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## Foreword

This European Telecommunication Standard (ETS) has been produced by the Business Telecommunications (BTC) Technical Committee of the European Telecommunications Standards Institute (ETSI).

<b>Transposition dates</b>	
Date of adoption of this ETS:	15 March 1996
Date of latest announcement of this ETS (doa):	30 June 1996
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## 1 Scope

This European Telecommunication Standard (ETS) describes the stage two of the location handling services for Private Integrated Services Networks (PISNs) which provide Cordless Terminal Mobility (CTM) user mobility capability.

The Cordless Terminal Location Registration Supplementary Service (SS-CTLR) enables a CTM user to register at, or deregister from, the current location within the PISN. The ability to register at different locations in the PISN at different times enables the CTM user to maintain the provided services (including the ability to make and receive calls) at different access points. Deregistration is used to inform the PISN that the CTM user is temporarily unable to make use of the provided services (including the receipt of incoming calls).

The Transfer of Service Profile Additional Network Feature (ANF-CTSP) enables different parts of the PISN to transfer or access service profiles, thereby allowing CTM users to maintain their service profiles when changing location within the PISN.

Supplementary service specifications are produced in three stages according to the method specified in ETS 300 387 [3]. Stage 2 identifies the functional entities involved in the feature and the information flows between them.

The purpose of the stage 2 specification is to guide and constrain the work on signalling protocols at stage 3, while fulfilling the requirements of stage 1. Stage 1 and stage 3 are defined in separate standards.

This ETS applies to CTM only within a single PISN. The specification of information flows between the PISN and cordless terminals is beyond the scope of this ETS.

Conformance to this ETS is met by conforming to a stage 3 standard which fulfils the requirements of this ETS that are relevant to the equipment for which the stage 3 standard applies. Therefore, no method of testing is provided for this ETS.

## 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 only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

- [1] ETS 300 415 (1995): "Private Telecommunication Network (PTN); Terms and definitions".
- [2] ISO/IEC 11579-1 (1994): "Information Technology - Telecommunications and information exchange between systems - Private integrated services network - Part 1: Reference configurations for PISN exchanges (PINX)".
- [3] ETS 300 387 (1994): "Private Telecommunication Network (PTN); Method for the specification of basic and supplementary services".
- [4] ITU-T Recommendation I.210 (1993): "Principles of telecommunication services supported by an ISDN and the means to describe them".
- [5] ITU-T Recommendation Z.100 (1993): "Specification and description language (SDL)".
- [6] ISO/IEC 11571 (1994): "Information technology - Telecommunications and information exchange between systems - Numbering and Sub-addressing in Private Integrated Services Network".

### 3 Definitions and abbreviations

#### 3.1 Definitions

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

**Additional Network Feature (ANF):** See ETS 300 415 [1].

**authentication:** See ETS 300 415 [1].

**Cordless Terminal Mobility (CTM):** The ability of a cordless terminal to be in continuous motion whilst accessing and using the telecommunication services offered by the PISN, as well as the capability of the network to keep track of the location of the cordless terminal within the coverage area of the radio system used.

**CTM information:** The information for a CTM user managed by a VDB.

**CTM user:** The user of Supplementary Service "Cordless Terminal Location Registration" (SS-CTRL).

**directory PINX:** A PINX which provides a mapping function to a CTM user's PISN number from another type of identity indicating the same CTM user.

**fixed part:** A physical grouping of some or all of the fixed component parts of mobile radio system. These would include one or more radio equipments attached to an antenna system. It could also include common control functions and interfaces to the PINX.

**Home Data Base (HDB):** See ETS 300 415 [1].

**home PINX:** The PINX which has direct access to the HDB entry for a particular CTM user.

**Location Area (LA):** The coverage area in which a cordless terminal may receive and make calls as a result of a single location registration.

**Network Assigned Identity (NAI):** A temporary identity assigned by the PISN to a CTM user. This identity comprises:

- a PISN number sufficient to identify the PINX assigning the NAI; and
- a local identity valid while the user is registered.

**Private Integrated ServicesNetwork (PISN):** See ISO/IEC 11579-1 [2].

**Private Integrated Services Network Exchange (PINX):** See ISO/IEC 11579-1 [2].

**PISN number:** See ISO/IEC 11571 [6].

**PISN user:** The user of the network layer services provided by a PISN.

**service profile:** The specific collection of PISN services and service options which a PISN user can utilize.

**supplementary service:** See ITU-T Recommendation I.210 [4].

**Visitor Area (VA):** See ETS 300 415 [1].

**Visitor Data Base (VDB):** See ETS 300 415 [1].

**visitor PINX:** The PINX which is serving a CTM user in a visitor area.



### 3.2 Abbreviations

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

ANF-xxx	"xxx" Additional Network Feature
CTLR	Cordless Terminal Location Registration
CTM	Cordless Terminal Mobility
CTSP	Transfer of Service Profile
FE	Functional Entity
FEA	Functional Entity Action
FP	Fixed Part
HDB	Home Data Base
LA	Location Area
NAI	Network Assigned Identity
PINX	Private Integrated Services Network Exchange
PISN	Private Integrated Services Network
SDL	Specification and Description Language
SP	Service Profile
SS-xxx	"xxx" Supplementary Service
VA	Visitor Area
VDB	Visitor Data Base

## 4 SS-CTLR

### 4.1 Description

SS-CTLR makes the location of a CTM user known to the PISN. By updating location information in the PISN, incoming calls can be routed to a CTM user, and the CTM user can access the PISN services from the current location area. SS-CTLR also enables a CTM user to inform the PISN that the current location area is no longer to be used to make and receive calls.

The network may allow the CTM user to perform location registration using a permanent identifier. Alternatively, for security reasons, a procedure supporting the use of temporary identifiers may be used.

SS-CTLR may cause the invocation of ANF-CTSP in order to provide a consistent service to a CTM user independent of the CTM user's location area.

SS-CTLR may use an authentication procedure in order to validate the identity provided by the CTM user to the PISN before completing the location registration.

### 4.2 Functional model

#### 4.2.1 Functional model description

The functional model for SS-CTLR shall be as shown in figure 1.

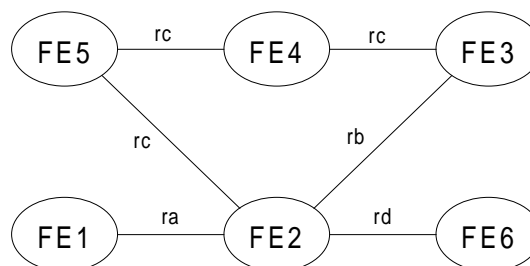


Figure 1: Functional model for SS-CTLR

The functional model for SS-CTLR shall comprise the following Functional Entities (FEs):

FE1: Served user agent;  
FE2: VDB function control;  
FE3: HDB function control;  
FE4: Old VDB function control;  
FE5: Old served user agent;  
FE6: Identification mapping entity.

The following functional relationships shall exist between these FEs:

ra: between FE1 and FE2;  
rb: between FE2 and FE3;  
rc: between FE3 and FE4, between FE4 and FE5 and between FE2 and FE5;  
rd: between FE2 and FE6.

#### **4.2.2 Description of functional entities**

##### **4.2.2.1 Served user agent, FE1**

This FE detects the request for location registration and deregistration procedures.

NOTE: The possible information transfer on the radio interface causing FE1 to invoke SS-CTLR is out of scope for this ETS.

##### **4.2.2.2 VDB function control, FE2**

This FE is responsible for the maintenance of CTM information while the CTM user is registered at the visited location by inserting an entry in the VDB when the CTM user first registers in the visitor area, updating the entry when the CTM user registers to a location area within the same visitor area, and deleting the entry when the CTM user deregisters.

##### **4.2.2.3 HDB function control, FE3**

This FE registers the new visitor area of the CTM user and requests the deletion of location information at the old visited location.

##### **4.2.2.4 Old VDB function control, FE4**

This FE is the VDB function control at the previous visited location and is responsible for the deletion of location information that is no longer required.

##### **4.2.2.5 Old served user agent, FE5**

This FE is the served user agent at the previously visited location and is responsible for the release of resources that are no longer required.

##### **4.2.2.6 Identification mapping entity, FE6**

This FE converts an identity supplied by the CTM user for location registration to the CTM user's PISN number.

#### **4.2.3 Relationship with basic service**

All information flows are independent of basic call flows.

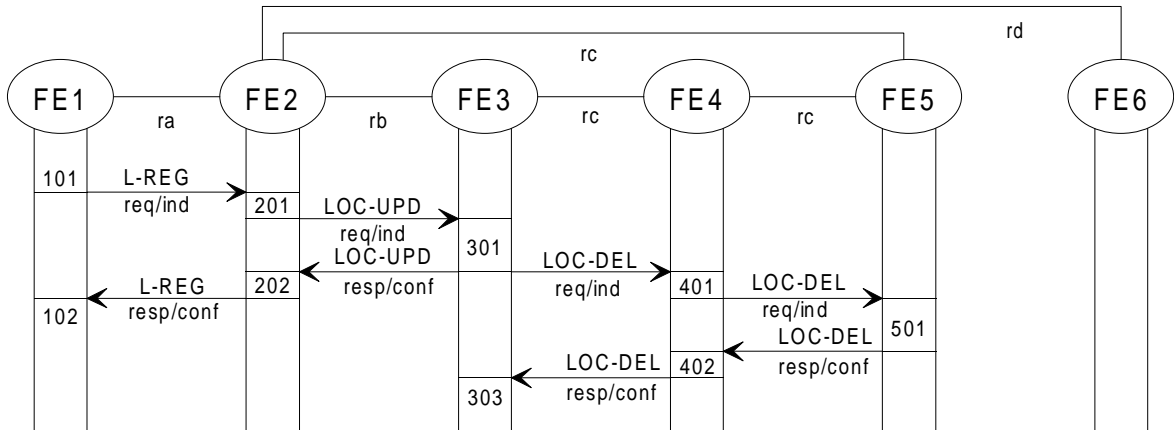
### **4.3 Information flows**

#### **4.3.1 Information flow sequences**

A stage 3 standard shall be capable of providing the information flows shown in this subclause. It can specify further information flows, e.g. to deal with additional exceptional conditions.

4.3.1.1 Location Registration to a new VA using the CTM user's identity

Figure 2 shows the information flow for a location registration to a new visitor area when the CTM user's identity is used.

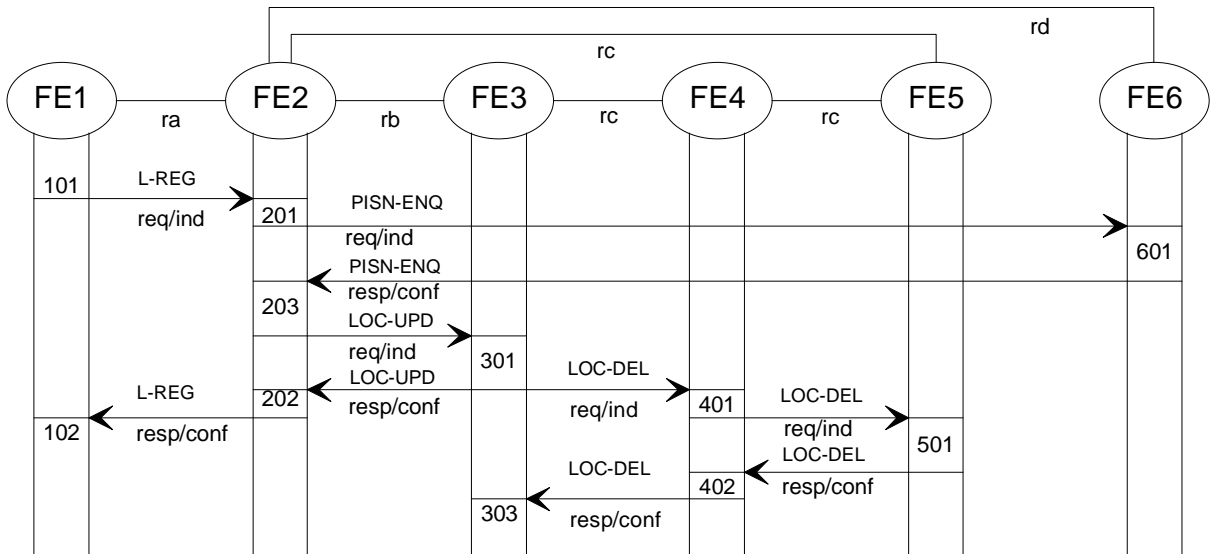


NOTE: Authentication procedures can be activated as part of FEA-201 before allowing the registration to take effect.

Figure 2: Location registration to a new VA using the CTM user's identity

4.3.1.2 Location registration to a new VA using an alternative identifier

Figure 3 shows the information flow for a location registration to a new visitor area when an alternative identifier is used.



NOTE: Authentication procedures can be activated as part of FEA-203 before allowing the registration to take effect.

Figure 3: Location registration to a new VA using an alternative identifier

4.3.1.3 Location registration within the same VA

Figure 4 shows the information flow for a location registration within the current visitor area.

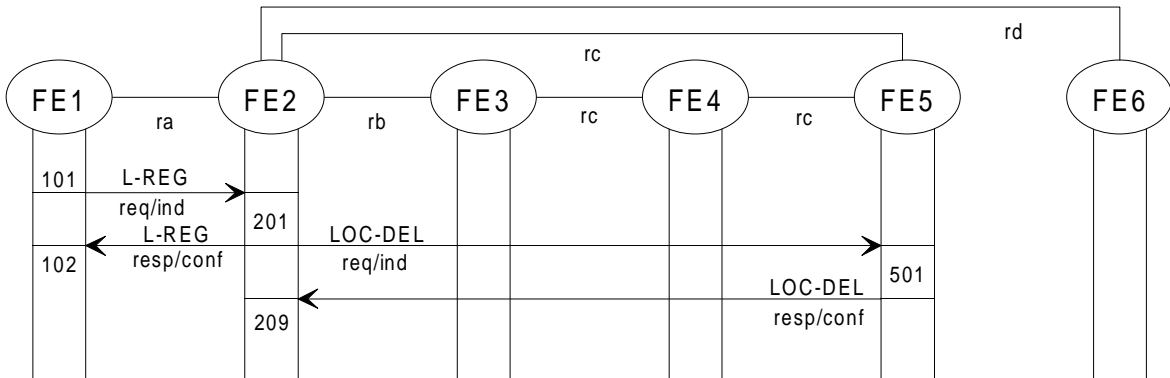


Figure 4: Location registration within the current VA

4.3.1.4 Location deregistration

Figure 5 shows the information flow for a location deregistration.

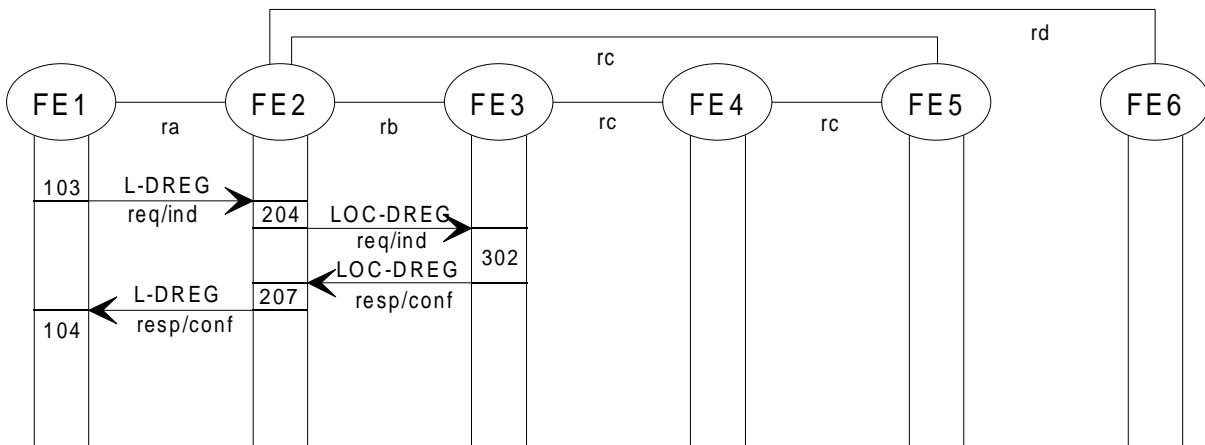


Figure 5: Location deregistration

4.3.1.5 Location registration rejected by FE3

Figure 6 shows the information flow for a failure in location registration using the CTM user's identity when the failure was caused by "User identity not known" or "CTM user not permitted to register in the current LA" detected by FE3.

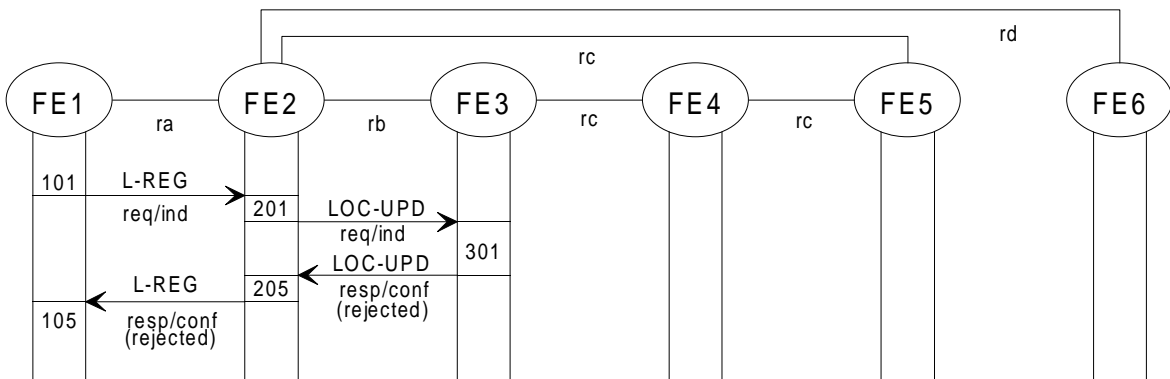


Figure 6: Location registration rejected by FE3

4.3.1.6 Location registration using the PISN number rejected by FE2

Figure 7 shows the information flow for a failure in location registration using the CTM user's identity. The information flow assumes that the failure was caused by "Location registration temporarily not possible" or "CTM user failed authentication" detected by FE2.

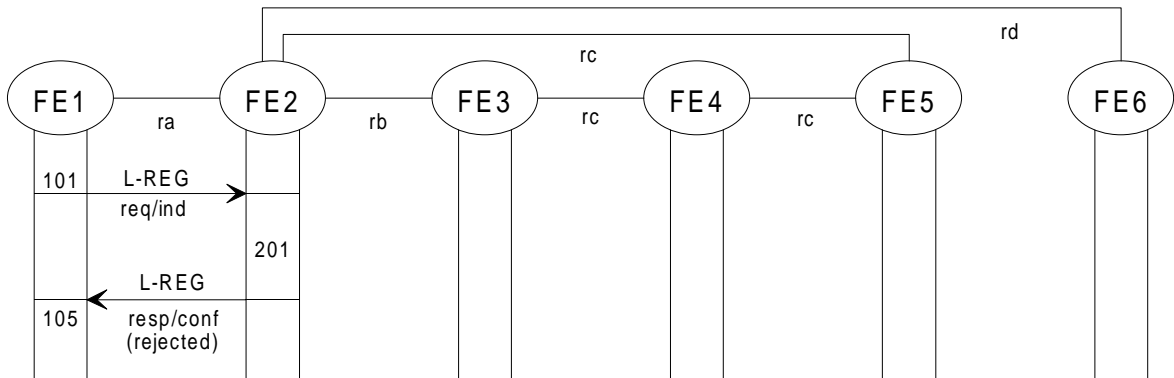


Figure 7: Location registration using the CTM user's identity rejected by FE2

4.3.1.7 Location registration rejected by FE6

Figure 8 shows the information flow for a failure in location registration using an alternative identifier. The information flow assumes that the failure was caused by "User identity not known" detected by FE6.

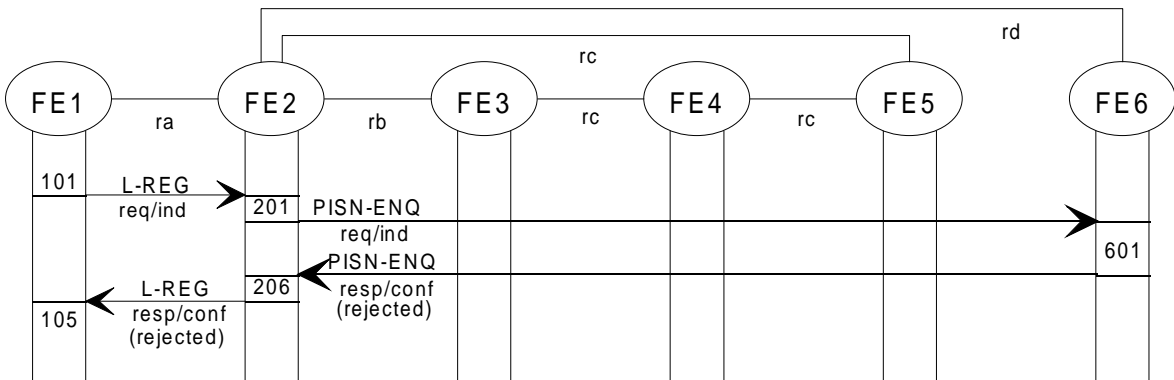


Figure 8: Location registration rejected by FE6

4.3.1.8 Location registration using an alternative identifier rejected by FE2

Figure 9 shows the information flow for a failure in location registration when using an alternative identifier. The information flow assumes that the failure was caused by "CTM user failed authentication" detected by FE2.

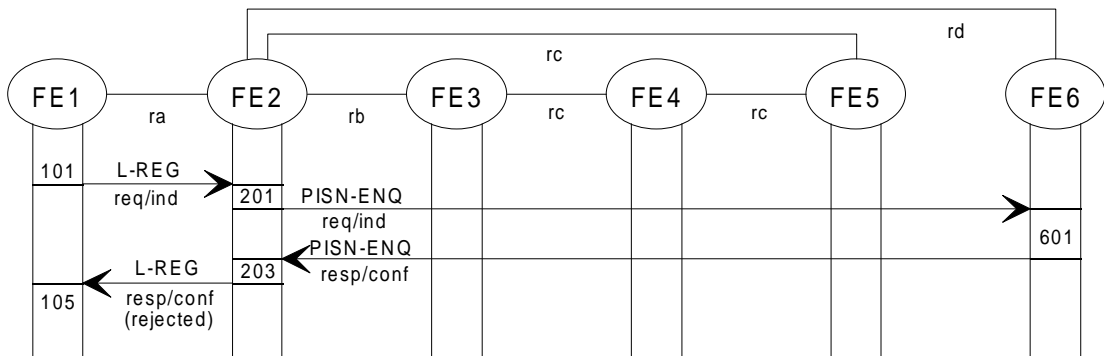


Figure 9: Location registration using an alternative identifier rejected by FE2

4.3.1.9 Location deregistration rejected by FE2

Figure 10 shows the information flow for a failure in location deregistration. The information flow assumes that the failure occurred because the CTM user was not registered.

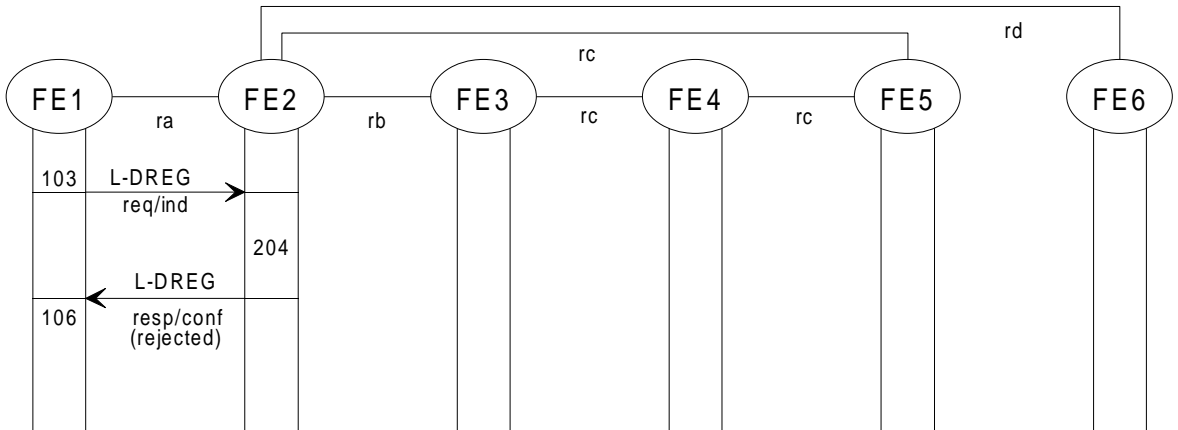


Figure 10: Location deregistration rejected by FE2

4.3.1.10 Location deregistration rejected by FE3

Figure 11 shows the information flow for a failure in location deregistration. The information flow assumes that the request was rejected by FE3.

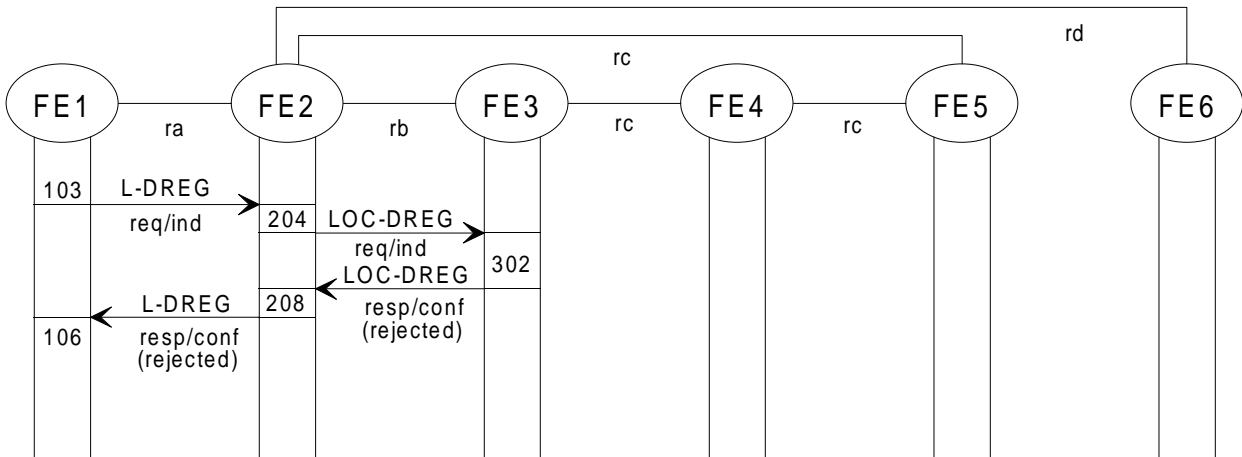


Figure 11: Location deregistration rejected by FE3

4.3.2 Definition of individual information flows

4.3.2.1 L-REG

This confirmed information flow is used to cause FE2 to perform a location registration of the CTM user. It shall be sent across relationship ra from FE1 to FE2.

**Table 1: Contents of L-REG**

Service elements	Allowed values	Request	Confirm
CTM user's identity		M	
Basic Service Indicator		M	
CTM user's PISN number			O (note 1)
CTM user's new NAI			O (note 2)
Result	Accepted or rejected		M
Cause of rejection	- User identity not known - CTM user not permitted to register in the current LA - CTM user failed authentication - Location registration temporarily not possible		O (note 3)
NOTE 1: Mandatory if the request is accepted.			
NOTE 2: The new NAI shall be provided if NAI assignment is implemented.			
NOTE 3: This service element shall only be included in cases of rejection.			

#### 4.3.2.2 L-DREG

This confirmed information flow is used to perform a deregistration of the CTM user from the current location. It shall be sent across relationship ra from FE1 to FE2.

**Table 2: Contents of L-DREG**

Service elements	Allowed values	Request	Confirm
CTM user's identity		M	
Basic Service Indicator		M	
Result	Accepted or Rejected		M

#### 4.3.2.3 LOC-DREG

This confirmed information flow is used to perform a deregistration of the CTM user from the current location. It shall be sent across relationship rb from FE2 to FE3.

**Table 3: Contents of LOC-DREG**

Service elements	Allowed values	Request	Confirm
CTM user's PISN number		M	
Basic Service Indicator		M	
Result	Accepted or Rejected		M

#### 4.3.2.4 LOC-DEL

This confirmed information flow is used to request the release of resources allocated to a CTM user. It shall be sent across relationship rc from FE3 to FE4, or from FE2 or FE4 to FE5.

**Table 4: Contents of LOC-DEL**

Service elements	Allowed values	Request	Confirm
CTM user's PISN number		M	
Basic Service Indicator		M	
Result	Accepted or Rejected		M

4.3.2.5 LOC-UPD

This confirmed information flow is used to request an update of the location information in FE3 for a CTM user. It shall be sent across relationship rb from FE2 to FE3.

Table 5: Contents of LOC-UPD

Service elements	Allowed values	Request	Confirm
CTM user's PISN number	PISN number Accepted or Rejected - User identity not known - CTM user not permitted to register in the current LA	M	M O (note)
Basic Service Indicator		M	
Visitor PINX		M	
Result			
Cause of rejection			
NOTE: This service element shall only be included in cases of rejection.			

4.3.2.6 PISN-ENQ

This confirmed information flow is a request for the PISN number of a CTM user identified by an NAI or similar. It shall be sent across relationship rd from FE2 to FE6.

Table 6: Contents of PISN-ENQ

Service elements	Allowed values	Request	Confirm
CTM user's identity	NAI or similar structure	M	O (note) M
CTM user's PISN number			
Result	Accepted or Rejected		
NOTE: Mandatory if the request is accepted.			

4.4 SDL diagrams for functional entities

The figures in this subclause are intended to illustrate typical FE behaviour in terms of information flows sent and received. The behaviour of each FE is shown using SDL according to ITU-T Recommendation Z.100 [5].

The direction of inputs and outputs (right or left) corresponds to the direction of messages in the flow diagrams. With the exception of internal events, all inputs are tagged with the originating FE(s) and all outputs are tagged with the destination FE. For each input, a reference to the FEA is indicated. The FEA referred to describes all actions until the next waiting state.



4.4.1 Behaviour of FE1

Figure 12 shows the SDL diagram for FE1.

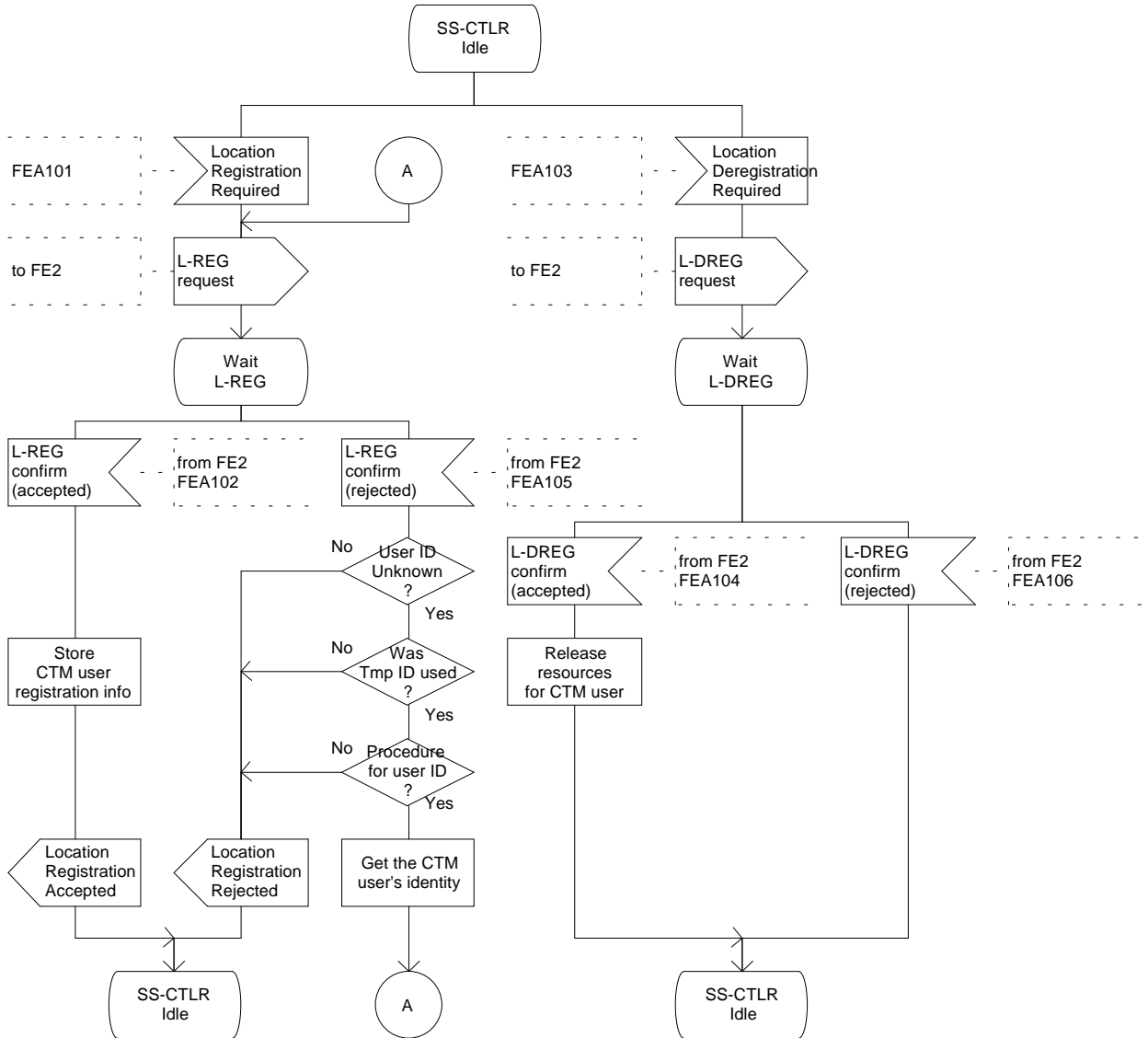


Figure 12: SDL diagram for FE1

4.4.2 Behaviour of FE2

Figure 13 shows the SDL diagrams for FE2.

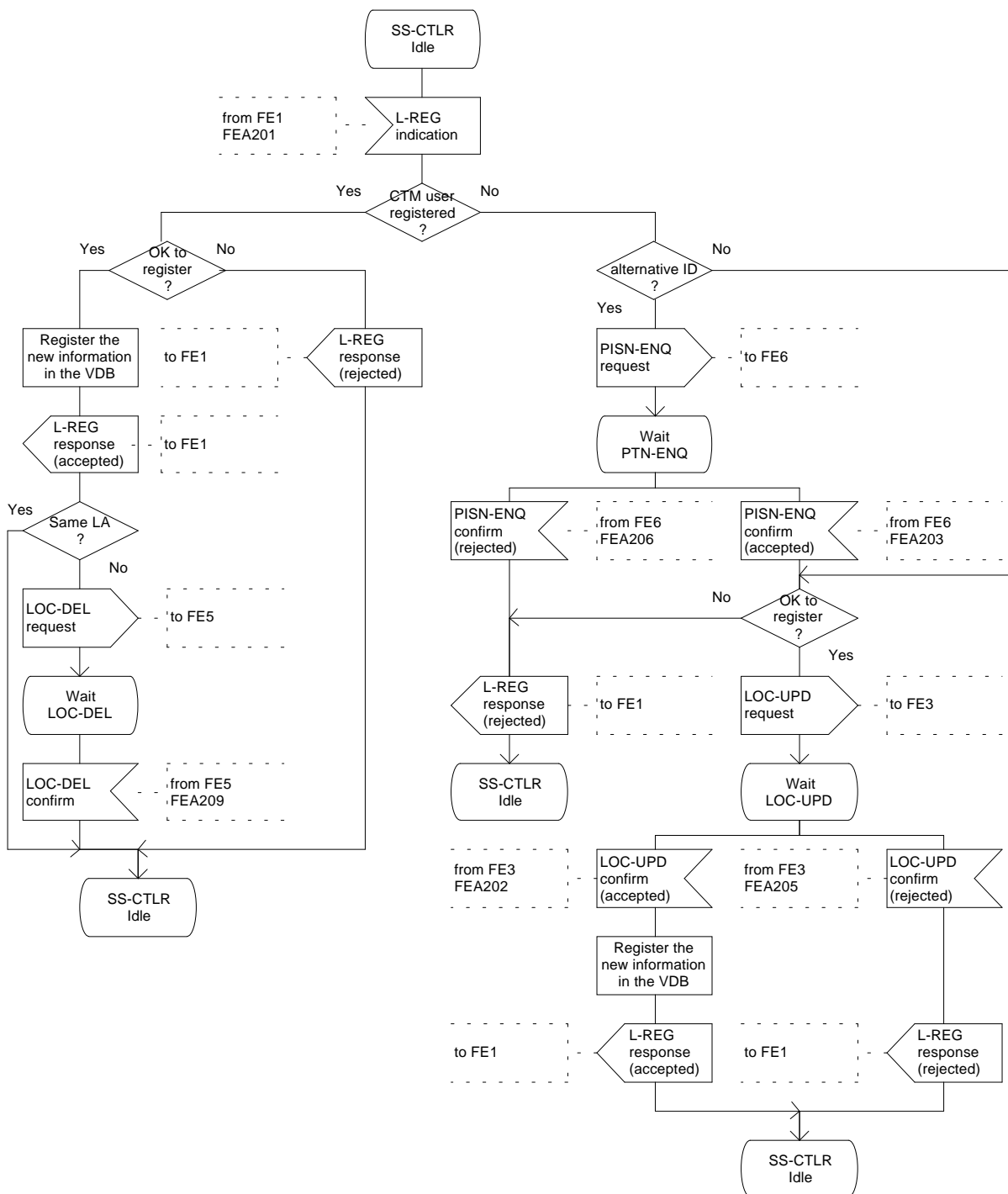


Figure 13 (sheet 1 of 2): SDL diagram for FE2

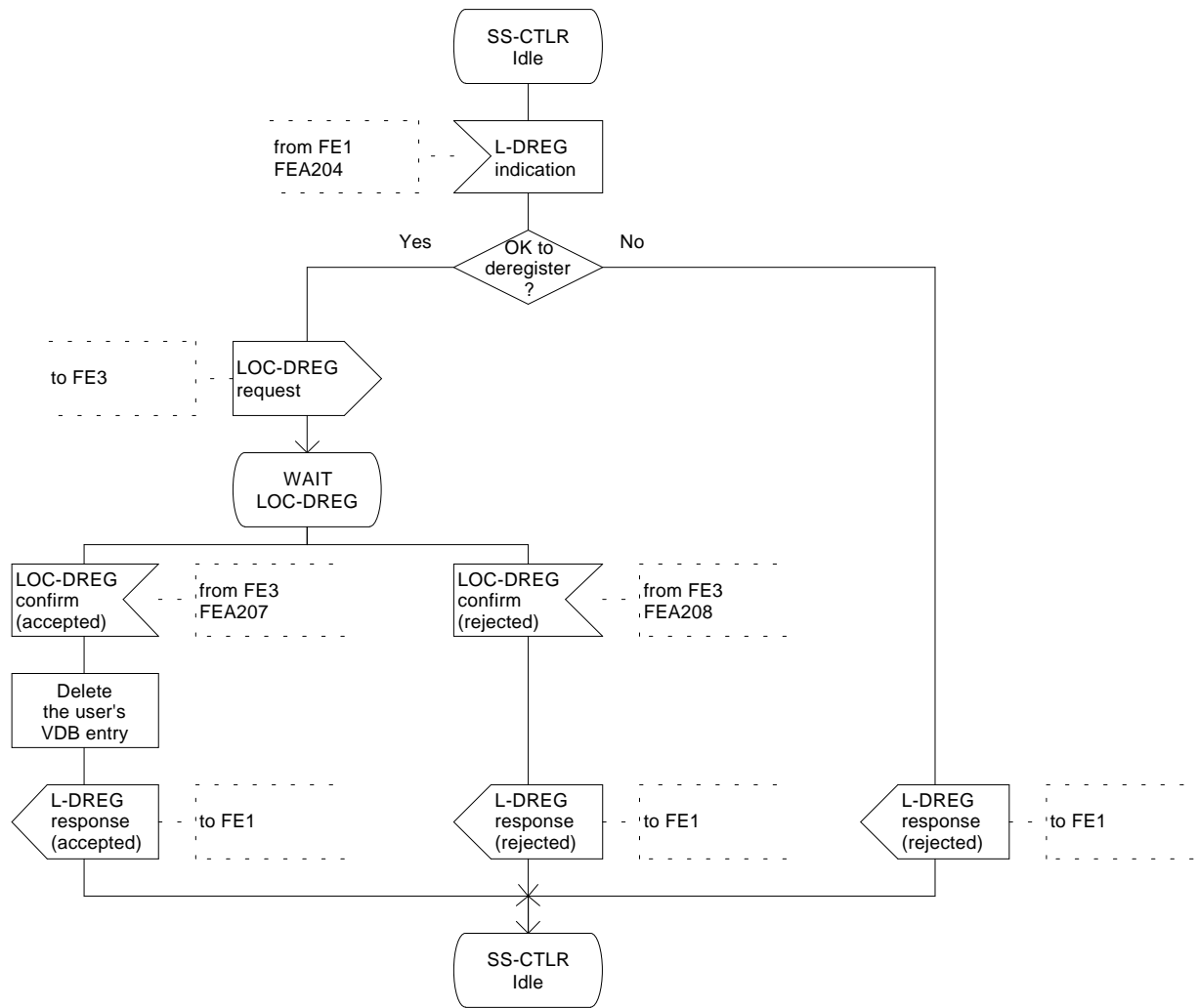


Figure 13 (sheet 2 of 2): SDL diagram for FE2

4.4.3 Behaviour of FE3

Figure 14 shows the SDL diagram for FE3.

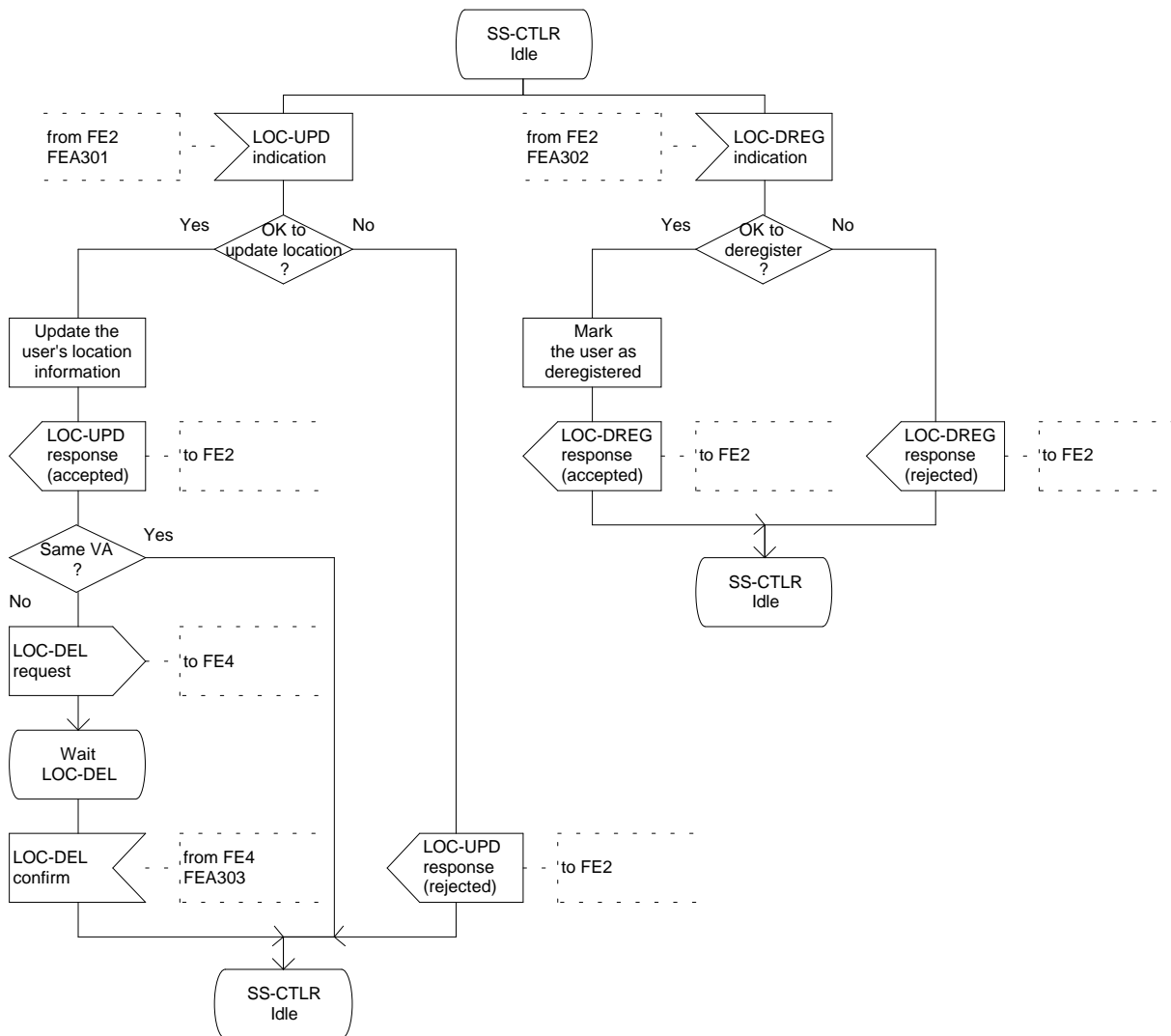


Figure 14: SDL diagram for FE3

#### 4.4.4 Behaviour of FE4

Figure 15 shows the SDL diagram for FE4.

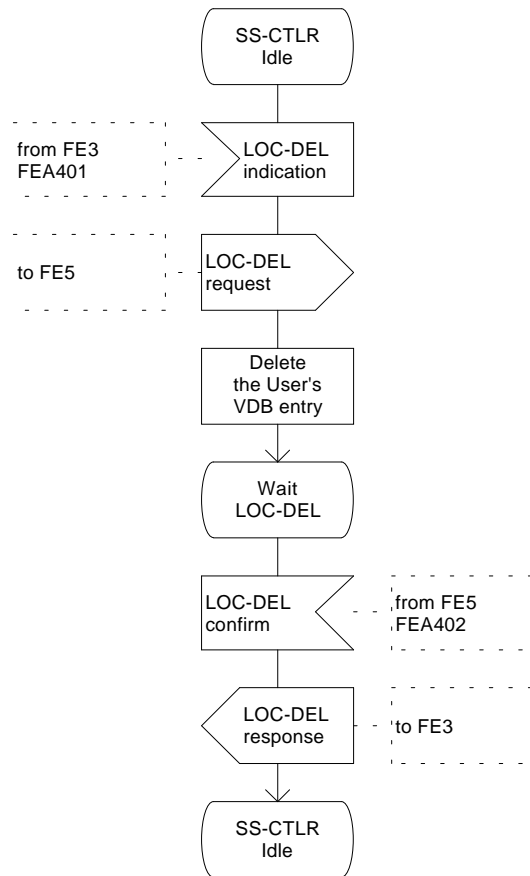


Figure 15: SDL diagram for FE4

4.4.5 Behaviour of FE5

Figure 16 shows the SDL diagram for FE5.

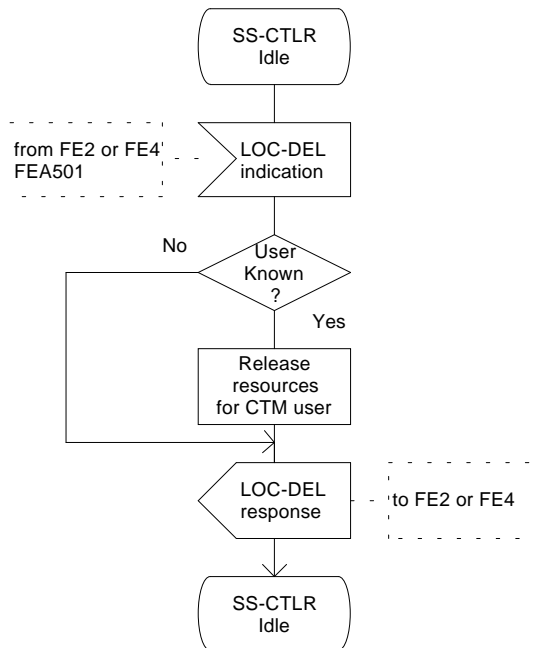


Figure 16: SDL diagram for FE5

4.4.6 Behaviour of FE6

Figure 17 shows the SDL diagram for FE6.

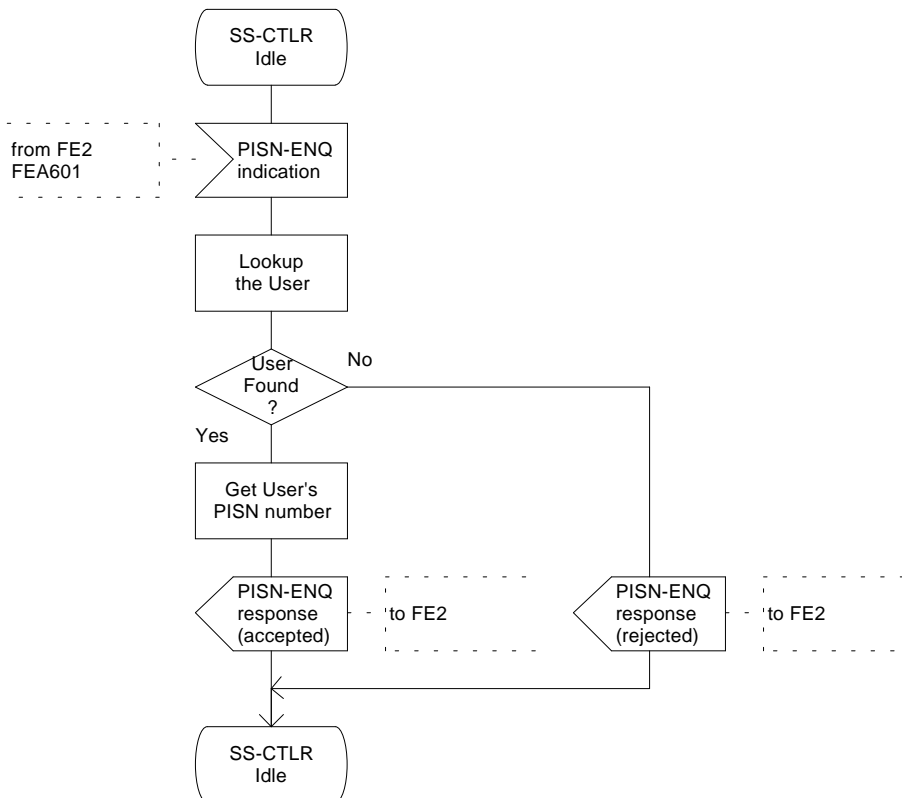


Figure 17: SDL diagram for FE6

#### 4.5 Functional Entity Actions (FEAs)

The following FEAs shall take place at the points indicated in the information flow sequences in subclause 4.3.1.

##### 4.5.1 FEAs of FE1

- 101 Detect a request for location registration and send L-REG-request to FE2.
- 102 Accept L-REG-confirm (accepted) from FE2. Store the CTM user's registration information and report the acceptance of location registration.
- 103 Detect a request for location deregistration and send L-DREG-request to FE2.
- 104 Accept L-DREG-confirm (accepted) from FE2. Release the resources for the CTM user.
- 105 Accept L-REG-confirm (rejected) from FE2. Analyse the reason for the rejection. If the reason was "User identity not known", a temporary identifier was used and a procedure to obtain the CTM user's identity exists, get the CTM user's identity and send L-REG-request to FE2 again. Otherwise, report the rejection of location registration.
- 106 Accept L-DREG-confirm (rejected) from FE2.

##### 4.5.2 FEAs of FE2

- 201 Accept L-REG-indication from FE1, and test if the CTM user is already registered within this visitor area.  
  
If the CTM user is already registered, check that the CTM user can change the registration (this may optionally invoke authentication of the CTM user). If yes, update the access information in the VDB, send L-REG-response to FE1 accepting the location registration and send LOC-DEL-request to FE5 if the LA has changed. If no, send L-REG-response (rejected) to FE1.  
  
If the CTM user is not already registered, check the identity provided. If an alternative identifier is used, send a PISN-ENQ-request to FE6, otherwise check that the CTM user can change the registration (this may optionally invoke authentication of the CTM user). If yes, send a LOC-UPD-request to FE3. If no, send L-REG-response (rejected) to FE1.
- 202 Accept LOC-UPD-confirm (accepted) from FE3. Insert an entry for the CTM user in the VDB and send L-REG-response (accepted) to FE1.
- 203 Accept PISN-ENQ-confirm (accepted) from FE6, and read the CTM user's PISN number. Check that the CTM user can change the registration (this may optionally invoke authentication of the CTM user). If yes, send a LOC-UPD-request to FE3. If no, send L-REG-response (rejected) to FE1.
- 204 Accept L-DREG-indication from FE1, and test if the CTM user is allowed to deregister (this may optionally invoke authentication of the CTM user). If yes, send LOC-DREG-request to FE3. If no, send L-DREG-response (rejected) to FE1.
- 205 Accept LOC-UPD-confirm (rejected) from FE3, and send L-REG-response (rejected) to FE1.
- 206 Accept PISN-ENQ-confirm (rejected) from FE6, and send L-REG-response (rejected, cause = "User identity not known") to FE1.
- 207 Accept LOC-DREG-confirm (accepted) from FE3, delete the CTM user's entry from the VDB and send L-DREG-response to FE1 accepting the location deregistration.
- 208 Accept LOC-DREG-confirm (rejected) from FE3, and send L-DREG-response (rejected) to FE1.
- 209 Accept LOC-DEL-confirm from FE5.

**4.5.3 FEAs of FE3**

- 301 Accept LOC-UPD-indication from FE2, and test if the CTM user may update the location information. If yes, update the location information in the HDB, send LOC-UPD-response (accepted) to FE2 and send LOC-DEL-request to FE4 only if the VA has changed. If no, send LOC-UPD-response (rejected) to FE2.
- 302 Accept LOC-DREG indication from FE2, and check if the CTM user may deregister. If yes, mark the CTM user as deregistered and send LOC-DREG-response (accepted) to FE2. If no, send LOC-DREG-response (rejected) to FE2.
- 303 Accept LOC-DEL-confirm from FE4.

**4.5.4 FEAs of FE4**

- 401 Accept LOC-DEL-indication from FE3, send LOC-DEL-request to FE5 and delete the CTM user's entry from the VDB.
- 402 Accept LOC-DEL-confirm from FE5, and send LOC-DEL-response to FE3.

**4.5.5 FEAs of FE5**

- 501 Accept LOC-DEL-indication from FE2 or FE4. If the CTM user is known, release the resources allocated to that user. Send LOC-DEL-response to FE2 or FE4 as appropriate.

**4.5.6 FEAs of FE6**

- 601 Accept PISN-ENQ-indication from FE2, and lookup the CTM user based on the identifier provided. If the CTM user entry was found, get the PISN number, and send PISN-ENQ-response (accepted) to FE2. If the identifier did not indicate a CTM user, send PISN-ENQ-response (rejected) to FE2.

**4.6 Allocation of functional entities to physical locations**

The allocation of FEs to physical locations is shown in table 7.

**Table 7: Allocation of FEs to physical entities**

	<b>FE1</b>	<b>FE2</b>	<b>FE3</b>	<b>FE4</b>	<b>FE5</b>	<b>FE6</b>
<b>Scenario 1</b>	FP	Visitor PINX	Home PINX	Old Visitor PINX	Old FP	Old Visitor PINX
<b>Scenario 2</b>	Visitor PINX	Visitor PINX	Home PINX	Old Visitor PINX	Old FP	Old Visitor PINX
<b>Scenario 3</b>	FP	Visitor PINX	Home PINX	Old Visitor PINX	Old Visitor PINX	Old Visitor PINX
<b>Scenario 4</b>	Visitor PINX	Visitor PINX	Home PINX	Old Visitor PINX	Old Visitor PINX	Old Visitor PINX
<b>Scenario 5</b>	FP	Visitor PINX	Home PINX	Old Visitor PINX	Old FP	Directory PINX
<b>Scenario 6</b>	Visitor PINX	Visitor PINX	Home PINX	Old Visitor PINX	Old FP	Directory PINX
<b>Scenario 7</b>	FP	Visitor PINX	Home PINX	Old Visitor PINX	Old Visitor PINX	Directory PINX
<b>Scenario 8</b>	Visitor PINX	Visitor PINX	Home PINX	Old Visitor PINX	Old Visitor PINX	Directory PINX

The "visitor PINX" and the "old visitor PINX" can be the same PINX if the CTM user does a location registration within the same visitor area.



## 5 ANF-CTSP

### 5.1 Description

ANF-CTSP enables CTM user's service profile to be maintained independent of the CTM user's location area within the PISN.

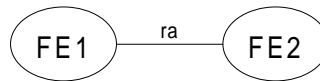
ANF-CTSP enables the transfer of the service profile information and also provides access to remotely available service profile details. The transfer of or access to a particular service profile may occur at any time.

Following a transfer of service profile details, if a change is made to the original, the copy may be updated. If a change is made to the copy, the original may also be modified.

### 5.2 Functional model

#### 5.2.1 Functional model description

The functional model for ANF-CTSP shall be as shown in figure 18.



**Figure 18: Functional model for ANF-CTSP**

The functional model for ANF-CTSP shall comprise the following Functional Entities (FEs):

FE1: VDB function control entity;  
FE2: HDB function control entity.

The following functional relationships shall exist between these FEs:

ra between FE1 and FE2.

#### 5.2.2 Description of functional entities

##### 5.2.2.1 VDB function control entity, FE1

This FE controls the transfer of, or access to, service profile information at the visited location. It is responsible for initiating the transfer or access when information is required that is not available at the visited location and shall process updates requested by the home location to services profiles previously transferred.

##### 5.2.2.2 HDB function control entity, FE2

This FE controls the transfer of service profile information at the home location. It shall respond to the request from FE1 for transfer of or access to a service profile. It shall also respond to the request of a modification of a service profile, and it is responsible for initiating an update of FE1 when changes are made to a service profile already transferred.

#### 5.2.3 Relationship with basic service

ANF-CTSP is a call unrelated additional network feature. Therefore, there is no relationship with the basic service.

5.3 Information flow

5.3.1 Information flow diagrams

5.3.1.1 Service profile transfer

Figure 19 shows the information flow for a transfer of, or access to, service profile details.

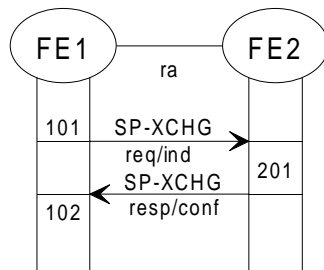


Figure 19: Service profile transfer

5.3.1.2 Service profile update

Figure 20 shows the information flow for a service profile update.

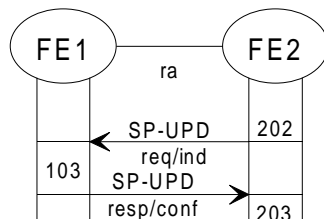


Figure 20: Service profile update

5.3.1.3 Service profile modification

Figure 21 shows the information flow for a service profile modification.

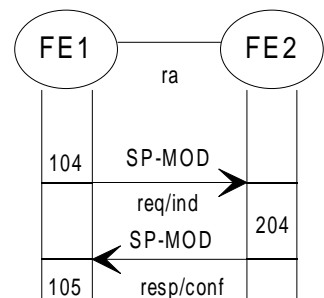


Figure 21: Service profile modification

5.3.2 Definition of individual information flows

5.3.2.1 SP-MOD

This confirmed information flow indicates a modification of service profile details for one or more services or call restrictions previously transferred. It shall be sent across relationship ra from FE1 to FE2.

**Table 8: Contents of SP-MOD**

Service elements	Allowed values	Request	Confirm
CTM user's identity		M	
List of SP details		M	
Result	Accepted or Rejected		M

### 5.3.2.2 SP-UPD

This confirmed information flow indicates an update of service profile details for one or more services or call restrictions previously transferred. It shall be sent across relationship ra from FE2 to FE1.

**Table 9: Contents of SP-UPD**

Service elements	Allowed values	Request	Confirm
CTM user's identity		M	
List of SP details		M	
Result	Accepted or Rejected		M

### 5.3.2.3 SP-XCHG

This confirmed information flow requests a transfer of, or access to, service profile details for one or more services or call restrictions. It shall be sent across relationship ra from FE1 to FE2.

**Table 10: Contents of SP-XCHG**

Service elements	Allowed values	Request	Confirm
CTM user's identity		M	
List of SP details requested		M	
List of SP details confirmed			O (note 1)
Result	Accepted or Rejected		M
Cause of rejection	- SP request not supported - Transfer not authorised		O (note 2)
NOTE 1:	Mandatory if the request is accepted.		
NOTE 2:	This service element shall only be included in cases of rejection.		

NOTE: The content of the two "SP details" fields depends on the usage of SP-XCHG. When used to initiate a transfer, the request will normally contain only a list of references to the services for which details are requested. When used to access remote service profile information, the request may contain more detailed information (e.g. a called PISN number).

## 5.4 SDL diagrams for functional entities

The figures in this subclause are intended to illustrate typical FE behaviour in terms of information flows sent and received. The behaviour of each FE is shown using SDL according to ITU-T Recommendation Z.100 [5].

The direction of inputs and outputs (right or left) corresponds to the direction of messages in the flow diagrams. With the exception of internal events, all inputs are tagged with the originating FE(s) and all outputs are tagged with the destination FE. For each input, a reference to the FEA is indicated. The FEA referred to describes all actions until the next waiting state.

5.4.1 Behaviour of FE1

Figure 22 shows the SDL diagram for FE1.

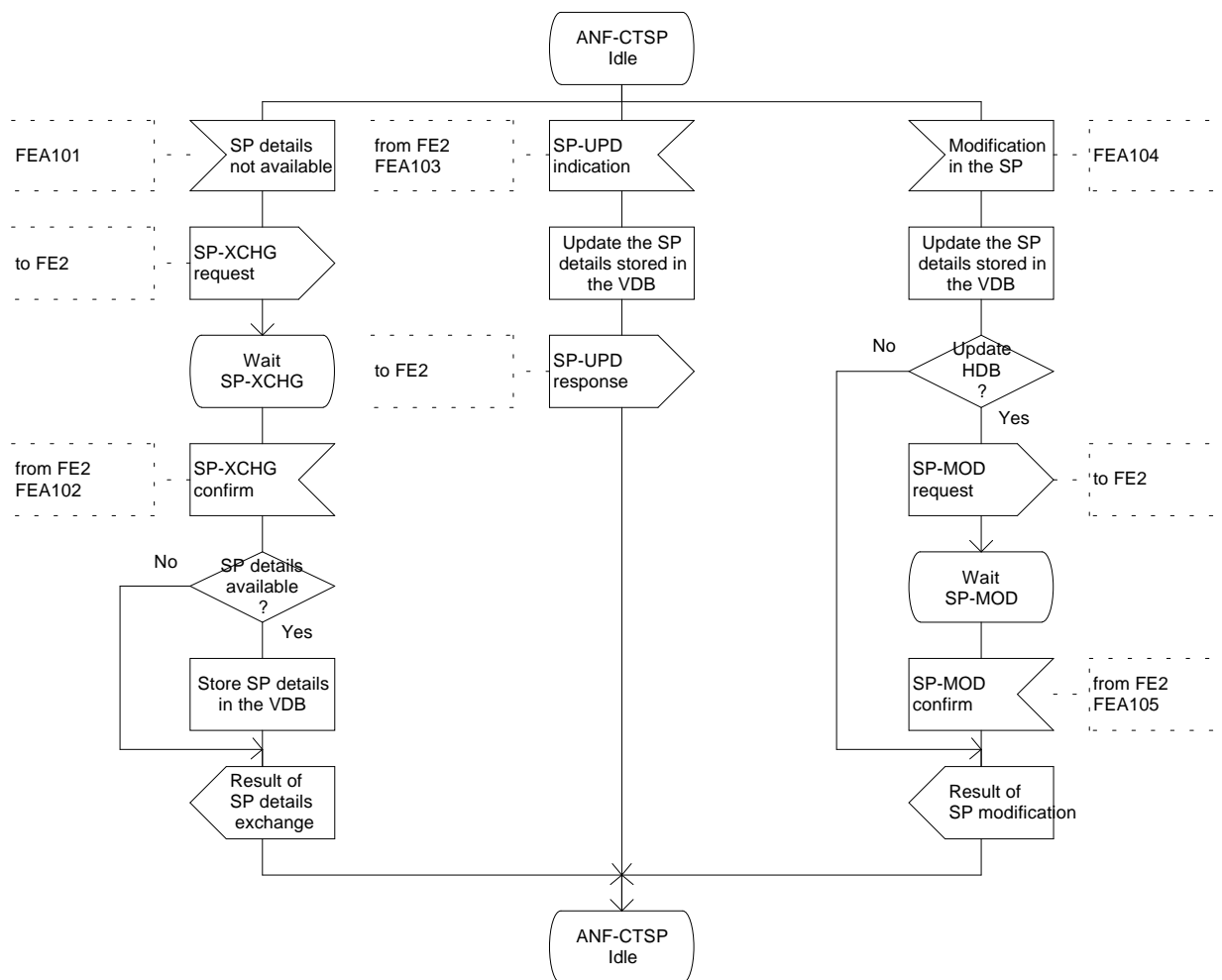


Figure 22: SDL for FE1

## 5.4.2 Behaviour of FE2

Figure 23 shows the SDL diagram for FE2.

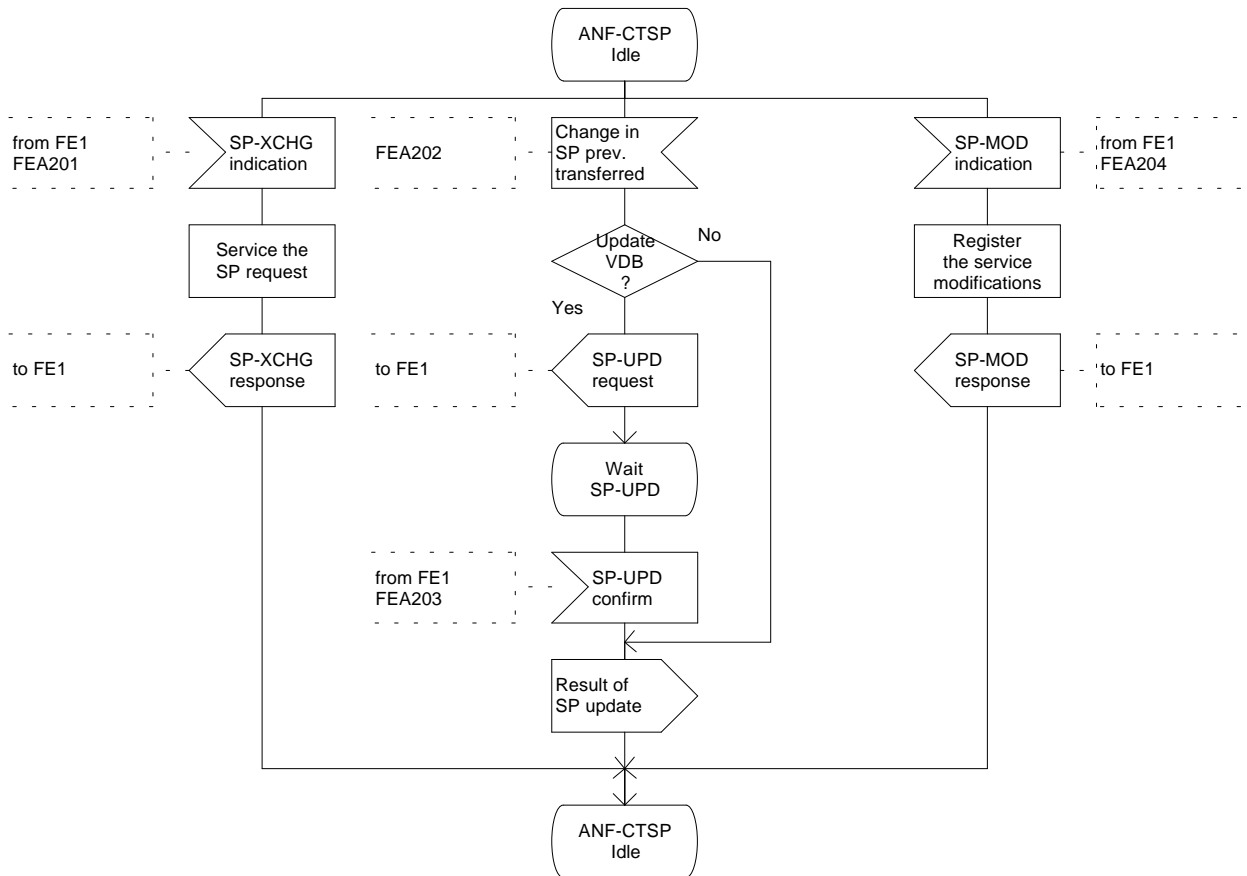


Figure 23: SDL for FE2

## 5.5 Functional Entity Actions (FEAs)

The following FEAs shall take place at the points indicated in the information flow sequences in subclause 5.3.1.

### 5.5.1 FEAs of FE1

- 101 Accept an internal request for service profile details which are not present in the VDB. Send a SP-XCHG-request to FE2 with information of the details to exchange.
- 102 Accept SP-XCHG-confirm from FE2, and if any service profile details are available store them in the VDB. Report the received service profile details by an internal stimulus.
- 103 Accept SP-UPD-indication from FE2, and store the updated service profile details in the VDB. Send SP-UPD-response to FE2.
- 104 Accept an internal stimulus reporting a modification in service profile details. Store the updated service profile details in the VDB. If the HDB is to be updated, send SP-MOD-request to FE2, else report the result of the service profile modification by an internal stimulus.
- 105 Accept SP-MOD-confirm from FE2, and report the result of the service profile modification by an internal stimulus.

**5.5.2 FEAs of FE2**

- 201 Accept SP-XCHG-indication from FE1. Resolve the service profile details required and send SP-XCHG-response to FE1.
- 202 Accept an internal stimulus reporting a change in service profile details previously transmitted to FE1. If the VDB is to be updated, send SP-UPD-request to FE1, else report the result of the service profile update by an internal stimulus.
- 203 Accept SP-UPD-confirm from FE1, and report the result of the service profile update by an internal stimulus.
- 204 Accept SP-MOD-indication from FE1. Register the modification in the service profile details and send SP-MOD-response to FE1.

**5.6 Allocation of functional entities to physical locations**

The allocation of FEs to physical locations is shown in table 11.

**Table 11: Allocation of FEs to physical entities**

	<b>FE1</b>	<b>FE2</b>
<b>Scenario 1</b>	Visitor PINX	Home PINX

## **Annex A (informative): User identifiers**

### **A.1 CTM user's identity**

The CTM user's identity is referred to throughout this document and is considered to have two possible forms:

- a) a PISN number as defined in ETS 300 415 [1];
- b) a permanent identity equivalent to the PISN number and which is understood for the identification of the CTM user at the home PINX and partly at the visitor PINX. This identity can be used throughout the PISN to determine the location of the CTM user's HDB.

### **A.2 Alternative identifiers**

This ETS refers to alternative identifiers which can be used instead of the CTM user's identity either as a security measure such that the user's identity is not transmitted over the air interface or because the cordless terminal technology does not support any form of flexible terminal/user identification. The two alternative identifiers are:

- a) a permanent identifier which has no meaning to the PISN. This may be the only one available for terminals that do not allow the network operator to enter an identity into the terminal. A directory service is required to translate such an identifier into a PISN number;
- b) a temporary identity (the NAI) which is partly understood at each visitor PINX, and fully understood by the old visitor PINX where it can be translated into the PISN number.

## History

Document history			
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March 1996	First Edition		