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Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 12: Supplementary services stage 3; Sub-part 6: Call Authorized by Dispatcher (CAD)

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Foreword

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

The present document is part 12, sub-part 6 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)";
- EN 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 (HOLD)";

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

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

EN 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)";

EN 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";

TR 100 392-17: "TETRA V+D and DMO specifications";

TS 100 392-18: "Air interface optimized applications".

NOTE: Part 10, sub-part 15 (Transfer of control), part 13 (SDL) and part 14 (PICS) of this multi-part deliverable are of status "historical" and are not maintained.

National transposition dates	
Date of adoption of this EN:	17 February 2006
Date of latest announcement of this EN (doa):	31 May 2006
Date of latest publication of new National Standard or endorsement of this EN (dop/e):	30 November 2006
Date of withdrawal of any conflicting National Standard (dow):	30 November 2006

1 Scope

The present document defines the stage 3 specifications of the Supplementary Service Call Authorized by Dispatcher (SS-CAD) for the Terrestrial Trunked RAdio (TETRA) as provided by European operators. Stage 3 defines the signalling system protocols needed to implement the service described in stage 1 and stage 2. The stage 1 and stage 2 aspects are detailed in EN 300 392-10-6 [2] and EN 300 392-11-6 [3] respectively. Aspects relating to all supplementary services are detailed in EN 300 392-9 [6].

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

The SS-CAD ensures that predefined TETRA calls do not proceed without first being authorized by a dispatcher.

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 Z.100: "Specification and Description Language (SDL)".

[2] ETSI EN 300 392-10-6: "Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 10: Supplementary services stage 1; Sub-part 6: Call Authorized by Dispatcher (CAD)".

[3] ETSI EN 300 392-11-6: "Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 11: Supplementary services stage 2; Sub-part 6: Call Authorized by Dispatcher (CAD)".

[4] 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 (CI)".

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

[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 300 392-3-2: "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)".

[8] ETSI EN 300 392-12-8: "Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 12: Supplementary services stage 3; Sub-part 8: Area Selection (AS)".

3 Definitions and abbreviations

3.1 Definitions

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

authorized user: user who can make service definition

NOTE: The authorized user can also activate/deactivate and interrogate the service.

dispatcher: user to whom the request for authorization shall be directed to

NOTE: This user is also able to activate/deactivate SS-CAD for other users (individuals and groups) within his responsibility area and interrogate the activation status for these users.

restricted user: user whose calls are forced to be authorized by a dispatcher before the call can proceed

NOTE: The restricted user can be either the calling user (A) or the called user (B) or both.

3.2 Abbreviations

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

ANF-ISIGC	Additional Network Feature - Inter-System Interface Group Call
ANF-ISISS	Additional Network Feature - Inter-System Interface Supplementary Service
CAD	Call Authorized by Dispatcher
CC	Call Control
CMCE	Circuit Mode Control Entity
FE	Functional Entity
ISI	Inter-System Interface
LS	Line Station
MMI	Man Machine Interface
MS	Mobile Station
PDU	Protocol Data Unit
SAP	Service Access Point
SDL	Specification and Description Language
SNA	Short Number Address
SS	Supplementary Service

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

SS-COLP	Supplementary Service - Connected Line Identification Presentation
SSI	Short Subscriber Identity
SS-TPI	Supplementary Service - Talking Party Identification
SwMI	Switching and Management Infrastructure
TETRA	TErrestrial Trunked RAdio
TSI	TETRA Subscriber Identity
V+D	Voice plus Data

4 SS-CAD overview

4.1 Functional entities and communication routes

The functional model for SS-CAD consists of Functional Entities FE1 to FE5 as defined in EN 300 392-11-6 [3], clause 4.1.

These functional entities can, for one call, be located in different TETRA systems, refer to EN 300 392-11-6 [3], clause 4.

4.2 Protocol structure and protocol stack

SS-CAD PDUs shall be routed as specified in EN 300 392-9 [6] (e.g. at the air interface in facility information elements for the call related SS-CAD PDUs and in U/D-FACILITY PDUs for the call unrelated SS-CAD PDUs, and using ANF-ISISS for conveying SS-CAD PDUs over the ISI). In addition some specific SS-CAD information elements have been included in the definition of some ANF-ISIIC and ANF-ISIGC PDUs. The present document is normative for the protocol architecture and user application Service Access Points (SAPs) within the MS/LS, but gives an informative description of the protocol within the SwMI.

5 SS-CAD service description

5.1 General

This clause describes the CAD 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 (V+D) layer 3 service boundary. The SS-CAD service access point may be used in conformance testing as a normative boundary in TETRA Mobile Stations (MSs) and TETRA Line Stations (LSs).

NOTE 1: As the present document only deals with the SS-CAD all service primitives has been shown without a TNSS-CAD-prefix e.g. TNSS-CAD-ACTIVATE request is shortened to ACTIVATE request.

NOTE 2: User application is the user of the supplementary service.

5.2 SS-CAD services offered over the TNSS-SAP

The SS-CAD service primitives at the restricted user MS/LS (FE1) TNSS-SAP shall be:

a) ACCEPTED indication;

b) DIVERTED indication;

c) REJECTED indication;

d) INTERCEPTED indication.

The SS-CAD service primitives specific at the authorized user MS/LS (FE3) TNSS-SAP shall be:

a) DEFINE request;

b) DEFINE indication.

The SS-CAD service primitives at the authorized user MS/LS (FE3) and dispatcher (FE7) TNSS-SAP shall be:

a) ACTIVATE request;

b) ACTIVATE indication;

c) DEACTIVATE request;

d) DEACTIVATE indication;

e) INTERROGATE request;

f) INTERROGATE indication.

The SS-CAD service primitives specific at the dispatcher (FE7) TNSS-SAP shall be:

a) ACCEPT response;

b) CANCEL indication;

c) DIVERT response;

d) REJECT response;

e) REQUEST indication.

NOTE: Following service primitives assume that a call identifier or equivalent information is exchanged implicitly or explicitly with the primitive, when the primitive is related to a call.

5.2.1 ACCEPT response

The user application shall offer an ACCEPT response to the dispatching user MS/LS (FE7) to indicate that the call has been authorized. The only parameter for this primitive is an optional Access priority.

5.2.2 ACCEPTED indication

The calling user MS/LS (FE1) shall offer an ACCEPTED indication to the user application to inform that the call authorization is successfully completed. There are no parameters for this primitive.

5.2.3 ACTIVATE indication

The authorized or dispatching user MS/LS (FE3 or FE7) shall offer an ACTIVATE indication to the user application to inform an activation of call authorization.

Parameters for the primitive ACTIVATE indication shall be as defined in table 1.

Table 1: Parameters for the primitive ACTIVATE indication

Parameter	Indication
Activation result	M
Restricted user TETRA identity (ies)	M (see note)
NOTE: It is optional to support more than one identity.	

5.2.4 ACTIVATE request

The user application shall offer an ACTIVATE request to the authorized or dispatching user MS/LS (FE3 or FE7) to request an activation of call authorization.

Parameters for the primitive ACTIVATE request shall be as defined in table 2.

Table 2: Parameters for the primitive ACTIVATE request

Parameter	Request
Access priority	O
Restricted user TETRA identity (ies)	M (see note)
Intercepting dispatcher identity (ies)	O
NOTE: It is optional to support more than one identity.	

5.2.5 CANCEL indication

The dispatching user MS/LS (FE7) shall offer a CANCEL indication to the user application to indicate that the restricted user no longer expects a call authorization. There are no parameters for this primitive.

5.2.6 DEACTIVATE indication

The authorized or dispatching user MS/LS (FE3 or FE7) shall offer a DEACTIVATE indication to the user application to inform a deactivation of call authorization.

Parameters for the primitive DEACTIVATE indication shall be as defined in table 3.

Table 3: Parameters for the primitive DEACTIVATE indication

Parameter	Indication
Deactivation result	M
Restricted user TETRA identity (ies)	M (see note)
NOTE: It is optional to support more than one identity.	

5.2.7 DEACTIVATE request

The user application shall offer a DEACTIVATE request to the authorized or dispatching user MS/LS (FE3 or FE7) to request a deactivation of call authorization.

Parameters for the primitive DEACTIVATE request shall be as defined in table 4.

Table 4: Parameters for the primitive DEACTIVATE request

Parameter	Request
Access priority	O
Restricted user TETRA identity	M (see note)
NOTE: It is optional to support more than one identity.	

5.2.8 DEFINE indication

The authorized user MS/LS (FE3) shall offer a DEFINE indication to the user application to indicate a result of the call authorization definition request.

Parameters for the primitive DEFINE indication shall be as defined in table 5.

Table 5: Parameters for the primitive DEFINE indication

Parameter	Indication
Definition result	M
Restricted user TETRA identity	M (see note)
NOTE: It is optional to support more than one identity.	

5.2.9 DEFINE request

The user application shall offer DEFINE request to the authorized user MS/LS (FE3) to make a call authorization definition.

Parameters for the primitive DEFINE request shall be as defined in table 6.

Table 6: Parameters for the primitive DEFINE request

Parameter	Request
Access priority	O
Activate/deactivate	M
Restricted user TETRA identity	M (see note 1)
Intercepting dispatcher identity	O (see note 2)
Restricted basic service incoming	O
Restricted basic service outgoing	O
Restricted source address	O (see note 2)
Restricted destination address	O (see note 2)
Restricted area (see note 2)	O (see note 2)
NOTE 1: It is optional to support more than one identity. NOTE 2: Repeatable.	