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## Foreword

This second edition European Telecommunication Standard (ETS) has been produced by the Terrestrial Trunked Radio (TETRA) Project of the European Telecommunications Standards Institute (ETSI).

This ETS is a multi-part standard and will consist of the following parts:

- 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 6: "Line connected Station (LS)";
- 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".

Transposition dates	
Date of adoption of this ETS:	18 December 1998
Date of latest announcement of this ETS (doa):	31 March 1999
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Date of withdrawal of any conflicting National Standard (dow):	30 September 1999

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## 1 Scope

This European Telecommunication Standard (ETS) 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.

This ETS specifies the service description of the supplementary service and the procedures to be expected with successful and unsuccessful outcomes. In addition, this ETS specifies the interactions with other TETRA supplementary services and interworking considerations.

Charging principles are outside the scope of this ETS.

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

## 2 Normative references

This ETS incorporates, by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this ETS only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

- [1] ITU-T Recommendation Z.100 (1993): "Specification and Description Language (SDL)".

## 3 Definitions and abbreviations

### 3.1 Definitions

For the purposes of this ETS the following definitions apply:

**authorized user:** The user who can make service definition. The authorized user can also activate/deactivate and interrogate the service.

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

**restricted user:** The user who's calls are forced to be authorized by a dispatcher before the call can proceed. 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 this ETS the following general abbreviations apply:

GTSI	Group TETRA Subscriber Identity
ITSI	Individual TETRA Subscriber Identity
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
V+D	Voice Plus Data

### 3.2.2 Supplementary service abbreviations

For the purposes of this ETS the following supplementary service abbreviations apply:

SS-AL	Ambience Listening
SS-AoC	Advice of Charge
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-TC	Transfer of Control
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 subclauses, 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:

- not authorized restricted user;
- invalid restricted identity;
- not authorized dispatcher;
- not valid dispatcher;
- no dispatcher available.

###### **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:

- not authorized restricted user;
- not authorized dispatcher;
- not valid dispatcher.

###### **4.2.3.1.3 Definition**

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

- not authorized restricted user/dispatcher identity;
- invalid restricted user/dispatcher identity;
- invalid area;
- not authorized basic service.

#### **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:

- invalid ITSI for the restricted user;
- unauthorized user.

#### **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 this ETS.

### **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 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 Transfer of Control (SS-TC)**

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

**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 Advice of Charge (SS-AoC)**

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

#### **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.

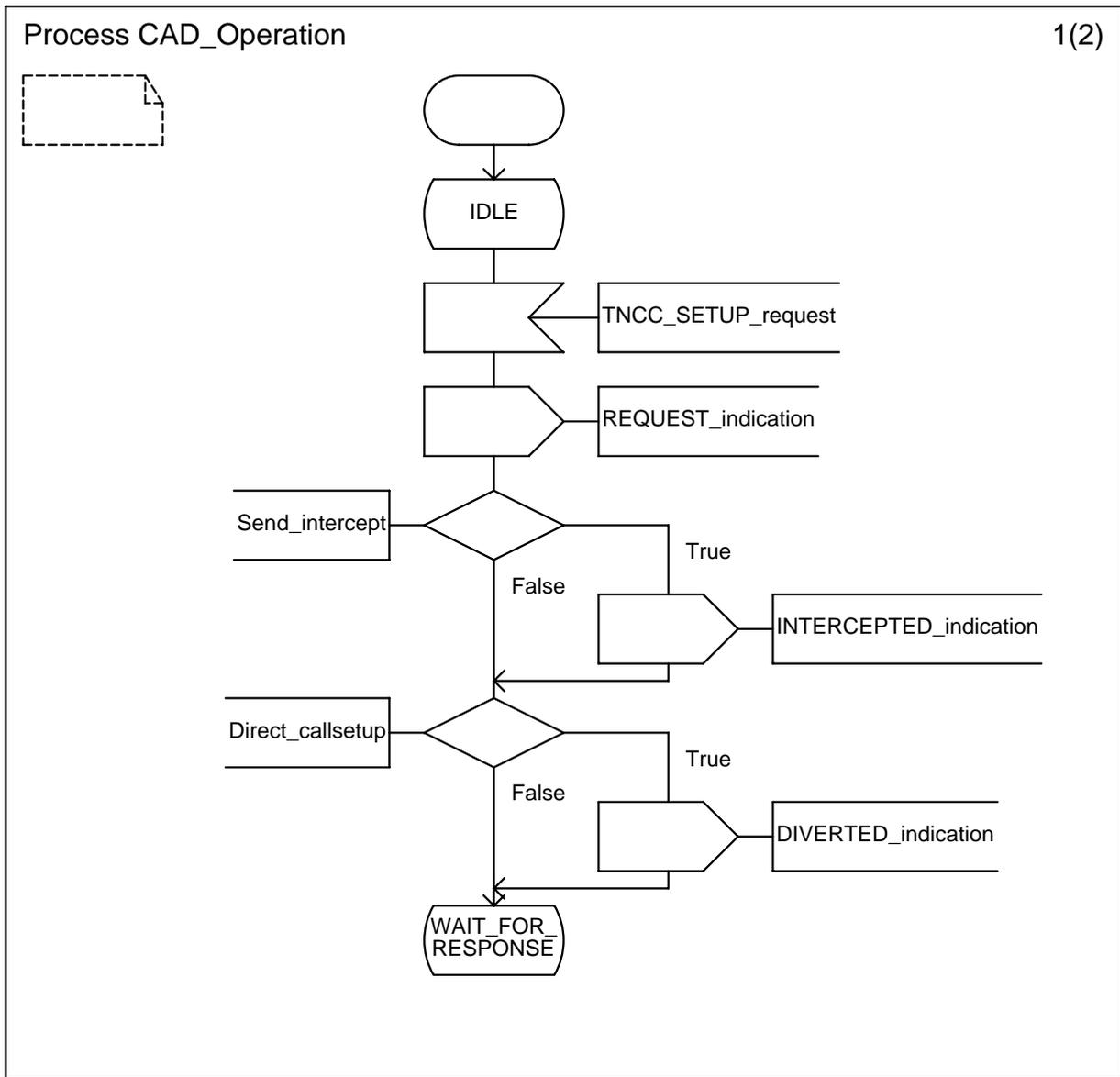


Figure 1 (sheet 1 of 2): SS-CAD supplementary service, overall SDL

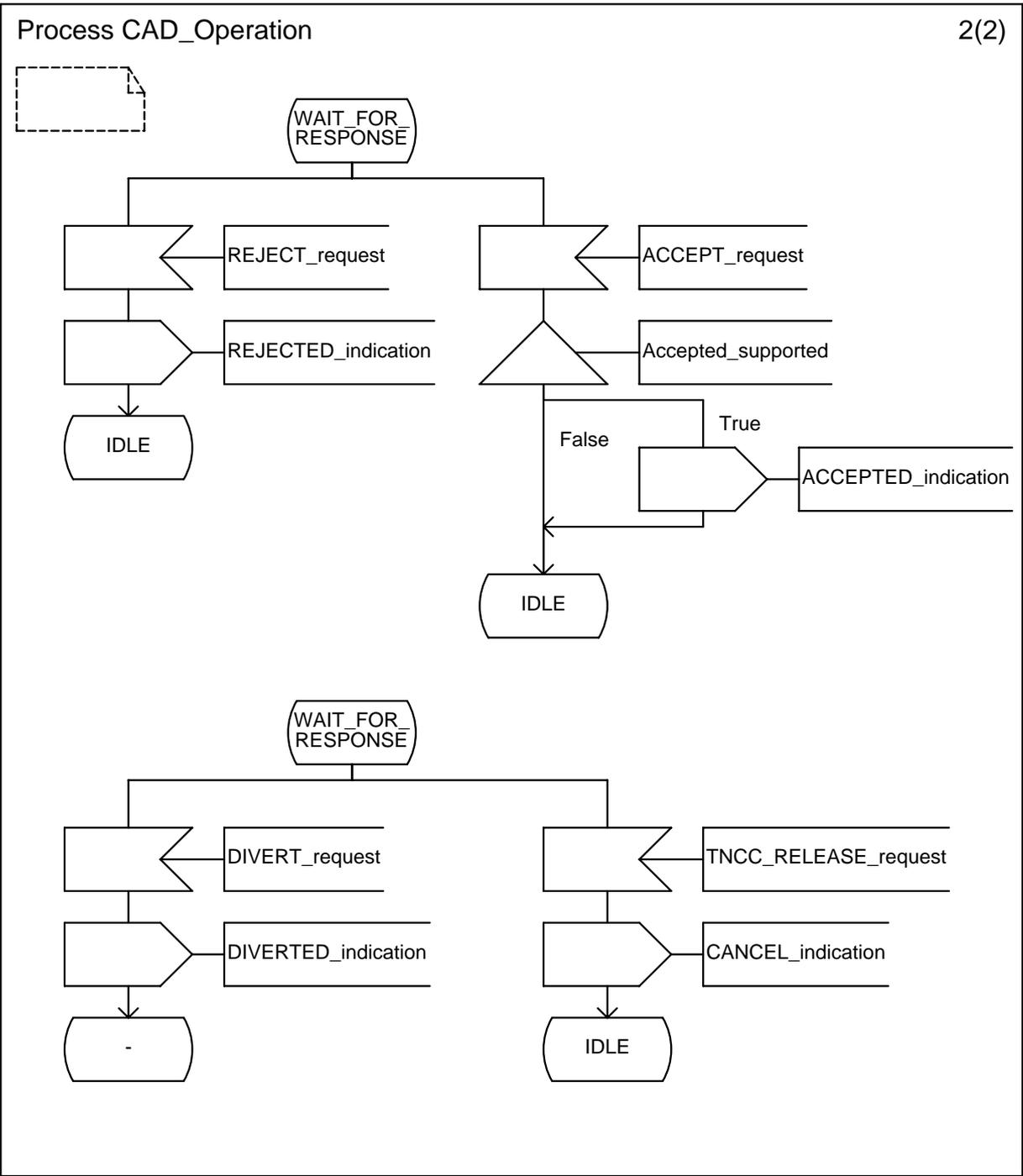


Figure 1 (sheet 2 of 2): SS-CAD supplementary service, overall SDL

## History

Document history	
April 1996	First Edition
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