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Foreword

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

This ETS consists 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:	25 August 2000
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1 Scope

This ETS specifies the stage 3 description of the Supplementary Service LSC List Search Call for the Terrestrial Trunked RAdio (TETRA).

The LSC supplementary service allows an incoming call to be offered to a pre-defined list of attendants in sequence, until the incoming call is answered or the call set up attempt is considered to be unsuccessful.

Man-Machine Interface and charging principles are outside the scope of this ETS.

The supplementary service stage 3 description is preceded by the stage 1 and the stage 2 description of the service, according to the method described in CCITT Recommendation I.130 [1]. The stage 1 description specifies the service from the user's point of view. The stage 2 description identifies the functional capabilities of each SS and the information flows needed to support the supplementary service as specified in its stage 1 description. The present stage 3 description specifies the protocols at the air interface and at the various Inter-System Interfaces (ISI) to support each Supplementary Service.

> NOTE: According to CCITT Recommendation I.130 [1], the stage 3 description of any telecommunication service addresses the network implementation aspects. Consequently it comprises two steps: the specifications of all protocols at the various reference points involved in any of the service procedures (notably the service operation) are the first step of the stage 3 description, and the specifications of the functions of the corresponding network entities are its second step. The latter have not been provided since they can be derived from the specification of the functional entity actions in the stage 2 description.

This ETS is applicable to Voice plus Data individual call; this ETS is neither applicable to Packet Mode of Operation nor to DMO; more specifically to the following entities:

- the MS/LS of either the calling user or the called user during an individual call;

- the originating Switching and Management Infrastructure (SwMI) in an individual call;

- the home SwMI of the LSC "user";

- the terminating SwMI in an individual call.

2 Normative references

This ETS incorporates by dated and 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]   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 300 392-2 (1995): "Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 2: Air Interface (AI)".

[3]   ETSI ETS 300 392-3-1 (1997): "Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 3: Interworking at the Inter-System Interface (ISI); Sub-part 1: General design".

[4]   ETSI ETS 300 392-3-2 (1997): "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 300 392-9 (1997): "Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 9: General requirements for supplementary services".

[6]   ITU-T Recommendation Z.100 (1993): "Specification and description language".

[7]   CCITT Recommendation X.219 (1988): "Remote operations: Model, notation and service definition".

[8]   CCITT Recommendation X.229 (1988): "Remote operations: Protocol specification".

[9]   ITU-T Recommendation X.217 (1995): "Information technology - Open Systems Interconnection - Service definition for the association control service element".

[10]   ETSI ETS 300 392-1: "Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 1: General network design".

[11]   ETSI ETS 300 392-10-5 (1996): "Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 10: Supplementary services stage 1; Sub-part 5: List Search Call (LSC)".

3   Definitions, symbols and abbreviations

3.1   Definitions

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

attendant: address within the search list which has been designated upon definition by the authorized user to receive calls.

authorized user: user authorized to define and activate the search list against an Individual TETRA Subscriber Identity (ITSI).

Base Station (BS): physical grouping of equipment which provides the fixed portion of the air interface. One base station transmits and receives radio signals to and from a single location area (a single region of geographical coverage). A BS contains at least one Base Radio Stack (BRS).

bearer service: type of telecommunication service that provides the capability for the transmission of signals between user-network interfaces.

search list: group of attendants accessed by the infrastructure in sequence.

search list number: number (ITSI) to which a search list is assigned.

> NOTE: The search list number is not a GTSI.

served user: user making an incoming call to the search list number.

Supplementary Service (SS): supplementary service modifies or supplements a bearer service or a teleservice. A supplementary service cannot be offered to a customer as a stand alone service. It should be offered in combination with a bearer service or a teleservice.

Switching and Management Infrastructure (SwMI): all of the TETRA equipment for a Voice plus Data (V+D) network except for subscriber terminals. The SwMI enables subscriber terminals to communicate with each other via the SwMI.

teleservice: type of telecommunications service that provides the complete capability, including terminal equipment functions, for communication between users according to agreed protocols.

3.2   Symbols

For the purposes of this ETS, there are no other symbols besides those used in SDL diagrams according to ITU-T Recommendation Z.100 [6].

3.3 Abbreviations

3.3.1 General abbreviations

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

ANF	Additional Network Function
GTSI	Group TETRA Subscriber Identity
ISDN	Integrated Services Digital Network
ITSI	Individual TETRA Subscriber Identity
SDL	(Functional) Specification and Description Language
SLN	Search List Number
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

3.3.2 Supplementary service abbreviations

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

AL	Ambience Listening
AS	Area Selection
BIC	Barring of Incoming Calls
CAD	Call Authorized by Dispatcher
CCBS	Call Completion to Busy Subscriber
CCNR	Call Completion on No Reply
CFB	Call Forwarding on Busy
CFNRc	Call Forwarding on Not Reachable
CFNRy	Call Forwarding on No Reply
CFU	Call Forwarding Unconditional
CLIR	Calling/Connected Line Identification Restriction
COLP	Connected Line Identification Presentation
CW	Call Waiting
DL	Discreet Listening
LSC	List Search Call
PC	Priority Call
PPC	Pre-emptive Priority Call
SLN	Search List Number
SNA	Short Number Addressing

4 SS-LSC Stage 3 Specifications

4.1 General

List Search Call (SS-LSC) is a supplementary service which allows to present a call from a calling User A MS/LS, on encountering either a busy called attendant 1, a no reply called attendant 1 or a not reachable called attendant 1 successively to the next attendants in a pre determined list until the list is exhausted.

This supplementary service is applicable to all basic circuit mode speech services defined in ETS 300 392-2 [2].

4.2 SS-LSC services offered over the TNSS-SAP

This subclause describes SS-LSC specific services offered by the Circuit Mode Control Entity (CMCE) at the Supplementary Services service access point (TNSS-SAP) of the TETRA voice plus data layer 3 service boundary in a TETRA Mobile Station (MS) or TETRA Line Station (LS). The SS-LSC service access point is used in conformance testing as a normative boundary in MSs and LSs.

NOTE 1: As this ETS only deals with the SS-LSC all the service primitives have been shown without a TNSS-LSC-prefix e.g. the TNSS-LSC-request is shorten into a LSC request.

NOTE 2: As man-machine interface or User A MS/LS applications are outside the scope of this ETS service primitives are used to define information exchange to and from the standardized part of the MS/LS. Those primitives may be only indirectly accessible.

The SS-LSC service primitives at the authorized user MS/LS TNSS-SAP shall be:

- ACTIVATE request;
- ACTIVATE ACK indication;
- DEACTIVATE request;
- DEACTIVATE ACK indication;
- DEFINE request;
- DEFINE ACK indication;
- INTERROGATE request;
- INTERROGATE ACK indication.

The SS-LSC service primitive at the affected user (calling user) MS/LS TNSS-SAP shall be:

- LSC INVOKED FOR CALLING USER indication.

The SS-LSC service primitive at the called user (called attendant) MS/LS TNSS-SAP shall be:

- LSC INVOKED indication.

4.2.1 ACTIVATE request/indication

The ACTIVATE request primitive shall be sent by the authorized user MS/LS CMCE to the SS-LSC Controlling Entity over TNSS-SAP to request activation of LSC supplementary service.

The ACTIVATE request primitive shall contain the SS-LSC parameters listed in table 1.

Table 1: Parameters for the primitive ACTIVATE request/indication

Parameter	Request
Activated/deactivated identity	M
Activation/deactivation request	M
Basic service	M

4.2.2 ACTIVATE ACK response/confirmation

The ACTIVATE ACK response/confirmation primitive shall be sent to the authorized user MS/LS CMCE by the SS-LSC Controlling Entity over TNSS-SAP to confirm the SS-LSC activation status.

The ACTIVATE ACK response/confirmation primitive shall contain the SS-LSC parameters listed in table 2.

Table 2: Parameters for the primitive ACTIVATE ACK response/confirmation

Parameter	Response/confirmation
Activated/deactivated identity	M
Activation/deactivation result	M
Activation state	C
Reject cause	

4.2.3 DEACTIVATE request/indication

The DEACTIVATE request/indication primitive shall be sent by the Authorized User MS/LS application to the SS-LSC Controlling Entity over TNSS-SAP to request deactivation of SS-LSC.

The DEACTIVATE request/indication primitive shall contain the SS-LSC parameters listed in table 3.

Table 3: Parameters for the primitive DEACTIVATE request/indication

Parameter	Request
Activated/deactivated Identity	M
Activation/deactivation request	M
Basic Service	M

4.2.4 DEACTIVATE ACK response/confirm

The DEACTIVATE ACK response/confirm primitive shall be sent to the authorized user MS/LS CMCE by the SS-LSC Controlling Entity over TNSS-SAP to report on the result of the SS-LSC deactivation request of SS-LSC.

The DEACTIVATE ACK response/confirm shall support one LSC identity.

The DEACTIVATE ACK response/confirm primitive shall contain the SS-LSC parameters listed in table 4.

Table 4: Parameters for the primitive DEACTIVATE ACK response/confirm

Parameter	Confirm
Activated/deactivated Identity	M
Activation/deactivation result	M
Deactivation state	C (note)
Reject cause	C (note)
NOTE: Conditional on SS-LSC Deactivation result.	

4.2.5 DEFINE request/indication

The DEFINE request primitive shall be sent by the authorized user MS/LS CMCE to the SS-LSC Controlling Entity over TNSS-SAP to define LSC supplementary service.

The DEFINE request primitive shall contain the SS-LSC parameters listed in table 5.

Table 5: Parameters for the primitive DEFINE request/indication

Parameter	Request
Identity (SLN)	M
Basic Service	M
Number of attendant (n)	M
Attendant 1 full ITSI/GTSI	M
…/…	C
Attendant n full ITSI/GTSI	M

4.2.6 DEFINE ACK response/confirmation

The DEFINE ACK response/confirmation primitive shall be sent to the authorized user MS/LS CMCE by the SS-LSC Controlling Entity over TNSS-SAP to confirm the SS-LSC activation status.

The DEFINE ACK response/confirmation primitive shall contain the SS-LSC parameters listed in table 6.

Table 6: Parameters for the primitive DEFINE ACK response/confirmation

Parameter	Response/confirmation
Identity (SLN)	M
Definition result	M
Activation state	C (note)
Reject cause	C (note)
NOTE: Conditional on definition result.	

4.2.7 INTERROGATE request/indication

The INTERROGATE request primitive shall be sent by the authorized user MS/LS CMCE to the SS-LSC Controlling Entity over TNSS-SAP to request activation of LSC supplementary service.

The INTERROGATE request primitive shall contain the SS-LSC parameters listed in table 7.

Table 7: Parameters for the primitive INTERROGATE request/indication

Parameter	Request
Identity (SLN)	M
Basic service	M

4.2.8 INTERROGATE ACK response/confirmation

The INTERROGATE ACK response/confirmation primitive shall be sent to the authorized user MS/LS CMCE by the SS-LSC Controlling Entity over TNSS-SAP to confirm the SS-LSC activation status.

The ACTIVATE ACK response/confirmation primitive shall contain the SS-LSC parameters listed in table 8.

Table 8: Parameters for the primitive INTERROGATE ACK response/confirmation

Parameter	Response/confirmation
Identity (SLN)	M
Interrogation result	M
Activation state	C (note)
Reject cause	C (note)
Number of attendants (n)	C (note)
SS-LSC attendant 1 ITSI/GTSI	C (note)
SS-LSC attendant 2 ITSI/GTSI	C (note)
…/…	C (note)
SS-LSC attendant n ITSI/GTSI	C (note)
NOTE: Conditional upon interrogation result.	

4.2.9 LSC INVOKED request/indication

The LSC INVOKED request/indication primitive shall be sent by the calling user MS/LS CMCE by the calling user SwMI over TNSS-SAP to inform the calling user that SS-LSC has been invoked for that call.

The LSC INVOKED request/indication primitive shall contain the SS-LSC parameters listed in table 9.

Table 9: Parameters for the primitive LSC INVOKED request/indication

Parameter	Request/Indication
TETRA Call identifier	M
LSC Invoked	M
SLN	M

4.2.10 LSC INVOKED FOR CALLING USER request/indication

The LSC INVOKED FOR CALLING USER request/indication primitive shall be sent by the calling user MS/LS CMCE by the calling user SwMI over TNSS-SAP to inform the calling user that SS-LSC has been invoked for that call.

The LSC INVOKED FOR CALLING USER request/indication primitive shall contain the SS-LSC parameters listed in table 10.

Table 10: Parameters for the primitive LSC INVOKED FOR CALLING USER request/indication

Parameter	Request/Indication
TETRA Call identifier	M
LSC INVOKED FOR CALLING USER	M
SLN	M

4.3 Parameter description

- Activated/deactivated identity:

    - Full ITSI/GTSI.

- Activation state:

    - Activated;

    - Deactivated.

- Activation/deactivation request;

- Activation/deactivation result:

    - Successful;

    - Unsuccessful.

- Attendant 1 full ITSI/GTSI;

- Attendant n full ITSI/GTSI;

- Basic service;

- Deactivation state:

    - Activated;

    - Deactivated.

- Definition result:

    - Successful;

    - Unsuccessful.

- Identity (SLN):

    - Full ITSI.

- Interrogation result:

    - Successful;

    - Unsuccessful.

- LSC INVOKED FOR CALLING USER;

- Number of attendants (n):

    - n from 0 to 63;

    - Reject cause;

    - SS-LSC not supported;

    - Unidentified identity (SLN);

    - Insufficient/too large number of attendants.

- SLN:

    - full ITSI.

- SS-LSC attendant 1 ITSI/GTSI;

- SS-LSC attendant 2 ITSI/GTSI;

- SS-LSC attendant n ITSI/GTSI;

- TETRA Call identifier.

5 Signaling protocol for the support of SS-LSC

5.1 SS-LSC Operational requirements

5.1.1 Requirements on the affected user MS/LS

The affected user MS/LS shall comply with the requirements in clause 14 of ETS 300 392-2 [2] which apply to the teleservices and bearer services which it supports. In addition, it shall comply with the relevant call unrelated requirements in clauses 7 and 11 of ETS 300 392-9 [5].

5.1.2 Requirements on the originating SwMI

That SwMI shall support the affected user MS/LS complying with the requirements for individual calls set in subclause 5.1.1.

If the call is over the ISI, the originating SwMI shall comply with the corresponding ISI requirements, set in ETS 300 392-3-2 [4] for individual calls. It shall also comply with the relevant call unrelated in clauses 9 to 11 of ETS 300 392-9 [5].

5.1.3 Requirements on the terminating SwMI

The terminating SwMI shall support the incoming individual call set-up and release as specified in ETS 300 392-2 [2].

If the call is over the ISI, the terminating SwMI shall comply with the corresponding ISI requirements, set in ETS 300 392-3-2 [4] for individual calls. It shall also comply with the relevant call related requirements in clauses 9 to 11 of ETS 300 392-9 [5].

5.1.4 Requirements on the affected user MS/LS

The affected (called) user MS/LS shall comply with the call setup and call release requirements of ETS 300 392-2 [2] clause 14.

5.1.5 Requirements on the SLN Home SwMI

The SLN home SwMI shall support the individual call set-up and release as specified in ETS 300 392-2 [2].

NOTE: There is no associated SLN MS/LS corresponding to the SLN ITSI.

If the call is over the ISI, the SLN Home SwMI shall comply with the corresponding ISI requirements, set in ETS 300 392-3-2 [4] for individual calls. It shall comply with the relevant call related requirements in clauses 9 to 11 of ETS 300 392-9 [5]. It shall comply with the call unrelated requirements in ETS 300 392-9 [5].

5.2 SS-LSC Coding Requirements

The information contained in the following description tables correspond to the following key:

- Length: length of the sub-argument in bits;
- Type: element type (1, 2 or 3) described in subclause 14.7 of ETS 300 392-2 [2];
- C/O/M: conditional/optional/mandatory;
- Remark: comment or reference to note(s).

5.2.1 SS-LSC PDUs

5.2.1.1 ACTIVATE

ACTIVATE PDU is sent from authorized user FE3 MS/LS application to SS-LSC SLN "home SwMI" FE20 which activates SS-LSC for one or more identities (such identities are ITSIs/GTSIs).

NOTE: The expected PDU in response to ACTIVATE PDU is ACTIVATE ACK (see subclause 5.2.1.2).

Table 11 lists the information elements within the ACTIVATE PDU.

The element activation/deactivation request indicates possible activation options of SS-LSC.

Table 11: ACTIVATE PDU contents

Information element	Length	Type	C/O/M		Remark
SS-Type	6	1	M		Defined in ETS 300 392-9 [5]
LSC-PDU type	5	1	M		ACTIVATE
Activated/deactivated identity	24	1	M		notes 1 and 2
Activation/deactivation request	2	1	M		
Basic service	8	1	M		
NOTE 1: May be repeated.					
NOTE 2: Both a full ITSI and a SLN.					

5.2.1.2 ACTIVATE ACK

ACTIVATE ACK PDU is sent to the authorized user FE3 MS/LS application by SS-LSC SLN "home SwMI" FE20 and gives the result positive or negative of the activation of SS-LSC for one or more identities (such identities are SLNs equivalent to ITSIs).

NOTE: This ACTIVATE ACK PDU is actually the response to ACTIVATE PDU (see subclause 5.2.1.1).

Table 12 lists the information elements within the ACTIVATE ACK PDU.

Table 12: ACTIVATE ACK PDU contents

Information element	Length	Type	C/O/M		Remark
SS-Type	6	1	M		Defined in ETS 300 392-9 [5]
LSC-PDU type	5	1	M		ACTIVATE ACK
Activated/deactivated identity		1	M		note 1
Activation/deactivation result		1	M		note 2
Reject cause	4	1	C		note 3
Activation state		1	C		note 3
NOTE 1: May be repeated.					
NOTE 2: Shall be repeated as appropriate if the element activated/deactivated identity is repeated.					
NOTE 3: Conditional upon activation/deactivation result.					

5.2.1.3 DEACTIVATE

DEACTIVATE PDU is sent from authorized user FE3 MS/LS application to SS-LSC SLN "home SwMI" FE20 which deactivates SS-LSC for one or more identities (such identities are ITSIs/GTSIs).

NOTE: The expected PDU in response to DEACTIVATE PDU is DEACTIVATE ACK (see subclause 5.2.1.2).

Table 13 lists the information elements within the DEACTIVATE PDU.

The element activation/deactivation request indicates possible deactivation options of SS-LSC.

Table 13: DEACTIVATE PDU contents

Information element	Length	Type	C/O/M		Remark
SS-Type	6	1	M		Defined in ETS 300 392-9 [5]
LSC-PDU type	5	1	M		DEACTIVATE
Activated/deactivated identity	24	1	M		notes 1 and 2
Activation/deactivation request	2	1	M		
Basic service	8	1	M		
NOTE 1: May be repeated.					
NOTE 2: Both a full ITSI and a SLN.					

5.2.1.4 DEACTIVATE ACK

DEACTIVATE ACK PDU is sent to the authorized user FE3 MS/LS application by SS-LSC SLN "home SwMI" FE20 and gives the result positive or negative of the deactivation of SS-LSC for one or more identities (such identities are SLNs equivalent to ITSIs).

NOTE: This DEACTIVATE ACK PDU is actually the response to DEACTIVATE PDU (see subclause 5.2.1.3).

Table 14 lists the information elements within the DEACTIVATE ACK PDU.

Table 14: DEACTIVATE ACK PDU contents

Information element	Length	Type	C/O/M		Remark
SS-Type	6	1	M		Defined in ETS 300 392-9 [5]
LSC-PDU type	5	1	M		DEACTIVATE ACK PDU
Activated/deactivated identity		1	M		note 1
Activation/deactivation result		1	M		note 2
Reject cause	4	1	C		note 3
Activation state		1	C		note 3
NOTE 1: May be repeated.					
NOTE 2: Shall be repeated as appropriate if the element activated/deactivated identity is repeated.					
NOTE 3: Conditional upon activation/deactivation result.					

5.2.1.5 DEFINE

DEFINE PDU is sent from authorized user FE3 MS/LS application to SS-LSC SLN "home SwMI" FE20 which allows definition of SS-LSC prior to activation and invocation for one or more identities (such identities are SLNs equivalent to ITSIs).

> NOTE: The expected PDU in response to DEFINE PDU is DEFINE ACK (see subclause 5.2.1.6).

Table 15 lists the information elements within the DEFINE PDU.

The last attendant information element may be either an ITSI or a GTSI.

Table 15: DEFINE PDU contents

Information element	Length	Type	C/O/M		Remark
SS-Type	6	1	M		Defined in ETS 300 392-9 [5]
LSC-PDU type	5	1	M		DEFINE PDU
Identity (SLN)	24	1	M		note 1
Basic Service	8	1	M		note 2
Number of Attendant (n)	6	1	M		note 2
Attendant 1 full ITSI/GTSI	24	1	M		note 2
Attendant n full ITSI/GTSI	24	1	M		notes 2 to 5
NOTE 1: May be repeated.					
NOTE 2: Shall be repeated if the element individual identity is repeated.					
NOTE 3: The last attendant identity may be a group.					
NOTE 4: n shall be at least 2.					
NOTE 5: May be repeated if n > 2.					

5.2.1.6 DEFINE ACK

DEFINE ACK PDU is sent to the authorized user FE3 MS/LS application by SS-LSC SLN "home SwMI" FE20 and gives the result positive or negative of the definition of SS-LSC for one or more identities (such identities are SLNs equivalent to ITSIs).

> NOTE: This DEFINE ACK PDU is actually the response to DEFINE PDU (see subclause 5.2.1.3).

Table 16 lists the information elements within the DEFINE ACK PDU.

Table 16: DEFINE ACK PDU contents

Information element	Length	Type	C/O/M		Remark
SS-Type	6	1	M		Defined in ETS 300 392-9 [5]
LSC-PDU type	5	1	M		DEFINE ACK PDU
Identity (SLN)	24	1	M		note 1
Definition result	1	1	M		note 2
Reject cause	4	1	C		note 3
NOTE 1: May be repeated.					
NOTE 2: Shall be repeated as appropriate if the element individual identity is repeated.					
NOTE 3 Present if the definition result is negative.					

5.2.1.7 INTERROGATE

INTERROGATE PDU is sent from authorized user FE3 MS/LS application to SS-LSC SLN "home SwMI" FE20 and allows interrogation against SS-LSC for one or more identities (such identities are ITSI/GTSIs).

> NOTE: The expected PDU in response to INTERROGATE PDU is INTERROGATE ACK (see subclause 5.2.1.8).

Table 17 lists the information elements within the INTERROGATE PDU.

Table 17: INTERROGATE PDU contents

Information element	Length	Type	C/O/M		Remark
SS-Type	6	1	M		Defined in ETS 300 392-9 [5]
LSC-PDU type	5	1	M		INTERROGATE PDU
Interrogated identity (SLN)	24	1	M		note
Basic service	8	1	M		note
NOTE: May be repeated.					

5.2.1.8 INTERROGATE ACK

INTERROGATE ACK PDU is sent to the authorized user FE3 MS/LS application by SS-LSC SLN "home SwMI" FE20 and gives the result positive or negative of the interrogation of SS-LSC against one or more identities (such identities are SLNs equivalent to ITSIs).

> NOTE: This INTERROGATE ACK PDU is actually the response to INTERROGATE PDU (see subclause 5.2.1.7).

Table 18 lists the information elements within the INTERROGATE ACK PDU.

Table 18: INTERROGATE ACK PDU contents

Information element	Length	Type	C/O/M		Remark
SS-Type	6	1	M		Defined in ETS 300 392-9 [5]
LSC-PDU type	5	1	M		INTERROGATE ACK PDU
Interrogated identity	14	1	M		note 1
Interrogation result	14	1	M		notes 2 and 3
Activation state	24	1	C		notes 2 and 3
Number of attendants (n)	6	1	C		notes 2 and 3
SS-LSC attendant 1 ITSI/GTSI	24	1	C		notes 2 and 3
SS-LSC attendant 2 ITSI/GTSI	24	1	C		notes 2 and 3
SS-LSC attendant n ITSI/GTSI	24	1	C		notes 2 to 4
NOTE 1: May be repeated.					
NOTE 2: Shall be repeated as appropriate if the element interrogated identity is repeated.					
NOTE 3: Conditional on the value of the element interrogation result.					
NOTE 4: May be absent even with an interrogation result positive if n = 2.					

5.2.1.9 LSC INVOKED

LSC INVOKED PDU is sent from the SS-LSC controlling SwMI ("SLN Home SwMI")to the called user SwMI and from the called user SwMI to the called user MS/LS application. It indicates that the call is subject to invocation of SS-LSC.

The content of this LSC INVOKED PDU is given in table 19. At the air interface and as an implementation option, this LSC INVOKED may be presented under the form of a notification.

Table 19: LSC INVOKED PDU contents

Information element	Length	Type	C/O/M		Remark
SS-Type	6	1	M		Defined in ETS 300 392-9 [5]
LSC-PDU type	5	1	M		LSC INVOKED PDU
LSC Invoked	1	1	M		
NOTE: The calling user ITSI is contained in the basic call information and needs not be repeated in this PDU.					

5.2.1.10 LSC INVOKED FOR CALLING USER

LSC INVOKED FOR CALLING USER PDU is sent from the SS-LSC controlling SwMI ("SLN Home SwMI") to the calling user SwMI and from the calling user SwMI to the calling user MS/LS application. It indicates that the call is subject to invocation of SS-LSC. At the air interface and as an implementation option this may be presented as a notification LSC INVOKED presented to the calling user MS/LS application.

The content of this LSC INVOKED FOR CALLING USER PDU is given in table 20.

Table 20: LSC INVOKED FOR CALLING USER PDU contents

Information element	Length	Type	C/O/M		Remark
SS-Type	6	1	M		Defined in ETS 300 392-9 [5]
LSC-PDU type	5	1	M		LSC INVOKED FOR CALLING USER PDU
LSC INVOKED FOR CALLING USER	1	1	M		

5.2.2 TETRA PDU information element coding

5.2.2.1 Activated/deactivated identity

This information element shall contain the same elements as SLN; see subclause 5.2.2.14.

5.2.2.2 Activation state

The purpose of the SS-LSC activation state information element shall be to indicate whether the SS-LSC instance identified by an SLN is active or non-active. It shall be encoded as defined in table 21.

Table 21: Activation state information element contents

Information element	Length	Value	Remark
Activation state	1	0_2	SS-LSC active
		1_2	SS-LSC non-active

5.2.2.3 Activation/deactivation request

The purpose of the Activation/deactivation request information element shall be to indicate whether the SS-LSC request is to activate SS-LSC or to deactivate SS-LSC. It shall be encoded as defined in table 22.

It is expected that an ACTIVATE PDU shall contain an activation request and that a DEACTIVATE PDU shall contain a deactivation request. The use of this information element could lead to the merge of the ACTIVATE and DEACTIVATE PDUs.

Table 22: Activation/deactivation request information element contents

Information element	Length	Value	Remark
Activation/deactivation request	1	0_2	SS-LSC activation request
		1_2	SS-LSC deactivation request

5.2.2.4   Activation/deactivation result

The purpose of the SS-LSC activation/deactivation result information element shall be to indicate whether the SS-LSC activation request has been accepted or not. It shall be encoded as defined in table 23.

Table 23: Activation/deactivation result information element contents

Information element	Length	Value	Remark
Activation/deactivation result	1	0_2	accepted
		1_2	rejected

5.2.2.5   Basic service

To be coded as in ETS 300 392-2 [2], clause 14.

5.2.2.6   Definition result

The purpose of the SS-LSC activation result information element shall be to indicate whether the SS-LSC activation request has been accepted or not. It shall be encoded as defined in table 24.

Table 24: Accepted/Rejected information element contents

Information element	Length	Value	Remark
SS-LSC Activation result	1	0_2	accepted
		1_2	rejected

5.2.2.7   Identity (SLN)

This information element shall contain the same elements as SLN; see subclause 5.2.2.14.

5.2.2.8   Interrogated identity (SLN)

This information element shall contain the same elements as SLN; see subclause 5.2.2.14.

5.2.2.9   Interrogation result

The purpose of the SS-LSC activation result information element shall be to indicate whether the SS-LSC activation request has been accepted or not. It shall be encoded as defined in table 25.

Table 25: Accepted/Rejected information element contents

Information element	Length	Value	Remark
SS-LSC Activation result	1	0_2	accepted
		1_2	rejected

5.2.2.10 LSC Invoked

LSC INVOKED shall either be presented as an information element in the LSC INVOKED PDU when carried through ISI or shall be presented as a notification "LSC INVOKED" to be added to the list of notifications in ETS 300 392-9 [5].

The content of the LSC Invoked information element shall be encoded as defined in table 26.

Table 26: LSC Invoked information element contents

Information element	Length	Value	Remark
LSC Invoked	1	0_2	Reserved (note)
		1_2	LSC Invoked
NOTE: The use of this value to indicate that SS-LSC is not invoked is implementation dependent.			

The encoding of the LSC Invoked notification indicator presented at the air interface shall be as shown in table 27 modification from table 3 of ETS 300 392-9 [5]).

Table 27: Notification indicator information element contents

Information element	Length	Value	Remarks
Notification Indicator	6	0	LE Broadcast
		1	LE Acknowledgement
		2	LE Paging
		3	AL Operation
		4	BIC Call Barred
		5	BOC Call Barred
		6	CLIR
		…/…	
		9	**LSC Invoked**
		…/…	
		5-63	Reserved

5.2.2.10a LSC INVOKED FOR CALLING USER

LSC INVOKED FOR CALLING USER shall either be presented as an information element in the LSC INVOKED PDU when carried through ISI or shall be presented as a notification "LSC INVOKED FOR CALLING USER" to be added to the list of notifications in ETS 300 392-9 [5].

The content of the LSC INVOKED FOR CALLING USER information element shall be encoded as defined in table 28.

Table 28: LSC INVOKED FOR CALLING USER information element contents

Information element	Length	Value	Remark
LSC INVOKED FOR CALLING USER	1	0_2	Reserved. (note)
		1_2	LSC INVOKED FOR CALLING USER
NOTE: The use of this value to indicate that SS-LSC is not invoked is implementation dependent.			

The encoding of the LSC Invoked notification indicator presented at the air interface shall be as shown in table 29 modification from table 3 of ETS 300 392-9 [5]).

Table 29: Notification indicator information element contents

Information element	Length	Value	Remarks
Notification Indicator	6	0	LE Broadcast
		1	LE Acknowledgement
		2	LE Paging
		3	AL Operation
		4	BIC Call Barred
		5	BOC Call Barred
		6	CLIR
		…/…	
		9	**LSC Invoked**
		…/…	
		5-63	Reserved

5.2.2.11 LSC-PDU type

LSC-PDU type indicates the type of the LSC-PDU as defined in table 30.

Table 30: LSC-PDU type information element contents

Information element	Length	Value	Remark
LSC-PDU type	5	00000_2	See ETS 300 392-9 [5]
		00001_2	See ETS 300 392-9 [5]
		00010_2	See ETS 300 392-9 [5]
		00011_2	See ETS 300 392-9 [5]
		00100_2	See ETS 300 392-9 [5]
		00101_2	ACTIVATE
		00110_2	ACTIVATE ACK
		00111_2	DEACTIVATE
		01000_2	DEACTIVATE ACK
		01001_2	DEFINE
		01010_2	DEFINE ACK
		01011_2	INTERROGATE
		01100_2	INTERROGATE ACK
		01101_2	LSC INVOKED
		01110	LSC INVOKED FOR CALLING USER
		$> 01110_2$	Reserved

5.2.2.12 Number of Attendant (n)

The purpose of the Number of Attendant information element shall be to define the number of attendant in the definition of the SS-LSC instance. It shall be encoded as defined in table 31. A maximum number of attendant is set to 63.

Table 31: Number of attendant information element contents

Information element	Length	Value	Remark
Number of attendants	6	$000-001_2$	Reserved
		$> 001_2$	Specifies the number of SS-LSC attendants

5.2.2.13 Reject cause

Reject Cause information element is a generic information element which regroups Reject Causes common to several PDUs; some of the values may not apply to some PDUs. Reject Cause information element shall be encoded as defined in table 32.

Table 32: Reject Cause information element contents

Information element	Length	Value	Remarks
Reject Cause	4	0000_2	Rejected for any reason
		0001_2	Service not subscribed to
		0010_2	Service withdrawn
		0101_2	Completion failure
		0100_2	Inter-working with a network that does not support SS-
		0101_2	Invalid PDU contents (note)
		0110_2	Maximum/minimum number of attendants exceeded
		0111_2	SLN ITSI not recognized (e.g. GTSI/ESN for example)
		1000_2	Supplementary service interaction not allowed
		1001_2	Wrong number of attendants
		$>1000_2$	Reserved
NOTE:			The PDU contents may be found invalid e.g.:

NOTE:	The PDU contents may be found invalid e.g.:
	- when some information element values do not exist; or because
	- the structure of an air interface PDU is wrong, e.g. O-bit or M-bit absent (see subclause 14.7 of ETS 300 392-2 [2]).

5.2.2.14 SLN

The SLN shall be composed as any full ITSI of an extension, an extension present bit and a SSI.

The purpose of the SLN extension element shall be to indicate to the calling user SwMI the extended part of the TSI address of the called LSC SLN. It is encoded as defined in table 95 of ETS 300 392-2 [2], the contents of which is reproduced in table 33.

Table 33: SLN extension element contents

Information sub-element	Length	Value	Remark
Country Code	10		See ETS 300 392-1 [10], clause 7.
Network Code	14		See ETS 300 392-1 [10], clause 7.

The purpose of the SLN SSI element shall be to indicate to the calling user SwMI the SSI address of the called LSC SLN. It is encoded as defined in table 96 of ETS 300 392-2 [2], the contents of which is reproduced in table 34.

Table 34: SLN SSI element contents

Information element	Length	Value	Remark
Short Subscriber Identity (SSI)	24		See ETS 300 392-1 [10], clause 7.

5.2.2.15 SS-LSC Attendant 1 ITSI/GTSI

The SS-LSC Attendant 1 ITSI/GTSI is composed of an SS-LSC Attendant 1 extension and an SS-LSC Attendant 1 SSI.

The purpose of the Attendant 1 extension element shall be to indicate to the SS-LSC managing SwMI the extended part of the TSI address of the SS-LSC Attendant 1. It is encoded as defined in table 95 of ETS 300 392-2 [2], the contents of which is reproduced in table 35.

Table 35: SS-LSC Attendant 1 extension element contents

Information sub-element	Length	Value	Remark
Country Code	10		See ETS 300 392-1 [10], clause 7.
Network Code	14		See ETS 300 392-1 [10], clause 7.

The purpose of the SS-LSC Attendant 1 SSI element shall be to indicate to the SS-LSC managing SwMI the SSI address of the SS-LSC Attendant 1. It is encoded as defined in table 96 of ETS 300 392-2 [2], the contents of which is reproduced in table 36.

Table 36: SS-LSC Attendant 1 SSI element contents

Information element	Length	Value	Remark
Short Subscriber Identity (SSI)	24		See ETS 300 392-1 [10], clause 7.

5.2.2.16 SS-LSC Attendant 2 ITSI/GTSI

The SS-LSC Attendant 2 ITSI/GTSI is composed of an SS-LSC Attendant 2 extension and an SS-LSC Attendant 2 SSI.

The purpose of the Attendant 2 extension element shall be to indicate to the SS-LSC managing SwMI the extended part of the TSI address of the SS-LSC Attendant 2. It is encoded as defined in table 95 of ETS 300 392-2 [2], the contents of which is reproduced in table 37.

Table 37: SS-LSC Attendant 2 extension element contents

Information sub-element	Length	Value	Remark
Country Code	10		See ETS 300 392-1 [10], clause 7.
Network Code	14		See ETS 300 392-1 [10], clause 7.

The purpose of the SS-LSC Attendant 2 SSI element shall be to indicate to the SS-LSC managing SwMI the SSI address of the SS-LSC Attendant 2. It is encoded as defined in table 96 of ETS 300 392-2 [2], the contents of which is reproduced in table 38.

Table 38: SS-LSC Attendant 2 SSI element contents

Information element	Length	Value	Remark
Short Subscriber Identity (SSI)	24		See ETS 300 392-1 [10], clause 7.

5.2.2.17 SS-LSC Attendant n ITSI/GTSI

The SS-LSC Attendant n ITSI/GTSI is composed of an SS-LSC Attendant n extension and an SS-LSC Attendant n SSI.

The purpose of the Attendant n extension element shall be to indicate to the SS-LSC managing SwMI the extended part of the TSI address of the SS-LSC Attendant n. It is encoded as defined in table 95 of ETS 300 392-2 [2], the contents of which is reproduced in table 39.

Table 39: SS-LSC Attendant n extension element contents

Information sub-element	Length	Value	Remark
Country Code	10		See ETS 300 392-1 [10], clause 7.
Network Code	14		See ETS 300 392-1 [10], clause 7.

The purpose of the SS-LSC Attendant n SSI element shall be to indicate to the SS-LSC managing SwMI the SSI address of the SS-LSC Attendant n. It is encoded as defined in table 96 of ETS 300 392-2 [2], the contents of which is reproduced in table 40.

Table 40: SS-LSC Attendant 2 SSI element contents

Information element	Length	Value	Remark
Short Subscriber Identity (SSI)	24		See ETS 300 392-1 [10], clause 7.

5.2.2.18 SS-Type

SS-Type indicates the type of supplementary service to which the PDU belongs. The coding of the information element SS type is defined in table 5 of ETS 300 392-9 [5] and is recalled in table 41 where SS-LSC is highlighted.

Table 41: SS type information element contents

Information element	Length	Value	Remark
SS type	6	…/…	
		05	LSC List Search Call
		…/…	

5.2.3 Additional coding requirements over the ISI

Clauses 9, 10 and 11 of ETS 300 392-9 [5] shall apply.

The remote operations (RO) protocol is defined in CCITT Recommendations X.219 [7] and X.229 [8]. The generic procedures defined in this ETS provide an encoding mechanism for the transport and use of this RO protocol in the PISN environment for the provision of supplementary services or additional network features.

In the OSI environment, communication between application processes is represented in terms of communication between a pair of application entities (AEs). Communication between application entities are inherently interactive. Typically, one entity requests that a particular operation be performed; the other entity attempts to perform the operation and then reports the outcome of the attempts. The concept of Remote Operations is a vehicle for supporting interactive applications of this type.

The generic structure of an operation is an elementary request/reply interaction. Operations are carried out within the context of an application-association.
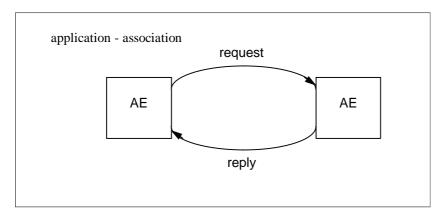
Figure 1 models this view.

Figure 1: Remote Operations Model

Operations invoked by one AE (the invoker) are performed by the other AE (the performer). Operations may be classified according to whether the performer of an operation is expected to report its outcome:

- in the case of success or failure (a result reply is returned if the operation is successful, an error reply is returned if the operation is unsuccessful);

- in case of failure only (no reply is returned if the operation is successful, an error reply is returned if the operation is unsuccessful);

- in case of success only (a result reply is returned if the operation is successful, no reply is returned if the operation is unsuccessful);

- or not at all (neither a result nor an error reply is returned, whether the operation was successful or not).

Operations may also be classified according to two possible operation modes: synchronous, in which the invoker requires a reply from the performer before invoking another operation; and asynchronous, in which the invoker may continue to invoke further operations without awaiting a reply.

The following Operation Classes are defined:

Operation Class 1:	Synchronous, reporting success or failure (result or error).
Operation Class 2:	Asynchronous, reporting success or failure (result or error).
Operation Class 3:	Asynchronous, reporting failure (error) only, if any.
Operation Class 4:	Asynchronous, reporting success (result) only.
Operation Class 5:	Asynchronous, outcome not reported.

The Operation Class of each operation is agreed to be Operation Class 3 between application entities for this SS-LSC Application Protocol draft ETS.

An application association defines the relationship between a pair of AEs, and is formed by the exchange of application (in this case supplementary services) Protocol Control information through the use of the services of underlying layers. The AE that initiates an association is called the association initiating AE, or the association initiator, while the AE that responds to the initiation of an application association by another AE is called the association responding AE, or the association responder.

NOTE 1: In the application of ROSE for the support of supplementary services in PSS1 the underlying services used by ROSE are those provided by GFT-Control or those provided by the Association Control Service Entity (ACSE). No use is made of the services of the Reliable Transport Service Element (RTSE).

Application associations are classified by which application-entity is allowed to invoke operations:

Association Class 1:	Only the association-initiating application-entity can invoke operations.
Association Class 2:	Only the association-responding application-entity can invoke operations.
Association Class 3:	Both the association-initiating and the association-responding application-entities can invoke operations.

This ETS assumes Application associations of Association Class 1.

The explicit control of an application-association (establishment, release and abort) is performed by the Association Control Service Element (ACSE) defined in ITU-T Recommendation X.217 [9].

The following shall apply for the PSS1 facility information element carrying an APDU of the ROSE operation used by ANF-ISISS for SS-LSC PDUs:

- both the sourceEntity and destinationEntity data elements in the Network Facility Extension of this PSS1 facility information element shall contain the value endPINX;

- no interpretation APDU shall be included in this PSS1 facility information element.

In the case of information flows such as ACTIVATE request which expect a reply ACTIVATE ACK response, the TETRA PDU such as ACTIVATE request shall be encoded in the IsiArgument tetraMessage IMPLICIT OCTET STRING of the ROSE Invoke APDU in support of TETRA encoding PDU from as defined in subclause 8.4.1 of ETS 300 392-3-1 [3]. The expected information flow ACTIVATE ACK TETRA PDU shall be encoded in the IsiArgument tetraMessage IMPLICIT OCTET STRING of an other ROSE Invoke APDU (in the opposite direction) defined in the same clause.

In the case of unconfirmed information flows such as LSC INVOKED or LSC INDICATION FOR CALLING USER indication, the TETRA PDU such as LSC INVOKED shall be encoded in the IsiArgument tetraMessage IMPLICIT OCTET STRING of the ROSE Invoke APDU in support of TETRA encoding PDU as defined in subclause 8.4.1 of ETS 300 392-3-1 [3].

> NOTE 2: The actions resulting from reception of ERRORS in reply to the ROSE Invoke APDU such as retry, time-out are outside the scope of this ETS.

5.3 SS-LSC State Definitions

5.3.1 At the authorized user MS/LS

There are no conceptual supplementary service states within the authorized user MS/LS.

> NOTE: The activation definition and interrogation are not defined as confirmed services in the supplementary service procedures.

5.3.2 At the SwMI where the authorized user MS/LS is registered

There are no conceptual supplementary service states within the SwMI where the authorized user MS/LS is registered.

> NOTE: The activation definition and interrogation are not defined as confirmed services in the supplementary service procedures.

5.3.3 At the managed SS-LSC SLN home SwMI

There are no conceptual supplementary service states within the SwMI where the authorized user MS/LS is registered.

> NOTE: The activation definition and interrogation are not defined as confirmed services in the supplementary service procedures.

5.3.4 States at User A MS/LS

There are no SS-LSC states within the calling user A MS/LS.

5.3.5 States at User A SwMI

There are no SS-LSC states within the calling user A SwMI.

5.3.6 States at SLN home SwMI

5.3.6.1 SS-LSC-Idle

Either SS-LSC has not been activated or SS-LSC has been activated and has not been invoked.

5.3.6.2 LSC Invoked

This state exists while SS-LSC has been invoked after activation and call setup to the SLN.

5.3.7 States at Attendant n SwMI

There are no SS-LSC states within the attendant n SwMI.

> NOTE: This holds true for any value of n = 1, 2,…, n.

5.3.8 States at Attendant n MS/LS

There are no SS-LSC states within the Attendant n MS/LS.

> NOTE: This holds true for any value of n = 1, 2,…, n.

5.4 SS-LSC Signaling Procedures

5.4.1 Actions at Calling User A MS/LS

The actions at calling user A MS/LS are shown in the SDL diagram of clause A.1. Besides the actions related to normal basic call, calling user A MS/LS shall receive a call related LSC INVOKED FOR CALLING USER notification as specified in ETS 300 392-9 [5].

> NOTE 1: It is assumed that this user A is not one of the SS-LSC authorized user; in the case where user A is also SS-LSC authorized user refer to subclauses below.

> NOTE 2: SS-SNA may be used to originate that call.

5.4.2 Actions at Calling User A SwMI

The actions at calling user A SwMI are shown in the SDL diagram of clause A.2. Besides the actions related to normal basic call, calling user A SwMI shall receive from SLN home SwMI a call related LSC INVOKED FOR CALLING USER notification as specified in ETS 300 392-9 [5]. Upon receipt of this LSC INVOKED FOR CALLING USER notification, the calling user A SwMI shall present to calling user A MS/LS the call related SS-LSC notification LSC INVOKED FOR CALLING USER.

5.4.3 Actions at the authorized user MS/LS

The SDL representation of procedures at the authorized user MS/LS is shown in clause A.3.

5.4.3.1 Normal procedures at the authorized user MS/LS

The authorized user MS/LS shall send one ACTIVATE/DEACTIVATE, DEFINE or INTERROGATE PDU for SS-LSC in a U-FACILITY PDU in filling in the appropriate value for the routeing information element (see table 4 in ETS 300 392-9 [5]). This value shall correspond:

- usually, to the managed user (SLN) home SwMI.

In accordance with subclause 8.4.1 of ETS 300 392-9 [5], identities included in ACTIVATE/DEACTIVATE, DEFINE or INTERROGATE PDUs may be indicated using only their SSIs in the case where the corresponding MNI is that of the SwMI to which those PDUs are addressed.

NOTE: It is assumed that the specification of the ACTIVATE/DEACTIVATE, DEFINE or INTERROGATE PDUs for SS-LSC does not provide the possibility to indicate such identities using SNAs.

The authorized user MS/LS shall receive one ACTIVATE/DEACTIVATE ACK, DEFINE ACK or INTERROGATE ACK PDU for SS-LSC in a D-FACILITY PDU.

In accordance with subclause 8.4.1 of ETS 300 392-9 [5], the authorized user MS/LS shall complement any identities indicated using only their SSIs which have been included in any received ACTIVATE ACK, DEFINE ACK or INTERROGATE ACK PDU.

5.4.3.2 Exceptional procedures at the authorized user MS/LS

Subclause 11.2 of ETS 300 392-9 [5] shall apply for the exceptional procedures at the authorized user MS/LS.

5.4.4 Actions at the SS-LSC control entity at the SwMI where the authorized user is registered

The SDL representation of procedures at the supplementary service control entity at the SwMI where the authorized user is registered is shown in clause A.4.

5.4.4.1 Normal procedures at the SS-LSC control entity at the SwMI where the authorized user is registered

The SS-LSC control entity at the SwMI where the authorized user is registered shall:

- receive the U-FACILITY PDU containing an ACTIVATE/DEACTIVATE PDU, a DEFINE PDU or an INTERROGATE PDU, and route them according to the value of the routeing information element in the U-FACILITY PDU (see table 4 of ETS 300 392-9 [5]). This routeing shall be as defined in subclause 9.1 of ETS 300 392-9 [5];

- if the SwMI where the authorized user is registered coincides with the managed user SLN home SwMI, its SS-LSC control entity shall process the ACTIVATE/DEACTIVATE, DEFINE or INTERROGATE PDU. Notably, in accordance with subclause 8.4.1 of ETS 300 392-9 [5], the SwMI shall then complement any identities indicated using only their SSIs which have been included in that PDU;

- if the SwMI where the authorized user is registered does not coincide with the managed user SLN home SwMI, subclause 9.1 of ETS 300 392-9 [5] shall apply to route the ACTIVATE/DEACTIVATE, DEFINE and INTERROGATE PDU(s) over the ISI. Notably the identity of the authorized user will be added to the ACTIVATE, DEFINE and INTERROGATE PDU(s) in the corresponding ANF-ISISS PDU (see table 24 of ETS 300 392-9 [5]).

In addition only the following options shall apply for the PSS1 facility information element carrying this ANF-ISISS PDU (as a ROSE Invoke APDU):

- both the sourceEntity and the destinationEntity data elements in the Network Facility Extension (NFE) of this PSS1 facility information element shall contain the value endPINX (see subclause 10.3.1 of ETS 300 392-9 [5]);

- no interpretation APDU shall be included in this PSS1 facility information element (see subclause 10.3.3 of ETS 300 392-9 [5]);

- if the resulting ACTIVATE ACK/DEACTIVATE ACK, DEFINE ACK and INTERROGATE ACK PDU(s) is (are) sent, the SS-LSC control entity at the SwMI where the authorized user is registered shall receive the corresponding ANF-ISISS ROSE Invoke APDU;

- the ACTIVATE ACK/DEACTIVATE ACK, DEFINE ACK and INTERROGATE ACK PDU resulting from an authorized user request shall be sent to the authorized user MS/LS in a D-FACILITY PDU. Such D-FACILITY PDU shall be individually addressed.

5.4.4.2 Exceptional procedures at the SS-LSC control entity at the SwMI where the authorized user is registered

Clause 11 of ETS 300 392-9 [5] shall apply for the exceptional procedures at the SS-LSC control entity at the SwMI where the authorized user is registered, taking into account the fact that the support of each of the three/four PDUs: ACTIVATE/DEACTIVATE, DEFINE and INTERROGATE is optional for every supplementary service.

The information defined in subclause 11.2 of ETS 300 392-9 [5] shall be sent to the authorized user MS/LS in a D-FACILITY PDU. Such D-FACILITY PDU shall be individually addressed.

5.4.5 Actions at the SS-LSC control entity at the managed user SLN home SwMI

The SDL representation of procedures at the SS-LSC control entity at the managed user home SwMI is shown in clause A.5.

5.4.5.1 Normal procedures at the SS-LSC control entity at the managed user SLN home SwMI

The SS-LSC control entity at the managed user SLN home SwMI shall:

- extract the ACTIVATE/DEACTIVATE, DEFINE or/and INTERROGATE PDU(s) in the received ANF-ISISS ROSE Invoke APDUs specified in clause 10 of ETS 300 392-9 [5];

- process these PDUs. Notably, in accordance with subclause 8.4.1 of ETS 300 392-9 [5], the SwMI shall then complement any identities indicated using only their SSIs which have been included in such PDU(s). If the response to an ACTIVATE, DEFINE or INTERROGATE PDU is positive, the SwMI shall generate the corresponding ACTIVATE ACK, DEFINE ACK or INTERROGATE ACK PDU, respectively;

- it shall send such ACK PDU(s) according to subclause 9.2 of ETS 300 392-9 [5]. Notably the identity of the authorized user will be added to the ACTIVATE ACK/DEACTIVATE ACK, DEFINE ACK or INTERROGATE ACK PDU(s) as its(their) final destination in the corresponding ANF-ISISS PDU (see table 24 of ETS 300 392-9 [5]).

In addition only the following options shall apply for the PSS1 facility information element carrying this ANF-ISISS PDU (as a ROSE Invoke APDU):

- both the sourceEntity and the destinationEntity data elements in the Network Facility Extension (NFE) of this PSS1 facility information element shall contain the value endPINX (see subclause 10.3.1 of ETS 300 392-9 [5]);

- no interpretation APDU shall be included in this PSS1 facility information element(see subclause 10.3.3 of ETS 300 392-9 [5]).

In the case where the managed user SLN home SwMI receives an ISI-IC-SETUP as part of a normal basic call, the SLN Home SwMI shall determine if the ITSI received corresponds to a valid SLN with the proper basic service parameter and shall determine if SS-LSC is activated for that SLN and for that basic service; in that case, the SLN home SwMI shall setup an individual call through ISI to the Attendant 1 ITSI/GTSI (the first attendant in the list of SS-LSC) and shall send in a ISI-FACILITY element to the calling user A SwMI. In the case where that first attendant is determined either to be either not reachable or busy or after a time which is implementation dependent to be no reply condition, the SLN home SwMI shall setup a second individual call through ISI to the second attendant in the list; the same process shall take place as long as the last attendant in the list has not been reached. In the case where the last attendant in the list has been reached and is determined to be busy, not reachable or after a time out no reply, the SLN home SwMI shall send an ISI-IC-DISCONNECT to the calling user A SwMI with disconnect cause either "unknown" or "due to supplementary service".

The call setup from the SLN home SwMI to any attendant in the list shall follow the ISI routeing procedures which can lead to re-routeing or forward switching this ISI procedure includes the determination through each attendant home SwMI whether the attendant is within its own SwMI or has migrated to another SwMI.

The call setup due to the result of SS-LSC invocation shall override any restrictions related to barring of incoming calls due to SS-BIC; this shall be made possible by a call related LSC INVOKED FOR CALLING USER PDU carried in an ISI FACILITY.

> NOTE: There is no MS/LS associated to the SLN SwMI.

5.4.5.2 Exceptional procedures at the SS-LSC control entity at the managed user SLN home SwMI

Subclause 11.1 of ETS 300 392-9 [5] shall apply for the exceptional procedures at the supplementary service control entity at the managed user home SwMI, taking into account the fact that the support of each of the three/PDUs: ACTIVATE/DEACTIVATE, DEFINE and INTERROGATE is optional for every supplementary service.

In the case where the managed user SLN home SwMI receives a call setup from the calling user A SwMI to a valid SLN for which SS-LSC has not been activated, this SLN home SwMI shall reject the cause and shall send an ISI-IC-DISCONNECT with disconnect cause "due to supplementary service".

In the case where the managed user SLN home SwMI receives a call setup from the calling user A SwMI with a basic service not identical to the basic service for which the SS-LSC has been defined and activated, the SLN home SwMI shall send an ISI-IC-DISCONNECT with a disconnect cause "incompatible basic service".

In the case where the SS-LSC control entity receives an ACTIVATE/DEACTIVATE/DEFINE PDU including either an invalid SLN or an SLN value corresponding to an external subscriber number, the SLN home SwMI shall reject the request by sending an ACTIVATE/DEACTIVATE ACK/DEFINE ACK with a result information element rejected and a reject cause "invalid SLN".

In the case where the SLN home SwMI receives an ACTIVATE/DEACTIVATE PDU with an invalid SLN, the SLN home SwMI shall reject the request by sending an ACTIVATE ACK/DEACTIVATE ACK with a result "rejected" and a reject cause "invalid SLN".

In the case where the SLN home SwMI receives a DEFINE PDU with a list of attendants exceeding the number of attendants n part of that same PDU, the SLN home SwMI shall send a DEFINE ACK with a result "rejected" and a reject cause "wrong number of attendants".

In the case where the SLN home SwMI receives a DEFINE PDU with an incomplete list of attendants, the number of attendants in the list does not correspond to the number of attendant n part of that same PDU, the SLN home SwMI shall send a DEFINE ACK with a result "rejected" and a reject cause "wrong number of attendants".

In the case where the SLN home SwMI receives a DEFINE PDU with a list of attendants including at least two identical attendant identities (ITSI/GTSIs) as part of that same PDU, the SLN home SwMI shall send a DEFINE ACK with a result "rejected" and a reject cause "illegal attendant ITSI/GTSI".

The SLN home SwMI may not recognize immediately that some attendant ITSI/GTSIs in the list provided as part of the DEFINE PDU are not valid ITSI/GTSIs.

It is possible that an attendant n ITSI in the list is in fact another search list number. Under these circumstances the incoming call shall invoke the additional list search call. It is an operator option as to the number of times SS-LSC may be invoked during the course of call. In the case where, as part of the list of attendant ITSIs provided in the DEFINE PDU, the SLN home SwMI recognizes that one of the attendant SwMI is identical to the SLN defining the list, the SLN home SwMI shall reject the DEFINE PDU by sending a DEFINE ACK PDU with result "rejected" and reject cause "invalid attendant ITSI/GTSI".

NOTE: While the attendant list of ITSI/GTSIs is provided in the DEFINE PDU in a sequence from 1 to n, the actual sequence of calls to each individual attendant is an implementation matter, may involved other parameters than the one in the DEFINE PDU and is outside the scope of this ETS.

5.4.6 Actions at the called Attendant n

The actions are the same regardless of the value of n which indicates the sequence number for each attendant. The called attendant shall be prepared to receive a notification "LSC INVOKED" PDU when needed. This PDU will indicate to the called attendant, that the call it is receiving is in fact a call for which SS-LSC has been invoked.

NOTE: Even in the case where the attendant MS/LS does not support SS-LSC, it shall still recognized that notification and present it as a notification value if nothing else in the mobile.

5.4.7 Group call considerations

The calling user shall place a call to an initial individual SLN which is equivalent to an ITSI; the procedure described above will be followed as long as it remains a series of individual calls to individual ITSIs. When a GTSI appears in the list, the SLN home SwMI shall set a group call through the group controlling SwMI; if the call to a group is successful, the SS-LSC procedure shall be completed and the calling user becomes member of the group. If the group corresponding to the GTSI is found to be busy, the SLN home SwMI shall be informed by the group controlling swMI of that status, shall disconnect the group call correspondingly by an ISI-GC-DISCONNECT and shall setup a call to the next ITSI/GTSI in the search list by an ISI-IC-SETUP or an ISI-GC-SETUP accordingly.

NOTE: The case where the group is defined as having as one of its member a SLN is outside the scope of this ETS.

5.5 Impact of Inter-working with Public ISDN

Not applicable.

5.6 Protocol interactions between SS-LSC and other supplementary services and ANFs

This clause specifies protocol interactions with other supplementary services and ANFs for which stage 3 TETRA European Standards had been published at the time of publication of this ETS. For interactions with supplementary services and ANFs for which stage 3 ETSs are published subsequent to the publication of this ETS, see those other stage 3 ETSs.

NOTE 1: Additional interactions that have no impact on the signaling protocol neither at the air interface nor at the ISI can be found in the relevant stage 1 description standards.

NOTE 2: Simultaneous conveyance of APDUs for SS-LSC and another supplementary service or ANF in the same message, each in accordance with the requirements of its respective stage 3 International Standard, does not, on its own, constitute a protocol interaction.

NOTE 3: Interactions between supplementary services that have been indicated in stage 1 ETS 300 392-10-5 [11] as not applicable, or there is no interaction, have not been repeated here.

5.6.1 Connected line identification presentation

Calling user who has activated SS-Connected Line Identification Presentation (COLP): there shall not be any interaction.

NOTE: There is no actual connection to the SLN.

5.6.2 Calling/Connected line identification restriction

Served user who has activated SS-Calling/Connected Line Identification Presentation (CLIR): there shall not be any interaction.

Attendant who has activated SS-CLIR: there shall not be any interaction, i.e. the calling user shall not receive the identity of the attendant unless the calling user has an override capability.

Calling user who has activated SS-CLIR: there shall not be any interaction. The attendant shall not receive the identity of the calling user, unless the attendant has an override capability.

SLN shall never place a call so that SS-CLIR cannot be invoked against SLN; SLN is never actually connected to a calling user so that invocation of SS-COLR against SLN is irrelevant.

5.6.3 Call report

List search call shall not have any interaction with call report. It is an implementation option as to which attendant the call report shall be sent to.

> NOTE: The call report is not sent to the SLN.

5.6.4 Call forwarding unconditional

List search call shall not have any interaction with call forwarding unconditional as SS-Call Forwarding Unconditional (CFU) cannot be activated against a search list number.

Attendant who has activated SS-CFU: there shall not be any interaction. On a call to the attendant, SS-CFU shall be invoked and the call shall be diverted as appropriate. If the call cannot be completed to the diverted-to user, then the next attendant in the search list shall be offered the call.

5.6.5 Call forwarding on busy

List search call shall not have any interaction with call forwarding on busy as SS-Call Forwarding on Busy (CFB) cannot be activated against the search list number.

Attendant who has activated SS-CFB: on a call to the attendant and that attendant is busy, dependent on the network implementation, SS-CFB may be invoked or the call may be offered to the next attendant in the search list.

> NOTE: The operation of SS-LSC is somewhat similar to the operation of SS-CFB; in the case where one attendant is found to be busy, the call will be setup to the next attendant in the list in the same manner as a call could be forwarded to the next attendant specified by the preceding attendant.

5.6.6 Call forwarding on no reply

List search call shall not have any interaction with call forwarding on no reply as SS-Call Forwarding on No Reply (CFNRy) cannot be activated against the search list number.

Attendant who has activated SS-CFNRy: on a call to the attendant and that attendant does not reply, dependent on the network implementation, SS-CFNRy may be invoked or the call may be offered to the next attendant in the search list.

> NOTE: The operation of SS-LSC is somewhat similar to the operation of SS-CFNRy; in the case where one attendant is found to be busy, the call will be setup to the next attendant in the list in the same manner as a call could be forwarded to the next attendant specified by the preceding attendant.

5.6.7 Call forwarding on not reachable

List search call shall not have any interaction with call forwarding on not reachable as SS-Call Forwarding on Not Reachable (CFNRc) cannot be activated against the search list number.

Attendant who has activated SS-CFNRc: on a call to the attendant and that attendant is not reachable, dependent on the network implementation, SS-CFNRc may be invoked or the call may be offered to the next attendant in the search list.

NOTE: The operation of SS-LSC is somewhat similar to the operation of SS-CFNRc; in the case where one attendant is found to be busy, the call will be setup to the next attendant in the list in the same manner as a call could be forwarded to the next attendant specified by the preceding attendant.

5.6.8 Call authorized by dispatcher

SS-Call Authorized by Dispatcher (CAD) which applies to the attendant: if the attendant is a restricted user i.e. certain incoming categories of incoming calls cannot proceed before authorization by a dispatcher, then SS-CAD shall be invoked before the call is routed to the attendant. After authorization, the dispatcher shall allow the incoming call to proceed to the attendant.

Calling user who has invoked SS-CAD: there shall not be any interaction.

5.6.9 Area selection

If the calling user has activated SS-Area Selection (AS) and the attendant is outside the selected area, then the call shall fail and the next attendant in the list shall be tried.

5.6.10 Call waiting

While an attendant may have activated SS-Call Waiting (CW), an incoming call due to invocation of SS-LSC shall override Call Waiting, e.g. SS-LSC will determine that the attendant is busy, not reachable or no reply and present the call to the next attendant unless the attendant was the last one in which case, the original call shall be disconnected.

For an SS-LSC invoked call, SS-CW shall not be invoked unless the call in which the attendant is already involved is also an SS-LSC call.

5.6.11 Call completion to busy subscriber

If SS-LSC control entity has searched through the list without success, and has informed the calling user that the call cannot be completed due to busy attendants, as a network implementation option, the calling user may invoke the SS-Call Completion to Busy Subscriber (CCBS). If the SS-CCBS invocation is accepted, the network shall monitor for any attendant becoming free in the search list.

5.6.12 Pre-emptive priority call

The Pre-emptive Priority Call (PPC) shall be offered to the attendants in the search list by sequence, (the sequence may offer the PPC to the available attendants in the list first), until either (a) an attendant answers or (b) a busy attendant is found and is pre-empted or (c) the end of the search list is reached without success.

5.6.13 Barring of incoming calls

SS-BIC may be activated against the search list number. This shall not affect the individual barring profiles that the attendants may have activated.

An attendant individual ITSI may be barred against incoming calls through the invocation of SS-BIC for that attendant; however, an SS-LSC issued call may override the barring of incoming call.

NOTE: This is a distinction between the case where the attendant is called without SS-LSC invocation in which case SS-BIC may be invoked and the case where the incoming call to this attendant is the result of a SS_LSC call which will result in an override of SS-BIC.

5.6.14 Call completion on no reply

If the supplementary service has searched through the list without success, and has informed the calling user that the call cannot be completed due to no reply from the attendants, as a network implementation option, the calling user may invoke the SS-Call Completion on No Reply (CCNR). If the SS-CCNR invocation is accepted, the network shall monitor the attendants in the list of SS-LSC for the first attendant to become in a reply condition.

5.6.15 Interaction with ANF-ISI

List Search Call shall be available across the Inter System Interface.

Attendants defined as such under SS-LSC may belong to different SwMIs. A call to a SLN may have to be extended from one SwMI to another SwMI through ANF-ISI. ANF-ISI shall allow to indicate to another SwMI that the call it is presenting is in fact a SS-LSC related call associating a basic ISI Individual Call and a LSC INVOKED PDU in an ISI FACILITY.

If a SwMI does not support SS-LSC, the originating SwMI will try to forward the SS-LSC related call to another SwMI who supports SS-LSC.

5.6.16 Interaction with ANF-MM

It is assumed as already stated that the SLN may not migrate away from its home SwMI.

5.6.16.1 Calling user migrating

In the case where the calling user migrates prior to the completion of an SS-LSC related call, the SLN home SwMI shall always send to the calling user home SwMI the LSC INVOKED FOR CALLING USER PDU; the home SwMI shall know towards which SwMI the calling user has migrated and shall sent to that new visited SwMI through ISI the LSC INVOKED PDU; that new visited SwMI shall send to the calling user the notification SS-LSC Invoked.

5.6.16.2 One of the attendant (m) migrates

In the case where one of the attendant in the SS-LSC list migrates the sequence of events shall be as follow (valid for all values of m contained between 2 and n the maximum number of attendants in the list):

- calling user A SwMI sets up a call to SLN Home SwMI;

- SLN Home SwMI sets up a call to attendant (m) home SwMI through ISI-IC with an ISI-FACILITY indicating LSC INVOKED PDU;

- attendant (m) home SwMI determines that attendant (m) has migrated to a new visited SwMI;

- attendant (m) home SwMI indicates to SLN home SwMI that attendant (m) has migrated to the new visited SwMI;

- SLN home SwMI shall setup a new call to the attendant (m) new visited SwMI through ISI-IC with an ISI-FACILITY containing LSC INVOKED PDU;

- attendant (m) new visited SwMI shall present the call to the attendant (m) MS/LS.

    NOTE: Attendant (m) is not informed that the call is the result of an SS-LSC invocation.

In the case where attendant (m) is either busy or not reachable, the new visited SwMI shall release the call through ISI; the SLN home SwMI shall then present the call to the next attendant in the SS-LSC list.

In the case where attendant (m) is found to be in a no reply condition, the new visited SwMI shall present ISI-ALERTING to the SLN home SwMI who after a timeout which is implementation dependant shall decide to present the call to the next attendant in the list of SS-LSC attendants.

In the case where attendant (m) new visited SwMI does not support SS-LSC, one of two implementation dependant alternatives shall be implemented:

-    either the new visited SwMI shall accept the ISI-IC ignoring the ISI-FACILITY LSC INVOKED PDU and handle the call like a basic call not associated to SS_LSC invocation;

-    or the new visited SwMI shall reject the ISI-IC indicating supplementary service not supported and the SLN home SwMI shall place a new ISI-IC to the next attendant in the SS-LSC list of attendants.

5.7   Parameter values

There are no timer values associated with the description of SS-LSC.

NOTE: The time out, after which SS-LSC controlling entity determines to either present the call resulting from SS-LSC invocation to the next attendant in the list or to reject the call when the last attendant in the list has been reached, is implementation dependant.

Annex A (normative): Specification and Description Language (SDL) representation of call unrelated procedures

The diagrams in this annex use the Specification and Description Language defined in ITU-T Recommendation Z.100 [6].

Each diagram represents the behavior of a supplementary service control entity either in a MS/LS or in a SwMI.

In accordance with the protocol model described in clause 14 of ETS 300 392-2 [2], the supplementary service control entity at a MS/LS uses the services of the V+D air interface control. The same applies for the supplementary service control entity at the SwMI where the MS/LS is registered. If this SwMI or any other operate at the ISI, in accordance with the protocol model described in clause 8 of ETS 300 392-3-1 [3], their supplementary service control entities use, via the co-ordination function, the services of ANF-ISISS for the corresponding supplementary service ISI protocols.

All PDUs with no prefix specifying whether they are air interface (or LS) PDUs or ISI PDUs are to be understood as being air interface (or LS) PDUs if the users to which they are addressed are registered in the same SwMI, and as ISI PDUs otherwise.

The suffix PDU has been omitted after the PDU names (e.g. ACTIVATE or ACTIVATE ACK).

A.1   SDL representations of SS-LSC at calling user A MS/LS

Figure A.1 shows the behavior of the calling user A MS/LS. Input signals from the right and output signals to the right represent signals from the user application. Input signals from the left and output signals to the left represent signals at the air interface.
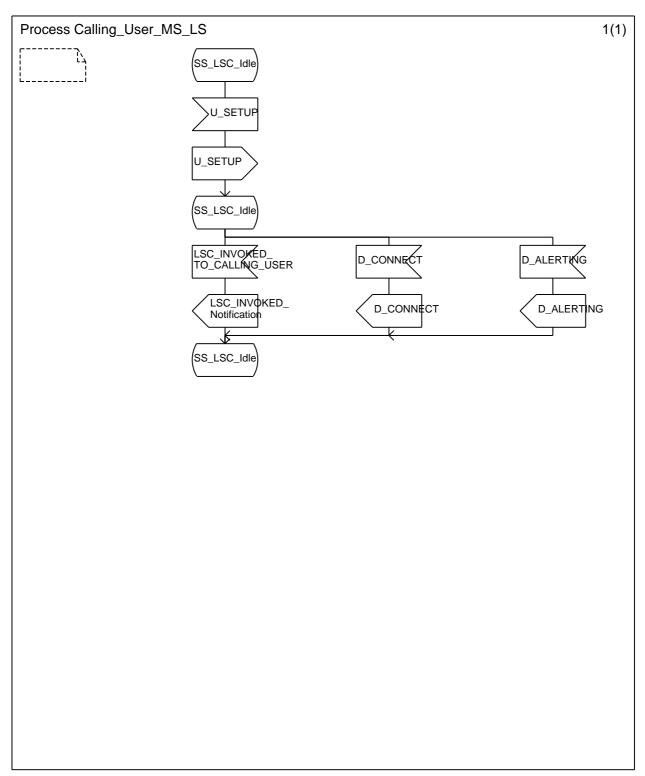
Process Calling_User_MS_LS   1(1)

SS_LSC_Idle

U_SETUP

U_SETUP

SS_LSC_Idle

| LSC_INVOKED_ TO_CALLING_USER | D_CONNECT | D_ALERTING |

| LSC_INVOKED_ Notification | D_CONNECT | D_ALERTING |

SS_LSC_Idle

Figure A.1: Calling user A MS/LS SDL

A.2 SDL representations of SS-LSC at calling user A SwMI

Figure A.2 shows the behavior of the calling user A SwMI. Input signals from the right and output signals to the right represent signals at the air interface. Input signals from the left and output signals to the left represent signals at the ISI inter system interface.
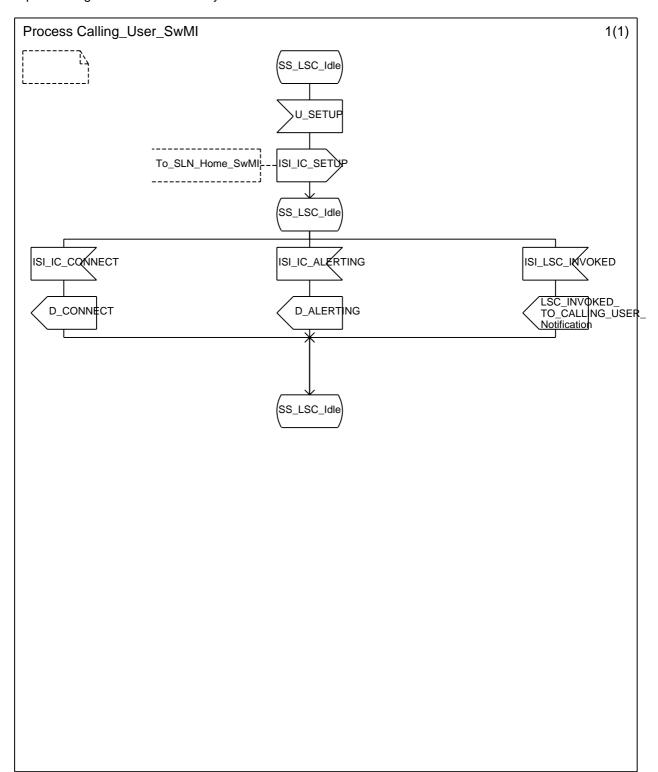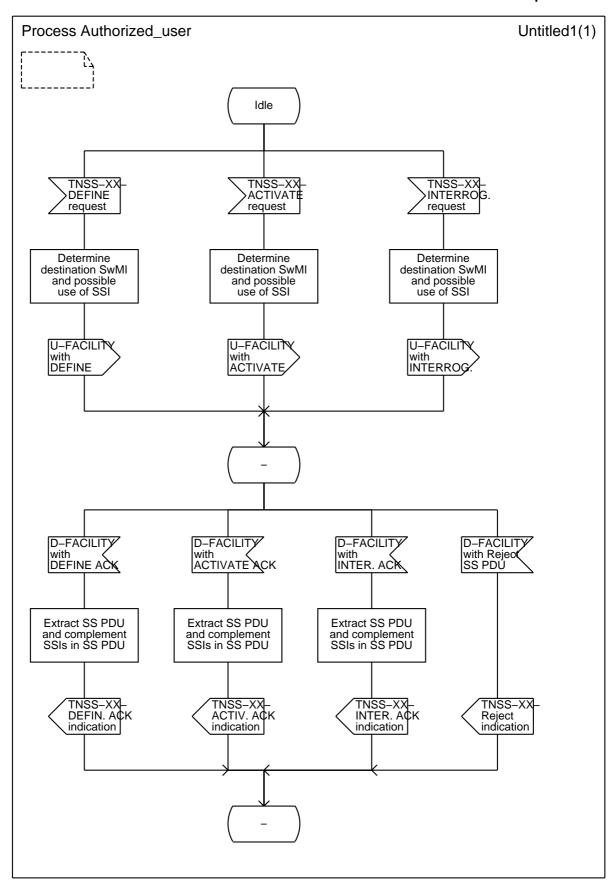

Figure A.2: Calling user A SwMI SDL

A.3   SDL representation of SS-LSC at the authorized user MS/LS

Figure A.3 shows the behavior of the SS-LSC control entity within the authorized user MS/LS.

Input signals from the right and output signals to the right represent air interface PDUs.

Input signals from the left and output signals to the left represent primitives to the authorized user.

Process Authorized_user   Untitled1(1)

```
                                    ┌─────────┐
                                    │  Idle   │
                                    └─────────┘
```


NOTE: In the case of SS-LSC, the served user has no authorized user capabilities; this SDL is not
          applicable to the served user MS/LS.

Figure A.3: Authorized user MS/LS SDL

A.4 SDL representation of SS-LSC control entity at the SwMI where the authorized user is registered

Figure A.4 shows the behavior of the SS-LSC control entity specific to the SwMI where the authorized user is registered.
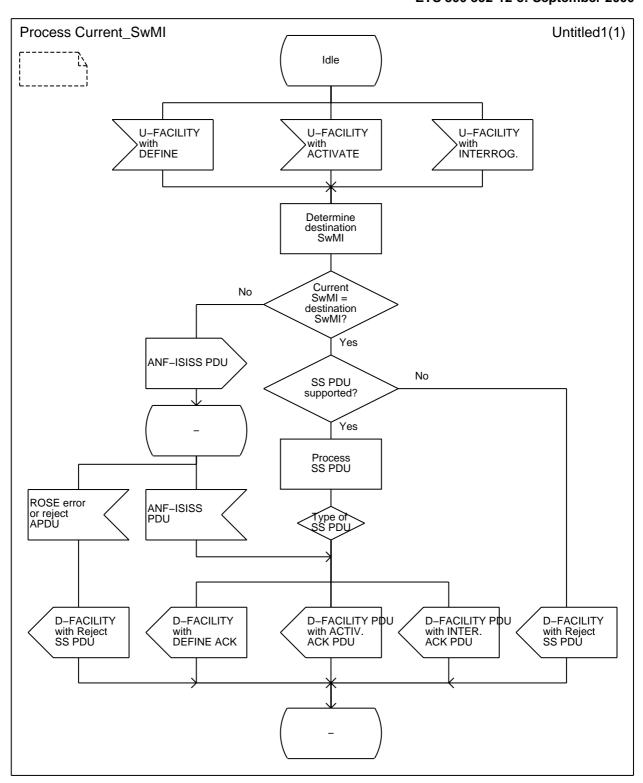
Depending on whether or not this SwMI is also the managed user SLN home SwMI, it is or it not the destination SwMI of the ACTIVATE/DEACTIVATE, DEFINE or INTERROGATE PDUs sent by the authorized user MS/LS.

Input signals from the right represent PDUs received from the managed user SLN home SwMI.

Output signals to the right represent PDUs sent to the managed user SLN home SwMI.

Input signals from the left represent PDUs received from the authorized user MS/LS.

Output signals to the left represent PDUs sent to the authorized user MS/LS.

NOTE: Every ANF-ISISS PDU or ROSE APDU is conveyed by a PSS1 FACILITY message. The latter has not been shown in the corresponding signal symbols.

Figure A.4: Authorized user current SwMI SDL

NOTE: In the case where a user involved in the invocation or operation of some supplementary service would be registered in the same SwMI as the authorized user, the SDL applicable to the SwMI where the former user is registered would apply in addition to figure A.4 to the SwMI where the authorized user is registered.
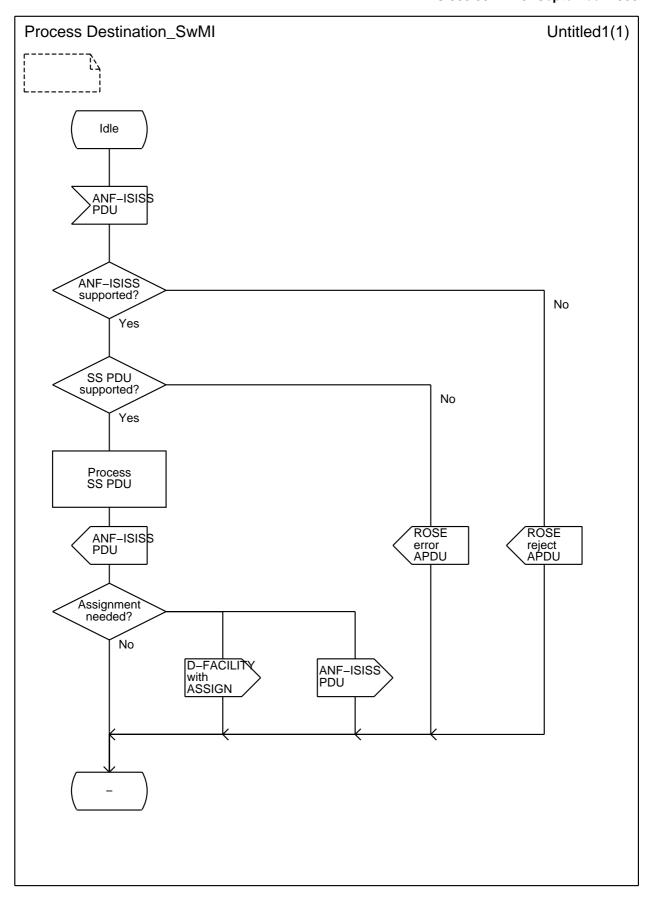
A.5 SDL representation of SS-LSC control entity at the managed user SLN home SwMI

Figure A.5 shows the behavior of the SS-LSC control entity specific to the managed user SLN home SwMI.

Input signals from the left represent PDUs received from the SwMI where the authorized user is registered.

Output signals to the left represent PDUs sent to the SwMI where the authorized user is registered.

There are no signals to the right and/or from the right.

Process Destination_SwMI   Untitled1(1)

Idle

ANF−ISISS
PDU

ANF−ISISS
supported?

No

Yes

SS PDU
supported?

No

Yes

Process
SS PDU

ANF−ISISS
PDU

ROSE
error
APDU

ROSE
reject
APDU

Assignment
needed?

No

D−FACILITY
with
ASSIGN

ANF−ISISS
PDU

−

NOTE: Every ANF-ISISS PDU or ROSE APDU is conveyed by a PSS1 FACILITY message. The latter
           has not been shown in the corresponding signal symbols.

Figure A.5 (sheet 1 of 3): Managed user home SwMI SDL

NOTE: If the managed user home SwMI is involved in the invocation or operation of some supplementary service e.g. because the managed user then becomes the served user, the SDL applicable to the corresponding SwMI would apply in addition to figure A.5.
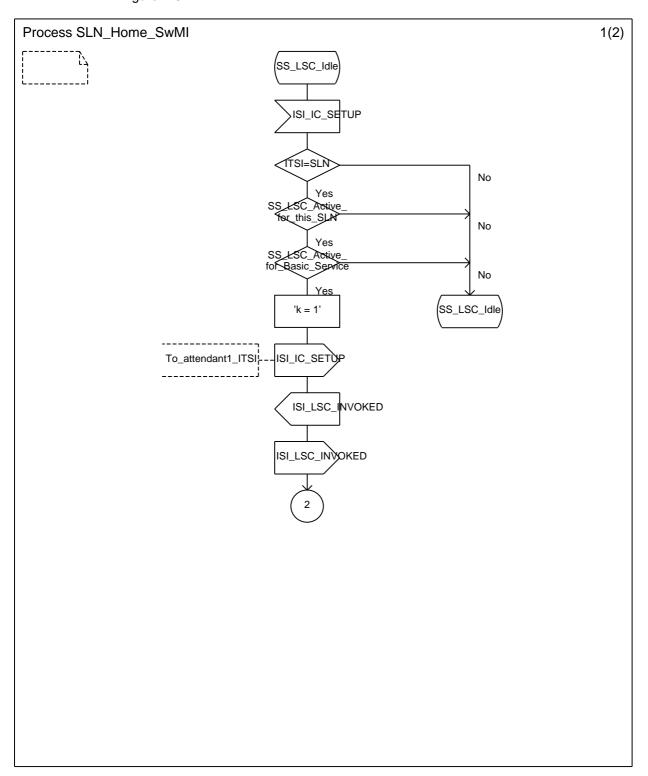
Process SLN_Home_SwMI   1(2)

SS_LSC_Idle

ISI_IC_SETUP

ITSI=SLN — No

Yes

SS_LSC_Active_for_this_SLN — No

Yes

SS_LSC_Active_for_Basic_Service — No

Yes

'k = 1'

SS_LSC_Idle

To_attendant1_ITSI --- ISI_IC_SETUP

ISI_LSC_INVOKED

ISI_LSC_INVOKED

2

Figure A.5 (sheet 2 of 3): Managed user home SwMI SDL

Process SLN_Home_SwMI   2(2)
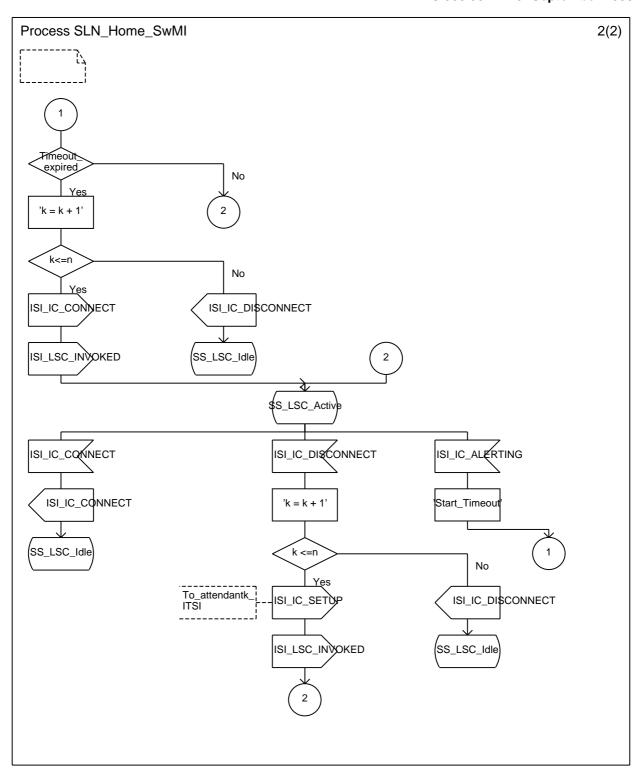

Figure A.5 (sheet 3 of 3): Managed user home SwMI SDL

A.6   SDL representations of SS-LSC at called user A SwMI

Figure A.6 shows the behavior of the called user A SwMI. Input signals from the left and output signals to the left represent signals at the air interface. Input signals from the right and output signals to the right represent signals at the ISI inter system interface.
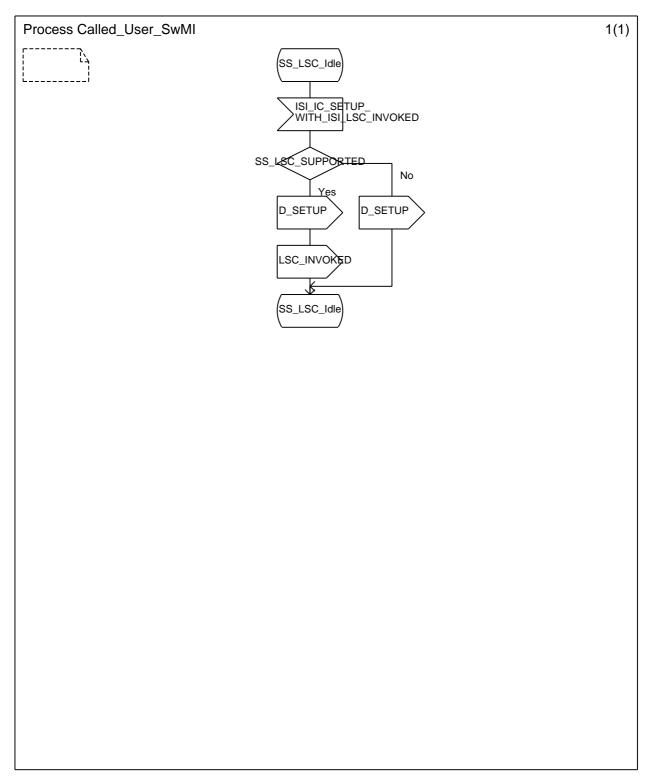
Process Called_User_SwMI   1(1)

SS_LSC_Idle

ISI_IC_SETUP_
WITH_ISI_LSC_INVOKED

SS_LSC_SUPPORTED

Yes   No

D_SETUP   D_SETUP

LSC_INVOKED

SS_LSC_Idle

Figure A.6: Called user (attendant n) SwMI SDL

A.7   SDL representations of SS-LSC at called user A MS/LS

Figure A.7 shows the behavior of the called user A (attendant n) MS/LS. This representation would have been a basic call representation had it not been for the addition of the notification LSC INVOKED. Input signals from the right and output signals to the right represent signals at the air interface.
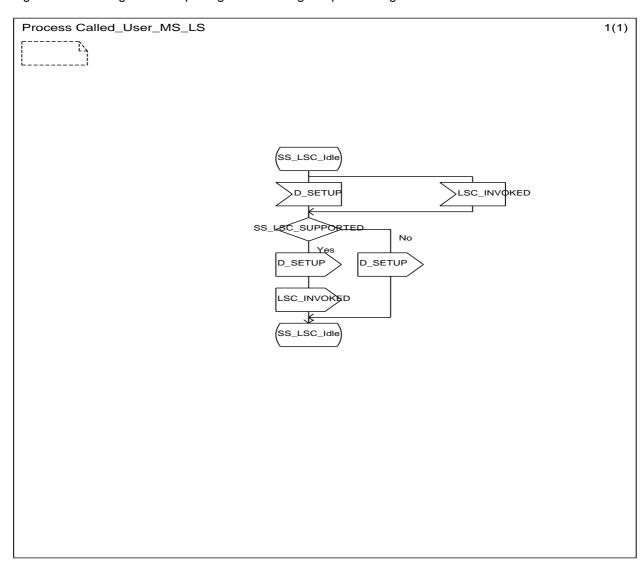

Figure A.7: Called user (attendant n) MS/LS SDL

Annex B (informative): Bibliography

The following material, though not specifically referenced in the body of the present document (or not publicly available), gives supporting information.

ITU-T Recommendation I.210 (1993): "Principles of telecommunication services supported by an ISDN and the means to describe them".

ETSI ETS 300 392-11-5 (1999): "Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 11: Supplementary services stage 2; Sub-part 5: List Search Call (LSC)".

ETSI ETS 300 392-3-5 (1998): "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)".

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