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European Standard (Telecommunications series)

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Voice plus Data (V+D);
Part 10: Supplementary services stage 1;
Sub-part 6: Call Authorized by Dispatcher (CAD)

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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 6 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)";

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 300 392-10-1:   "Call Identification (CI)";

        ETS 300 392-10-2:   "Call report";

        ETS 300 392-10-3:   "Talking Party Identification (TPI)";

        EN 300 392-10-4:   "Call Forwarding (CF)";

        ETS 300 392-10-5:   "List Search Call (LSC)";

        EN 300 392-10-6:   "Call Authorized by Dispatcher (CAD)";

        ETS 300 392-10-7:   "Short number addressing";

        EN 300 392-10-8:   "Area Selection (AS)";

        ETS 300 392-10-9:   "Access priority";

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

        ETS 300 392-10-11: "Call Waiting (CW)";

        EN 300 392-10-12:   "Call Hold (HOLD)";

        ETS 300 392-10-13: "Call completion to busy subscriber";

        EN 300 392-10-14:   "Late Entry (LE)";

ETS 300 392-10-15: "Transfer of control";

ETS 300 392-10-16: "Pre-emptive priority call";

EN 300 392-10-17: "Include Call (IC)";

EN 300 392-10-18: "Barring of Outgoing Calls (BOC)";

EN 300 392-10-19: "Barring of Incoming Calls (BIC)";

ETS 300 392-10-20: "Discreet Listening (DL)";

EN 300 392-10-21: "Ambience Listening (AL)";

EN 300 392-10-22: "Dynamic Group Number Assignment (DGNA)";

ETS 300 392-10-23: "Call completion on no reply";

ETS 300 392-10-24: "Call Retention (CRT)";

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

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

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 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

Introduction

Supplementary services specifications are produced in three stages, according to the method described in ITU-T Recommendation I.210 [2]. The present document contains the stage 1 specification of SS-CAD. The stage 1 descriptions specify the supplementary services as seen by users of networks.

The Call Authorized by Dispatcher service is specific to TETRA.

1   Scope

The present document defines the stage 1 specifications of the Supplementary Service Call Authorized by Dispatcher (SS-CAD) for the Terrestrial Trunked Radio (TETRA) system. 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-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]   ITU-T Recommendation I.210: "Principles of telecommunication services supported by an ISDN and the means to describe them".

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

dispatcher: user to whom the request for authorization is directed.

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

3.2.1   General abbreviations

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

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
V+D   Voice Plus Data

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 Call Authorized by Dispatcher (SS-CAD) stage 1 specification

4.1   Description

4.1.1   General description

SS-CAD is defined as the ability of the dispatcher to verify and approve a call request before the call is allowed to proceed.

The supplementary service shall also apply to the option whereby the dispatcher authorization of incoming call requests to specified TETRA addresses is required before the service can proceed. The specified TETRA addresses may be TETRA users or gateways. The incoming calls may be generated inside or outside of the operator's TETRA domain.

The service shall enable interception of calls due to the following conditions:

1)   restricted basic service request;

2)   restricted destination or source address;

3)   restricted area.

4.1.2   Qualifications on applicability to telecommunication services

SS-CAD shall be applicable to all TETRA speech and circuit mode data services.

4.2   Procedures

4.2.1   Provision and withdrawal

The SS-CAD supplementary service shall be provided by prior arrangement with the service provider.

This service may be withdrawn by the service provider.

Conditions for SS-CAD shall be defined and linked with the source, basic service request and destination of the call as shown in table 1.

Table 1: Implementation options, authorization conditions

Implementation options	Source	Basic service request	Destination
Restricted basic service	Internal TETRA number	Speech and circuit mode data services	Internal TETRA number, External to TETRA
Restricted destination address	Internal TETRA number	Speech and circuit mode data services	Internal TETRA number, External to TETRA
Restricted destination address	Other TETRA systems or gateways	Supported services	Internal TETRA number
Restricted source address	Internal TETRA number	Speech and circuit mode data services	Internal TETRA number, External to TETRA
Restricted source address	Other TETRA systems or gateways	Supported services	Internal TETRA number
Restricted area	Internal TETRA number	Speech and circuit mode data services	Specified TETRA area

As an implementation option, the calling user may receive information that the call is intercepted according to table 2.

Table 2: Implementation options, interception information

Implementation options	Value
Information to the calling user	- No - Yes, without dispatcher's number - Yes, with dispatcher's number

4.2.1.1 Restricted basic service

To provide this implementation option the authorized user shall supply the following to the service provider:

1) the identifications of the restricted users to which authorization shall be given by the dispatcher before their request for service can proceed;

2) the restricted basic service applicable to each restricted user, for which authorization shall be given by the dispatcher, e.g. speech call;

3) the dispatcher address where all requests for service shall be diverted for approval.

4.2.1.2 Restricted destination address

To provide this implementation option the authorized user shall supply the following to the service provider:

1) the identifications of the restricted destination address(es), gateway address(es) and external subscriber address(es), to which, all incoming calls shall be authorized by the dispatcher before being offered;

2) the restricted basic service(s) applicable to each restricted destination address, for which authorization shall be given by the dispatcher, e.g. speech call;

3) the dispatcher address where all requests for service shall be diverted for approval.

4.2.1.3 Restricted source address

To provide this implementation option the authorized user shall supply the following to the service provider:

1) the identifications of the restricted source address(es) or gateway address(es), from which, all incoming calls shall be authorized by the dispatcher before being offered;

2) the restricted basic service(s) applicable to each restricted source address, for which authorization shall be given by the dispatcher, e.g. speech call;

3) the dispatcher address where all requests for service shall be diverted for approval.

4.2.1.4 Restricted area

To provide this implementation option the authorized user shall supply the following to the service provider:

1) the identifications of the restricted users to which authorization shall be given by the dispatcher before their request for service can proceed;

2) the restricted areas, applicable to each restricted user, for which authorization shall be given by the dispatcher before the call request can proceed;

3) the restricted basic service applicable to each restricted user, for which authorization shall be given by the dispatcher, e.g. speech call;

4) the dispatcher address where all requests for service shall be diverted for approval.

4.2.1.5 Verification and acceptance

In all cases, verification of the restricted users shall be accomplished before completing an SS-CAD definition. This verification is done by a check of the restricted users' numbers to ascertain if the numbers are within the jurisdiction of the authorized user.

When the authorized user makes an SS-CAD definition, the service provider shall return notification of acceptance or rejection of the request to 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

The supplementary service shall be activated and/or deactivated upon provision and/or withdrawal or may be activated and/or deactivated by the authorized user.

4.2.2.1.2 Definition

The authorized user shall be able to carry out definition.

4.2.2.1.3 Registration

The authorized user shall be registered upon provision.

4.2.2.1.4 Interrogation

The authorized user may interrogate the system. The SwMI shall support interrogation on a per number basis. The TETRA response to an interrogation request may provide the following information to the authorized user:

- restricted user;

- activated or deactivated state of the supplementary service;

- applicable basic services;

- applicable destination address/es;

- applicable source address/es;

- restricted area.

As an option the restricted user may be authorized to interrogate its own SS-CAD restrictions.

4.2.2.2 Invocation and operation

NOTE: In the following clauses, the calling or called party address may be replaced by, or include, a gateway address for calls to or from a SwMI.

4.2.2.2.1 Outgoing calls

In the case of outgoing calls from a restricted user, this supplementary service shall be invoked by the infrastructure when a call request is received from the restricted user. The infrastructure shall be able to use the calling party address, the called party address or area, and the basic service request to determine whether the SS-CAD shall be invoked.

Should authorization be required, an indication may be optionally sent to the restricted user and the call is optionally:

- either temporarily suspended and its relevant data sent to the dispatcher for authorization. These data includes the calling party address, the called party address and/or area, the basic service request and the condition for the generation of the authorization request. The dispatcher may then have call diverted to him, for example to ask the restricted user the reason for the call, before authorization is granted; or

- directly diverted to the dispatcher.

If the dispatcher authorizes the call without having diverted it to him, he shall forward a confirmation of authorization to the infrastructure thus allowing the call set up request to continue. If the dispatcher authorizes the call after having diverted it to him, the call shall be established by transfer within the infrastructure.

If the dispatcher does not authorize the call he shall forward a rejection indication to the infrastructure and the call shall be disconnected.

The disconnection shall include an indication to the restricted user that the call has been disconnected as authority to proceed has not been given.

4.2.2.2.2   Incoming calls

The same requirement as for outgoing calls shall hold for incoming calls.

4.2.2.2.3   Restricted basic service

If this condition is selected, calls of a restricted basic service made by or addressed to restricted user shall be intercepted.

4.2.2.2.4   Restricted area

If this condition is selected, outgoing calls of a restricted basic service made by restricted user to a restricted area shall be intercepted.

4.2.2.3   Cancellation

Cancellation shall not be applicable to SS-CAD.

4.2.3   Exceptional procedures

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

4.2.3.1.1   Activation

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

- rejected for undefined reason;

- not authorized restricted user;

- invalid restricted identity;

- not authorized dispatcher;

- not valid dispatcher;

- no dispatcher available;

- undecodeable message; or

- range not supported.

4.2.3.1.2   Deactivation

If the infrastructure cannot accept a request for deactivation, the authorized user shall receive a notification that SS-CAD deactivation was not successful. Possible causes can be:

- rejected for undefined reason;

- not authorized restricted user;

- invalid restricted identity;

- not authorized dispatcher;

- not valid dispatcher

- no dispatcher available (may not be a valid deactivation reason);

- undecodeable message; or

- range not supported.

4.2.3.1.3 Definition

If the SwMI cannot accept a definition request, the authorized user shall receive a notification that SS-CAD definition was unsuccessful. Possible causes for rejection can be:

- rejected for undefined reason;

- not authorized source/destination/dispatcher identity;

- invalid source/destination /dispatcher identity;

- invalid area;

- not authorized basic service;

- undecodeable message; or

- range not supported.

4.2.3.1.4 Registration

Exceptional procedures for registration shall not be applicable to SS-CAD.

4.2.3.1.5 Interrogation

If the SwMI cannot accept an interrogation request, the interrogating user shall receive a notification that SS-CAD interrogation was unsuccessful. Possible causes for rejection can be:

- rejected for any reason;

- user not authorized;

- unknown TETRA identity;

- range not supported;

- invalid PDU contents; or

- SS-CAD not subscribed for user addressed.

4.2.3.2 Cancellation

Exceptional procedures for cancellation shall not be applicable to SS-CAD.

4.2.3.3 Invocation and operation

Exceptional procedures for invocation and operation, e.g. when no dispatcher is available at the time of SS-CAD invocation, are outside the scope of the present document.

4.3 Interactions with supplementary services

4.3.1 Calling Line Identification Presentation (SS-CLIP)

SS-CAD shall not have any interaction with SS-CLIP. The SS-CAD information flows normally contains the same information as in SS-CLIP.

4.3.2 Connected Line identification Presentation (SS-COLP)

SS-CAD shall not have any interaction with SS-COLP to the final destination. The SS-CAD information flow may contain the same information as in the SS-COLP against the dispatcher.

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

SS-CAD interception may override SS-CLIR against the dispatcher.

4.3.4 Call Report (SS-CR)

SS-CAD shall not have any interaction with SS-CR.

4.3.5 Talking Party Identification (SS-TPI)

SS-CAD shall not have any interaction with SS-TPI.

4.3.6 Call Forwarding Unconditional (SS-CFU)

SS-CAD shall not have any interaction with SS-CFU.

4.3.7 Call Forwarding on Busy (SS-CFB)

SS-CAD shall not have any interaction with SS-CFB.

4.3.8 Call Forwarding on No Reply (SS-CFNRy)

SS-CAD shall not have any interaction with SS-CFNRy.

4.3.9 Call Forwarding on Not Reachable (SS-CFNRc)

SS-CAD shall not have any interaction with SS-CFNRc.

4.3.10 List Search Call (SS-LSC)

SS-CAD shall not have any interaction with SS-LSC.

4.3.11 Call Authorized by Dispatcher (SS-CAD)

The same call may generate multiple SS-CAD invocations. A local SS-CAD may override another SS-CAD rejection for local calls. Once authority has been given for a call to proceed, there shall not be any need for the call to be returned to the same dispatcher for further authorization providing that the authorized call set up remains within the bounds of what has been authorized.

4.3.12 Short Number Addressing (SS-SNA)

SS-CAD shall not have any interaction with SS-SNA.

As an operator option it may be possible to allow restricted user to automatically complete call requests made with SS-SNA without requesting authorization from a dispatcher whereas normally they shall require authorization to be given for the same calls made without SS-SNA.

4.3.13 Area Selection (SS-AS)

SS-CAD shall not have any interaction with SS-AS. SS-AS may invoke or prevent invocation of SS-CAD.

4.3.14   Access Priority (SS-AP)

SS-CAD shall not have any interaction with SS-AP.

4.3.15   Priority Call (SS-PC)

SS-CAD shall not have any interaction with SS-PC.

4.3.16   Call Waiting (SS-CW)

SS-CAD shall not have any interaction with SS-CW.

4.3.17   Call Hold (SS-HOLD)

SS-CAD shall not have any interaction with SS-HOLD.

4.3.18   Call Completion to Busy Subscriber (SS-CCBS)

SS-CAD shall not have any interaction with SS-CCBS.

The restricted user shall be able to request the SS-CCBS supplementary service if the original call has been authorized by the dispatcher.

4.3.19   Late Entry (SS-LE)

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

4.3.20   (Void)

4.3.21   Pre-emptive Priority Call (SS-PPC)

SS-PPC shall take precedence over SS-CAD. In the case where the restricted user makes a pre-emptive priority call then the call shall be offered directly to the called user. In the case where a pre-emptive priority call is made to a restricted user, the pre-emptive priority call shall be offered directly to the restricted user.

4.3.22   Include Call (SS-IC)

SS-CAD shall not have any interaction with SS-IC.

If the parameters of the SS-IC are such that the restricted user requires authorization from the dispatcher, then the SS-IC request shall generate a request for authorization.

4.3.23   (Void)

4.3.24   Barring of Outgoing Calls (SS-BOC)

SS-CAD shall override SS BOC.

4.3.25   Barring of Incoming Calls (SS-BIC)

SS-CAD shall override SS-BIC.

4.3.26   Discreet Listening (SS-DL)

SS-CAD shall not have any interaction with SS-DL.

4.3.27   Ambience Listening (SS-AL)

An SS-AL call may require authorization from a dispatcher.

4.3.28   Dynamic Group Number Assignment (SS-DGNA)

SS-CAD shall not have any interaction with SS-DGNA.

4.3.29   Call Completion on No Reply (SS-CCNR)

SS-CAD shall not have any interaction with SS-CCNR.

The restricted user shall be able to request the SS-CCNR supplementary service if the original call has been authorized by the dispatcher.

4.3.30   Call Retention (SS-CRT)

SS-CAD shall not have any interaction with SS-CRT.

4.4   Interworking considerations

SS-CAD shall be available across the intersystem interface. If the restricted user has moved to a visited SwMI and wishes to make a call that would normally require dispatcher approval in the home TETRA system, then the call request may be routed to the dispatcher in the home TETRA system to seek authorization for the call request.

4.5   Overall SDL

Figure 1 contains the dynamic description of SS-CAD using the Specification and Description Language (SDL) defined in ITU-T Recommendation Z.100 [1]. The SDL process represents the behaviour of the network in providing SS-CAD.
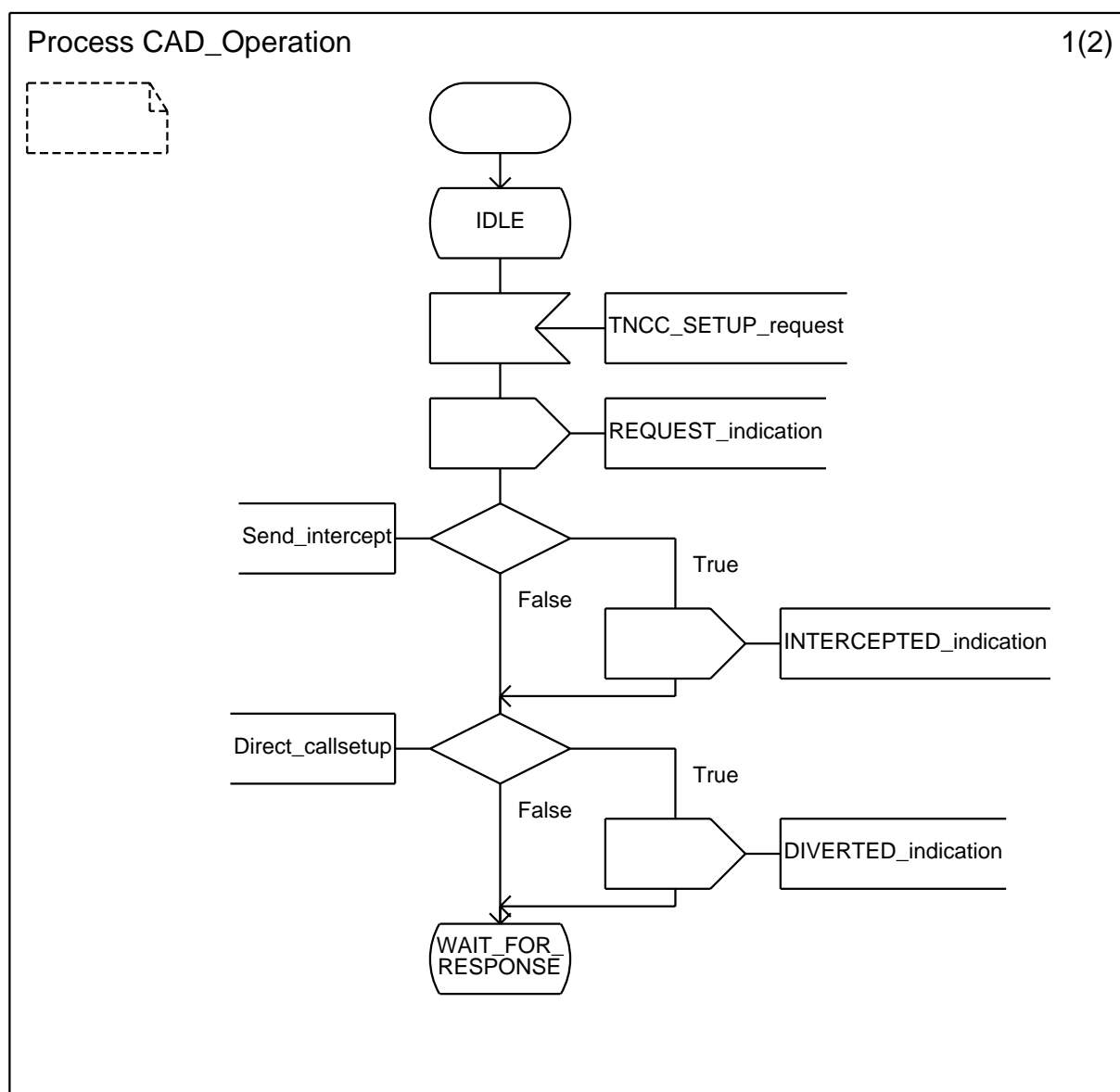
Process CAD_Operation   1(2)

IDLE

TNCC_SETUP_request

REQUEST_indication

Send_intercept

True

False

INTERCEPTED_indication

Direct_callsetup

True

False

DIVERTED_indication

WAIT_FOR_
RESPONSE

Figure 1 (sheet 1 of 2): SS-CAD supplementary service, overall SDL

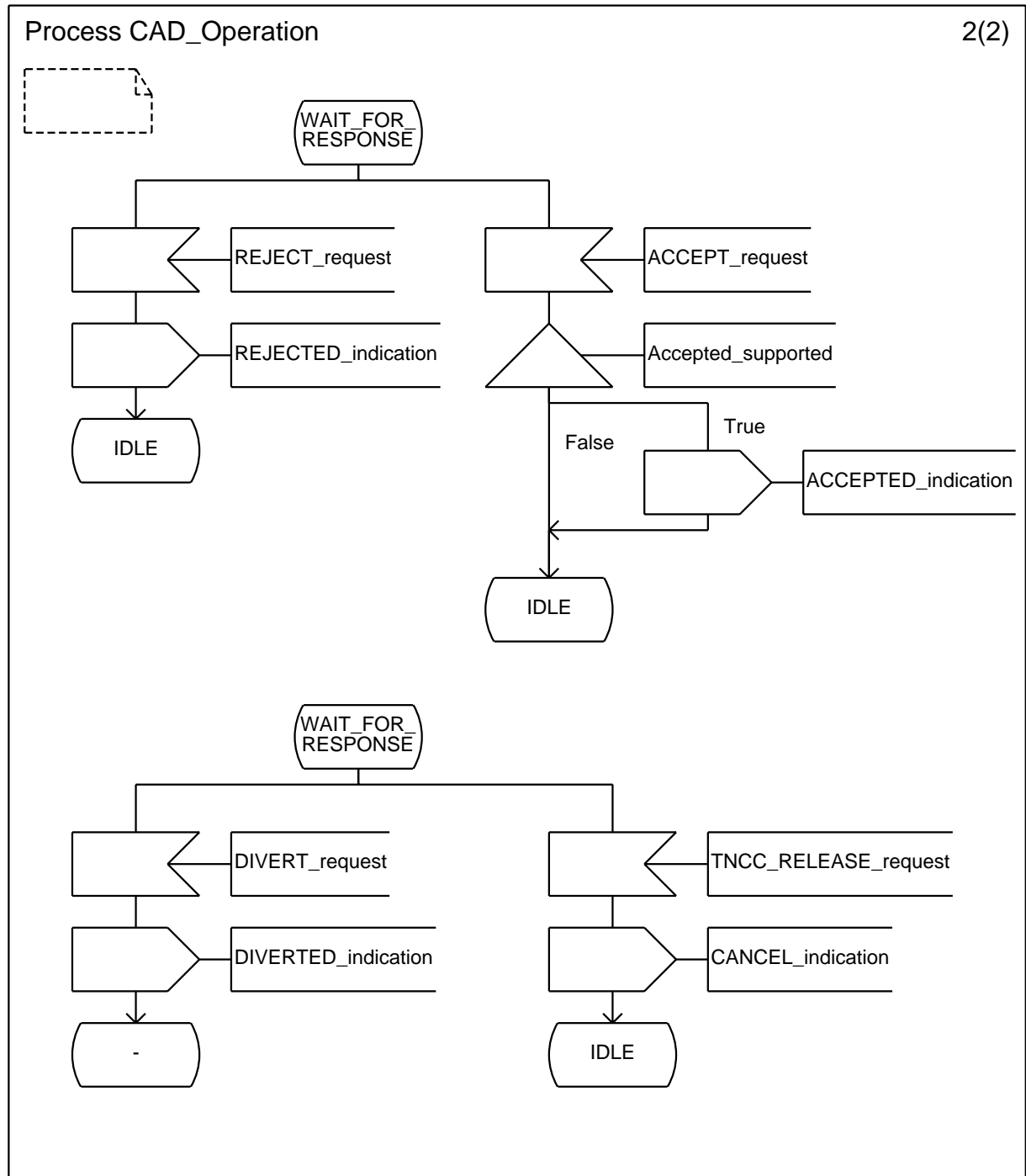Process CAD_Operation   2(2)

Figure 1 (sheet 2 of 2): SS-CAD supplementary service, overall SDL

Annex A (informative):
Change Requests

The present document contains change request as described in table A.1.

Table A.1: Change Requests

No	CR vers.	Standard Version	Clauses affected	Title	CR Status
001	10	Ed.1	4.2.3.1.1, 4.2.3.1.2, 4.2.3.1.3, 4.2.3.1.5, 4.2.3.3, 4.3.13, 4.3.20, 4.3.23	Alignment with stage 3 and editorial corrections	WG3 approved 030428

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