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**Integrated Services Digital Network (ISDN);
Three-Party (3PTY) supplementary service
Functional capabilities and information flows**

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Foreword

This European Telecommunication Standard (ETS) has been produced by the Signalling Protocols and Switching (SPS) Technical Committee of the European Telecommunications Standards Institute (ETSI).

In accordance with CCITT Recommendation I.130, the following three level structure is used to describe the supplementary telecommunication services as provided by European public telecommunications operators under the pan-European Integrated Services Digital Network (ISDN):

- Stage 1: is an overall service description, from the user's standpoint;
- Stage 2: identifies the functional capabilities and information flows needed to support the service described in stage 1; and
- Stage 3: defines the signalling system protocols and switching functions needed to implement the service described in stage 1.

This ETS details the stage 2 aspects (functional capabilities and information flows) needed to support the Three-Party (3PTY) supplementary service. The stage 1 and stage 3 aspects are detailed in ETS 300 186 (1993) and ETS 300 188 (1993), respectively.

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1 Scope

This standard defines the stage two of the Three-Party (3PTY) supplementary service for the pan-European Integrated Services Digital Network (ISDN) as provided by European public telecommunications operators. Stage two identifies the functional capabilities and the information flows needed to support the service as described in stage one. The stage two description also identifies user operations not directly associated with a call (see CCITT Recommendation I.130 [2]).

This standard is specified according to the methodology specified in CCITT Recommendation Q.65 [3].

In addition this standard does not specify the requirements where the service is provided to the user via a private ISDN. This standard does not specify the requirements for the allocation of defined functional entities within a private ISDN, it does however define which functional entities may be allocated to a private ISDN.

This standard does not specify the additional requirements where the service is provided to the user via a telecommunications network that is not an ISDN.

The 3PTY supplementary service enables a user to establish, participate in and control, a three-way conversation, i.e. a simultaneous communication involving the served user and two remote parties.

The 3PTY supplementary service is applicable to all circuit-switched telecommunication services carrying speech.

This standard is the stage three standard for the ISDN 3PTY supplementary service. The term "stage three" is also defined in CCITT Recommendation I.130 [2]. Where the text indicates the status of a requirement (i.e. as a strict command or prohibition, as authorisation leaving freedom, or as a capability or possibility), this shall be reflected in the text of the relevant stage three standard.

Furthermore, conformance to this standard is met by conforming to the stage three standard with the field of application appropriate to the equipment being implemented. Therefore, no method of testing is provided for this standard.

2 Normative references

This standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate place 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 standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

- [1] CCITT Recommendation I.112 (1988): "Vocabulary of terms for ISDNs".
- [2] CCITT Recommendation I.130 (1988): "Method for the characterisation of telecommunication services supported by an ISDN and network capabilities of an ISDN".
- [3] CCITT Recommendation Q.65 (1988): "Stage 2 of the method for the characterisation of services supported by an ISDN".
- [4] CCITT Recommendation Q.71 (1988): "ISDN 64 kbits/s circuit mode switched bearer service".
- [5] CCITT Recommendation Z.100 (1988): "Functional Specification and Description Language (SDL)".

3 Definitions

For the purposes of this standard, the following definitions apply:

Integrated Services Digital Network (ISDN): see CCITT Recommendation I.112 [1], § 2.3, definition 308.

Service; telecommunications service: see CCITT Recommendation I.112 [1], § 2.2, definition 201.

Three-way conversation: communication between all three user's agents, i.e. the served users agent and the two remote users agents.

4 Symbols and abbreviations

For the purposes of this standard, the following abbreviations apply:

3PTY	Three-Party supplementary service
CC	Call Control
CCA	Call Control Agent
FE	Functional Entity
FEA	Functional Entity Action
ISDN	Integrated Services Digital Network
LE	Local Exchange
PTNX	Private Telecommunications Network Exchange
SDL	Specification and Description Language
TE	Terminal Equipment

5 Description

Not applicable.

6 Derivation of the functional model

6.1 Functional model description

The functional model for the 3PTY supplementary service is shown in figure 1.

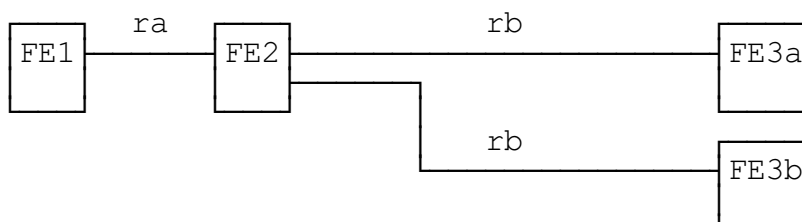


Figure 1: Functional model

6.2 Description of functional entities

The Functional Entities (FEs) required for the 3PTY supplementary service above those of the basic call are:

FE1: Served user's agent;

FE2: 3PTY control entity;

FE3: Remote user's agent.

6.3 Relationship with a basic service

The relationship of the 3PTY supplementary service with the basic service is shown in figure 2.

NOTE: The basic call model is defined in CCITT Recommendation Q.71 [4], § 3.2.1, with the exception that r1 represents an outgoing call relationship from a Call Control Agent (CCA) and r3 represents an incoming call relationship to a CCA.

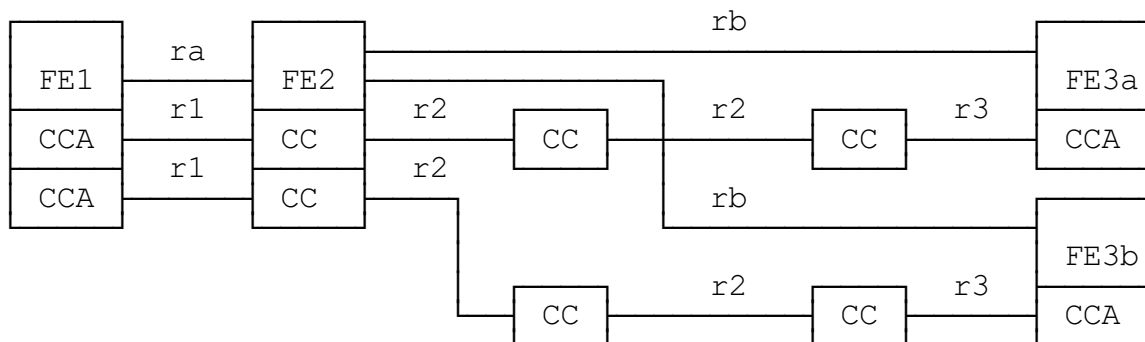


Figure 2

7 Information flows

7.1 Information flow diagrams

The information flows for the 3PTY supplementary service are shown in figures 3 to 7 for the following procedures:

Figure 3: Begin three-way conversation;

Figure 4: Create private communication (two cases);

Figure 5: Disconnect call by remote user whilst in three-way conversation mode;

Figure 6: Disconnect call by served user whilst in three-way conversation mode;

Figure 7: Disconnect entire call by served user whilst in three-way conversation mode.

NOTE: The information flow diagrams for the clearing of connections are provided in CCITT Recommendation Q.71 [4].

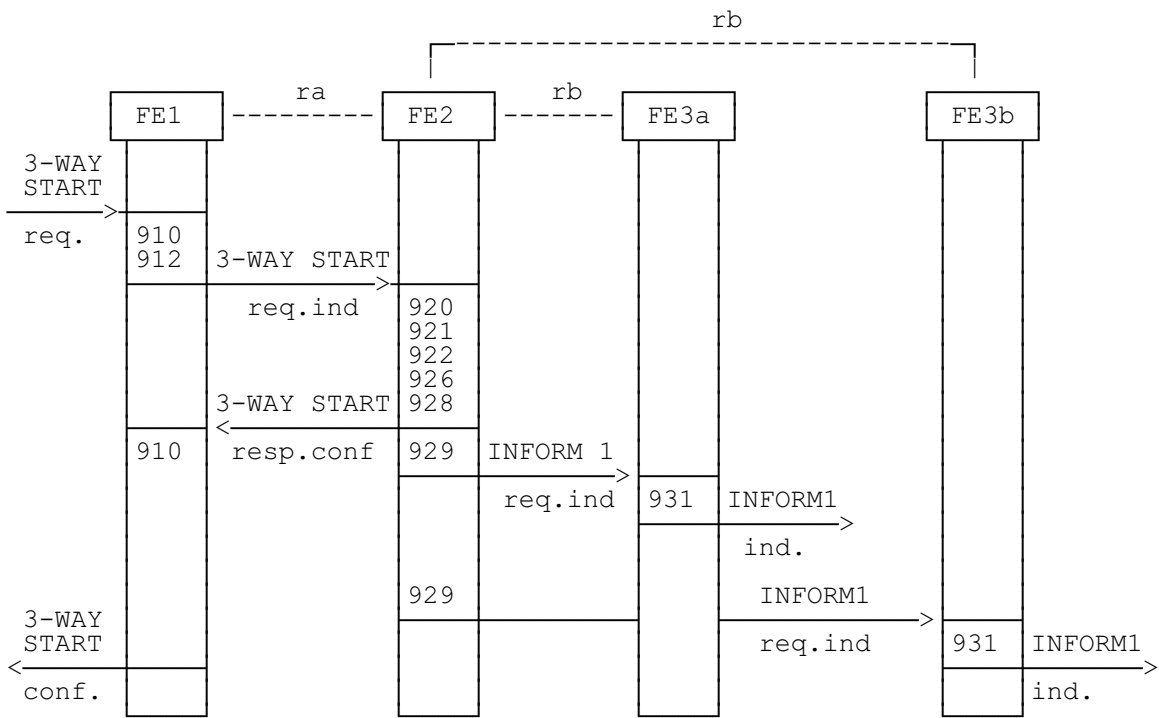
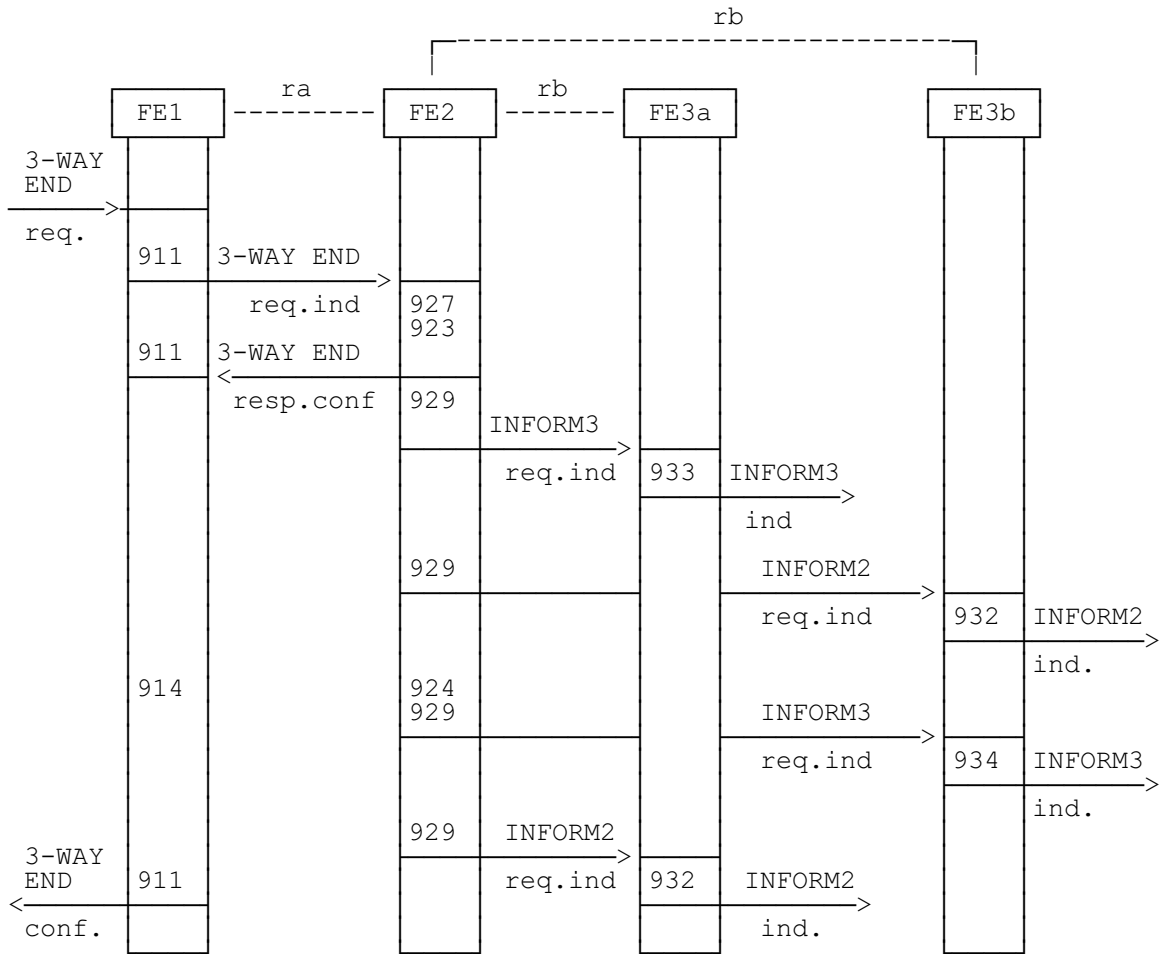
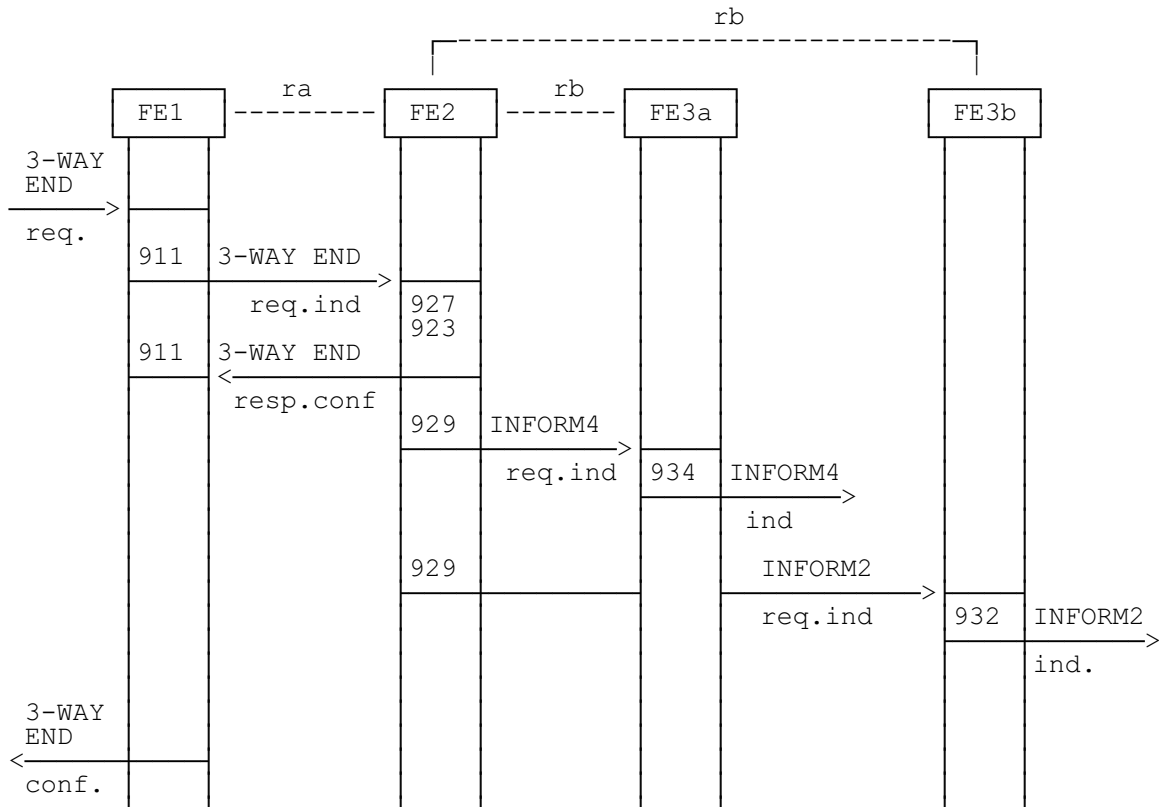


Figure 3: Begin three-way conversation



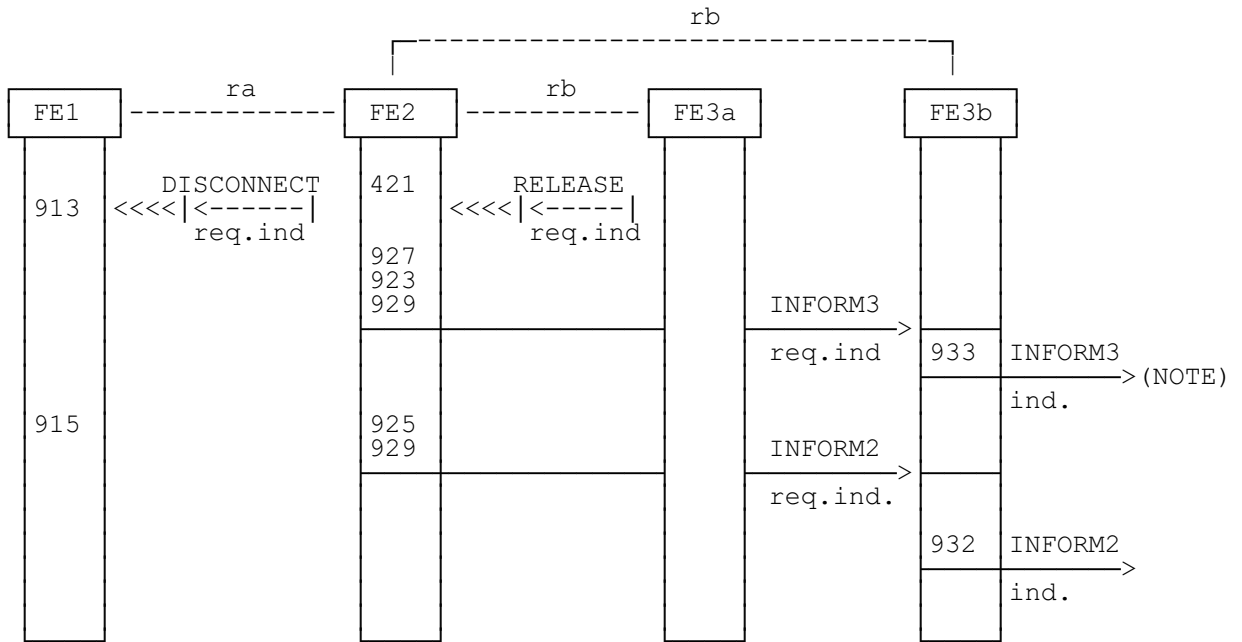
NOTE: Figure 4a shows the scenario where FE3a is considered as the user agent with the held connection, FE3b is considered as the user agent with the active connection. FE3a is (in figure 4a) explicitly chosen to have a private communication with the served users agent FE1.

Figure 4a: Create private communication (case a)



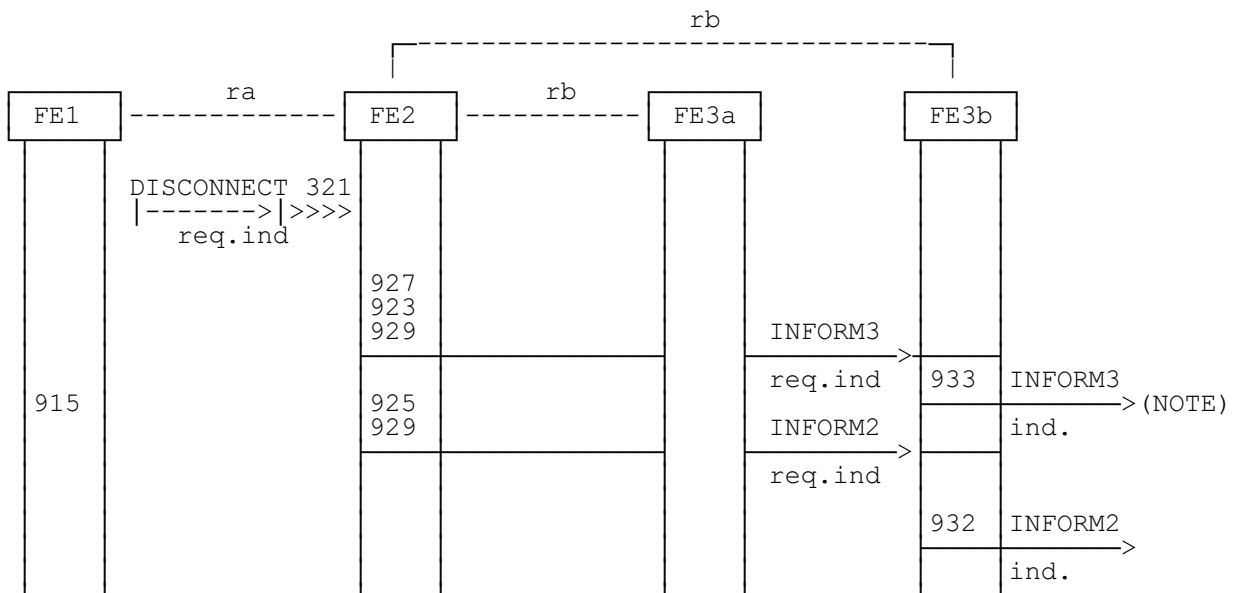
NOTE: Figure 4b shows the scenario where FE3a is considered as the user agent with the held connection, FE3b is considered as the user agent with the active connection. FE3b is (in figure 4b) explicitly chosen to have a private communication with the served users agent FE1.

Figure 4b: Create private communication (case b)



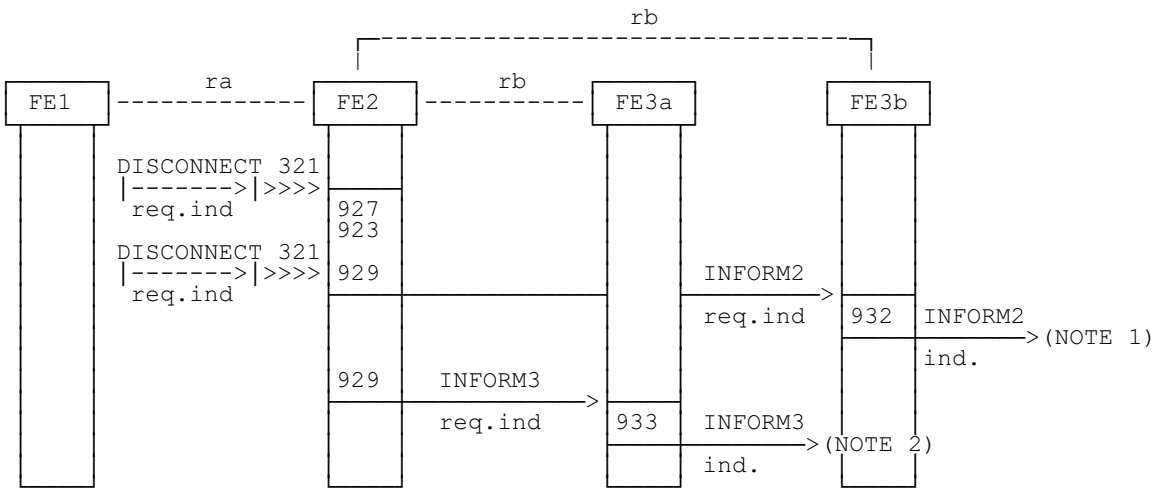
NOTE: INFORM3 is only sent in the case where a held connection between the served user and the remote user still exists.

Figure 5: Disconnect call by remote user whilst in three-way conversation mode



NOTE: INFORM3 is only sent in the case where a held connection between the served user and the remote user still exists.

Figure 6: Disconnect call (call FE1 - FE3a) by served user whilst in three-way conversation mode



- NOTE 1: INFORM2 is sent to the user agent with the active connection in case the held connection has been cleared first.
- NOTE 2: INFORM3 is sent to the user agent with the held connection in case the active connection has been cleared first.

Figure 7: Disconnect entire call by served user whilst in three-way conversation mode

7.2 Definition of individual information flows

7.2.1 Relationship ra

The contents of the information flows (see figures 3 and 4) via relationship ra and specific to the 3PTY supplementary service are given in the subclauses below.

7.2.1.1 Contents of 3-WAY START

This confirmed information flow initiates the bridging of the two calls into a three-way conversation mode, the request shall be sent in the context of the held call.

There are no contents of the 3-WAY START information flow.

7.2.1.2 Contents of 3-WAY START REJECT

Table 1 shows the contents of the 3-WAY START REJECT information flow.

Table 1

Parameter	req.ind
Reject reason	Mandatory

7.2.1.3 Contents of 3-WAY END

The confirmed information flow initiates the termination of the three-way conversation mode.

There are no contents of the 3-WAY END information flow.

7.2.2 Relationship rb

INFORM1 shall be used to inform the two remote parties that a three-way conversation has been established.

INFORM2 shall be used to inform the remote party that the three-way call has been released and a single call exists between served user and the one remote party.

INFORM3 shall be used to inform the remote party that a single held connection exists between the served user and the one remote party.

INFORM4 shall be used to inform the remote party that the conference has been disconnected and that a held call exists between the served user and the one remote user.

There are no contents of the INFORM1, INFORM2 and INFORM 4 information flows.

8 SDL diagrams for functional entities

The Specification and Description Language (SDL) diagrams are provided according to CCITT Recommendation Z.100 [5].

8.1 FE1

The SDL diagrams for FE1 are shown in figure 8.

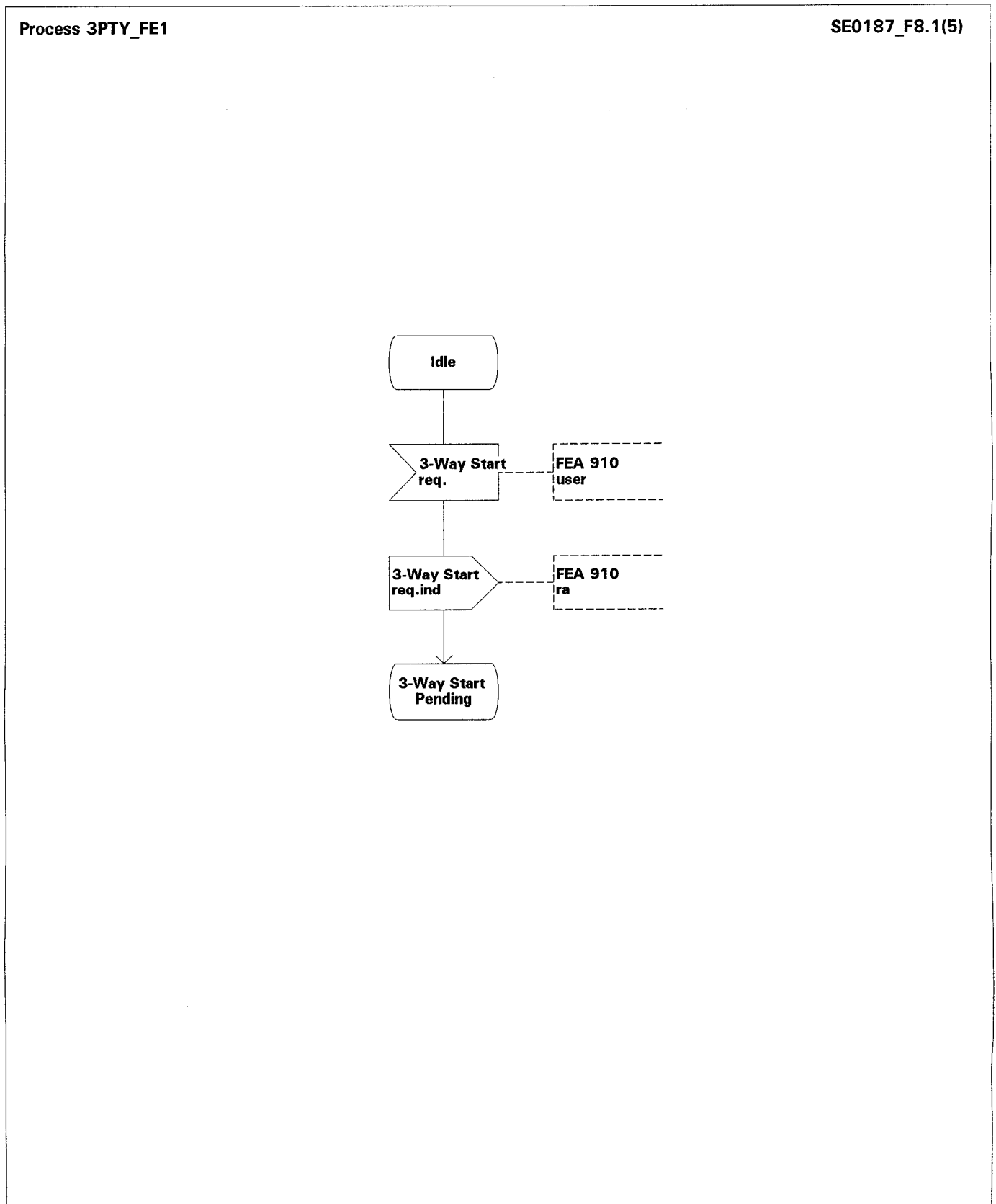


Figure 8.1: SDL diagrams for FE1

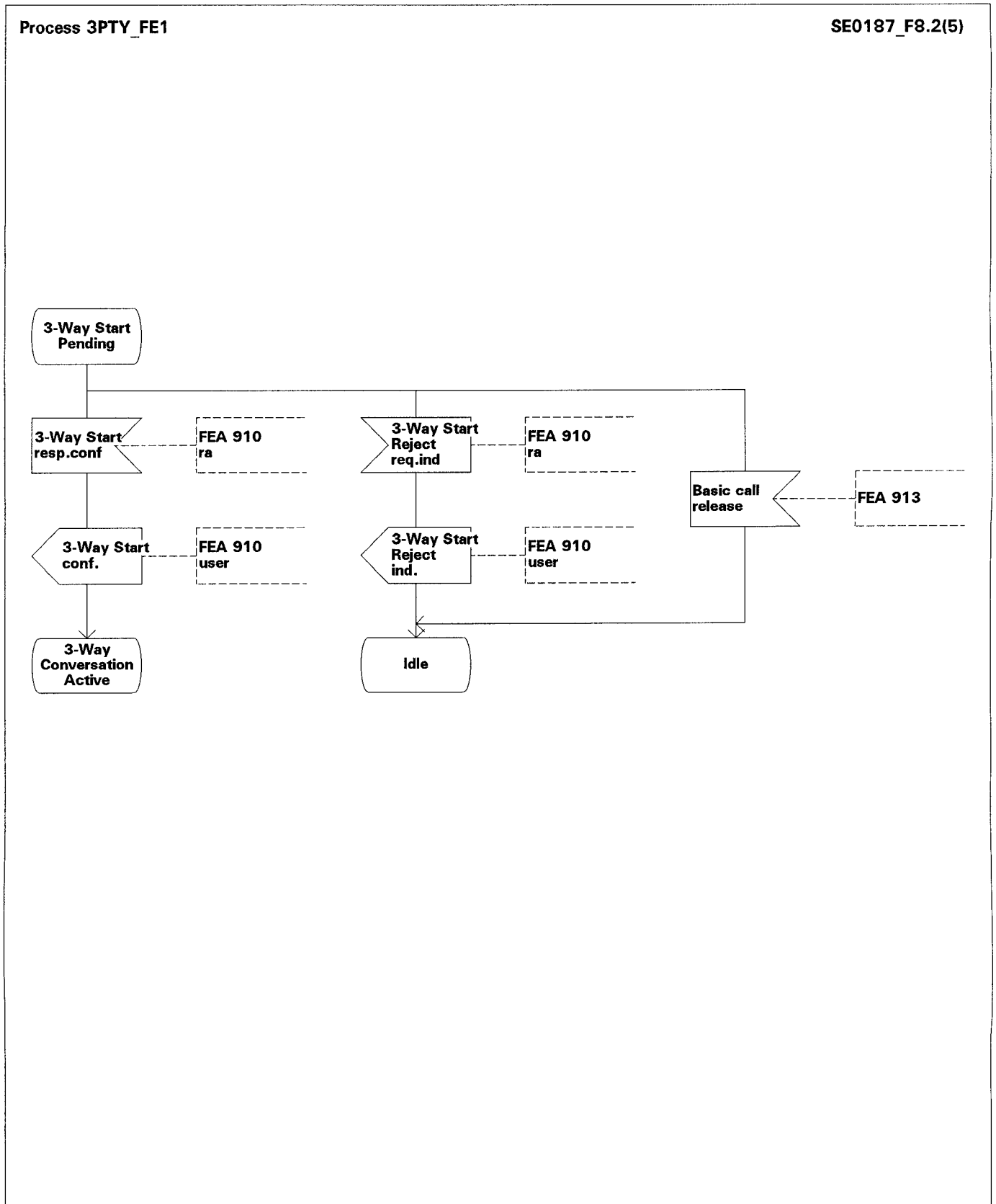


Figure 8.2: SDL diagrams for FE1

Process 3PTY_FE1

SE0187_F8.3(5)

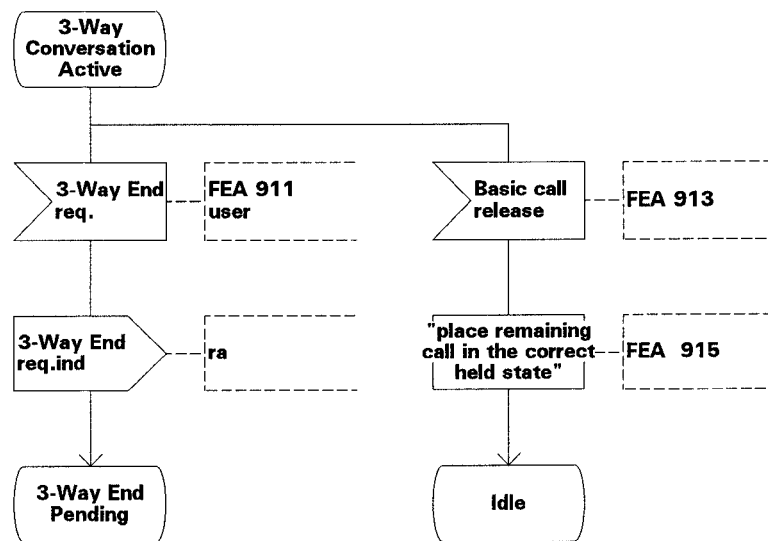


Figure 8.3: SDL diagrams for FE1

Process 3PTY_FE1

SE0187_F8.4(5)

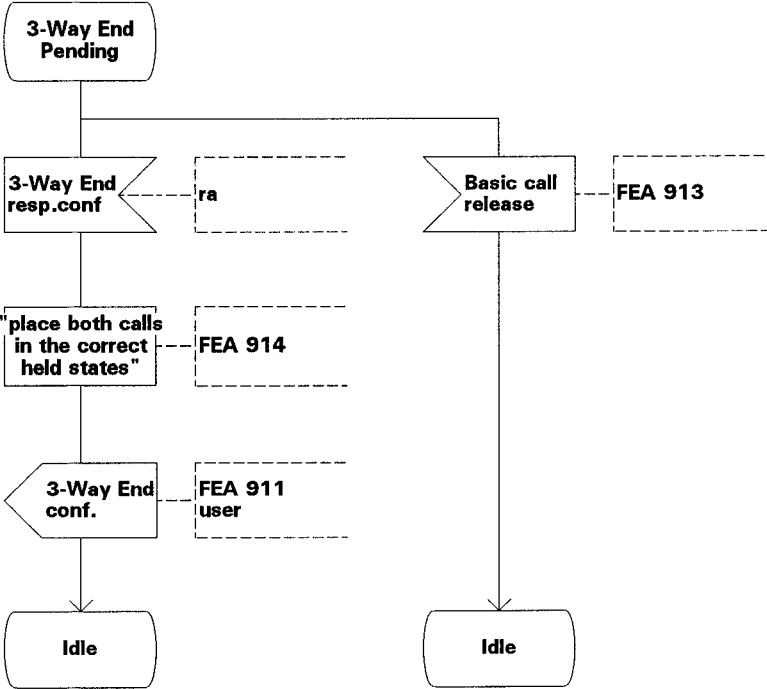


Figure 8.4: SDL diagrams for FE1

Process 3PTY_FE1

SE0187_F8.5(5)

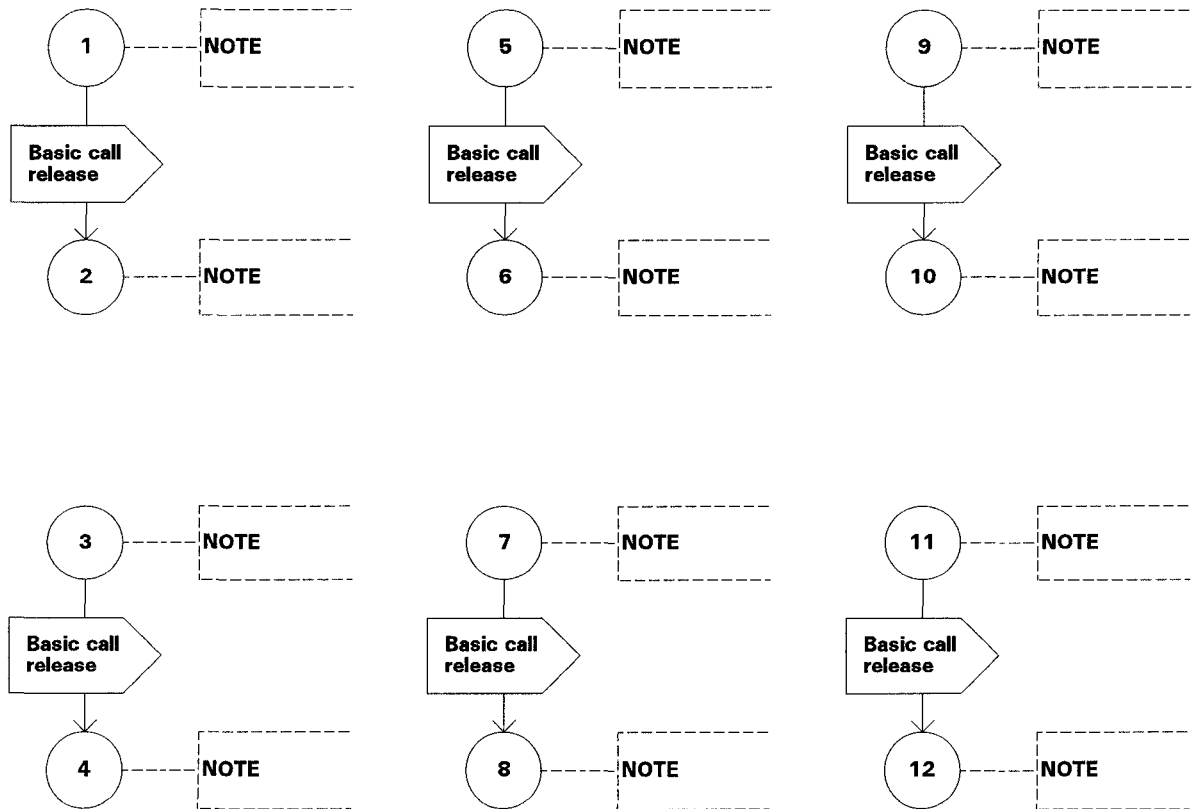


Figure 8.5: SDL diagrams for FE1

Notes to figure 8.5:

NOTE: This breaks the basic call CCA functionality at the following points:

- for 3PTY1 and 3PTY2, in CCITT Recommendation Q.71 [4], figure 2-8/Q.71 (sheet 2 of 11), in state 11 "AWAIT USER DISCON (0)" following the input "DISCONNECT req.";
- for 3PTY3 and 3PTY4, in CCITT Recommendation Q.71 [4], figure 2-8/Q.71 (sheet 5 of 11), in state 5 "AWAIT RELEASE (0)" following the input "RELEASE req.ind" (see FEA312);
- for 3PTY5 and 3PTY6, in CCITT Recommendation Q.71 [4], figure 2-8/Q.71 (sheet 6 of 11), in state 7 "AWAIT RELEASE CONF (0)" following the input "RELEASE resp.conf" (see FEA413);
- for 3PTY7 and 3PTY8, in CCITT Recommendation Q.71 [4], figure 2-8/Q.71 (sheet 10 of 11), in state 15 "AWAIT RELEASE (T)" following the input "RELEASE req.ind" (see FEA452);
- for 3PTY9 and 3PTY10, in CCITT Recommendation Q.71 [4], figure 2-8/Q.71 (sheet 10 of 11), in state 12 "AWAIT USER DISCON (T)" following the input "DISCONNECT req.";
- for 3PTY11 and 3PTY12, in CCITT Recommendation Q.71 [4], figure 2-8/Q.71 (sheet 11 of 11), in state 17 "AWAIT RELEASE CONF (T)" following the input "RELEASE resp.conf" (see FEA353).

8.2 FE2

The SDL diagrams for FE2 are shown in figure 9.

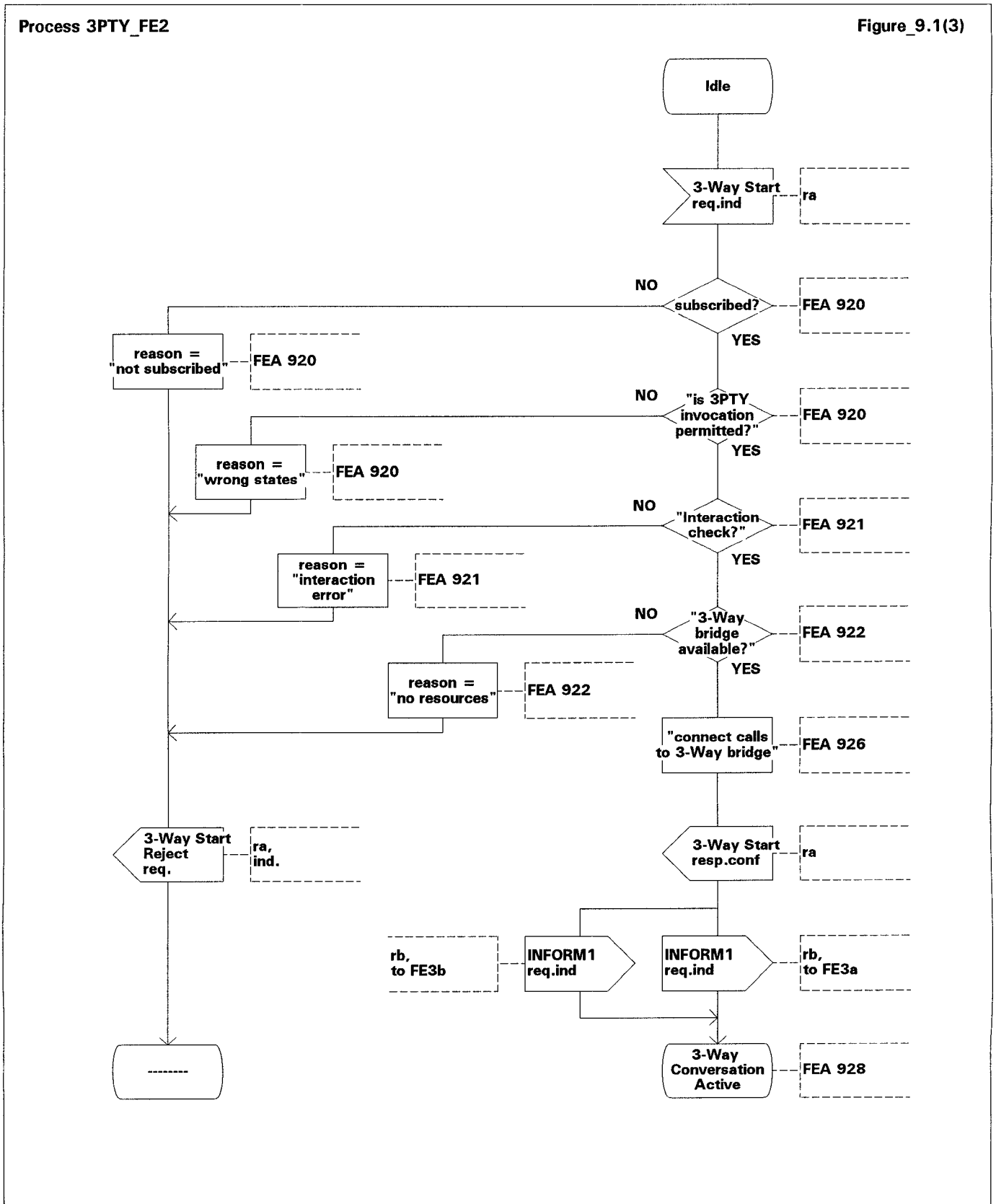


Figure 9.1: SDL diagrams for FE2

Process 3PTY_FE2

Figure_9.2(3)

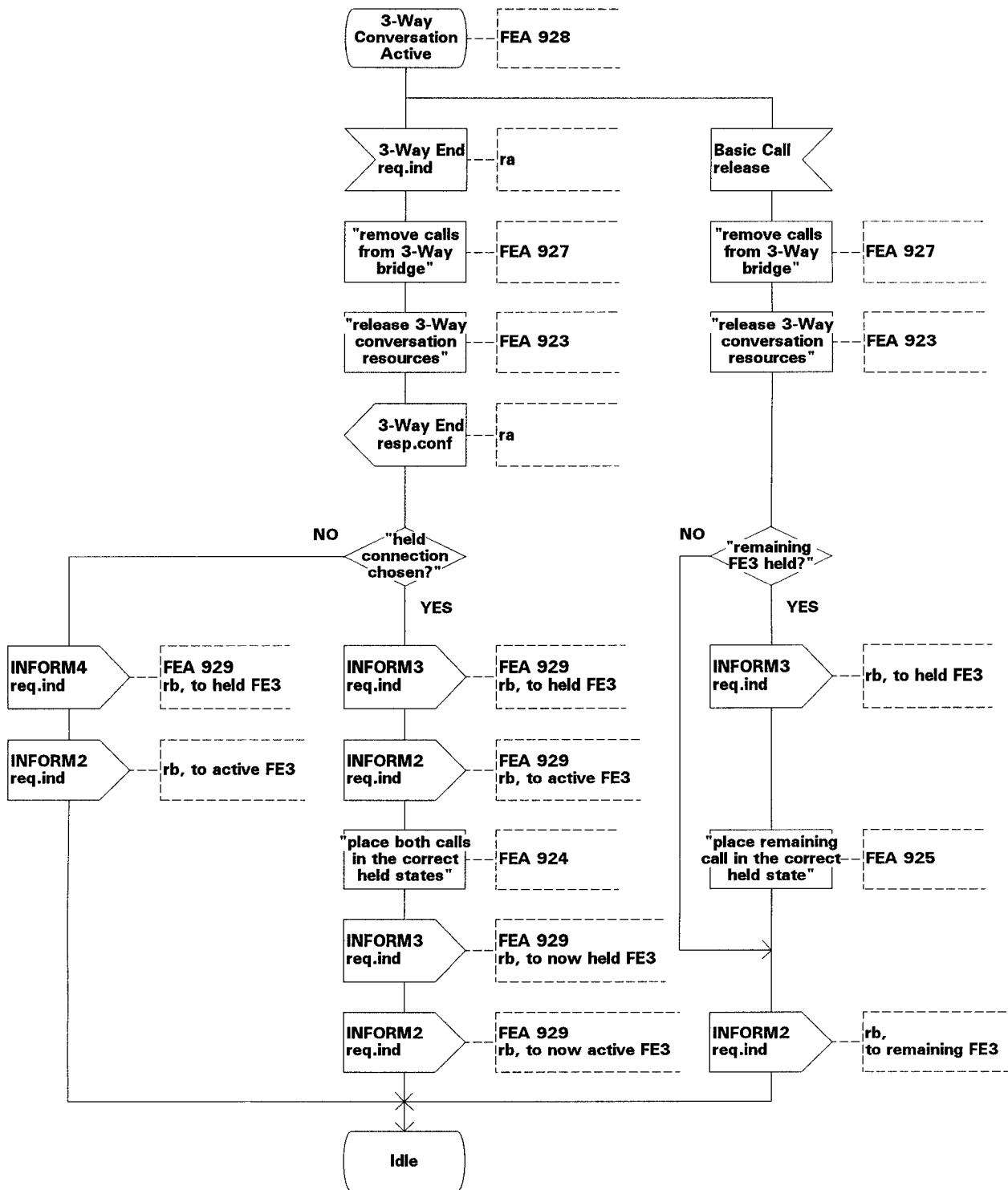


Figure 9.2: SDL diagrams for FE2

Process 3PTY_FE2

Figure_9.3(3)

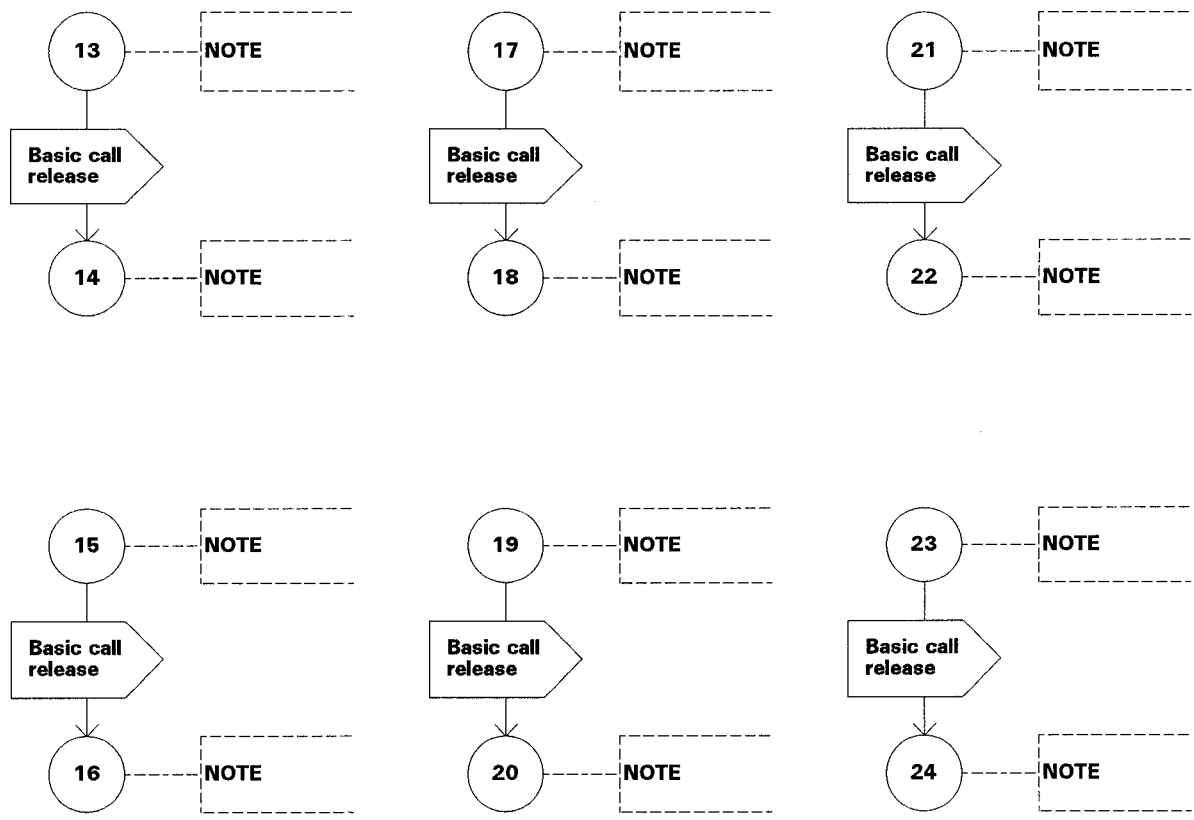


Figure 9.3: SDL diagrams for FE2

Notes to figure 9.3:

NOTE: This breaks the basic call CC functionality at the following points:

- for 3PTY13 and 3PTY14, in CCITT Recommendation Q.71 [4], figure 2-9/Q.71 (sheet 6 of 19), in state 15 "r1-REL (B); r2-REL (F)" following the input "RELEASE resp.conf." from r1 (see FEA322);
- for 3PTY15 and 3PTY16, in CCITT Recommendation Q.71 [4], figure 2-9/Q.71 (sheet 6 of 19), in state 13 "r1-REL (B)" following the input "RELEASE resp.conf" (see FEA322);
- for 3PTY17 and 3PTY18, in CCITT Recommendation Q.71 [4], figure 2-9/Q.71 (sheet 6 of 19), in state 3 "r1-DISCON (B)" preceding the output "RELEASE resp.conf" to r1 in the transition commenced by input "RELEASE req.ind" (see FEA322);
- for 3PTY19 and 3PTY20, in CCITT Recommendation Q.71 [4], figure 2-9/Q.71 (sheet 10 of 19), in state 23 "r2-REL (B); r1-REL (F)" following the input "RELEASE resp.conf" from r1 (see FEA442);
- for 3PTY21 and 3PTY22, in CCITT Recommendation Q.71 [4], figure 2-9/Q.71 (sheet 10 of 19), in state 11 "r1-REL (F)" following the input "RELEASE resp.conf" (see FEA442);
- for 3PTY23 and 3PTY24, in CCITT Recommendation Q.71 [4], figure 2-9/Q.71 (sheet 10 of 19), in state 12 "r1-DISCON (F)" preceding the output "RELEASE resp.conf" to r1 in the transition commenced by input "RELEASE req.ind" (see FEA342).

8.3 FE3a and FE3b

The SDL diagrams for FE3a and FE3b are shown in figure 10.

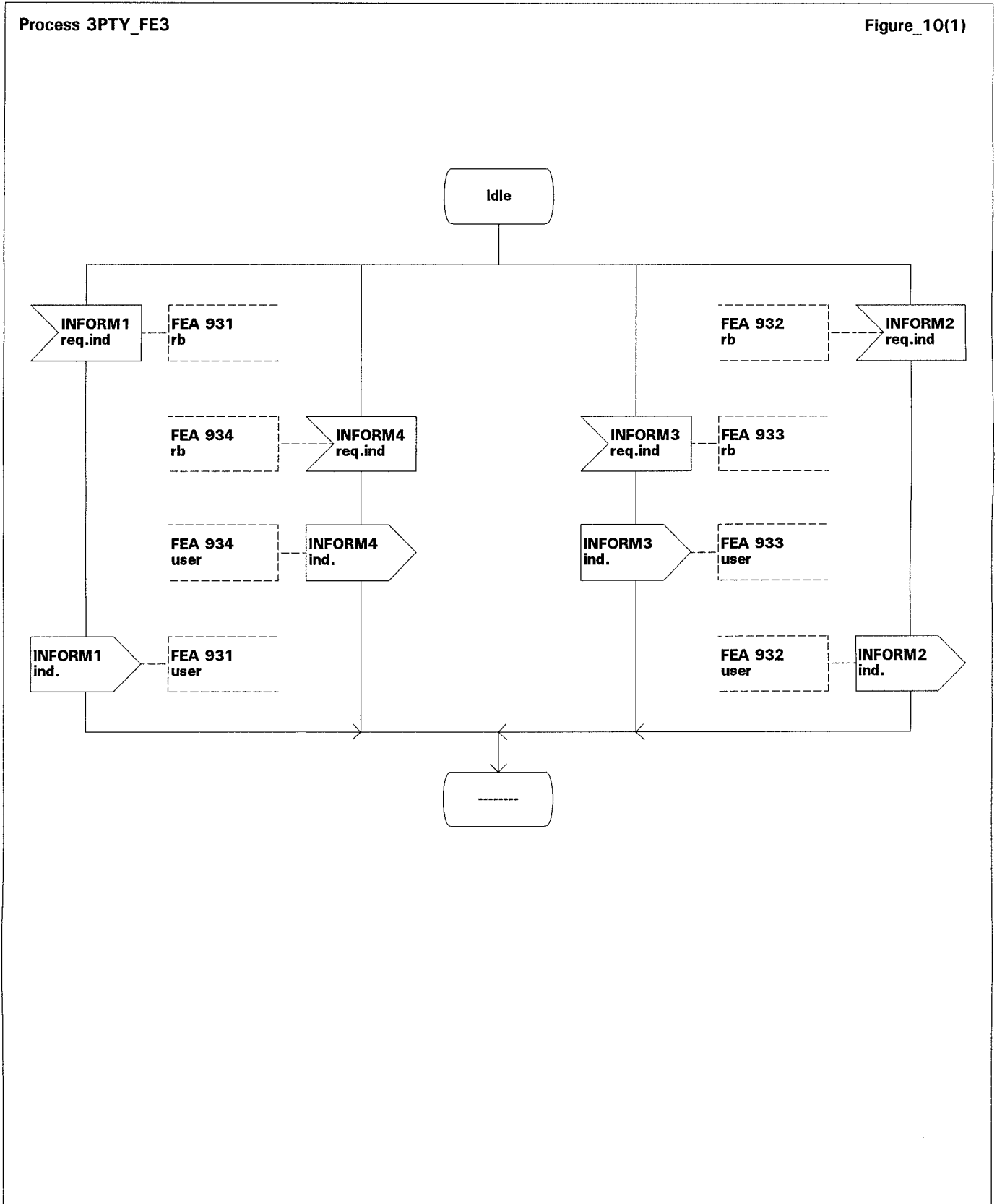


Figure 10: SDL diagram for FE3a and FE3b

9 Functional entity actions (FEAs)

9.1 FEAs of FE1

- 910: The functional entity shall:
- recognise a user request for 3-WAY START req.;
 - generate and transfer a 3-WAY START req.ind to FE2 or reject the user request if not valid;
 - recognise a 3-WAY START resp.conf from FE2;
 - transfer a service confirmation towards the user.
- 911: The functional entity shall:
- recognise a user request for 3-WAY END req.;
 - generate and transfer a 3-WAY END req.ind to FE2;
 - recognise a 3-WAY END resp.conf from FE2;
 - transfer a service confirmation towards the user.
- 912: The functional entity shall check the states of the two calls involved.
- 913: The functional entity shall recognise a remote or local clearing request of either one of the calls or the entire three-way conversation call.
- 914: The functional entity shall place both connections in the correct held states.
- 915: The functional entity shall place the remaining connection in the correct held state.

9.2 FEAs of FE2

- 920: The functional entity shall:
- recognise a 3-WAY START req.ind from FE1;
 - check for a valid start condition.
- 921: The functional entity shall:
- check for unauthorised interaction with other supplementary services (e.g. interaction with CONF supplementary service);
 - check for authorised interaction with other supplementary services (e.g. matching of CUG-information).
- 922: The functional entity shall seize resources (e.g. three-way bridge).
- 923: The functional entity shall release resources.
- 924: The functional entity shall place both connections in the correct held states.
- 925: The functional entity shall place the remaining connection in the correct held state.

- 926: The functional entity shall connect the two calls to the bridge.
- 927: The functional entity shall remove the two calls from the bridge.
- 928: The functional entity shall control interaction with other supplementary services whilst in the three-way active state.
- 929: The functional entity shall notify the remote users of either the establishment or clearing of a three-way conversation, and/or the occurrence of one single held connection.

9.3 FEAs of FE3 (i.e. FE3a and FE3b)

- 931: FE3 shall accept an INFORM1 req.ind and relay it to the user.
- 932: FE3 shall accept an INFORM2 req.ind and relay it to the user.
- 933: FE3 shall accept an INFORM# req.ind and relay it to the user.
- 934: FE3 shall accept two an INFORM4 req.ind and relay it to the user.

10 Allocation of functional entities to physical locations

The possible locations of functional entities FE1, FE2, FE3a and FE3b are shown in table 2.

Table 2

	FE1	FE2	FE3a	FE3b
Scenario 1	TE	LE	TE	TE
Scenario 2	TE	PTNX	TE	TE

NOTE: These allocations constrain FE1 and FE2 to be at opposite ends of a basic call (r1 or r3) relationship.

History

Document history	
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