

The information contained in the description tables correspond to the following key:

- Length: length of the information element in bits;
- Type: element type (1, 2 or 3) described in EN 300 392-2 [4], clause 14.7;
- C/O/M: conditional/optional/mandatory;
- Remark: comment or reference to note(s).

4.3.2 SS-CLIP and SS-CLIR PDUs

4.3.2.1 U-SETUP PDU

CLIR PDU shall be encoded as an information element in the U-SETUP PDU as defined in clause 4.3.3.

4.3.2.2 EXTERNAL NUMBER PDU

Potential additional type information of the external subscriber number is presented in clause A.3.

4.3.3 TETRA PDU information element coding for SS-CLIP and SS-CLIR

4.3.3.1 U-SETUP CLIR (RESTRICT)

The U-SETUP CLIR (RESTRICT) information element shall be as specified in table 4.

Table 4: U-SETUP CLIR (RESTRICT) information element content

CLIR (RESTRICT) bits	Usage
00_2	Not implemented or use default mode
01_2	Reserved
10_2	SS-CLIR invoked; no restriction for that call
11_2	SS-CLIR invoked; Presentation restricted

4.3.3.2 Notification indicator information element

NOTE: See clause A.2.

4.3.3.3 Numbering plan identifier

NOTE: See clause A.3.

4.3.3.4 Type of number

NOTE: See clause A.3.

4.3.3.5 Screening indicator

NOTE: See clause A.3.

4.3.3.6 INFORM2 CLIP OVERRIDE PDU

INFORM2 CLIR OVERRIDE PDU is sent to the calling user, refer to table 5. It indicates that the connected user has overridden its invocation for SS-CLIR and that its identity has been presented to the connected user.

Table 5: INFORM2 CLIR OVERRIDE PDU contents

Information element	Length	Type	C/O/M	Remark
SS-Type	6	1	M	Defined in EN 300 392-9 [6]
SS-CI PDU type	5	1	M	INFORM2 CLIR OVERRIDE

4.3.3.7 INFORM3 CLIP OVERRIDE PDU

INFORM3 CLIR OVERRIDE PDU is sent to the connected user, refer to table 6. It indicates that the presentation of the calling user address, in the calling address fields of the D-SETUP, is due to override.

Table 6: INFORM3 CLIR OVERRIDE PDU contents

Information element	Length	Type	C/O/M	Remark
SS-Type	6	1	M	Defined in EN 300 392-9 [6]
SS-CI PDU type	5	1	M	INFORM3 CLIR OVERRIDE

4.3.3.8 SS-CLIR PDU Type

SS-CLIR-PDU type indicates the type of the SS-CLIR PDU as defined in table 7.

Table 7: SS-CLIR PDU type information element contents

Information element	Length	Value	Remark
	5	00000_2	Refer EN 300 392-9 [6]
		00001_2	Refer EN 300 392-9 [6]
EXTERNAL NUMBER		00010_2	See clause A.3
Reserved		00011_2	INFORM1 (see note)
Reserved		00100_2	INFORM2 (see note)
Reserved		00101_2	INFORM3 (see note)
NOTE: Those values are reserved in the case the CLIR bits and the notification values cannot be changed.			

4.3.4 Messages

All the information for SS-CLIP is sent in the D-SETUP PDU using the optional "calling_party" and "external_subscriber_number" information elements. The absence of the SS-CLIP information in the D-SETUP indicates that presentation has been restricted.

Information for SS-CLIR is sent in the U-SETUP PDU using a specific information element "CLIR control". The SS-PDU INFORM2 CLIR OVERRIDE may be passed back to the calling user in a D-CALL-PROCEEDING, D-ALERT, D-CONNECT PDU, or D-INFO PDU. The SS-PDU INFORM3 CLIR OVERRIDE. may be sent with the D-SETUP.

4.4 SS-CLIP and SS-CLIR state definitions

4.4.1 SS-CLIP state definitions

4.4.1.1 States at the served user MS/LS

There are no SS-CLIP conceptual states within the served user MS/LS in association with a particular individual call or group call.

NOTE: The SS-CLIP information sent to the served user MS/LS is simply for information, no specific SS-CLIP action being defined for this MS/LS as a result of the reception of this information.

4.4.1.2 States at the group controlling SwMI

4.4.1.3 States for SS-CLIP invocation and operation

The procedures for the group controlling SwMI for invocation and operation of SS-CLIP are written in terms of the conceptual states defined below existing within the SS-CLIP control application in that SwMI in association with a particular group call.

The definition of the SS-CLIP invocation states for the group controlling SwMI (in association with a particular group call) is derived from the following SS-CLIP group controlling basic state:

- SS-CLIP-Idle (assume activation at subscription).

SS-CLIP is invoked with no option as soon as call set up is presented.

4.4.1.4 States at the served user SwMI

4.4.1.5 States for SS-CLIP invocation and operation

The invocation and operation procedures for the served user SwMI are written in terms of the following conceptual states existing within the SS-TPI control application in that SwMI in association with a particular individual call.

NOTE: There are no activation, deactivation, definition or interrogation procedures defined for the served user SwMI.

- SS-CLIP-Idle (activated at subscription).

SS-CLIP is invoked with no option as soon as call set up is presented.

4.4.2 SS-CLIR state definitions

4.4.2.1 States at the served user MS/LS

There are no SS-CLIR conceptual states within the served user MS/LS in association with a particular individual call or group call.

NOTE: The SS-CLIR invocation request is sent on a call per call basis and does not result in a state change of the SS-CLIR process. The eventual information "OVERRIDDEN" provided to the served user MS/LS is simply for information, no specific SS-CLIR action being defined for this MS/LS as a result of the reception of this information.

4.4.2.2 States at the group controlling SwMI

4.4.2.3 States for SS-CLIR invocation and operation

The procedures for the group controlling SwMI for invocation and operation of SS-CLIR are written in terms of the conceptual states defined below existing within the SS-CLIR control application in that SwMI in association with a particular group call.

The definition of the SS-CLIR invocation states for the group controlling SwMI (in association with a particular group call) is derived from the following SS-CLIR group controlling basic state:

- SS-CLIR-Idle (assume activation at subscription).

SS-CLIR is either invoked with no option as soon as call set up is presented due to permanent mode or is invoked on a call per call basis.

4.4.2.4 States at the served user SwMI

4.4.2.5 States for SS-CLIR invocation and operation

The invocation and operation procedures for the served user SwMI are written in terms of the following conceptual states existing within the SS-TPI control application in that SwMI in association with a particular individual call.

NOTE: There are no activation, deactivation, definition or interrogation procedures defined for the served user SwMI.

- SS-CLIR-Idle (activated at provision).

SS-CLIR is either invoked with no option as soon as call set up is presented due to permanent mode or is invoked on a call per call basis.

4.5 SS-CLIP and SS-CLIR signalling procedures

4.5.1 SS-CLIP signalling procedures

Examples of message sequences are shown in stage 2 EN 300 392-11-1 [8].

4.5.1.1 Actions at the originating SwMI for SS-CLIP

The originating SwMI may either be the TETRA calling user SwMI or the Gateway SwMI.

4.5.1.1.1 Normal procedures

All information pertaining to the CLIP supplementary service shall be inserted in the SETUP message sent as part of the basic individual or group call set-up according to EN 300 392-2 [4], clause 14. This applies regardless of whether SS-CLIR is invoked or not.

The calling line identity shall always be the identity associated with the access (in which the call was generated) in the originating SwMI; the identity shall not be provided by the user in the case of TETRA but by the originating SwMI.

If the SETUP message contains a wrong calling identity information element, the originating SwMI shall screen the identity and rejects the U-SETUP call set-up.

The presentation RESTRICT indicator also called RESTRICT indicator, as determined by the SS-CLIR procedure described below shall be forwarded to the terminating SwMI in association with the basic call request.

4.5.1.1.2 Exceptional procedures

Not applicable.

4.5.1.2 Actions at the terminating for SS-CLIP

The SDL representation of procedures at the Terminating SwMI is shown in figure B.1.

In all what follows the terminating SwMI may mean the group controlling SwMI in case of a group call.

4.5.1.3 Normal procedures

The terminating SwMI may either be the connected user SwMI or the gateway SwMI in which case it is terminating from a TETRA network point of view; the later will be described in the interworking considerations.

The terminating SwMI shall check if SS-CLIP has been activated for the called user. If yes and presentation is allowed according to the presentation RESTRICT indicator supplied together with the calling identity, the terminating SwMI shall include the calling user identity information element in the D-SETUP PDU sent to the called user. In case of an intra-TETRA call, the presentation RESTRICT indicator is part of the basic call ANF-ISIIC SETUP PDU and is carried as the bit CLIR.

If presentation is not allowed according to the presentation RESTRICT indicator supplied together with the calling number, the terminating SwMI shall present to the called user the notification indicator corresponding to:

- presentation RESTRICT indicator set to "presentation restricted".

If the called user is not provided with the CLIP supplementary service, then the calling user identity shall not be included in the SETUP message sent to the called user.

If presentation is restricted but the connected user has the override privilege indicated in the terminating SwMI, if the call is an individual call and not a group call and if the calling identity is available, the terminating SwMI shall include the calling user identity information element in the D-SETUP PDU sent to the called user.

4.5.1.4 Actions at the group controlling SwMI

Shall be identical to the actions described for the terminating SwMI.

4.5.1.5 Actions at the participating SwMI

Shall be identical to the actions described for the terminating SwMI.

4.5.1.6 Exceptional procedures

Not applicable.

4.5.2 SS-CLIR signalling procedures

4.5.2.1 Actions at the originating SwMI for SS-CLIR

The originating SwMI may either be the TETRA calling user SwMI or the Gateway SwMI. In all what follows, the originating SwMI may mean the group controlling SwMI in case of group call if the calling user is registered in the group home SwMI. It is assumed that all group members have no override capability.

NOTE: A procedure where each group member would have a different override is not possible with the present group call set-up.

4.5.2.1.1 Normal procedures

If the calling user has subscribed to the SS-CLIR permanent mode, then the originating SwMI shall ignore the presentation RESTRICT indicator received in the SETUP message. The originating SwMI shall set the presentation RESTRICT indicator to "presentation restricted". All information pertaining to the CLIR supplementary service including the calling line identity shall be inserted in the ANF-ISIIC SETUP PDU sent as part of the basic individual call set-up.

If the SS-CLIR is requested by the calling user on a per-call basis, and the presentation RESTRICT indicator is included in the U-SETUP message, the originating SwMI shall set in the ISI SETUP message the presentation RESTRICT indicator according to that in the received calling user SETUP.

If the SS-CLIR is requested by the user on a per-call basis, and no presentation RESTRICT indicator is included in the U-SETUP message, then the originating SwMI shall set the presentation RESTRICT indicator to the subscribed default value.

The presentation RESTRICT indicator shall be forwarded to the terminating SwMI in association with the basic call request.

In the case where override privilege has been exercised by the connected user, the originating SwMI shall inform the calling user that SS-CLIR has been overridden.

4.5.2.1.2 Exceptional procedures

Not applicable.

4.5.2.2 Actions at the terminating SwMI

The terminating SwMI may either be the called user SwMI or the gateway SwMI in which case it is terminating from a TETRA network point of view.

The SDL representation of SS-CLIR procedure is shown in figure B.2.

The SDL representation of procedures at the Terminating SwMI is shown in figure B.3.

If presentation of the CGLI is not allowed according to the presentation RESTRICT indicator supplied together with the calling identity due to the invocation of SS-CLIR, the terminating SwMI shall:

- not include the calling user identity in the D-SETUP;
- include in the notification to the called user that SS-CLIR has been invoked.

If SS-CLIP is not subscribed to and regardless of whether SS-CLIR is invoked for that call or not, the terminating SwMI shall:

- not include the calling user identity in the D-SETUP;
- not include any notification to the connected user that SS-CLIP has not been subscribed.

If presentation of the CGLI is restricted but the connected user has the override capability, the terminating SwMI shall:

- include the identity digits in the calling user identity message;
- generate an INFORM2 PDU to inform the calling user that its invocation for SS-CLIR has been overridden by the connected user and that its identity has been presented to the connected user.

NOTE: The terminating SwMI may also generate an INFORM3 PDU to inform the connected user that presentation of CGLI is due to override; the content of INFORM3 is identical to the content of INFORM1.

4.5.2.3 Exceptional procedures

Not applicable.

4.5.3 SS-CLIP and SS-CLIR impact of interworking.

4.5.3.1 SS-CLIP

On calls incoming from non TETRA networks, the calling number may be delivered to the gateway SwMI without an indication of calling line identity restriction. In this case, the gateway SwMI shall present the calling identity information element as described below.

The presentation indicators associated with the calling identity in the case of interworking with non TETRA networks received at the originating SwMI shall be passed transparently to the terminating SwMI (called user SwMI) as part of the ISI SETUP. The screening indicator, the type of numbering and the numbering plan associated with the calling identity (External Subscriber Number) shall be carried over ISI to the served user SwMI, not to the end user.

The numbering plan identifier, to be indicated with the calling user identity information element, sent by the gateway SwMI to the terminating SwMI shall be either TETRA numbering plan, ITU-T Recommendations E.164 [11], X.121 [13], or unknown.

Where the external subscriber number included by the calling user SwMI is complete, the type of number to be sent by the gateway SwMI to the terminating SwMI shall be one of the following:

- Local;
- National number;
- International number;
- Unknown.

Where a partial calling user ID is included by the calling user network, the calling user identity information element shall be set to "unknown".

If neither the calling user identity nor an indication that the presentation is restricted is available at the terminating SwMI, the terminating SwMI shall:

- present to the called user screening indicator set to "number not available due to interworking";
- include the gateway identity digits field in the calling user information element;
- include a value 0 for the external subscriber number length (indicating external number not available).

For call originating outside TETRA, the value of the screening indicator set by the gateway SwMI shall be as provided by the interworking network in the case it is provided or set to network provided by the gateway SwMI in the case it is not provided by the interworking network.

In the case of interworking, for call originating outside of TETRA, where the calling user provides partial calling identity information even though the digit sequence is a valid one, the gateway SwMI shall either proceed with the call without indicating the calling identity and indicating " number not available due to interworking" or reject the call set up.

The presentation RESTRICT indicator, as determined by the SS-CLIR procedure received from the interworking network and described below shall be forwarded to the terminating SwMI in association with the basic call request.

The case where the terminating SwMI is requested by the interworking network to provide the calling user identity is outside the scope of the present document.

NOTE: Conversion from the TETRA numbering plan to an external numbering plan would be needed.

4.5.3.2 SS-CLIR

On calls to non TETRA networks, it cannot be assured that a restriction indicator can be carried to the destination network. As an implementation option, the gateway TETRA SwMI may restrict any information identifying the calling user from being forwarded to the destination network when the SS-CLIR is applicable.

On calls incoming from non TETRA networks, the calling user number may be delivered to the SwMI gateway with an indication of calling line identity restriction. In this case, the originating SwMI which is also the gateway SwMI shall use the normal procedure of the SS-CLIR originating SwMI.

If presentation of the CGLI is not allowed according to the presentation RESTRICT indicator supplied together with the calling identity due to the invocation of SS-CLIR by the external network calling user, and if SS-CLIP has been subscribed to, the terminating SwMI shall:

- include the CGLI information element in the D-SETUP message;
- set the presentation RESTRICT indicator to presentation restricted in the notification indicator;
- not include the external subscriber number;
- include the gateway SwMI identity.

NOTE: The case of override in interworking is outside the scope of the present document.

4.6 Protocol interactions between SS-CLIP and SS-CLIR and other supplementary services and ANFs

This clause specifies protocol interactions with other supplementary services and ANFs for which stage 3 TETRA European Standards had been published at the time of publication of the present document. For interactions with supplementary services and ANFs for which stage 3 documents are published subsequent to the publication of the present document, see those other stage 3 documents.

NOTE 1: Additional interactions that have no impact on the signalling protocol neither at the air interface nor at the ISI can be found in the relevant stage 1 description standards.

NOTE 2: Simultaneous conveyance of APDUs for either SS-CLIP or SS-CLIR and another supplementary service or ANF in the same message, each in accordance with the requirements of its respective stage 3 International Standard, does not, on its own, constitute a protocol interaction.

4.6.1 Interaction of SS-CLIR with SS-CLIP

SS-CLIR procedure interacts with SS-CLIP as has been described at length in the present document.

4.6.2 Talking party identification

4.6.2.1 With SS-CLIP

SS-TPI and SS-CLIP shall interact when the talking/sending party at call set-up time in a group call is another user than the calling user, to whom transmission permission has been granted automatically and when no SS-TPI INFORM PDU is sent in the D-SETUP PDU: in that specific case SS-CLIP shall not be invoked, i.e. the calling user identity shall not be delivered to any participant in the group call.

4.6.2.2 With SS-CLIR

If SS-CLIR has been invoked for the talking/sending party, neither his identity nor his mnemonic name shall be included in any air interface PDU sent by either the group controlling SwMI or the connected user SwMI to the served user MS/LS (of SS-TPI). The value of the information element SS-CLIR invoked for talking/sending party in the SS-TPI INFORM PDU shall be set to 1.

NOTE: As mandated by ETS 300 392-10-3 [17], on the stage 1 description of SS-TPI, any SwMI supporting SS-TPI has to support SS-CLIR for the distant party which has invoked it.

There shall be no interaction between SS-TPI and SS-CLIR operations when SS-CLIR has been invoked for the SS-TPI served user.

4.6.3 Interactions with ISI Mobility Management (ANF-ISIMM) of SS-CLIP

Except for the call-per-call operation of SS-CLIR, both SS-CLIR and SS-CLIP can be treated similarly (but not identically). For the permanent mode of operation of SS-CLIR, the SS-PROFILE TYPE will be different and the served user of SS-CLIP is different from the served user of SS-CLIR (connected vs. calling). The difference in profiles for each calling identification justifies the assignment of different values of SS-TYPE for each supplementary services.

The case of mobility during a call is not dealt with in the present document.

NOTE: Call restoration has no impact on SS-CLIP nor on SS-CLIR; call restoration occurs after the completion of the call and after the completion of actions of SS-CLIP or SS-CLIR.

4.6.3.1 SS-CLIP profiles

4.6.3.1.1 SS-CLIP information

The SS-CLIP information element shall indicate if SS-CLIP should be supported for the individual subscriber in the visited SwMI. It shall indicate SS status and shall be encoded as described in clause 34 of EN 300 392-3-5 [16]. SS-CLIP profile response shall be as encoded in clause 34 of EN 300 392-3-5 [16].

4.6.3.1.2 SS-CLIP migration original profile

SS-CLIP migration original profile is actually an ANF-ISIMM information element, sent by the home SwMI to the visited SwMI of a user (to be called) when this user migrates, as part of the SS profile information (see clause 34 of EN 300 392-3-5 [16]).

SS-CLIP profile shall contain information elements as defined in table 8.

Table 8: SS-CLIP migration original profile information element contents

Information element	Length	Type	C/O/M	Value	Remark
SS-Type	6	1	M		SS-CLIP (see note 1)
SS-CLIP Provided/Non provided	1	1	M	0_2	provided
				1_2	non-provided
Override privilege for SS-CLIR	1	1	O	0_2	no override (see note 2)
				1_2	override
NOTE 1: This profile could be combined with SS-COLR profile. NOTE 2: If override is implemented, this information element is mandatory.					

NOTE: There is no need to specify the identity of the user to whom the profile information element specified in the above table applies since the ANF-ISIMM PDU which carries that information element already includes that identity.

4.6.3.2 SS-CLIP migration original profile response information element

Like SS-CLIP profile, SS-CLIP profile response is an ANF-ISIMM information element, sent by the visited SwMI of a user (to be called) to his home SwMI as part of the SS profile response information (see EN 300 392-3-5 [16]). It is an acknowledgement of the corresponding SS-CLIP profile.

SS-CLIP migration original profile response shall contain information elements as defined in table 9 with the same values as table 6.

Table 9: SS-CLIP migration original profile response information element contents

Information element	Length	Type	C/O/M	Value	Remark
SS-Type	6	1	M		SS-CLIP (see note 1)
SS-CLIP Provided/Non Provided	1	1	M		
Override privilege for SS-CLIR supported/not supported	1	1	O		(see note 2)
NOTE 1: This profile could be combined with SS-COLR profile. NOTE 2: If override is supported by the home SwMI, the content of the override ack is mandatory.					

4.6.3.3 Operation of Interaction with ISI MM of SS-CLIP

When a user (to be connected) migrates to a visited SwMI, his home SwMI shall send the following SS-CLIP profile information to this visited SwMI through ANF-ISIMM:

- SS-CLIP provided; or
- SS-CLIP not provided to the user.

SS-CLIP provision or non provision shall be sent by the home SwMI as part of ANF-ISIMM basic profile information, in the ANF-ISIMM PROFILE PDU (see relevant clause of EN 300 392-3-5 [16]).

The visited SwMI shall acknowledge the transfer of that information, in indicating to the home SwMI, also through ANF-ISIMM, as acknowledgement of the basic profile information, whether:

- SS-CLIP supported as served user SwMI; or
- SS-CLIP not supported as served user SwMI.

Since there is no activation/deactivation/definition/interrogation for SS-CLIP, there is no need for profile upgrade.

4.6.4 Interactions of SS-CLIR with ISI Mobility Management (ANF-ISIMM)

4.6.4.1 SS-CLIR Profiles

4.6.4.1.1 SS-CLIR information

The SS-CLIR information element shall indicate if SS-CLIR should be supported for the individual subscriber in the visited SwMI. It shall indicate SS status and shall be encoded as described in clause 34 of EN 300 392-3-5 [16]. SS-CLIR profile response shall be as encoded in clause 34 of EN 300 392-3-5 [16].

NOTE: SS-CLIR has to be supported for any SwMI supporting ISI.

4.6.4.1.2 SS-CLIR migration original profile

SS-CLIR migration original profile is actually an ANF-ISIMM information element, sent by the home SwMI to the visited SwMI of a user (to be calling) when this user migrates, as part of the SS profile information (see EN 300 392-3-5 [16]).

SS-CLIR migration original profile shall contain information sub-elements as defined in table 10.

Table 10: SS-CLIR migration original profile information element contents

Information sub-element	Length	Type	C/O/M	Value	Remark
SS-Type	6	1	M		SS-CLIR (see note 1)
SS-CLIR Permanent/temporary mode	7	1	M	0_2	Permanent
				1_2	Temporary
Default value of SS-CLIR temporary mode restricted/non-restricted	1	1	C	0_2	Restricted (see note 2)
				1_2	Non-restricted (see note 2)
NOTE 1: This profile could be combined with SS-COLP profile. NOTE 2: This information element shall be present only, when the SS-CLIR Permanent/temporary mode information element has value "Temporary".					

NOTE: There is no need to specify the identity of the user to whom the profile information element specified in the above table applies since the ANF-ISIMM PDU which carries that information element already includes that identity.

4.6.4.2 SS-CLIR migration original profile response information element

Like SS-CLIR migration original profile, SS-CLIR migration original profile response is an ANF-ISIMM information element, sent by the visited SwMI of a user (to be calling) to his home SwMI as part of the SS profile response information (see EN 300 392-3-5 [16]). It is an acknowledgement of the corresponding SS-CLIR profile.

SS-CLIR migration original profile response shall contain information sub-elements as defined in table 11 with the same values as in table 10.

Table 11: SS-CLIR migration original profile response information element contents

Information sub-element	Length	Type	C/O/M	Value	Remark
SS-Type	6	1	M		SS-CLIR (see note)
SS-CLIR Permanent/Temporary Mode	7	1	M		
Default value of SS-CLIR temporary mode	1	1	M		
NOTE: This profile could be combined with SS-COLP profile.					

4.6.4.3 Operation of Interaction of SS-CLIR with ISI MM.

When a user (to be calling) migrates to a visited SwMI, his home SwMI shall send the following SS-CLIR profile information to this visited SwMI through ANF-ISIMM:

- possible restriction of presentation of the calling user identity in a permanent mode or a temporary mode (i.e. SS-CLIR has been invoked for this user).

SS-CLIR shall be sent by the home SwMI as part of ANF-ISIMM basic profile information, in the ANF-ISIMM PROFILE PDU (see relevant clause of EN 300 392-3-5 [16]).

The visited SwMI shall acknowledge the transfer of that information, in indicating to the home SwMI, also through ANF-ISIMM, as acknowledgement of the basic profile information, whether or not it supports:

- SS-CLIR as served user SwMI, if the restriction of presentation of the identity of the user has been requested on a permanent mode.

Since there is no activation/deactivation/definition/interrogation for SS-CLIP, there is no need for profile upgrade.

4.7 SS-CLIP and SS-CLIR parameter values (timers)

There shall be no timer for either SS-CLIP or SS-CLIR procedures.

5 Signalling protocol for the support of SS-COLP and SS-COLR

5.1 SS-COLP and SS-COLR description

It is assumed that SS-COLP may be invoked independently from SS-CLIP and in the same manner, SS-COLR may be invoked independently from SS-CLIR thus the justification of separating those supplementary services in the present document.

5.1.1 SS-COLP description

5.1.1.1 General

SS-COLP provides the calling user with the possibility to receive identification of the connected user. SS-COLP is not a validity check of the called identity dialling but gives an indication to the calling user of the connected address. In a TETRA environment, the connected line identity shall include all the information necessary to unambiguously identify the connected line.

This clause describes SS-COLP specific services offered by the Circuit Mode Control Entity (CMCE) at the Supplementary Services service access point (TNSS-SAP) of the TETRA voice plus data layer 3 service boundary in a TETRA Mobile Station (MS) or TETRA Line Station (LS). The SS-COLP service access point is used in conformance testing as a normative boundary in MSs and LSs.

NOTE: All the service primitives have been shown without a TNSS-COLP-prefix.

5.1.1.2 SS-COLP services offered over the TNSS-SAP

NOTE: As man-machine interface or user applications are outside the scope of the present document service primitives are used to define information exchange to and from the standardized part of the MS/LS. Those primitives may be only indirectly accessible.

The SS-COLP service primitives at the served user MS/LS TNSS-SAP shall be:

- INFORM4 indication.

5.1.1.3 INFORM4 indication

The INFORM4 indication primitive shall be sent to the calling user application by the MS/LS CMCE over TNSS-SAP as a result of SS-COLP operation. The INFORM4 indication primitive shall contain the SS-COLP parameters listed in table 12.

Table 12: Parameters for the primitive INFORM4 indication

Parameter	Indication
SS-COLR invoked for connected user	M
COnnected Line Identity (COLI)	C (see note 1)
Override	O (see note 2)
NOTE 1: Conditional on SS-COLR not having been invoked for calling user. NOTE 2: When implemented, INFORM4 is presented with the indication that the identity of the connected user is provided due to override.	

5.1.2 Parameter description

SS-COLR invoked for connected user:

- 00 not implemented or default mode;
- 10 no restriction;
- 11 restriction.

Override:

- 1 overridden;
- 0 not overridden.

COnnected Line Identity:

- Short Subscriber Identity (SSI);
- Short Subscriber Identity (SSI) + Address extension;
- Gateway identity;
- External subscriber number.

NOTE 1: The numbering plan, the type of number and the screening indicator are needed to the originating SwMI in the case of interworking.

Screening indicators (only for interworking):

- number not available due to interworking.

NOTE 2: The following screening indicator parameter needs to be brought to the originating SwMI:

- network provided;
- user provided, verified and passed;
- user provided, not screened (only occurs in certain interworking situations).

5.1.3 SS-COLR description

5.1.3.1 General

SS-COLR is sometimes treated in the same document as SS-CLIR (ECMA-148 [9]) or in separate documents in case of public ISDN; SS-COLR enables the connected user to prevent presentation of its identity to the calling user. SS-COLR is offered to the connected user (which may be different from the called user). When SS-COLR is applicable and active, the terminating SwMI shall provide the originating SwMI with the indication that the connected user's identity is not allowed to be presented to the calling user (exception in the case of override). In this case no connected user identity shall be included in the connected information presented to the calling user even though this calling user has subscribed to the SS-COLP.

The presentation restriction shall not influence the forwarding of the connected user identity within the network as part of the basic call set up procedures.

This clause describes SS-COLR specific services offered by the Circuit Mode Control Entity (CMCE) at the Supplementary Services service access point (TNSS-SAP) of the TETRA voice plus data layer 3 service boundary in a TETRA Mobile Station (MS) or TETRA Line Station (LS). The SS-COLR service access point is used in conformance testing as a normative boundary in MSs and LSs.

NOTE: All the service primitives have been shown without a TNSS-COLR-prefix.

5.1.3.2 SS-COLR services offered over the TNSS-SAP

NOTE: As man-machine interface or user applications are outside the scope of the present document service primitives are used to define information exchange to and from the standardized part of the MS/LS. Those primitives may be only indirectly accessible.

The SS-COLR service primitives at the served user MS/LS TNSS-SAP shall be:

- INVOCATION request;
- INFORM5 indication (SS-COLR overridden to the connected user);
- INFORM6 indication (SS-COLR invoked, presentation restricted or presentation authorized due to override).

5.1.3.2.1 INVOCATION request

The INVOCATION request primitive shall be sent by the connected user application to the MS/LS CMCE over TNSS-SAP as a result of SS-COLR operation. The INVOCATION request primitive shall contain the SS-COLR parameters listed in table 13.

Table 13: Parameters for the primitive INVOCATION request

Parameter	Request
SS-COLR invoked for connected user	M

5.1.3.2.2 INFORM5 indication

The INFORM5 indication primitive shall be sent to the connected user application by the MS/LS CMCE over TNSS-SAP as a result of SS-COLR operation to indicate to the connected user that SS-COLR override has taken place. The INFORM5 indication primitive shall contain the SS-COLR parameters listed in table 14.

Table 14: Parameters for the primitive INFORM5 indication

Parameter	Indication
SS-COLR Overridden by Calling User	M (see note)
NOTE: This INFORM5 indication is presented only in the case where override is implemented and has taken place.	

5.1.3.2.3 INFORM6 indication

The INFORM6 indication primitive shall be sent to the calling user application by the MS/LS CMCE over TNSS-SAP as a result of SS-COLR operation to indicate that COLI is either restricted of presentation or presented due to override. The INFORM6 indication primitive shall contain the SS-COLR parameters listed in table 12 and shall be identical to INFORM4.

5.1.4 Parameter description

SS-COLR invoked for connected user:

- not implemented or default mode;
- no restriction;
- restriction.

Override:

- overridden;
- not overridden.

COnnected Line Identity:

- Short Subscriber Identity (SSI);
- Short Subscriber Identity (SSI) + Address extension;
- Gateway identity;
- External subscriber number.

NOTE 1: The following indicator parameters need to be presented to the originating SwMI in the case of interworking:

- numbering plan;
- type of number (local, national, international).

Screening indicators (only for interworking):

- number not available due to interworking.

NOTE 2: The following screening indicator parameters need to be provided to the originating SwMI in the case of interworking:

- network provided;
- user provided, verified and passed;
- user provided, not screened.

5.2 SS-COLP and SS-COLR operational requirements

5.2.1 SS-COLP operational requirements

5.2.1.1 Served user MS/LS

The served user (connected user) MS/LS shall comply with the requirements in clause 14 of EN 300 392-2 [4] which apply to the tele- and bearer services which it supports.

5.2.1.2 Originating SwMI

The originating SwMI is also the served user SwMI. That SwMI shall support the served user MS/LS complying with the requirements for individual calls in EN 300 392-2 [4] clause 14. It shall support the served user MS/LS complying with the requirements for group calls in EN 300 392-2 [4] clause 14. If the call is over ISI, the originating SwMI shall also comply with the corresponding requirements for Individual Calls in EN 300 392-3-2 [14] and in EN 300 392-3-3 [15] for group calls. All information relating to COLP supplementary service shall be received in the CONNECT message sent as part of the basic individual or group call set-up.

5.2.1.3 Terminating SwMI

The terminating SwMI may either be the SwMI of the connected TETRA MS/LS or the gateway SwMI in case of interworking.

For an individual call, that SwMI shall support the possibility for the connected user MS/LS to participate in the call as defined in EN 300 392-2 [4] for individual calls.

The same shall apply for group calls if that SwMI is different from the group controlling SwMI.

If the call is over the ISI, the connected user SwMI shall comply with the corresponding ISI requirements, set in EN 300 392-3-2 [14] for individual calls and in EN 300 392-3-3 [15] for group calls.

All information pertaining to SS-COLP shall be inserted in the CONNECT message sent as part of the basic call procedures according to EN 300 392-2 [4] and EN 300 392-3-2 [14] and EN 300 392-3-3 [15].

5.2.2 SS-COLR operational requirements

5.2.2.1 Served user MS/LS

The served user MS/LS shall comply with the requirements in clause 14 of EN 300 392-2 [4] which apply to the tele- and bearer services which it supports.

5.2.2.2 Originating SwMI

That SwMI shall support the calling user MS/LS complying with the requirements for individual calls in clause 4.2.2.1. It shall also support the served user with the requirements for group calls set in clause 4.2.2.1. if it is different from the group controlling SwMI. If the call is over ISI, the served user SwMI/originating SwMI shall also comply with the corresponding requirements set in EN 300 392-3-2 [14] for individual calls and in EN 300 392-3-3 [15].

5.2.2.3 Terminating SwMI

The terminating SwMI is the SS-COLR served user SwMI. The terminating SwMI shall support the served user with complying with the requirements in EN 300 392-3-2 [14] for individual calls and EN 300 392-3-3 [15] for group calls.

All information pertaining to SS-COLR shall be inserted in the CONNECT message sent as part of the basic call procedures according to clause 14 of EN 300 392-2 [4].

In the case of a call over ISI, the terminating SwMI shall comply with the relevant clauses of EN 300 392-3-2 [14] for individual call or EN 300 392-3-3 [15] for group calls.

5.3 SS-COLP and SS-COLR coding requirements

5.3.1 General on coding

Refer to clause 4.3.1.

5.3.2 SS-COLP coding requirements

5.3.2.1 SS-COLP PDU

NOTE: There is no SS-COLP INVOCATION PDU since SS-COLP is either permanently invoked or permanently not invoked.

5.3.2.1.1 EXTERNAL NUMBER PDU

See clause A.3.2

5.3.2.1.2 INFORM4 COLP PRESENTATION PDU

INFORM4 COLP PRESENTATION PDU is sent to the MS/LS of the served (calling) user by the SwMI where that user is registered (the calling user SwMI). This PDU is used to present to the calling user the COnnected Line Identification. This PDU is associated to the facility field of the D-CONNECT PDU or the D-INFO PDU, when sent after the sending of the D-CONNECT PDU. This PDU is used only at the Air Interface and is not needed for a call over ISI where the ISI CONNECT message carries all needed information in support of SS-COLP.

The INFORM4 COLP PRESENTATION PDU is always sent to the calling user when SS-COLP is invoked. The address is not inserted into the INFORM4 COLP PRESENTATION PDU where SS-COLR is invoked and SS-COLR is not overridden.

INFORM4 COLP PRESANTATION PDU shall contain the SS-COLP information elements described in table 15.

Table 15: INFORM4 COLP PRESENTATION PDU contents

Information element	Length	Type	C/O/M	Remark
SS-Type	6	1	M	Defined in EN 300 392-9 [6]
SS-CI PDU type	5	1	M	I INFORM4 COLP PRESENTATION
Address type of connected user	2	2	O	(see note 1)
Connected user SSI	24	2	C	(see note 2)
Connected user extension	24	2	C	(see note 2)
External subscriber number length	5	2	O	(see notes 3 and 4)
External subscriber number digits	variable	2	C	(see note 5)
NOTE 1: The address is not inserted if an SS-COLR restriction, that is not overridden, applies. NOTE 2: Conditional on address type. NOTE 3: Value 0 of length indicates external number not known. NOTE 4: Only in the case of interworking. NOTE 5: Only in the case of interworking.				

5.3.2.2 TETRA PDU information element coding

5.3.2.2.1 Connected line identification information elements

Address type of connected user, Connected user SSI, Connected user extension, External connected subscriber number length and External connected subscriber number digits information elements shall be encoded as in EN 300 392-9 [6].

5.3.2.2.2 Numbering plan identifier information element

See clause A.3.2.

5.3.2.2.3 Screening Indicator information element

See clause A.3.2.2.

5.3.2.2.4 Type of Number information element

See clause A.3.2.1.

5.3.2.3 Operations

At the air interface, the U-CONNECT PDU format being different from the D-SETUP, the two bits "reserved" in the D-SETUP used for SS-CLIR are not available; moreover, the U-CONNECT does not include the connected user identification which will have to be provided by the terminating SwMI. If SS-COLP is active at the time the calling user initiates a call, and unless SS-COLR is active for that call as will be described in the following clause, the terminating SwMI shall set SS-COLP to the subscribed value (INVOKED or non-INVOKED).

The COLI COnnected Line Identification defined in stages 1 and 2 EN 300 392-10-1 [7] and EN 300 392-11-1 [8] shall be encoded in several different information elements: the COnnected line identity shall be included in the Connected SSI/Connected User Extension in the case of an internal TETRA call; the external subscriber number length/external subscriber number digits as well as the TETRA Gateway ITSI shall be included in the case of interworking; the presentation RESTRICT indicator shall be coded in the bit SS-COLR (same bit as SS-CLIR bit but in the other direction) invoked for connected user.

5.3.3 SS-COLR coding requirements

5.3.3.1 SS-COLR PDUs

5.3.3.1.1 INVOKE COLR

INVOKE COLR PDU is sent from the MS/LS served (connected) user application to that served user SwMI. This PDU is used to present the SS-COLR invocation and to set the RESTRICTION/NO RESTRICTION to the value chosen by the user application. This PDU is associated to the U-CONNECT in the facility field of that U-CONNECT. This PDU is used only at the air interface and needs not to be carried over ISI where the ISI CONNECT message carries all the information in support of SS-COLR.

INVOKE COLR is not applicable to a group call. A group may have a pre-defined SS-COLR attribute at the SwMI.

INVOKE COLRPDU shall contain the SS-COLR information elements described in table 16.

Table 16: INVOKE COLR PDU contents

Information element	Length	Type	C/O/M	Remark
SS-Type	6	1	M	Defined in EN 300 392-9 [6]
SS-CI PDU type	5	1	M	INVOKE COLR
SS-COLR requested by connected user	2	1	M	

5.3.3.1.2 INFORM5 COLR OVERRIDE PDU

INFORM5 COLR OVERRIDE PDU is sent to the MS/LS of the SS-COLR served user by the SwMI where that user is registered (connected user SwMI) to deliver to this user the SS-COLR information indicating that SS-COLR has been overridden. This PDU shall be sent in the case where override has been invoked only. It shall be associated with the D-CONNECT ACKNOWLEDGE in the case of Individual Call in a Facility field; this D-CONNECT ACKNOWLEDGE contains the call reference to identify for which call the SS-COLR has been overridden. In the case of a group call no indication of the override condition is sent to the group.

INFORM5 COLR OVERRIDE PDU shall contain the SS-COLR information elements described in table 17.

Table 17: INFORM5 COLR OVERRIDE PDU contents

Information element	Length	Type	C/O/M	Remark
SS-Type	6	1	M	Defined in EN 300 392-9 [6]
SS-CI PDU type	5	1	M	INFORM5 COLR OVERRIDE

5.3.3.1.3 INFORM6 COLR OVERRIDE PDU

INFORM6 COLR OVERRIDE PDU is sent to the MS/LS of the calling user to indicate to that user that SS-COLR has been invoked for that call and that override has been invoked. INFORM6 COLR OVERRIDE PDU is sent in association with the D-CONNECT, or D-INFO after a D-CONNECT, in the Facility element. The same basic call PDU that carried the INFORM4 COLP PRESENTATION is used. The normal use of this PDU will be to inform the calling user of restriction of COLI presentation due to invocation of SS-COLR by the connected user and that presentation of the connected user identity is due to override.

INFORM6 COLR OVERRIDE PDU shall contain the SS-COLR information elements described in table 18.

Table 18: INFORM6 COLR OVERRIDE PDU contents

Information element	Length	Type	C/O/M	Remark
SS-Type	6	1	M	Defined in EN 300 392-9 [6]
SS-CI PDU type	5	1	M	INFORM6 COLR OVERRIDE

5.3.3.1.4 TETRA PDU information element coding

5.3.3.1.5 Connected user identification information elements

Address type of connected user, Connected user SSI, Connected user extension, External connected subscriber number length and External connected subscriber number digits information elements shall be as specified in EN 300 392-9 [6].

5.3.3.1.6 SS-COLR requested by connected user information element

The SS-COLR requested by connected user information element shall be coded as specified in table 19.

Table 19: SS-COLR requested by connected user information element contents

Information element	Length	Value	Remarks
SS-COLR requested by connected user	2	00_2	Use default value (see note)
		01_2	reserved
		10_2	SS-COLR invoked; no restriction
		11_2	SS-COLR invoked; restriction
NOTE: Or not implemented.			

5.3.3.1.7 Screening indicator air interface information element

See clause A.3.

5.3.3.2 Operations

The facility field of the U-CONNECT PDU shall be used to convey the information element SS-COLR invoked by the connected user MS/LS.

In an individual call the INFORM5 COLR OVERRIDE may be sent back to the called user to indicate that its SS-COLR invocation has been overridden.

In the case where the call involves more than one SwMI, the ISI PSS1 CONNECT message shall be used. The PSS1 CONNECT PDU contents for SS-COLR invocation shall be as given in EN 300 392-3-2 [14] with the extension of the notification indicator values to cover SS-COLR or SS-COLR Override and the SS-COLR invoked for connected user set to the proper value (RESTRICTED or NOT RESTRICTED). This one-bit information element is actually carried in the SS-CLIR bit.

The SS-COLR restriction shall be associated to the basic call set up and shall be indicated to the originating (calling user) SwMI in the TETRA PDU sent in the PSS1 CONNECT message.

On the calling side user MS/LS, the restriction of COnnected Line presentation shall be notified by the absence of the address in the INFORM4 COLP PRESENTATION PDU. The same basic call PDU may also carry the INFORM6 COLR OVERRIDE PDU to indicate that the reason for the presentation of the address is due to override.

See clause A.2.1.

NOTE: According to the definition of this information element in clause 14.8.27 of EN 300 392-2 [4], when a SwMI receives such information element in a (call related) ISI PDU, it will relay it to the MS/LS.

5.4 SS-COLP and SS-COLR state definitions

The discussion contained in clause 4.4 for SS-CLIP and SS-CLIR applies to SS-COLP and SS-COLR; both have only one state each which is SS-COLP-idle or SS-COLR-idle respectively.

5.5 SS-COLP and SS-COLR signalling procedures

5.5.1 SS-COLP

For SS-COLP, the MS/LS procedures shall be provided as part of the basic service and the connected user need not have subscribed to the SS-COLP; there is therefore no specific signalling procedure at the connected MS/LS.

5.5.1.1 Actions at the originating SwMI for SS-COLP

The originating SwMI for SS-COLP may either be the calling user SwMI or the gateway SwMI.

The SDL representation of procedures at the Originating SwMI is shown in figure B.4.

The SDL representation of the SS-COLR procedure which impacts the SS-COLP results is shown in figure B.5.

5.5.1.1.1 Normal procedures

When the originating SwMI receives a CONNECT message for the calling user and if the calling user is provided with SS-COLP, the SwMI shall check that the connected identity is available.

If the connected identity is available and presentation is allowed according to the presentation RESTRICT indicator supplied with the connected identity, the originating SwMI shall include the connected identity information element in the CONNECT PDU sent to the calling user.

If the calling user is not provided with the SS-COLP, then the Connected identity information element shall not be included in the CONNECT PDU sent to the calling user (without any further information).

If presentation is restricted but the calling user has an "override" privilege, the originating SwMI shall include the COnnected Line Identity (COLI) information element in the CONNECT PDU and inform calling user that SS-COLP occurs due to override.

In the rare cases where the originating SwMI receives several U-CONNECT messages from the MS/LS, the SwMI shall decide which CONNECT to select and shall perform the procedure for only one connect.

In case of TETRA connected user, the identity shall always be SwMI provided and not user provided. No checking of the validity of the identity shall be necessary and no screening indicator needs be provided.

5.5.1.1.2 Exceptional procedures

Not applicable.

5.5.1.2 Actions at the group controlling SwMI

Shall be identical to the actions at the originating SwMI.

5.5.1.3 Actions at the terminating SwMI for SS-COLP

5.5.1.3.1 Normal procedures

These procedures shall be provided as part of the basic service and the connected user need not have subscribed to the SS-COLP. The terminating SwMI may either be a TETRA end user SwMI or a gateway SwMI for interworking.

When a CONNECT message is received from the connected user, the terminating SwMI shall check that the COnnected identity is included.

The ITSI digits shall be forwarded to the originating SwMI, in association with basic call response, regardless of the presentation restriction indicator(invocation of SS-COLR by the connected user).

In the case where override has been invoked by the calling user, the terminating SwMI shall inform the connected user that its line identity has been presented to the calling user due to override in a CONNECT ACKNOWLEDGE.

5.5.1.3.2 Exceptional procedures

Not applicable.

5.5.2 SS-COLR

5.5.2.1 Actions at the served/connected user for SS-COLR

If the SS-COLR is requested by the served user on a per-call basis and the connected user wishes to overrule the default setting (in the case of temporary mode operation), the connected/served user MS/LS shall include, in the U-CONNECT PDU facility field, the presentation RESTRICT indicator set to "presentation restricted" or "presentation not restricted".

5.5.2.2 Actions at the originating SwMI for SS-COLR

Shall be as indicated in the SS-COLP actions at the originating SwMI clause 5.5.1.

All information pertaining to the COLR supplementary service including the connected line identity shall be received in the CONNECT message sent as part of the basic individual or group call set-up. The originating SwMI shall receive the SS-COLR PDU, recognize the restricted presentation of the COLI and shall restrict that presentation unless override has been invoked by the calling user.

In the case where override privilege is implemented and is invoked, the originating SwMI shall generate an INFORM5 PDU towards the terminating SwMI containing the information that SS-COLR has been overridden due to override privilege of the calling user.

As an implementation option, the originating SwMI may also indicate to the calling user that the COLI is presented due to override.

5.5.2.3 Actions at the group controlling SwMI for SS-COLR

Shall be identical to the actions at the terminating SwMI.

5.5.2.4 Actions at the terminating SwMI for SS-COLR

The terminating SwMI is either the connected user SwMI or the gateway.

The SDL representation of procedures at the Terminating SwMI is shown in figure B.6.

5.5.2.4.1 Normal procedures

If the connected user has subscribed to the SS-COLR permanent mode, the terminating SwMI shall ignore the presentation RESTRICT indicator contained in the SS-COLR facility information element in the U-CONNECT PDU. The terminating SwMI shall set the presentation RESTRICT indicator to " presentation restricted".

If the connected user has subscribed to SS-COLR on a per-call basis, and the Connected identity information element containing a presentation RESTRICT indicator is included in the CONNECT PDU, then the destination/terminating SwMI shall set the presentation RESTRICT indicator according to the content of SS-COLR facility PDU received as part of the Connected identity information element.

If the connected user has subscribed to SS-COLR on a per call basis, and no presentation RESTRICT indicator is included in the CONNECT PDU, the terminating SwMI shall set the presentation RESTRICT indicator according to the subscribed default value setting.

The presentation RESTRICT indicator shall be forwarded to the originating SwMI in association with the basic call CONNECT PDU.

In the case where the connected user provided partial connected identity information, the SwMI shall set the COLI to number not available.

In the case where the calling user has overridden the SS-COLR, the terminating SwMI shall inform the connected user that its COLI has been presented to the calling user due to override.

The terminating SwMI shall generate a SS-COLR PDU informing the originating SwMI that SS-COLR has been invoked for that particular call and that particular user.

In the case of override privilege, an additional flow of information shall be required to carry the INFORM6 PDUs.

5.5.2.4.2 Exceptional procedures

Not applicable.

5.5.3 SS-COLP and SS-COLR impact of interworking

5.5.3.1 SS-COLP

On calls outgoing to non TETRA networks, the connected line number may be delivered to the gateway SwMI without an indication of connected line identity restriction. In this case, the gateway SwMI shall present the connected identity information element as described in clause 5.5.1.1.

If the COnnected Line Identity information element is received with a coding of the numbering plan identifier field other than TETRA or unknown, the terminating SwMI shall either discard the connected identity information element and process the call as if that information was not received or use the extended external numbering information specified in the coding of SS-COLP.

The number digits and the screening indicator shall be forwarded to the originating SwMI, in association with basic call response, regardless of the presentation restriction indicator(invocation of SS-COLR).

The terminating SwMI shall either set the screening indicator to the value provided by the interworking network.

If the CONNECT message does not contain the connected identity information element or if that element has been determined to be incorrect, the terminating SwMI shall set the screening indicator to either number not available due to interworking or number unknown.

In case where no information is provided by the connected user (as part of the basic call procedures) in the case of interworking, the terminating SwMI shall provide indication to the served user MS/LS that no COLI is available due to interworking.

5.5.3.2 SS-COLR

On calls outgoing to non TETRA networks, it cannot be assured that a restriction indicator can be carried to the destination network. As an implementation option, the terminating gateway SwMI may restrict any information identifying the connected user from being forwarded to the originating network when the SS-COLR is applicable.

On calls incoming from non TETRA networks, the connected user number may be delivered to the SwMI gateway with an indication of connected line identity restriction. In this case, the terminating interworking SwMI which is also the gateway SwMI shall use the normal procedure of the terminating SwMI described in clause 5.5.2.1.

If presentation is not allowed according to the presentation RESTRICT indicator supplied together with the Connected identity information element, the originating SwMI shall include the Connected identity information element in the CONNECT message sent to the calling user with the following coding:

- Notification information element set to SS-COLR;
- Screening indicator not provided;
- External subscriber number digits field not included;
- Gateway ITSI in the calling user identity field included.

If neither the connected identity nor an indication that presentation is restricted is available at the originating SwMI, the originating SwMI shall send to the calling user MS/LS the COnnected identity information element in the CONNECT message with the following coding:

- No notification indicator;
- Screening indicator set to " number not available due to interworking".

5.6 Protocol interactions between SS-COLP and SS-COLR and other supplementary services and ANFs

This clause specifies protocol interactions with other supplementary services and ANFs for which stage 3 TETRA ETSs had been published at the time of publication of this International Standard. For interactions with supplementary services and ANFs for which stage 3 TETRA ETSs are published subsequent to the publication of this International Standard, see those other stage 3 TETRA ETSs.

NOTE 1: Additional interactions that have no impact on the signalling protocol neither at the air interface nor at the ISI can be found in the relevant stage 1 description standards.

NOTE 2: Simultaneous conveyance of APDUs for either SS-COLP or SS-COLR and another supplementary service or ANF in the same message, each in accordance with the requirements of its respective stage 3 International Standard, does not, on its own, constitute a protocol interaction.

NOTE 3: Supplementary Services, which according to stage 1 statements are indicated as no possible interaction have not been repeated here.

5.6.1 Interaction of SS-COLP with SS-COLR

The connected line identity shall not be presented if connected line identification restriction has been invoked at the calling user, unless the connected user has the privilege to override this restriction. An indication of SS-COLR shall be given to the calling user.

5.6.2 Talking party identification

5.6.2.1 With SS-COLP

SS-TPI and SS-COLP can only interact when the connected user is the talking/sending party at call set-up in an individual call. Then there shall be no impact on SS-TPI operation, i.e. INFORM PDU sent in the D-CONNECT PDU shall include the identity of the talking/sending party, unless it is restricted. However no SS-COLP PDU shall be sent in the D-CONNECT PDU.

NOTE: There cannot be any interaction between SS-TPI and SS-COLP in the case of group call, since the information delivered then by SS-COLP is the identity of the group.

5.6.2.2 With SS-COLR

In the case where SS-COLR has been invoked for the talking party then that supplementary service shall take precedence over SS-TPI and neither the identity of the talking party nor his mnemonic name shall be given to the other party/parties in the call. However the information that SS-CLIR has been invoked for the talking party shall be delivered as an SS-TPI information.

SS-COLR may be overridden if a SS-TPI served user has been given the corresponding privilege, but this is outside the scope of the TPI ETS.

5.6.3 Call forward unconditional

5.6.3.1 With SS-COLP

One can define to illustrate the interactions of CFU with SS-COLP, three users with their own identity:

- the original called user;
- a diverted-to user;
- the last diverted-to user who is the actual connected user.

One can then assume that all three users have not invoked SS-COLR. There are several options proposed to the calling user and to the three users defined above. In any case, the last diverted-to user shall have its identity presented to the calling user who has invoked SS-COLP since this last user is the actual connected user.

If the option "calling user is notified of diversion without diverted to number", no information is given to the calling user concerning the original called user diversion and any intermediate diverted-to user; only the last diverted-to user (which is also the connected user) shall have its identity presented as part of SS-COLP.

If the option "calling user is notified of diversion with diverted-to number", the calling user shall be informed of the successive diversions with the successive identities of the users to which the call has been diverted to as part of the Call Forward Unconditional supplementary service; in fact in that case he would not need to subscribe to SS-COLP; in fact one interaction is to avoid double presentation of the connected line identification, once through call diversion and once through SS-COLP.

5.6.3.2 With SS-COLR

A diverted-to user who has invoked restriction (automatically or on request from the user) shall not have his identity presented to the calling user, either as SS-COLP or as part of a notification of diversion, unless the calling user has an override privilege. A diverted-to user who is provided with SS-COLR temporary mode shall not have his identity revealed to the calling user as part of notification of diversion until the diverted-to user has responded and it is known that restriction is not to be invoked, unless the calling user has an override privilege.

NOTE: The invocation of SS-COLR at the diverting user has no impact on the presentation of the diverting user's identity to the calling user or to the diverted-to user. These presentations are governed by options in the various diversion services.

In each of the above situations, a calling user that subscribes to SS-COLP and who has override capability shall not be able to receive the diverted-to user's identity as part of the diverting notification information, but can invoke SS-COLP with override in order to receive the connected line identity when the call is actually answered.

5.6.4 Call authorized by dispatcher

When outgoing calls are completed via dispatcher authorization, (i.e. the SS-CAD is activated) SS-COLR shall not be operative (temporary override) and the identity of the connected user shall be revealed to the dispatcher. However the SS-COLR shall be operative for incoming calls once authorized by the dispatcher.

5.6.5 Discreet listening

The SS-DL shall take precedence over SS-CLIR and the SS-DL monitoring user shall receive the identity of the monitored user. A user who has invoked a discreet listening call shall take precedence over SS-CLIR activated at the connected users privilege and the identity of the connected (monitored) user shall be revealed.

5.6.6 Ambience listening

Dispatcher invoked:

Call identification shall not have any interaction with ambience listening.

Should the dispatcher invoke the supplementary service "ambience listening", in order to monitor activity in a terminal of interest, then the dispatcher's identity shall not be presented to the listened-to user.

Self invoked:

Should the user invoke the supplementary service "ambience listening" in order that another user may listen to his activity, then his identity shall be presented to the connected user, even though the SS-CLIR may be activated in the users profile.

5.6.7 Interactions with ISI Mobility Management (ANF-ISIMM) of SS-COLP and SS-COLR

Except for the call-per-call operation of SS-COLR, both SS-COLR and SS-COLP can be treated similarly but not identically. For the permanent mode of operation of SS-COLR, the SS-TYPE will be different and the served user of SS-COLP is different from the served user of SS-COLR (calling vs. connected). The difference in profiles for each calling identification justifies the assignment of different values of SS-TYPE for each supplementary services.

The case of mobility during a call is not dealt with in the present document.

NOTE: Call restoration has no impact on SS-COLP nor on SS-COLR; call restoration occurs after the completion of the call and after the completion of actions of SS-COLP or SS-COLR.

5.6.7.1 SS-COLP Profiles

5.6.7.1.1 SS-COLP information

The SS-COLP information element shall indicate if SS-COLP should be supported for the individual subscriber in the visited SwMI. It shall indicate SS status and shall be encoded as described in clause 34 of EN 300 392-3-5 [16]. SS-COLP profile response shall be as encoded in clause 34 of EN 300 392-3-5 [16].

5.6.7.1.2 SS-COLP migration original profile

SS-COLP migration original profile is actually an ANF-ISIMM information element, sent by the home SwMI to the visited SwMI of a user when this user migrates, as part of the SS migration original profile information (see EN 300 392-3-5 [16]).

SS-COLP migration original profile shall contain information sub-elements as defined in table 20.

Table 20: SS-COLP migration original profile information element contents

Information sub-element	Length	Type	C/O/M	Value	Remark
SS-Type	6	1	M		SS-COLP (see note 1)
SS-COLP Provided/Non Provided	1	1	M	1_2	Provided
				0_2	Non-provided
Override privilege for SS-COLR	1	1	O	1_2	Override (see note 2)
				0_2	No override
NOTE 1: This profile could be combined with SS-CLIR profile. NOTE 2: If override is implemented, this field is mandatory.					

NOTE: There is no need to specify the identity of the user to whom the profile information element specified in the above table applies since the ANF-ISIMM PDU which carries that information element already includes that identity.

5.6.7.1.3 SS-COLP migration original profile response information element

Like SS-COLP migration original profile, SS-COLP migration original profile response is an ANF-ISIMM information element, sent by the visited SwMI of a user to his home SwMI as part of the SS migration original profile response information (see EN 300 392-3-5 [16]). It is an acknowledgement of the corresponding SS-COLP migration original profile.

SS-COLP migration original profile response shall contain information sub-elements as defined in table 21 with the same values as in table 24.

Table 21: SS-COLP migration original profile response information element contents

Information sub-element	Length	Type	C/O/M	Value	Remark
SS-Type	6	1	M		SS-COLP (see note 1)
SS-COLP Provided/Non provided	1	1	M		
Override privilege for SS-COLR supported/not supported	1	1	O		
NOTE 1: This profile ack could be combined with SS-CLIR profile; it deals with the calling user. NOTE 2: If override is supported by the home SwMI, the content of the override ack is mandatory.					

5.6.8 Operations of SS-COLP with ISI Mobility Management (ANF-ISIMM)

5.6.8.1 Profile sending requirements

When a user migrates to a visited SwMI, his home SwMI shall send the following SS-COLP profile information to this visited SwMI through ANF-ISIMM:

- SS-COLP provided; or
- SS-COLP not provided to the user.

SS-COLP provision or non provision shall be sent by the home SwMI as part of ANF-ISIMM basic profile information, in the ANF-ISIMM PROFILE PDU (see relevant clause of EN 300 392-3-5 [16]).

The visited SwMI shall acknowledge the transfer of that information, in indicating to the home SwMI, also through ANF-ISIMM, as acknowledgement of the basic profile information, whether:

- SS-COLP supported as served user SwMI: or
- SS-COLP not supported as served user SwMI.

Since there is no activation/deactivation/definition/interrogation for SS-COLP, there is no need for profile upgrade.

5.6.8.2 SS-COLR profiles

5.6.8.2.1 SS-COLR information

The SS-COLR information element shall indicate if SS-COLR should be supported for the individual subscriber in the visited SwMI. It shall indicate SS status and shall be encoded as described in clause 34 of EN 300 392-3-5 [16]. SS-COLR profile response shall be as encoded in clause 34 of EN 300 392-3-5 [16].

NOTE: SS-COLR has to be supported for any SwMI supporting ISI.

5.6.8.2.2 SS-COLR migration original profile

SS-COLR migration original profile is actually an ANF-ISIMM information element, sent by the home SwMI to the visited SwMI of a user (to be calling) when this user migrates, as part of the SS migration original profile information (see EN 300 392-3-5 [16]).

SS-COLR migration original profile shall contain information sub-elements as defined in table 22.

Table 22: SS-COLR migration original profile information element contents

Information sub-element	Length	Type	C/O/M	Value	Remark
SS-Type	6	1	M		SS-COLR (see note 1)
SS-COLR Permanent/Temporary Mode	7	1	M	0_2	Permanent
				1_2	Temporary
Default value of SS-COLR temporary mode restricted/non-restricted	1	1	M	0_2	Restricted
				1_2	Non-restricted
NOTE: This profile could be combined with SS-CLIP profile as it deals with the connected user.					

NOTE: There is no need to specify the identity of the user to whom the profile information element specified in the above table applies since the ANF-ISIMM PDU which carries that information element already includes that identity.

5.6.8.2.3 SS-COLR migration original profile response information element

Like SS-COLR migration original profile, SS-COLR migration original profile response is an ANF-ISIMM information element, sent by the visited SwMI of a user (to be calling) to his home SwMI as part of the SS migration original profile response information (see EN 300 392-3-5 [16]). It is an acknowledgement of the corresponding SS-COLR migration original profile.

SS-COLR migration original profile response shall contain information sub-elements as defined in table 23 with the same values as in table 22.

Table 23: SS-COLR migration original profile response information element contents

Information sub-element	Length	Type	C/O/M	Value	Remark
SS-Type	6	1	M		SS-COLR (see note)
SS-COLR Permanent/Temporary Mode	7	1	M		
Default value of SS-COLR temporary mode	1	1	M		
NOTE: This profile could be combined with SS-CLIP profile as it deals with the connected user.					

5.6.8.3 Operations of SS-COLR with ISI Mobility Management (ANF-ISIMM)

When a user (to be connected) migrates to a visited SwMI, his home SwMI shall send the following SS-COLR profile information to this visited SwMI through ANF-ISIMM:

- possible restriction of presentation of the calling user identity in a permanent mode or a temporary mode (i.e. SS-COLR has been invoked for this user).

SS-COLR shall be sent by the home SwMI as part of ANF-ISIMM basic profile information, in the ANF-ISIMM PROFILE PDU (see relevant clause of EN 300 392-3-5 [16]).

The visited SwMI shall acknowledge the transfer of that information, in indicating to the home SwMI, also through ANF-ISIMM, as acknowledgement of the basic profile information, whether or not it supports:

- SS-COLR as served user SwMI, if the restriction of presentation of the identity of the user has been requested on a permanent mode.

Since there is no activation/deactivation/definition/interrogation for SS-COLR, there is no need for profile upgrade.

5.7 SS-COLP and SS-COLR parameter values (timers)

There shall be no timer for either SS-CLIP or SS-COLR procedures.

6 Common SS-CI Elements

6.1 General on common coding requirements

Clause 6.1 defined coding requirements applicable to all SS-CI protocols.

6.2 PDU type information element contents

The SS-CI PDU type information element shall be encoded as defined in table 24.

Table 24: SS-CI PDU type information element contents

Information element	Length	Value	Remark
	5	00000_2	Refer EN 300 392-9 [6]
	…etc.	…etc.	…etc.
	5	00100_2	Refer EN 300 392-9 [6]
EXTERNAL NUMBER PARAMETERS CLIP	5	00101_2	See clause A.3.
INFORM2 CLIR OVERRIDE	5	00110_2	
INFORM3 CLIR OVERRIDE	5	00111_2	
INFORM 4 COLP PRESENTATION	5	01000_2	See clause A.3.
EXTERNAL NUMBER PARAMETERS COLP	5	01001_2	
INFORM5 COLR OVERRIDE	5	01010_2	
INFORM6 COLR OVERRIDE	5	01011_2	
INVOKE COLR	5	01100_2	

Annex A (normative): External subscriber numbers in support of Call Identification Supplementary Services

A.1 External number PDU in support of SS-CLIP

In the case of interworking, the external subscriber number digits N provided by the gateway SwMI is carried over ISI; the gateway SwMI shall allow to encode only for external numbers: the numbering plan, the type of number and the screening indicators in an EXTERNAL NUMBER PARAMETERS CLIP PDU. Those elements shall be carried over ISI as defined in EN 300 392-3-2 [14] for Individual Call and EN 300 392-3-3 [15] for Group Call. The encoding for the EXTERNAL NUMBER PARAMETERS CLIP PDU shall be as given in table A.1. This PDU shall be associated with the basic call SET-UP facility field.

The intelligent gateway shall indicate to the connected user the identity it shall re-dial to reach the calling user where it happens to be.

Table A.1: External number parameters CLIP PDU contents in support of SS-CLIP

Information element	Length	Type	C/O/M	Remark
SS-Type	6	1	M	Defined in EN 300 392-9 [6]
SS-CI PDU type	5	1	M	EXTERNAL NUMBER PARAMETERS CLIP
Numbering plan identifier	4	3	M	
Type of Number	4	3	M	
Screening Indicator	4	3	M	

A.2 External number parameters COLP PDU in support of SS-COLP

In the case of interworking, the screening indicator, the type of numbering and the numbering plan shall be provided in the extension of the external subscriber number by an additional PDU. This EXTERNAL NUMBER PARAMETERS COLP PDU shall be provided by the Gateway SwMI and shall be associated with the CONNECT message in the Facility field in the case of interworking only and in the case of Individual Call only; EXTERNAL NUMBER PARAMETERS COLP PDU shall allow to encode, for external numbers only: the numbering plan, the type of number and the screening indicators.

The content of the external number PDU in support of SS-COLP shall be as defined in table A.2.

Table A.2: External number parameters COLP PDU contents

Information element	Length	Type	C/O/M	Remark
SS-Type	6	1	M	Defined in EN 300 392-9 [6]
SS-CI PDU type	5	1	M	EXTERNAL NUMBER PARAMETERS COLP
Numbering plan identifier	4	3	M	
Type of Number	4	3	M	
Screening Indicator	4	3	M	

A.3 Information elements

A.3.1 Numbering plan identifier information element

The Numbering Plan Identifier information element shall be as specified in table A.3.

Table A.3: Numbering plan identifier information element.

Information element	Value	Numbering plan	Remark
Numbering plan identifier	0 (see note)	unknown	
	1 (see note)	(TETRA)	
	2 (see note)	E.164 [11](PSTN/ISDN/GSM)	
	3 (see note)	X.121 [13](PDN)	
NOTE: Digits shall be BCD (binary coded decimal)			

A.3.2 Type of number information element

The Type of Number information element shall be as specified in table A.4.

Table A.4: Type of Number information element

Information element	Value	Type of Number	Remark
Type of Number	0 (see note)	Unknown	
	1 (see note)	Local	
	2 (see note)	National	
	3 (see note)	International	
	4 (see note)	TETRA	
NOTE: Digits shall be BCD (binary coded decimal).			

A.3.3 Screening indicators information element

The Screening Indicators information element shall be as specified in table A.5.

Table A.5: Screening indicators information element

Information element	Value	Screening indicators	Remark
Screening Indicators	0 (see note)	None, not implemented, or unknown	Case of PSTN most likely
	1 (see note)	Network provided number	Case of Tetra
	2 (see note)	User provided, verified and passed	Case of ISDN
	3 (see note)	User provided, not screened	
	4 (see note)	Number not available due to interworking	
NOTE: Digits shall be BCD (binary coded decimal).			

Annex B (informative): Specification and Description Language (SDL) representation of procedures

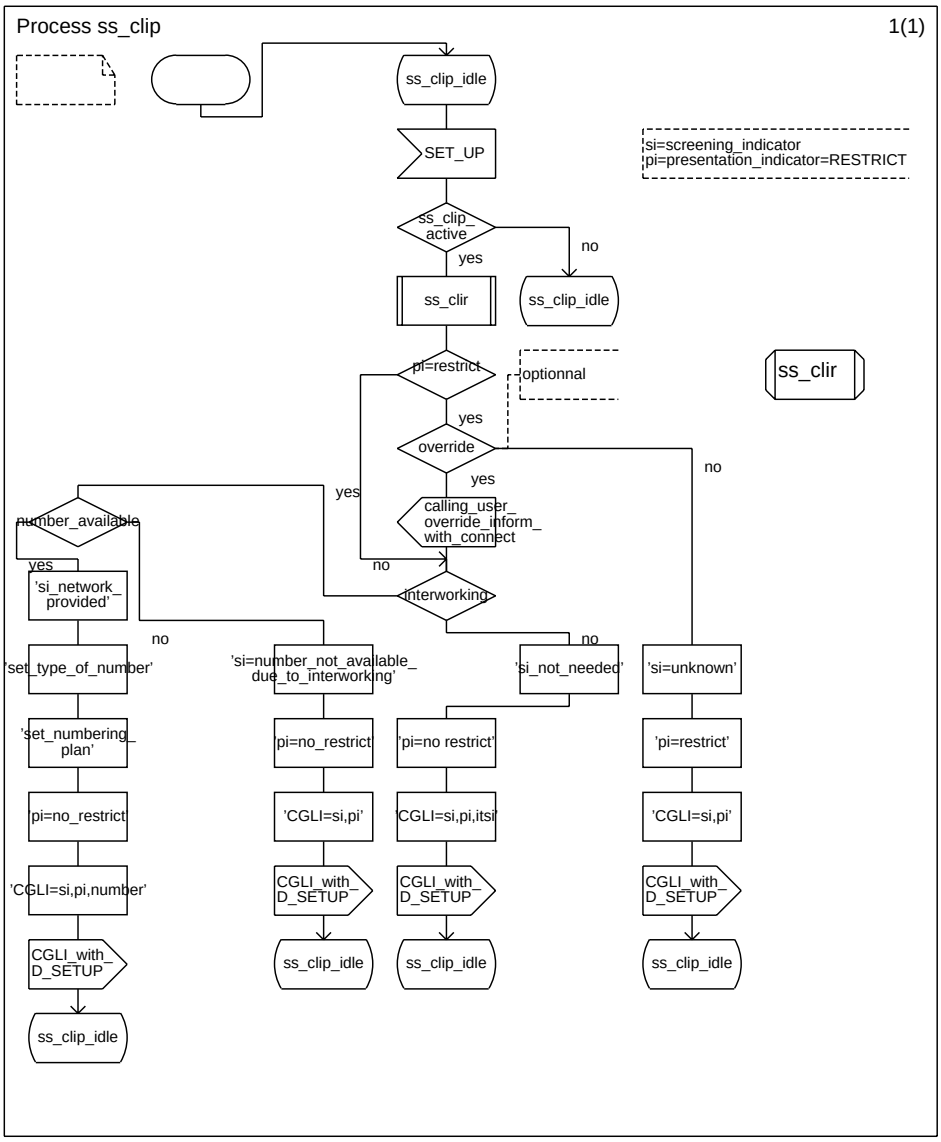
The figures in this annex use the Specification and Description Language defined in ITU-T Recommendation Z.100 [10]. This annex is not maintained and if it is in conflict with the main body of the present document. If any conflict the main body takes precedence.

B.1 SDL representation of SS-CLIP at the terminating SwMI

Figure B.1 shows the behaviour of an SS-CLIP supplementary service control entity within terminating SwMI.

Input signals from the right and output signals to the right represent air interface messages.

Input signals from the left and output signals to the left represent primitives to/from the user.



NOTE 1: The indication CGLI-with--D-SETUP corresponds to the INFORM1 PDU.
NOTE 2: In the case of override, the indication calling-user-override-inform with-connect corresponds to the INFORM2 flow.
NOTE 3: In the case of override and not shown in this figure to keep readability an indication INFORM3 may be added to indicate that presentation of CGLI is due to override.

Figure B.1: SS-CLIP Process at Terminating SwMI

B.2 SDL representation of SS-CLIR procedure

Figure B.2 shows the behaviour of the SS-CLIR supplementary service SDL procedure.

Input signals from the right and output signals to the right represent air interface messages.

Input signals from the left and output signals to the left represent primitives to/from the calling user.

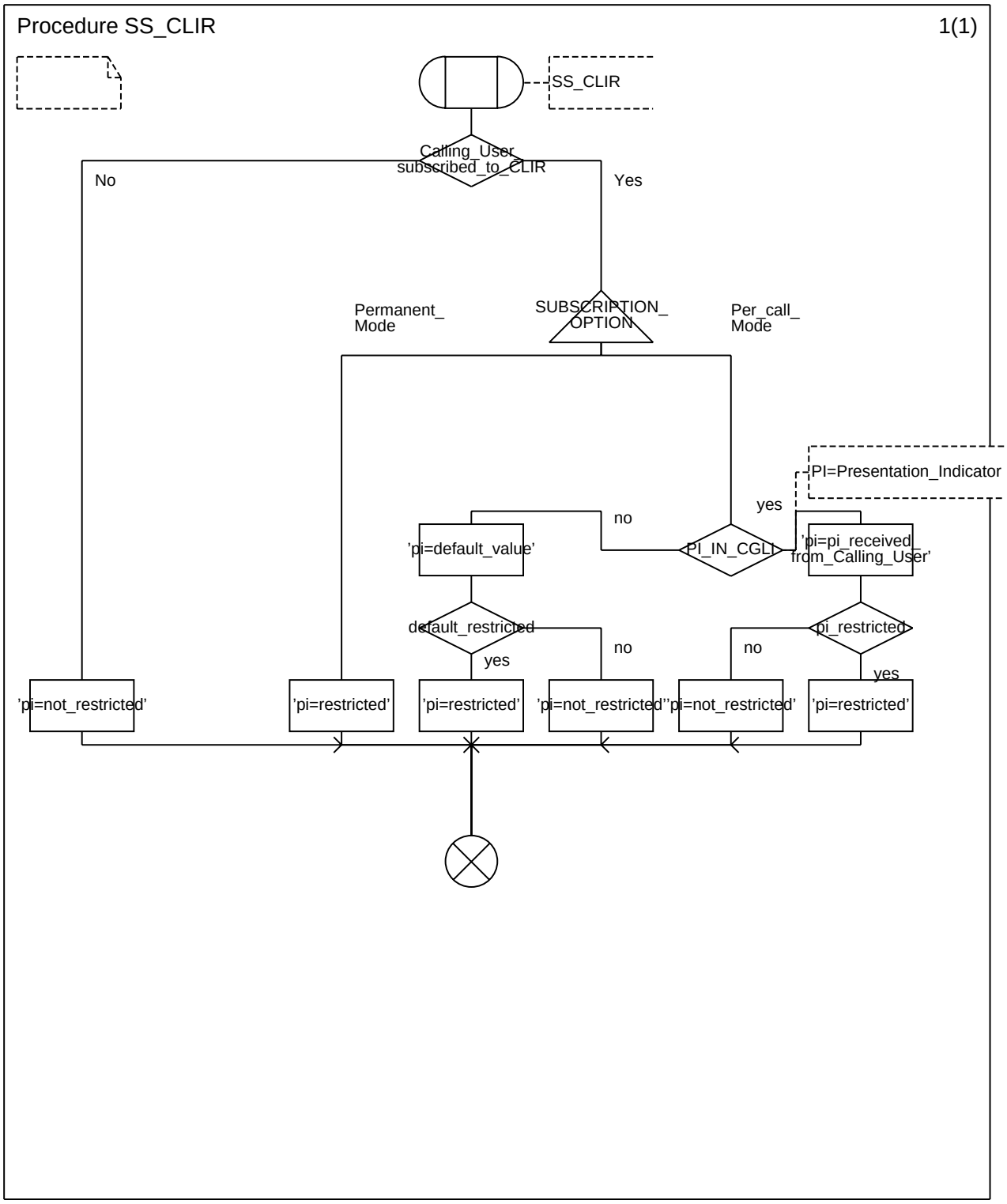
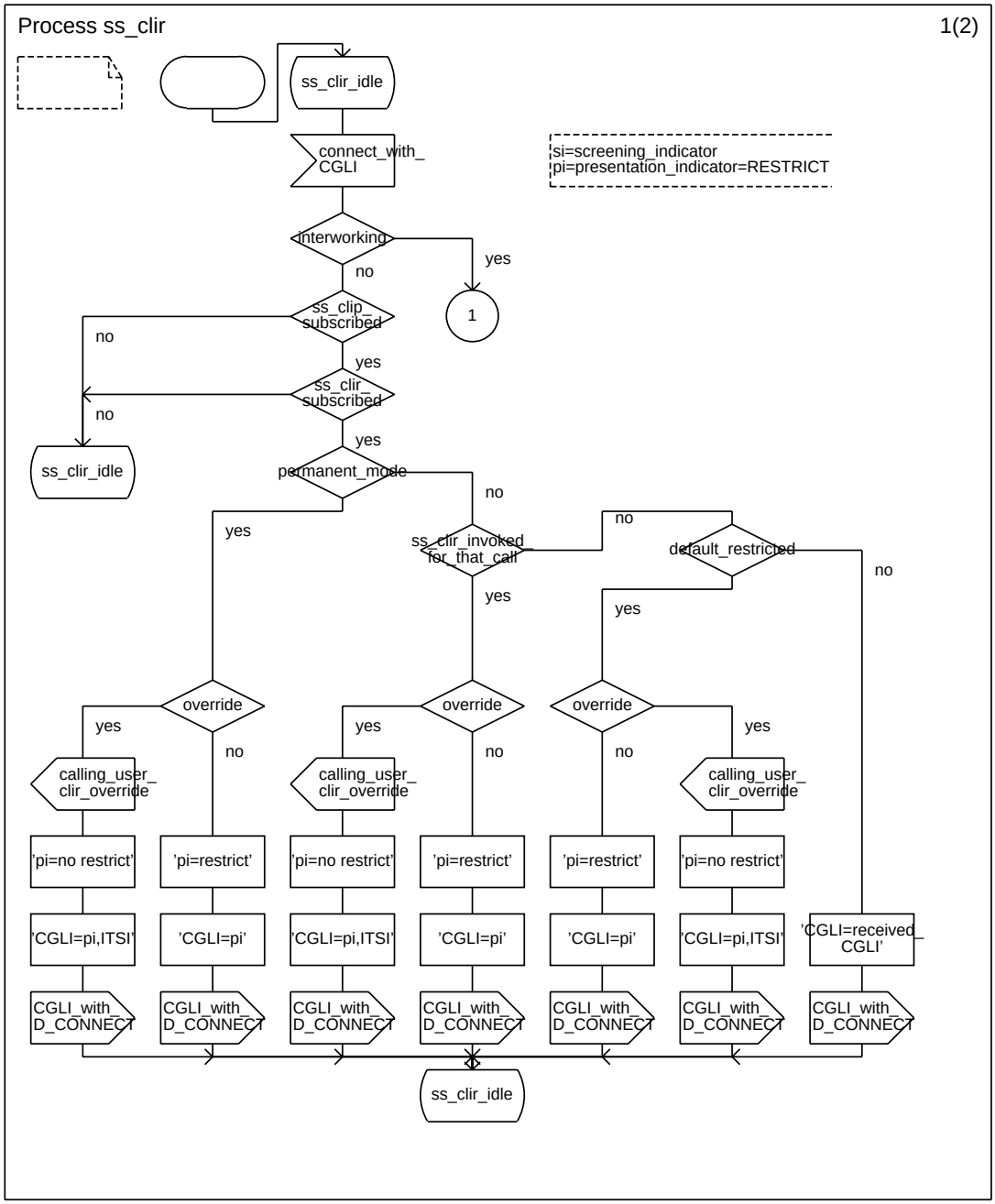


Figure B.2: SS-CLIR Procedure

B.3 SDL representation of SS-CLIR at the originating SwMI

Figure B.3 shows the behaviour of an SS-CLIP supplementary service control entity within originating SwMI. Input signals from the right and output signals to the right represent air interface messages.

Input signals from the left and output signals to the left represent primitives to/from the monitoring user.



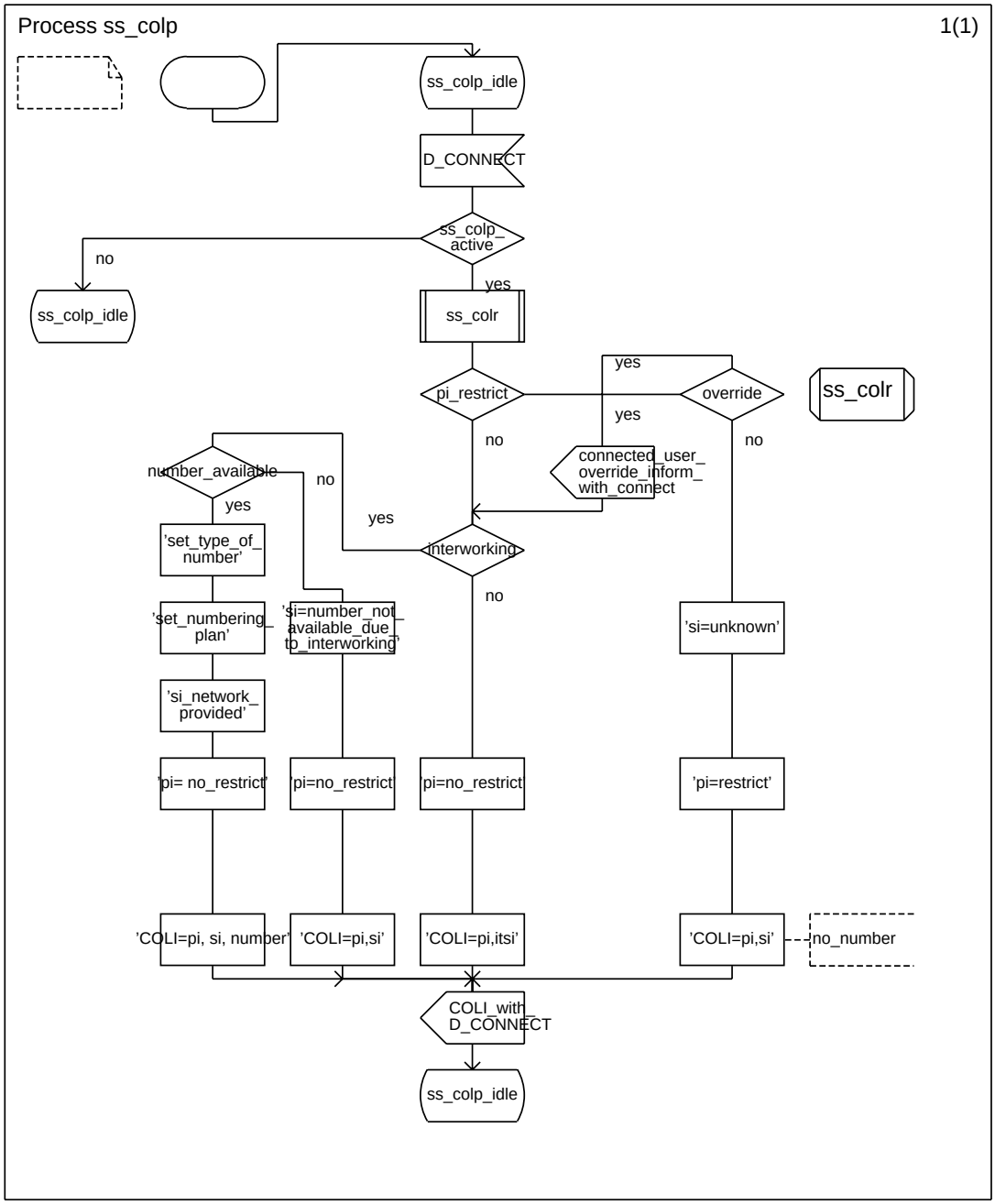
NOTE 1: The indication CGLI-with-D-SETUP corresponds to the INFORM1 PDU.
NOTE 2: In the case of override, the indication calling-user-override-inform with connect corresponds to the INFORM2 flow.
NOTE 3: In the case of override and not shown in this figure to keep readability an indication INFORM3 should be added to indicate that presentation of CGLI is due to override.

Figure B.3: SS-CLIR SDL Process at the originating SwMI

B.4 SDL representation of SS-COLP at the originating SwMI

Figure B.4 shows the behaviour of an SS-COLP supplementary service control entity within originating SwMI. Input signals from the right and output signals to the right represent air interface messages.

Input signals from the left and output signals to the left represent primitives to/from the user.



NOTE 1: The indication COLI-with-D-CONNECT corresponds to the INFORM4 PDU.
NOTE 2: In the case of override, the indication connected-user-override-inform with connect corresponds to the INFORM5 flow.
NOTE 3: In the case of override and not shown in this figure to keep readability an indication INFORM6 should be added to indicate that presentation of COLI is due to override.

Figure B.4: SS-COLP Process at Originating SwMI

B.5 SDL representation of SS-COLR procedure

Figure B.5 shows the behaviour of an SS-COLR supplementary service control entity within originating SwMI. Input signals from the right and output signals to the right represent air interface messages.

Input signals from the left and output signals to the left represent primitives to/from the user.

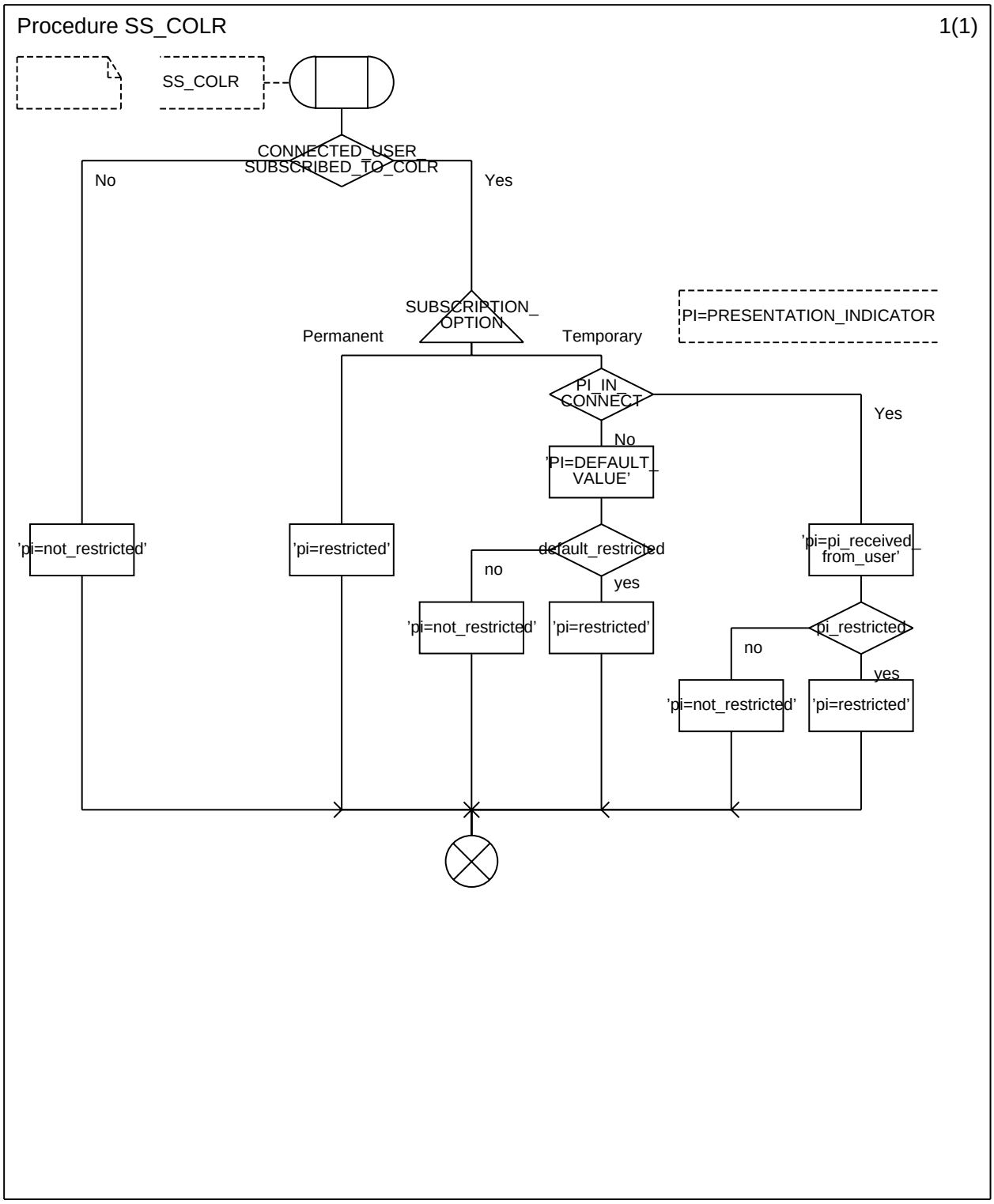
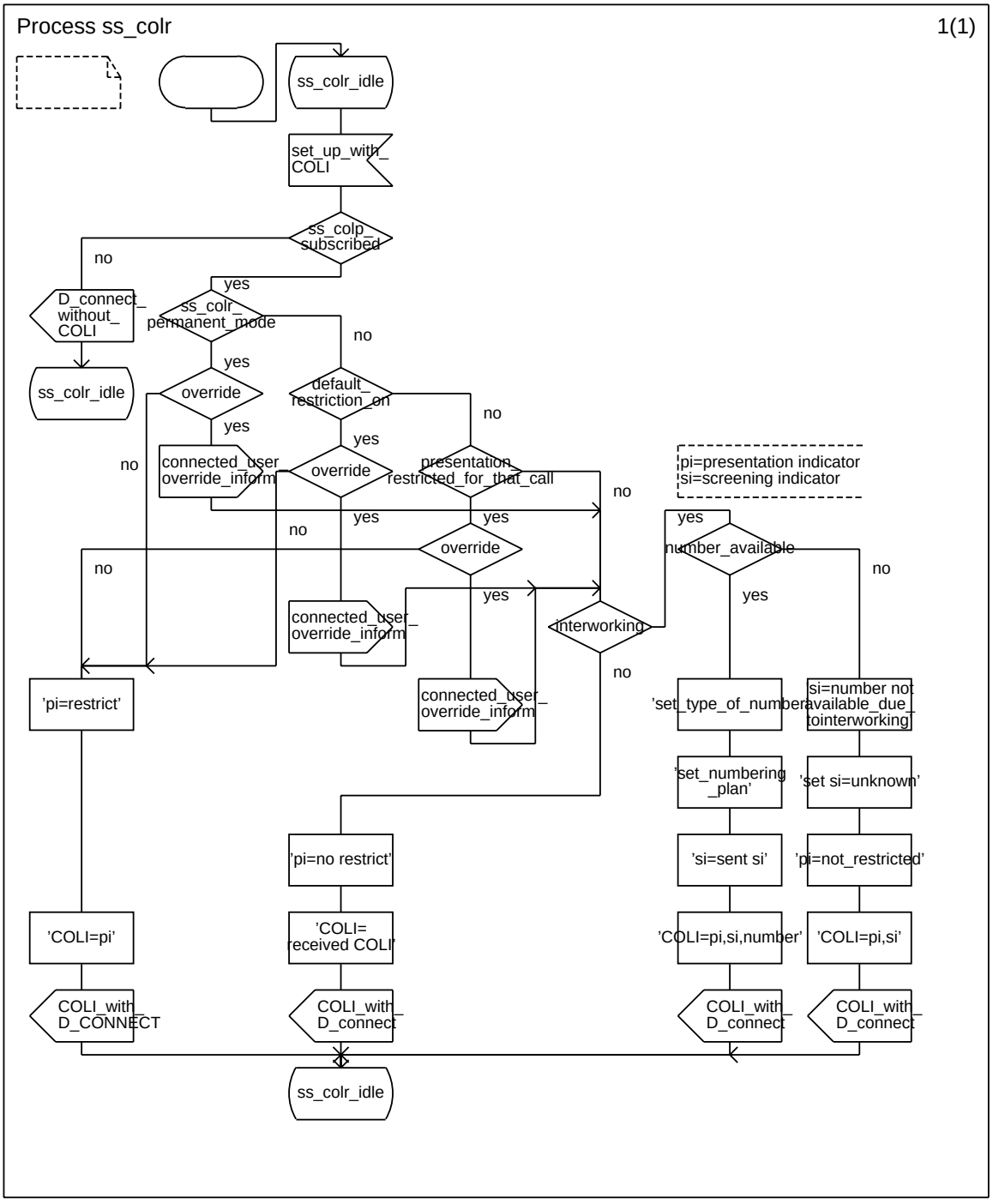


Figure B.5: SS-COLR Procedure

B.6 SDL representation of SS-COLR process at the originating SwMI

Figure B.6 shows the behaviour of an SS-COLR supplementary service control entity within originating SwMI. Input signals from the right and output signals to the right represent air interface messages.

Input signals from the left and output signals to the left represent primitives to/from the user.



NOTE 1: The indication COLI-with-D-CONNECT corresponds to the INFORM4 PDU.
NOTE 2: In the case of override, the indication connected-user-override-inform with connect corresponds to the INFORM5 flow.
NOTE 3: In the case of override and not shown in this figure to keep readability an indication INFORM6 should be added to indicate that presentation of COLI is due to override.

Figure B.6: SS-COLR Process at Terminating SwMI

Annex C (informative): Bibliography

- ITU-T Recommendation E.212: "The international identification plan for mobile terminals and mobile users".

Annex D (informative): Change Requests

The Change Requests as presented in table C.1 are included into the present version the present document.

Table C.1

No	CR vers.	Standard Version			Clauses affected	Title	CR Status
001	10	Ed.1			5.3.2.1.2	Relationship of the SS-COLP INFORM 4 PDU with basic call flows to the calling party.	WG3 approved 030409
002	02	Ed.1			4.3, 5.3, 6 (new section), A.3	Coding requirements for SS-CI	WG3 approved 030409
003	01	Ed.1			3.1, 3.2, 4.1.4, 4.3.1, 4.3.2.1,4.3.2.2, 4.6.3.1.2, 4.6.3.3, 4.6.4.1.2, 5.1.4, 5.3.1, Annex A	Editorial improvements	Proposal
004							

History

Document history		
Edition 1	August 1999	Publication as EN 300 392-12-1
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