



SLOVENSKI STANDARD

SIST EN 300 392-11-8 V1.1.1:2003

01-december-2003

Prizemni snopovni radio (TETRA) i Govor in podatki (V+D) i 11. del: Dopolnilne storitve stopnje 2 i 8. poglavje: Izbira območja (AS)

Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 11: Supplementary services stage 2; Sub-part 8: Area Selection (AS)

iTeh STANDARD PREVIEW
(standards.iteh.ai)

Ta slovenski standard je istoveten z: EN 300 392-11-8 Version 1.1.1

SIST EN 300 392-11-8 V1.1.1:2003
<https://standards.iteh.ai/catalog/standards/sist/5d6287d9-8e65-4f88-8803-fc725bc41663/sist-en-300-392-11-8-v1-1-1-2003>

ICS:

33.070.10

Prizemni snopovni radio
(TETRA)

Terrestrial Trunked Radio
(TETRA)

SIST EN 300 392-11-8 V1.1.1:2003

en

iTeh STANDARD PREVIEW
(standards.iteh.ai)

SIST EN 300 392-11-8 V1.1.1:2003

<https://standards.iteh.ai/catalog/standards/sist/3d6287d9-8e65-4f88-8803-fc725bc41663/sist-en-300-392-11-8-v1-1-1-2003>

ETSI EN 300 392-11-8 V1.1.1 (2000-12)

European Standard (Telecommunications series)

**Terrestrial Trunked Radio (TETRA);
Voice plus Data (V+D);
Part 11: Supplementary services stage 2;
Sub-part 8: Area Selection (AS)**

**iTeh STANDARD PREVIEW
(standards.iteh.ai)**

[SIST EN 300 392-11-8 V1.1.1:2003](https://standards.iteh.ai/catalog/standards/sist/3d6287d9-8e65-4f88-8803-fc725bc41663/sist-en-300-392-11-8-v1-1-1-2003)

<https://standards.iteh.ai/catalog/standards/sist/3d6287d9-8e65-4f88-8803-fc725bc41663/sist-en-300-392-11-8-v1-1-1-2003>



Reference

DEN/TETRA-03A-11-08

KeywordsTETRA, V+D, data, radio, speech, stage 2,
supplementary service, area select**ETSI**650 Route des Lucioles
F-06921 Sophia Antipolis Cedex - FRANCE

Tel.: +33 4 92 94 42 00 Fax: +33 4 93 65 47 16

Siret N° 348 623 562 00017 - NAF 742 C
Association à but non lucratif enregistrée à la
Sous-Préfecture de Grasse (06) N° 7803/88

iTeh STANDARD PREVIEW
(standards.iteh.ai)

SIST EN 300 392-11-8 V1.1.1:2003[https://standards.iteh.ai/catalog/standards/sist/3d6287d9-8e65-4f88-8803-
fc725bc41663/sist-en-300-392-11-8-v1-1-1-2003](https://standards.iteh.ai/catalog/standards/sist/3d6287d9-8e65-4f88-8803-fc725bc41663/sist-en-300-392-11-8-v1-1-1-2003)

Important notice

Individual copies of the present document can be downloaded from:

<http://www.etsi.org>

The present document may be made available in more than one electronic version or in print. In any case of existing or perceived difference in contents between such versions, the reference version is the Portable Document Format (PDF). In case of dispute, the reference shall be the printing on ETSI printers of the PDF version kept on a specific network drive within ETSI Secretariat.

Users of the present document should be aware that the document may be subject to revision or change of status. Information on the current status of this and other ETSI documents is available at <http://www.etsi.org/tb/status/>

If you find errors in the present document, send your comment to:
editor@etsi.fr

Copyright Notification

No part may be reproduced except as authorized by written permission.
The copyright and the foregoing restriction extend to reproduction in all media.

© European Telecommunications Standards Institute 2000.
All rights reserved.

Contents

Intellectual Property Rights	5
Foreword.....	5
1 Scope.....	6
2 References.....	6
3 Definitions and abbreviations.....	7
3.1 Definitions.....	7
3.2 Abbreviations.....	7
3.2.1 General abbreviations.....	7
4 Functional model.....	8
4.1 Functional model description.....	8
4.2 Description of functional entities	10
4.2.1 Served user functional entity, FE1	10
4.2.2 Served user current SwMI functional entity, FE21	10
4.2.3 Area number mapping functional entity, FE221	10
4.2.4 SS-AS operation controlling functional entity, FE222.....	10
4.2.5 SS-AS operating functional entity, FE25	10
4.2.6 Managed served user/group home SwMI FE, FE20.....	11
4.2.7 Authorized user functional entity, FE3.....	11
4.3 Relationship of functional model to basic call functional model.....	11
5 Information flows	14
5.1 Definition of information flows	14
5.1.1 ASSIGN	14
5.1.2 ASSIGN ACK	14
5.1.3 DEFINE	15
5.1.4 DEFINE ACK	15
5.1.5 INTERROGATE	16
5.1.6 INTERROGATE ACK	16
5.1.7 INVOKE	17
5.1.8 INVOKE CONFIRM	18
5.1.9 INVOKE EXT	18
5.1.10 NOT DEFINED	19
5.1.11 NOT SUBSCRIBED	19
5.1.12 NOT SUPPORTED.....	19
5.2 Relationship of information flows to basic call information flows.....	20
5.3 Service primitives.....	21
5.4 Examples of information flow sequences	21
5.4.1 Definition	22
5.4.1.1 Definition with no assignment.....	22
5.4.1.2 Definition with assignment	22
5.4.2 Interrogation	23
5.4.3 Invocation and operation	23
5.4.3.1 Invocation for individual call with successful operation.....	23
5.4.3.1.1 Successful call establishment.....	23
5.4.3.1.2 Call attempt cleared by SS-AS.....	25
5.4.3.2 Invocation for group call with successful operation	27
5.4.3.2.1 Successful call establishment.....	27
5.4.3.2.2 Call attempt cleared by SS-AS.....	30
5.4.3.3 Operation for call restoration	31
5.4.3.4 SS-AS invocation failure	31
5.4.3.4.1 Group call attempt by calling user outside the selected area with SS-AS inhibition for that user.....	31
5.4.3.4.2 Selected area not defined	32
5.4.3.4.3 SS-AS not supported	33

5.4.3.4.4	SS-AS not subscribed to	34
6	FE actions	34
6.1	Functional Entity actions of FE1	34
6.2	Functional Entity actions of FE20	34
6.3	Functional Entity actions of FE21	35
6.4	Functional Entity actions of FE221	35
6.5	Functional Entity actions of FE222	35
6.6	Functional Entity actions of FE25	37
6.7	Functional Entity actions of FE3	38
7	Allocation of functional entities to physical equipment	38
8	Interworking considerations	39
History		42

iTeh STANDARD PREVIEW (standards.iteh.ai)

SIST EN 300 392-11-8 V1.1.1:2003

<https://standards.iteh.ai/catalog/standards/sist/3d6287d9-8e65-4f88-8803-fc725bc41663/sist-en-300-392-11-8-v1-1-1-2003>

Intellectual Property Rights

IPRs essential or potentially essential to the present document may have been declared to ETSI. The information pertaining to these essential IPRs, if any, is publicly available for **ETSI members and non-members**, and can be found in ETSI SR 000 314: *"Intellectual Property Rights (IPRs); Essential, or potentially Essential, IPRs notified to ETSI in respect of ETSI standards"*, which is available from the ETSI Secretariat. Latest updates are available on the ETSI Web server (<http://www.etsi.org/ipr>).

Pursuant to the ETSI IPR Policy, no investigation, including IPR searches, has been carried out by ETSI. No guarantee can be given as to the existence of other IPRs not referenced in ETSI SR 000 314 (or the updates on the ETSI Web server) which are, or may be, or may become, essential to the present document.

Foreword

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

The present document had been submitted to Public Enquiry as ETS 300 392-11-8. During the processing for Vote it was converted into an EN.

The present document 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".

National transposition dates

Date of adoption of this EN:	1 December 2000
Date of latest announcement of this EN (doa):	31 March 2001
Date of latest publication of new National Standard or endorsement of this EN (dop/e):	30 September 2001
Date of withdrawal of any conflicting National Standard (dow):	30 September 2001

1 Scope

The present document specifies the stage 2 description of the Supplementary Service Area Selection (SS-AS) for the Terrestrial Trunked Radio (TETRA).

SS-AS enables a user to select an area where a call will be set up.

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

Supplementary service specifications are produced in three stages according to the method defined in CCITT Recommendation I.130 [1]. The stage 2 description identifies the functional capabilities and the information flows needed to support the supplementary service as specified in its stage 1 description (see ETS 300 392-10-8 [8]). The stage 2 description is followed by the stage 3 description, which specifies the protocols at the air interface and at the various Inter-System Interfaces (ISI) to support the service.

The present document is applicable to TETRA Voice plus Data terminal equipment and networks.

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, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies.

- iTeh STANDARD PREVIEW**
(standards.iteh.ai)
- SIST EN 300 392-11-8 V1.1.1:2003
https://standards.iteh.ai/en/standards/sist/300392118/V1.1.1-2003/ETSI-EN-300-392-11-8-V1.1.1-2003/
- [1] CCITT Recommendation I.130 (1988): "Method for the characterization of telecommunication services supported by an ISDN and network capabilities of an ISDN".
- [2] ETSI ETS 300 392-1: "Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 1: General network design".
- [3] ETSI EN 300 392-2: "Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 2: Air Interface (AI)".
- [4] ETSI EN 300 392-3-2: "Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 3: Interworking at the Inter-System Interface (ISI); Sub-part 2: Additional Network Feature Individual Call (ANF-ISIIC)".
- [5] ETSI ETS 300 392-3-3: "Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 3: Interworking at the Inter-System Interface (ISI); Sub-part 3: Additional Network Feature Group Call (ANF-ISIGC)".
- [6] ETSI ETS 300 392-3-5: "Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 3: Interworking at the Inter-System Interface (ISI); Sub-part 5: Additional Network Feature for Mobility Management (ANF-ISIMM)".
- [7] ETSI EN 300 392-9: "Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 9: General requirements for supplementary services".
- [8] ETSI ETS 300 392-10-8: "Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 10: Supplementary services stage 1; Sub-part 8: Area selection".
- [9] ETSI EN 300 392-12-8: "Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 12: Supplementary services stage 3; Sub-part 8: Area Selection (AS)".

- [10] ISO/IEC 11574: "Information technology; Telecommunications and information exchange between systems; Private Integrated Services Network; Circuit-mode 64 kbit/s bearer services; Service description, functional capabilities and information flows".

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions of EN 300 392-9 [7] apply with the following modifications:

authorized user: identified user who is allowed to define areas and/or interrogate the infrastructure about the SS-AS areas defined for an individual subscriber or for a group

served user: calling party who invokes the supplementary service when setting up a group call or an individual call

served user SwMI: SwMI where the served user is currently registered. In a call (whether an individual or a group call), the served user SwMI is the originating SwMI

In addition, the following terms and definitions shall apply:

geographical definition: definition of an SS-AS area given by limits on a map. In practice, due to the difficulty to describe mathematically any area shape, only circles, areas along a line and rectangular areas are specified in SS-AS protocol (see EN 300 392-12-8 [9])

important user: in a group call, a user considered by the group controlling SwMI as being important. In the case of SS-AS, this definition applies also to the calling user of a group call (i.e. even if the group controlling SwMI does not consider that user as being important)

site definition: definition of an SS-AS area given as a list of base stations within one or more SwMIs. Such list may be implicit, e.g. area defined as a whole home SwMI with no visited SwMI (i.e. no participating SwMI in the case of a group call, and no other terminating SwMI than such home SwMI in the case of an individual call)

3.2 Abbreviations

3.2.1 General abbreviations

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

ANF-ISIMM	Additional Network Feature - Inter-System Interface Mobility Management
AS	Area Selection
CC	Basic Service Call Control functional entity
CCA	Basic Service Call Control functional entity agent

NOTE 1: CC and CCA are applied as defined in ISO/IEC 11574 [10].

FE	Functional Entity
GTSI	Group TETRA Subscriber Identity
ISI	Inter-System Interface
ITSI	Individual TETRA Subscriber Identity
LS	Line Station
MS	Mobile Station
SS	Supplementary Service

NOTE 2: The abbreviation SS is only used when referring to a specific supplementary service (e.g. SS-AS).

SwMI	Switching and Management Infrastructure
------	---

4 Functional model

4.1 Functional model description

The functional model shall comprise the following Functional Entities (FEs):

FE1	Served user functional entity;
FE21	Served user current SwMI FE;
FE221	Area number mapping FE;
FE222	SS-AS operation controlling FE;
FE25	SS-AS operating FE;
FE20	Managed served user/group home SwMI FE;
FE3	Authorized user functional entity.

The following relationships shall exist between these FEs:

ra	between FE1 and FE21;
rb	between FE21 and FE221;
rc	between FE221 and FE222;
rd	between FE222 and FE25;
re	between FE1 and FE221;
rf	between FE1 and FE222;
rg	between FE3 and FE20.

Figure 1 shows these FEs and relationships for the basic operational part of SS-AS.

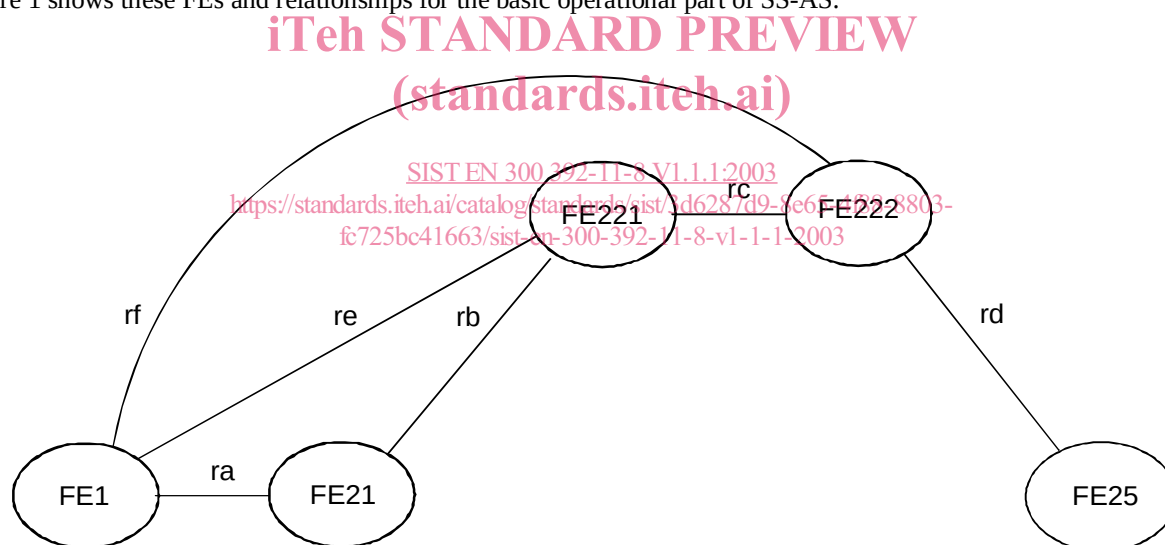


Figure 1: Functional model for the operational part of SS-AS

NOTE: No functional entity is shown for the called users because the only SS-AS related action for users participating in the group call is to inform them when they fail to restore their call (after having changed location) because of SS-AS operation (i.e. they have moved outside the selected area and either they are not important users for the call or SS-AS operation has not been inhibited for such users). Such information being delivered to the user call control entity, the corresponding actions are to be considered as basic call actions and not as SS-AS actions (hence the absence of SS-AS functional entity for the called users).

Explanation about figure 1

FE25 shall check whether it can establish the call within the selected area requested. It shall be located;

- in the case of an individual call, in the terminating SwMI;
- in the case of a group call, in:
 - the group controlling SwMI (for the group members attached to the group in that SwMI or because it can determine that some participating SwMIs -where group members are attached- are totally outside the selected area);
 - the participating SwMIs partly outside the selected area.

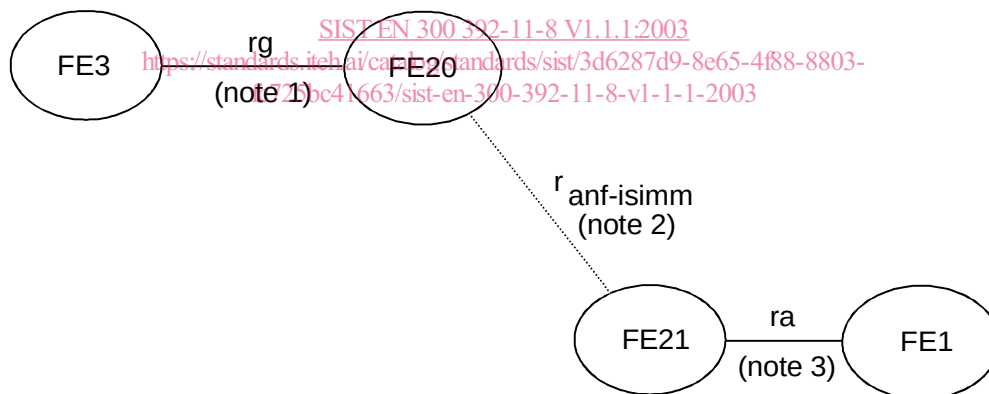
In the case of a group call, both FE221 and FE221 shall be located in the group controlling SwMI when the selected area is one defined for the group - i.e. per GTSI. FE221 shall be located in the originating SwMI (assuming that the latter is different from the former), for the determination of the area corresponding to the area number sent by FE1, and FE222, in the group controlling SwMI for SS-AS operation control, when the selected area is one defined for the calling user - i.e. per ITSI.

In the case of an individual call, FE221 shall be located in: either

- the originating SwMI (FE221 shall then be co-located with FE21, in which case the relationship rb will "collapse"); or
- the called user home SwMI.

FE222 shall be located in the called user home SwMI. If the -individual- call is then established by rerouteing, the protocol for sending the SS-AS information flow over relationship rc actually relays it through the originating SwMI - but such relaying is a stage 3 description issue and not to be taken into account in the stage 2 description.

Figure 2 shows these FEs and relationships for the management part of SS-AS.



NOTE 1: All requests issued by the authorized user for an SS-AS managed served user or group are to be addressed to the home SwMI of this managed served user or group.

This holds even if the calling user is given a partial authorized user capability to define selectable areas against his ITSI, or place interrogation about such definition.

NOTE 2: The relationship between FE20 and FE21 is an ANF-ISIMM relationship, across which flows the SS-AS profile exchange.

NOTE 3: The relationship ra is shown on the figure in case the definition is assigned (i.e. downloaded) to the served user.

Figure 2: Functional model for the management part of SS-AS

4.2 Description of functional entities

4.2.1 Served user functional entity, FE1

FE1 is the functional entity that serves the calling user for the invocation of SS-AS.

In addition, FE1 handles the reception of the area definitions from FE21 and the possible sending of their acknowledgement to FE21.

4.2.2 Served user current SwMI functional entity, FE21

When it receives an SS-AS invocation from FE1 (at call set-up time), FE21 determines if SS-AS has been activated (i.e. subscribed) for the group, in the case of a group call, or for the served user, in the case of an individual call.

NOTE: Actually, there is one exception to the checking by FE21 of SS-AS subscription for the group: in the case where the group is not attached. This is because the corresponding protocol would have slowed down the establishment of the group call.

In addition in the case of group call, FE21 informs FE22 whether an FE25 collocated with it (see subclause 4.2.4) would support the inhibition of SS-AS operation for the calling user at the establishment of the call (so that that user can participate in the group call if he is outside the selected area).

In addition, if instructed by FE20, FE21 downloads the SS-AS definitions (received as part of ANF-ISIMM - see ETS 300 392-3-5 [6])) and receives the possible corresponding acknowledgements from FE1.

4.2.3 Area number mapping functional entity, FE221

When it receives an SS-AS invocation from FE21, FE221 determines the selected area definition corresponding to the area number invoked and passes it to FE222. It does not play any further role.

4.2.4 SS-AS operation controlling functional entity, FE222

When it receives an SS-AS invocation from FE221, FE222 determines the selected area definition corresponding to the area number invoked. It subsequently creates FE25s in the appropriate SwMIs. FE222 created for an individual call is cleared once that call has been established.

FE222 continues to exist during a group call. It creates FE25s in the new participating SwMIs if necessary for SS-AS operation (i.e. when only part of the new SwMI is within the selected area). When important users, which were initially participating in the call, change location during the call, FE222 may allow them to restore the call in inhibiting SS-AS operation if they have moved outside the selected area.

NOTE 1: Reminder: according to the definition of important user in subclause 3.1, in the present document, the calling user is defined as being an important user.

NOTE 2: If call restoration of an important user fails, especially if that user is the owner of the group call at that time, the basic group call procedure will apply.

4.2.5 SS-AS operating functional entity, FE25

When it receives an SS-AS invocation with the selected area definition, from FE222, FE25 ensures that the call is not established outside that area.

In the case of group call, FE25 can therefore be considered as a distributed functional entity, which bars the establishment of the call in all cells outside the selected area, except possibly for the calling user if he is outside that area. FE25 continues to operate during the call in ensuring that the group call is not extended beyond that area after it has been established.

NOTE 1: The above paragraph means that FE25 will bar the group members outside the selected area who attempt to join the group call later. It will also bar the operation of the supplementary service Late Entry (SS-LE) outside the selected area.

FE25 may support the inhibition of SS-AS operation for a group call (to be decided by FE222 for the call):

- at set-up time, for the calling user if he is outside the selected area; and
- during the call, when the calling user or other important users already participating in the call change location in roaming or migrating outside the selected and FE25 support SS-AS inhibition, i.e. FE25 will then ensure that the call restoration request from that user is not barred by SS-AS operation (although it takes place outside the selected area).

NOTE 2: If it does not support the inhibition of SS-AS operation or if FE222 has not requested it, FE25 will ensure:

- that the calling user is not included in the call if he is outside the selected area. FE222 will then clear that call (see subclause 6.4); or
- that, when any of the so-called important users, including the calling user, changes location to a cell outside the selected area, the call restoration attempt of that user will fail. See note in subclause 4.2.3 if such user happens to be the owner of the group call at that time.

NOTE 3: Whether or not FE25 supports the inhibition of SS-AS operation, when any other initial participating user than the important users including the calling user, has roamed or migrated outside the selected area, the call restoration attempt of that user will fail.

In the case of individual call, FE25 is cleared once that call has been established, i.e. once the call has been established the connected user may restore it when he changes location in roaming or migrating outside the selected area.

4.2.6 Managed served user/group home SwMI FE, FE20

FE20 receives and processes the optional definition requests received from FE3.

NOTE: When the served user has migrated and is registered in a visited SwMI, the SS-AS definition stored by FE20 will be passed to FE21 in that SwMI by ANF-ISIMM (see ETS 300 392-3-5 [6]), possibly with the request to download it to the served user (if the authorized user has requested that such definition be assigned to the served user).

FE20 also receives and processes the optional interrogation requests received from FE3.

4.2.7 Authorized user functional entity, FE3

FE3 handles the sending the optional definition and/or interrogation requests passed by the authorized user application, and the reception of the optional definition and/or interrogation responses from FE20, in passing them to the authorized user application.

4.3 Relationship of functional model to basic call functional model

Although no formal models have been defined for basic individual call or for basic group call, those models can be readily derived from the PISN model for basic call, in ISO/IEC 11574 [10].

Being call unrelated the assignment, definition and interrogation procedures are independent of CC or CCA.

FE1 shall be collocated with the calling user CCA.

FE21 shall be collocated with the originating CC. Actually when the calling user invokes SS-AS for a group call in using an area number defined against that group (which is the basic method for invoking SS-AS for a group call), the SS-AS subscription function of FE21 shall be handled in the group controlling SwMI if at that time the originating SwMI has not been attached to the group.

NOTE 1: If the originating SwMI has been attached, it means that it has received the information whether or not SS-AS has been subscribed for the group (by the ANF-ISIMM group attachment service - see clause 8).

NOTE 2: Formally, FE21 should have been split into two functional entities to cater for the latter case. However it was judged that such splitting would make the model unnecessarily complex for all other scenarios.