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Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 12: Supplementary services stage 3; Sub-part 17: Include Call (IC)

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Foreword

This European Standard (Telecommunications series) has been produced by ETSI Project Terrestrial Trunked Radio (TETRA).

The present document is part 12 sub-part 17 of a multi-part deliverable covering Voice plus Data (V+D), as identified below:

Part 1: "General network design";

Part 2: "Air Interface (AI)";

Part 3: "Interworking at the Inter-System Interface (ISI)";

Part 4: "Gateways basic operation";

Part 5: "Peripheral Equipment Interface (PEI)";

Part 7: "Security";

Part 9: "General requirements for supplementary services";

Part 10: "Supplementary services stage 1";

Part 11: "Supplementary services stage 2";

Part 12: "Supplementary services stage 3";

Part 13: "SDL model of the Air Interface (AI)";

Part 14: "Protocol Implementation Conformance Statement (PICS) proforma specification";

Part 15: "TETRA frequency bands, duplex spacings and channel numbering";

Part 16: "Network Performance Metrics";

Part 17: "TETRA V+D and DMO Release 1.1 specifications".

National transposition dates	
Date of adoption of this EN:	11 January 2002
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1 Scope

The present document specifies the stage 3 description of the Supplementary Service Include Call (SS-IC) for the Terrestrial Trunked Radio (TETRA).

SS-IC permits the served user participating a call to include other participant to that call.

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

Supplementary service specifications are produced in three stages according to the method defined in ITU-T Recommendation I.130 [1]. The stage 1 description specifies the service from the user's point of view (see ETS 300 392-10-17 [7]). The stage 2 description identifies the functional capabilities and the information flows needed to support the service as specified in its stage 1 description (see EN 300 392-11-17 [8]). The present stage 3 description specifies the protocols at the air interface *and at the various Inter-System Interfaces (ISI)* to support SS-IC.

NOTE 1: 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.

NOTE 2: 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 and group calls; more specifically to the following entities:

- the MS/LSs of the served user and of the affected user; and
- the served user and the affected user Switching and Management Infrastructures (SwMIs) in an individual and 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.

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

[3] 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)".

[4] ETSI ETS 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)".

[5] ETSI ETS 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)".

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

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

[8] ETSI EN 300 392-11-17: "Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 11: Supplementary services stage 2; Sub-part 17: Include Call (IC)".

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions given in EN 300 392-9 [6] apply with the following modifications:

affected user: user or users included in the original call

NOTE: The original call may be either a group call or an individual call but the resulting call is a group call.

affected user SwMI: any SwMI where an affected user is currently registered

another user: any other than server user in the original call to which new users will be included

another user SwMI: any SwMI where another user is currently registered

original call: call already established in which the served user participates and which will be included in a group call together with new participant added by the served user

resulting call: call formed from the original call participant(s) and new participant(s) included in the SS-IC operation

served user: user already participating in a call and who invokes the SS-IC supplementary service

served user SwMI: SwMI where the served user is currently registered

NOTE: The served user SwMI is the group controlling SwMI of the resulting group call.

3.2 Abbreviations

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

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
ANF-ISISS	Additional Network Feature - Inter-System Interface Supplementary Service
IC	Include Call
ISI	Inter-System Interface
LS	Line Station
MS	Mobile Station
PDU	Protocol Data Unit
ROSE	Remote Operation Service Element
SDL	Specification Description Language
SS	Supplementary Service

NOTE: The abbreviation SS is only used when referring to a specific supplementary service (e.g. SS-IC).

SwMI	Switching and Management Infrastructure

4 SS-IC service description

4.1 General

SS-IC enables a served user, while already participating in an active call (original call) to place a second call and have the participant(s) in this second call included in a group call together with the participant(s) in the original call.

This clause describes the SS-IC 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-IC service access point is used in conformance testing as a normative boundary in MSs and LSs.

NOTE: As the present document deals only with SS-IC, all the service primitives has been shown without a TNSS-IC- prefix e.g. the TNSS-IC-INVOKE request is shortened into an INVOKE request.

4.2 SS-IC services offered over the TNSS-SAP

4.2.1 General on service primitives

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-IC service primitives at the served user MS/LS TNSS-SAP shall be:

- CANCEL request;
- INVOKE request;
- INVOKE indication; and
- INVOCATION FAILURE indication.

The SS-IC service primitives for the affected user at the MS/LS TNSS-SAP shall be:

- INFORM indication.

The SS-IC service primitives for another user at the MS/LS TNSS-SAP shall be:

- INFORM indication.

4.2.2 CANCEL

The CANCEL request primitive may be sent over the served user TNSS-SAP by the user application to the MS/LS CMCE to cancel SS-IC invocation.

The CANCEL primitive shall contain the SS-IC parameters listed in table 1.

Table 1: Parameters for the primitive CANCEL request

Parameters	Request
Included party	M

4.2.3 INFORM

The INFORM indication primitive may be sent over the affected or another user TNSS-SAP by the MS/LS CMCE to the user application to inform it that the presented call is an include call or that the current call is modified into an include call.

There are no parameters in the INFORM indication primitive.

NOTE: Actually the INFORM indication is carried as a notification indication of the basic call.

4.2.4 INVOKE

The INVOKE request primitive shall be sent over the served user TNSS-SAP by the user application to the MS/LS CMCE to invoke SS-IC. The INVOKE indication shall be sent over the served user TNSS-SAP to the user application when the inclusion of the new party or parties has been completed.

The INVOKE primitive shall contain the SS-IC parameters listed in table 2.

Table 2: Parameters for the primitive INVOKE request and indication

Parameters	Request	Indication
Included party	M	M

NOTE 1: There are no other parameters as the call type is implied and the other relevant call parameters are the same as for the current call.

NOTE 2: "called user alerted" is conveyed using the basic call primitives.

4.2.5 INVOCATION FAILURE indication

The INVOCATION FAILURE indication primitive may be sent over the served user TNSS-SAP by the MS/LS CMCE to the user application to inform it about the failure of a previous INVOKE request.

The INVOCATION FAILURE indication primitive shall contain the SS-IC parameters listed in table 3.

Table 3: Parameters for the primitive INVOCATION FAILURE indication

Parameters	Indication
Included party	M
Invocation failure cause	M
Disconnect cause	M

4.3 Parameter description

Disconnect cause:

- any basic call disconnection cause.

Invocation failure cause:

- rejected for any reason;
- not subscribed;
- maximum number of inclusions already reached;
- any basic call failure in the call set-up to the affected user (to be included user).

NOTE: The maximum number of inclusions is outside the scope of the present document.