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European Standard (Telecommunications series)

Terrestrial Trunked Radio (TETRA);
Voice plus Data (V+D);
Part 10: Supplementary services stage 1;
Sub-part 14: Late Entry (LE)
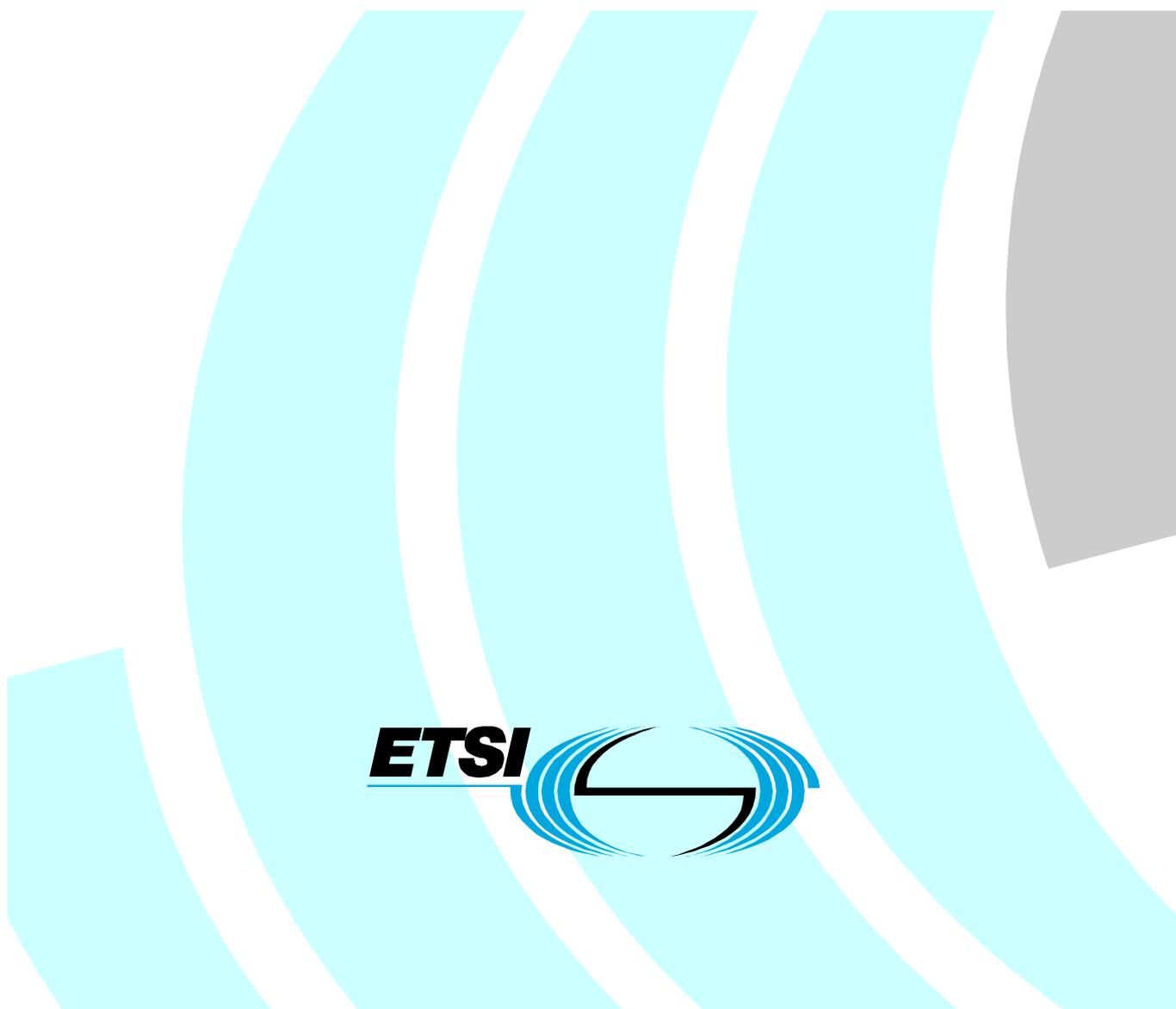
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Foreword

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 10, sub-part 14 of a multi-part deliverable covering 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)";

EN 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";

    Sub-part 1: "Call identification";

    Sub-part 2: "Call report";

    Sub-part 3: "Talking Party Identification (TPI)";

    Sub-part 4: "Call Forwarding (CF)";

    Sub-part 5: "List Search Call (LSC)";

    Sub-part 6: "Call Authorized by Dispatcher (CAD)";

    Sub-part 7: "Short number addressing";

    Sub-part 8: "Area selection";

    Sub-part 9: "Access priority";

    Sub-part 10: "Priority Call (PC)";

    Sub-part 11: "Call Waiting (CW)";

    Sub-part 12: "Call Hold (CH)";

    Sub-part 13: "Call completion to busy subscriber";

    Sub-part 14: "Late Entry (LE)";

Sub-part 15:   "Transfer of control";

Sub-part 16:   "Pre-emptive priority call";

Sub-part 17:   "Include Call (IC)";

Sub-part 18:   "Barring of Outgoing Calls (BOC)";

Sub-part 19:   "Barring of Incoming Calls (BIC)";

Sub-part 20:   "Discreet Listening (DL)";

Sub-part 21:   "Ambience Listening (AL)";

Sub-part 22:   "Dynamic Group Number Assignment (DGNA)";

Sub-part 23:   "Call completion on no reply";

Sub-part 24:   "Call Retention (CRT)";

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

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

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

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

TS 100 392-15:   "TETRA frequency bands, duplex spacings 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 defines the stage 1 specifications of the Supplementary Service Late Entry (SS-LE) for the Trans-European Trunked Radio (TETRA). Stage 1 is an overall service description from the users point of view but does not deal with the details of the human interface itself.

The present document specifies the service description of the supplementary service and the procedures to be expected with successful and unsuccessful outcomes. In addition the present document specifies the interactions with other TETRA supplementary services and interworking considerations.

Charging principles are outside the scope of the present document.

The SS-LE allows radio users to be informed of and, if they are concerned, to join an already existing multipoint speech or data 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 Z.100: "Specification and description language (SDL)".

3   Definitions and abbreviations

3.1   Definitions

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

authorized user: identified user who is able to define the SS-LE parameters

bearer service: type of telecommunication service that provides the capability for the transmission of signals between user-network interfaces

forced late entry: User is forced to join to the indicated call.

> NOTE: As a user application in the mobile station, the user may be forced to join the multipoint call as soon as a late entry broadcast or late entry paging message is received. If the user is already engaged in another communication, the user may be forced to join the highest priority call.

late entry acknowledgement: indication sent in SS-LE messages by the Switching and Management Infrastructure (SwMI) to inform a member who would like to join the call that he has to inform the SwMI of his entering the call

late entry broadcast: indication sent by the SwMI to inform members of a multipoint call which are currently not already involved in this call that they can join directly an existing communication (a channel is already allocated in this cell)

late entry paging: indication sent by the SwMI to inform members of a multipoint call which are currently not already involved in this call, that they need to ask for a communication channel for that call if they want to participate (a channel is not yet allocated in this cell)

multipoint call: call supporting a point-to-multipoint teleservice or bearer service

> NOTE: It can be either a group call, an acknowledged group call or a broadcast call.

Supplementary Service (SS): modifies or supplements a bearer service or a teleservice

> NOTE: A supplementary service cannot be offered to a customer as a stand alone service. It is offered in combination with a bearer service or a teleservice.

teleservice: type of telecommunications service that provides the complete capability, including terminal equipment functions, for communication between users according to agreed protocols

3.2   Abbreviations

3.2.1   General abbreviations

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

GTSI	Group TETRA Subscriber Identity
ISDN	Integrated Services Digital Network
SDL	(Functional) Specification and Description Language
SS	Supplementary Service

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

SwMI	Switching and Management Infrastructure
TETRA	TErrestrial Trunked RAdio

3.2.2   Supplementary service abbreviations

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

SS-AL	Ambience Listening
SS-AP	Access Priority
SS-AS	Area Selection
SS-BIC	Barring of Incoming Calls
SS-BOC	Barring of Outgoing Calls
SS-CAD	Call Authorized by Dispatcher
SS-CCBS	Call Completion to Busy Subscriber
SS-CCNR	Call Completion on No Reply
SS-CFB	Call Forwarding on Busy
SS-CFNRy	Call Forwarding on No Reply
SS-CFNRc	Call Forwarding on Not Reachable
SS-CFU	Call Forwarding Unconditional
SS-CLIP	Calling Line Identification Presentation
SS-CLIR	Calling/Connected Line Identification Restriction
SS-COLP	COnnected Line identification Presentation
SS-CR	Call Report
SS-CRT	Call ReTention
SS-CW	Call Waiting
SS-DGNA	Dynamic Group Number Assignment
SS-DL	Discreet Listening
SS-HOLD	Call HOLD
SS-IC	Include Call
SS-LE	Late Entry
SS-LSC	List Search Call
SS-PC	Priority Call
SS-PPC	Pre-emptive Priority Call
SS-SNA	Short Number Addressing
SS-TPI	Talking Party Identification

4   Supplementary Service Late Entry (SS-LE) stage 1 specification

4.1   Description

4.1.1   General description

During a multipoint speech call, the infrastructure shall send (when necessary) Late Entry indications related to this call to allow group members to join the ongoing speech call. This supplementary service may be used regardless of whether the members of the group are engaged in a call or not.

SS-LE shall be related to the called group identity.

4.1.2   Qualifications on applicability to telecommunication services

This supplementary service shall be applicable to all TETRA multipoint speech and data circuit mode services.

4.2   Procedures

4.2.1   Provision and withdrawal

The service provider may provide two services.

Service 1: Provision and withdrawal of SS-LE shall be provided by pre-arrangement with the service provider against a specific Group TETRA Subscriber Identity (GTSI).

Service 2: Provision and withdrawal of SS-LE shall be provided by pre-arrangement with the service provider to the authorized user.

The SS-LE supplementary service can be withdrawn by the service provider for administrative purposes or at the request of the authorized user.

4.2.2   Normal procedures

4.2.2.1   Activation, deactivation, definition, registration, interrogation, and cancellation

4.2.2.1.1   Activation and deactivation

Service 1: The supplementary service shall be activated upon provision and deactivated upon withdrawal.

Service 2: The supplementary service shall be activated upon definition and deactivated upon removal.

4.2.2.1.2   Definition and removal

Service 1: The definition process shall be carried out upon provision.

Service 2: The authorized user defines and removes LE definitions.

To define/remove SS-LE definition the authorized user shall supply:

- group identity or identities;

- LE definition/removal;

- LE used over ISI;

- Call behaviour;

- Basic service type;

- Repetition rate.

4.2.2.1.3   Registration

Registration shall be used upon provision in order to identify the authorized users.

Service 2: The authorized user should be provided with the list of GTSIs he is able to carry out SS-LE procedures.

4.2.2.1.4   Interrogation

SS-LE may be interrogated on a GTSI basis by any member of the group or an authorized user.

The response of an interrogation shall be the details of the definition or indication that LE is not defined.

4.2.2.1.5   Cancellation

Procedures for cancellation shall not be applicable to SS-LE.

4.2.2.2   Invocation and operation

4.2.2.2.1   Invocation

SS-LE shall be invoked by the network after completion of the call set-up, if SS-LE is activated for the service related to the called group identity.

4.2.2.2.2   Operation

SS-LE indications shall be sent for the duration of a multipoint call.

SS-LE indications contain relevant information on the group call and whether radio resources are available. The MS receiving LE may join the call immediately on LE broadcast and LE acknowledge, but shall request radio resources on LE paging.

   NOTE: As a user application in the mobile station, the user may be forced to join the ongoing multipoint call as soon as he receives a late entry message by applying supplementary service Priority Call or Pre-emptive Priority Call.

The periodicity of LE broadcasts is outside the scope of the present document.

4.2.3 Exceptional procedures

4.2.3.1 Activation, deactivation, definition, registration, interrogation, and cancellation

4.2.3.1.1 Activation and deactivation

Not applicable.

4.2.3.1.2 Definition

If the system cannot accept a definition request, the authorized user shall receive a notification that the SS-LE definition was not successful. Possible causes can be:

- rejected for any reason;

- insufficient information;

- unknown GTSI;

- SS-LE not supported for the basic service;

- user not authorized;

- parameters not valid.

4.2.3.1.3 Registration

Not applicable.

4.2.3.1.4 Interrogation

If the network cannot accept an interrogation request, the interrogating user shall receive a notification that the SS-LE interrogation was unsuccessful. The possible causes for rejection can be:

- service not provided by the network;

- interrogation against a number which is not a valid GTSI;

- interrogating user is not a member of the group or an authorized user;

- rejected for any reason;

- parameters not valid;

- insufficient information.

4.2.3.1.5 Cancellation

Exceptional procedures are not applicable to SS-LE.

4.2.3.2 Invocation and operation

4.2.3.2.1 Invocation

Exceptional procedures are not applicable to SS-LE.

4.2.3.2.2 Operation

Exceptional procedures are not being applicable to SS-LE.

4.3   Interactions with other supplementary services

Interactions with other TETRA supplementary services are specified below.

4.3.1   Calling Line Identification Presentation (SS-CLIP)

SS-LE shall not have any interaction with calling line identification presentation supplementary service.

4.3.2   Connected Line identification Presentation (SS-COLP)

SS-LE shall not have any interaction with Connected Line identification Presentation supplementary service.

4.3.3   Calling/Connected Line Identification Restriction (SS-CLIR)

SS-LE shall not have any interaction with calling/connected line identification restriction supplementary service.

4.3.4   Call Report (SS-CR)

SS-LE shall not have any interaction with Call Report supplementary service.

4.3.5   Talking Party Identification (SS-TPI)

SS-LE shall not have any interaction with SS-TPI supplementary service.

4.3.6   Call Forwarding Unconditional (SS-CFU)

SS-LE shall not have any interaction with Call Forwarding Unconditional supplementary service. If SS-LE is activated against the GTSI and this GTSI subsequently forwards all calls to the forwarded-to GTSI, the SS-LE functionality shall not be transferred to the forwarded-to GTSI. Only SS-LE related to the forwarded-to GTSI shall be applied.

4.3.7   Call Forwarding on Busy (SS-CFB)

Not applicable. If SS-LE is activated against the GTSI and this GTSI subsequently forwards all calls to the forwarded-to GTSI, the SS-LE functionality shall not be transferred to the forwarded-to GTSI. Only SS-LE related to the forwarded-to GTSI shall be applied.

4.3.8   Call Forwarding on No Reply (SS-CFNRy)

Not applicable.

4.3.9   Call Forwarding on Not Reachable (SS-CFNRc)

Not applicable.

4.3.10   List Search Call (SS-LSC)

SS-LE shall not have any interaction with SS-LSC supplementary service.

4.3.11   Call Authorized by Dispatcher (SS-CAD)

SS-LE shall not have any interaction with SS-CAD supplementary service.

4.3.12   Short Number Addressing (SS-SNA)

SS-LE shall not have any interaction with SS-SNA supplementary service.

4.3.13   Area Selection (SS-AS)

SS-LE shall not have any interaction with SS-AS supplementary service. The SS-LE supplementary service shall be offered in the area selected for the call.

4.3.14   Access Priority (SS-AP)

SS-LE shall not have any interaction with SS-AP supplementary service.

4.3.15   Priority Call (SS-PC)

SS-LE shall not have any interaction with SS-PC supplementary service. The SS-PC indication shall be displayed or shall be used by the members of the group to choose their participation to call indicated by the SS-LE.

4.3.16   Call Waiting (SS-CW)

Not applicable.

4.3.17   Call Hold (SS-HOLD)

SS-HOLD is not applicable to group calls.

4.3.18   Call Completion to Busy Subscriber (SS-CCBS)

Not applicable.

4.3.19   Late Entry (SS-LE)

SS-LE shall not have any interaction with other operating SS-LE instances.

4.3.20   Void

4.3.21   Pre-emptive Priority Call (SS-PPC)

SS-LE shall not have any interaction with SS-PPC supplementary service.

4.3.22   Include Call (SS-IC)

SS-LE shall not have any interaction with SS-IC supplementary service.

4.3.23   Void

4.3.24   Barring of Outgoing Calls (SS-BOC)

SS-LE shall not have any interaction with SS-BOC supplementary service.

4.3.25   Barring of Incoming Calls (SS-BIC)

Not applicable.

4.3.26   Discreet Listening (SS-DL)

SS-LE shall not have any interaction with SS-DL supplementary service.

4.3.27 Ambience Listening (SS-AL)

SS-LE shall not have any interaction with SS-AL supplementary service.

4.3.28 Dynamic Group Number Assignment (SS-DGNA)

SS-LE shall not have any interaction with SS-DGNA supplementary service.

4.3.29 Call Completion on No Reply (SS-CCNR)

Not applicable.

4.3.30 Call ReTention (SS-CRT)

SS-LE shall not have any interaction with SS-CR supplementary service.

4.4 Inter-working considerations

SS-LE shall be supported over ISI, when both connected SwMIs support SS-LE.

4.5 Overall SDL

Figure 1 contains the dynamic description of SS-LE using the Specification Description Language (SDL) defined in ITU-T Recommendation Z.100 [1]. The SDL process represents the behaviour of the network in providing SS-LE.
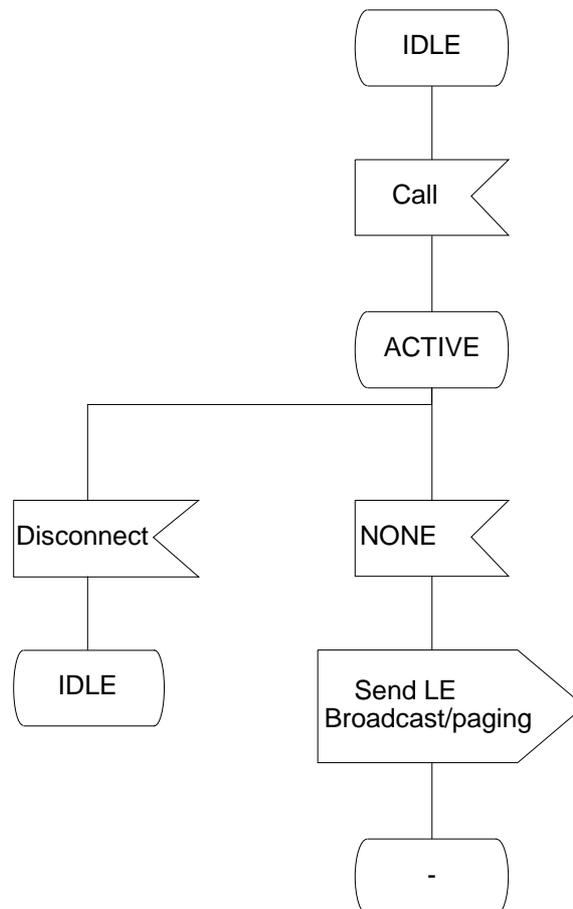
Figure 1: SS-LE supplementary service SDL

Annex A (informative):
Bibliography

ITU-T Recommendation I.130: "Method for the characterization of telecommunication services supported by an ISDN and network capabilities of an ISDN".

History

Document history		
Edition 1	April 1996	Publication as ETS 300 392-10-14
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