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Draft Standard ECMA-SMS-SD
December 2000

ECMA

Standardizing Information and Communication Systems

Private Integrated Services Network (PISN) – Specification, Functional Model and Information Flows – Short Message Service Supplementary Service

Second Draft – December 2000

Phone: +41 22 849.60.00 - **Fax:** +41 22 849.60.01 - **URL:** http://www.ecma.ch - **Internet:** helpdesk@ecma.ch

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Brief History

This Standard is one of a series of ECMA Standards defining services and signalling protocols applicable to Private Integrated Services Networks (PISNs). The series uses ISDN concepts as developed by ITU-T and conforms to the framework of International Standards for Open Systems Interconnection as defined by ISO/IEC. It has been produced under ETSI work item DEN/ECMA-XXXXX.

This particular Standard specifies the Short Message Service supplementary service.

This Standard is based upon the practical experience of ECMA member companies and the results of their active and continuous participation in the work of ISO/IEC JTC1, ITU-T, ETSI and other international and national standardization bodies. It represents a pragmatic and widely based consensus.

This ECMA Standard is contributed to ISO/IEC JTC1 under terms of the fast-track procedure, for adoption as an ISO/IEC International Standard.

Drafting Statements

First draft was edited by Lars Kiessling and Georg Mayer, Siemens AG, Germany (Lars.Kiessling@icn.siemens.de, Georg.Mayer@icn.siemens.de).

Second draft was edited by Lars Kiessling and Georg Mayer, Siemens AG, Germany (Lars.Kiessling@icn.siemens.de, Georg.Mayer@icn.siemens.de).

This ECMA Standard has been adopted by the ECMA General Assembly of ...

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1 Scope

This Standard specifies the Supplementary Service Short Message Service (SS-SMS).

SMS is a supplementary service which enables a user to send and receive Short Messages (SMs) to and from another user.

NOTE

This supplementary service is based on ETSI TS 100 901 (GSM 03.40). The Service Centre functionality described in this Standard is equal to the functionality of a Service Centre in ETSI TS 100 901 (GSM 03.40). Thus it is only necessary to implement a QSIG interface and some interworking in the Service Centre in order to use it in the herein described network.

Supplementary service specifications are produced in three stages, according to the method described in ETS 300 387. This Standard contains the stage 1 and stage 2 specifications of SS-SMS. The stage 1 specification (clause 6) specifies the supplementary service as seen by users of PISNs. The stage 2 specification (clause 7) identifies the functional entities involved in the supplementary service and the information flows between them.

2 Conformance

In order to confirm to this Standard, a stage 3 standard shall specify signalling protocols and equipment behaviour that are capable of being used in a PISN which supports the supplementary services specified in this Standard. This means that, to claim conformance a stage 3 standard is required to be adequate for the support of those aspects of clause 6 (stage 1) and clause 7 (stage 2) which are relevant to the interface or equipment to which the stage 3 standard applies.

3 References

The following standards contain provisions which, through references in this text, constitute provisions of this Standard. All standards are subject to revision, and parties to agreements based on this Standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below.

In the case of references to ECMA Standards that are aligned with ISO/IEC International Standards, the number of the appropriate ISO/IEC International Standard is given in brackets after the ECMA reference.

Editor's NOTE:
Which references shall be used for ETSI, which references are ISO conform (GSM 03.40 or TS 100 901)?

ECMA-142	Private Integrated Services Network – Circuit-mode 64 kbit/s Bearer Services – Service Description, Functional Capabilities and Information Flows (International Standard ISO/IEC 11574)
ISO/IEC 11579-1	Information technology – Telecommunications and information exchange between systems – Private Integrated Services Network – Part 1: Reference configuration for PISN Exchanges (PINX)
ETSI TS 100 900	Digital cellular telecommunications systems (Phase 2+); Alphabets and language-specific information (1998)(GSM 03.38)
ETSI TS 100 901	Digital cellular telecommunications systems (Phase 2+); Technical realization of the Short Message Service (SMS) (1998) (GSM 03.40)
ETSI TS 100 942	Digital cellular telecommunications systems (Phase 2+); Point-to-Point (PP) Short Message Service (SMS) support on mobile radio interface (1999)(GSM 04.11)
ETSI TS 100 974	Digital cellular telecommunications systems (Phase 2+); Mobile Application Part (MAP) specification (1999)(GSM 09.02)
ETSI TS 101 032	Digital cellular telecommunications systems (Phase 2+); Compression algorithm for text messaging services (1998) (GSM 03.42)

ETS 300 387	Private Telecommunication Network (PTN); Method for the specification of basic and supplementary services (1994)
ITU-T Rec. I.112	Vocabulary of terms for ISDNs (1993)
ITU-T Rec. I.210	Principles of telecommunication services supported by an ISDN and the means to describe them (1993)
ITU-T Rec. Z.100	Specification and description language (1993)

4 Definitions

For the purpose of this Standard, the following definitions apply.

4.1 External definitions

This Standard uses the following terms defined in other documents:

- Basic Service (ITU-T Rec. I.210)
- Private Integrated Services Network (PISN) (ISO/IEC 11579-1)
- Private Integrated Services Network Exchange (PINX) (ISO/IEC 11579-1)
- Service (ITU-T Rec. I.112)
- Signalling (ITU-T Rec. I.112)
- Supplementary Service (ITU-T Rec. I.210)
- User (ECMA-142)

Editor's Note: Is that still necessary?

This Standard refers to the following basic call functional entities (FEs) defined in ECMA-142:

- Call Control (CC)
- Call Control Agent (CCA)

This Standard refers to the following basic call inter-FE relationships defined in ECMA-142:

- r1
- r2
- r3

This Standard refers to the following basic call information flows defined in ECMA-142:

- Release request/indication
- Release response/confirmation
- Setup request/indication
- Setup response/confirmation

4.2 Other definitions

4.2.1 Command

Short Message data unit which enables the Sending User to invoke an operation at the Service Centre.

As far as acknowledging and delivery is concerned, Commands are treated like Short Messages. In the case of certain Commands a Status Report may be sent in response from the SC which contains the outcome of the operation.

4.2.2 Message Centre

The entity which activates or deactivates the Message Waiting Indication as a result of the storage or retrieval of Short Messages. The Message Centre can serve as a Sending, Storing and Receiving Entity for Short Messages.

4.2.3 Report

A report can be a response from

- the Service Centre upon a Short Message received from the Sending User (Submit Report);
- the Receiving User upon a Short Message received from the Service Centre (Delivery Report);
- the Sending User upon a Status Report received from the Service Centre (Delivery Report);
- the Service Centre upon a Command received from the Sending User (Submit Report).

A report may be an acknowledge report, which confirms the reception of a Short Message, a Status Report or a Command; or it may be an error report, which indicates that the Short Message, Status Report or the Command was not received, including the reason why.

NOTE

Report as used here does not refer to the Status Report capabilities of the SMS.

4.2.4 ScAlert

Information provided to an SC which has previously initiated unsuccessful Short Message delivery attempt(s) to a specific user, that the user is now recognised to have recovered operation or to have memory available again.

4.2.5 Service Centre (SC)

A function within the network which is responsible for the relaying and store-and-forwarding of a Short Message. If a Receiving User is not able to receive a Short Message, the Service Centre has to store the Short Message and attempt to deliver the Short Message again at a later time. The Service Centre is responsible for the Short Message until it is successfully delivered to the Receiving User or the Validity Period expires.

Depending on the implementation of Short Message Waiting Data the SC either repeats the delivery attempt automatically in certain intervals or attempts to deliver the Short Message upon reception of a ScAlert information.

NOTE

The functionality of the Service Centre is as described in ETSI TS 100 901 (GSM 03.40).

4.2.6 Short Message (SM)

Data unit containing the Short Message Text and additional data necessary for the transmission of the Short Message Text from the Sending to the Receiving User.

4.2.7 Short Message Waiting Data

SMS user specific information containing address information of one or more SCs which unsuccessfully attempted to deliver a Short Message to a Receiving User while the user was not able to receive the Short Message (e.g. did not have memory available or was not reachable). The Short Message Waiting Data is used to alert the SC when the user has memory available or is reachable again.

4.2.8 Status Report

Information sent from the SC to the Sending User containing the status of a Short Message submitted to a Receiving User or the outcome of a Command submitted to an SC. A Status Report is sent from the SC to the Sending User of the Command or Short Message if it is requested in the Short Message or Command.

The status report capabilities of SS-SMS are optional, i.e. the choice, of whether to offer Status Report or not, is left to the Service Provider.

5 Acronyms

Editors Note:
Is that still necessary?
CC Call Control (functional entity)

CCA	Call Control Agent (functional entity)
FE	Functional Entity
PINX	Private Integrated Services Network Exchange
PISN	Private Integrated Services Network
PNP	Private Numbering Plan
SC	Service Centre
SCTS	Service-Centre-Time-Stamp
SDL	Specification and Description Language
SM	Short Message
SMS	Short Message Service
SS-SMS	Supplementary Service - Short Message Service
VP	Validity Period

6 SS-Short Message Service stage 1 specification

6.1 Description

The Supplementary Service Short Message Service provides a means of sending messages of limited size point-to-point between network users. The provision of SMS makes use of a Service Centre which acts as a store-and-forward centre for Short Messages, i.e. all Short Messages are sent using a Service Centre which receives Short Messages from the Sending User, stores them and delivers them to the Receiving User. Thus the network needs to support the transfer of Short Messages between Sending User, Service Centre and Receiving User.

The Sending User sends the Short Message to the Service Centre where the Short Message is stored. The Service Centre attempts to deliver the Short Message to the Receiving User. If a Short Message can not be delivered within a specific time (Validity Period) the Service Centre deletes the Short Message.

The Sending User and the Service Centre shall be informed about the outcome of a submission or delivery, respectively, by means of a submit or delivery report.

Other messages besides the user defined Short Messages can be sent using SMS:

- Status Reports inform the Sending User about the status of a previously sent Short Message or Command;
- Commands allow users to manipulate Short Messages already stored in a Service Centre or the behaviour of the Service Centre with regard to the Status Report procedure.

NOTE

The functionality of the Service Centre in this specification is identical to the functionality of a Service Centre in GSM.

6.2 Procedures

6.2.1 Provision/withdrawal

SS-SMS may be provided after pre-arrangement with the service provider, or may be available generally to all users. SS-SMS may be withdrawn on request of the user or for administrative reasons.

6.2.2 Normal procedures

6.2.2.1 Activation/deactivation/registration/interrogation

Not applicable.

6.2.2.2 Invocation and Operation

6.2.2.2.1 Normal Operation

A Sending User shall be able to submit a Short Message to a Service Centre at any time, independently of whether or not there is a call in progress. A report will always be returned to the Sending User; either confirming that the SC received the Short Message or informing the Sending User that it was not possible to deliver the Short Message to the SC, including the reason why.

A Sending User shall be able to submit a Command to a Service Centre at any time, independently of whether or not there is a call in progress.

The Service Centre shall receive Commands from the Sending User and execute them. Upon reception of a Command the Service Centre shall execute the Command on the Short Message specified by the Short Message Number and the Originating-Address given in the Command information. A report will always be returned to the Sending User, either confirming the reception/ execution of the Command or indicating that the reception/ execution of the command failed, including the reason why.

A Receiving User shall be able to receive a Short Message from a Service Centre at any time, independently of whether or not there is a call in progress. A report will always be returned to the SC; either confirming that the Receiving User received the Short Message, or indicating that the reception of the Short Message failed, including the reason why.

If either a Short Message or a Command submitted to the Service Centre from a Sending User requests a Status Report, and the Status Report capabilities are included in the SC, it shall return (a) Status Report(s) to the Sending User. The Sending User shall be able to receive Status Reports from a Service Centre at any time, independently of whether or not there is a call in progress. A report will always be returned to the Service Centre, either confirming the reception of the Status Report or indicating that the reception failed, including the reason why.

It shall be possible for the Sending User to send several Short Messages which together form a longer Short Message (Concatenated Short Message).

The information transfer of SS-SMS shall only make use of call independent signalling connections (CISC).

NOTE

The acknowledging of a successful reception of a Short Message or a Status Report by the receiving entity does not imply that the Short Message or the Status Report has been displayed or in any other way delivered to the user.

6.2.3 Exceptional Procedures

6.2.3.1 Activation, deactivation and interrogation

Not applicable.

6.2.3.2 Invocation and Operation

If the Service Centre is not able to receive a Short Message from the Sending User it shall return a report to the Sending User containing the Failure-Cause.

If the Service Centre is not able to receive/execute a command submitted from the Sending User it shall return a report to the Sending User containing the Failure-Cause.

If the Receiving User is not able to receive a Short Message delivered from the Service Centre the Receiving User shall return a report to the Service Centre containing the Failure-Cause.

If the Sending User is not able to receive a Status Report from the Service Centre the Sending User shall return a report to the Service Centre containing the Failure-Cause.

If the Service Centre is not able to deliver a Short Message to a Receiving User because there is no memory available or the user is not reachable, the entity responsible for that Receiving User shall set an indication that a Service Centre attempted to deliver a Short Message to this user and store the address of that SC in the Short Message Waiting Data. If the Receiving User has memory available or is reachable again the entity shall send an ScAlert to the Service Centre, containing the address of the

Receiving User and upon reception of a ScAlert confirmation delete the SC address from the SMWD list.

The implementation of the Short Message Waiting Data is optional. If it is not implemented it is up to the SC to repeat the delivery attempt periodically to ensure the delivery of a Short Message.

6.3 Interactions with other Supplementary Services/ Additional Network Features

Interactions with other supplementary services and ANFs for which PISN standards were available the time of this Standard are specified below.

6.3.1 Calling Line Identification Presentation (SS-CLIP)

No Interaction.

6.3.2 Connected Line Identification Presentation (SS-COLP)

No interaction.

6.3.3 Calling/Connected Line Identification Restriction (SS-CLIR)

No interaction.

6.3.4 Calling Name Identification Presentation (SS-CNIP)

No interaction.

6.3.5 Calling/Connected Name Identification Restriction (SS-CNIR)

If calling name identification restriction has been invoked then the Receiving User's name shall not be included in any SMS message.

6.3.6 Connected Name Identification Presentation (SS-CONP)

If the name of the Receiving User is available to the SC it may optionally be included in a SMS message.

6.3.7 Completion of Calls to Busy Subscriber (SS-CCBS)

No interaction.

6.3.8 Completion of Calls on No Reply (SS-CCNR)

No interaction.

6.3.9 Call Transfer (SS-CT)

No interaction.

6.3.10 Call Forwarding Unconditional (SS-CFU)

Call forwarding shall not apply for Short Message Service.

6.3.11 Call Forwarding Busy (SS-CFB)

Call forwarding shall not apply for Short Message Service.

6.3.12 Call Forwarding No Reply (SS-CFNR)

Call forwarding shall not apply for Short Message Service.

6.3.13 Call Deflection (SS-CD)

Call deflection shall not apply for Short Message Service.

6.3.14 Path Replacement (ANF-PR)

No interaction.

6.3.15 Call Offer (SS-CO)

No interaction.

6.3.16 Call Intrusion (SS-CI)

No interaction.

6.3.17 Do Not Disturb (SS-DND)

Do Not Disturb shall not apply for Short Message Service.

6.3.18 Do Not Disturb Override (SS-DNDO)

No interaction.

6.3.19 Advice of Charge (SS-AOC)

No interaction.

6.3.20 Recall (SS-RE)

No interaction.

6.3.21 Call Interception (ANF-CINT)

Call Interception shall not apply for Short Message Service.

6.3.22 Transit Counter (ANF-TC)

No interaction.

6.3.23 Route Restriction Class (ANF-RRC)

No interaction.

6.3.24 Message Waiting Indication (SS-MWI)

The Message Centre may act as a sending entity for Short Messages and Commands and as a storage entity for Short Message and shall indicate the reception of new Short Messages to the Receiving User.

6.3.25 Wireless Terminal Location Registration (SS-WTLR)

No Interaction.

6.3.26 Wireless Terminal Mobility Incoming Call (ANF-WTMI)

No Interaction.

6.3.27 Wireless Terminal Mobility Outgoing Call (ANF-WTMO)

No Interaction.

6.3.28 Authentication of a WTM user (SS-WTAT)

No interaction.

6.3.29 Authentication of the PISN (SS-WTAN)

No interaction.

6.3.30 Private User Mobility Incoming Call (ANF-PUMI)

No Interaction.

6.3.31 Private User Mobility Outgoing Call (ANF-PUMO)

No Interaction.

6.3.32 Private User Mobility Registration (SS-PUMR)

No Interaction.

6.3.33 Common Information (ANF-CMN)

No interaction.

6.3.34 Call Priority Interruption (Protection) (SS-CPI(P))

No interaction.

6.3.35 Single Step Call Transfer (SS-SSCT)

No interaction.

6.3.36 Simple Dialog (SS-SD)

No interaction.

6.3.37 Call Identification and Call Linkage (ANF-CIDL)

No interaction.

6.4 Interworking considerations

A Service Centre may be connected to other networks than a PISN and receive Short Messages from and send Short Messages to the other networks.

6.4 Overall SDL

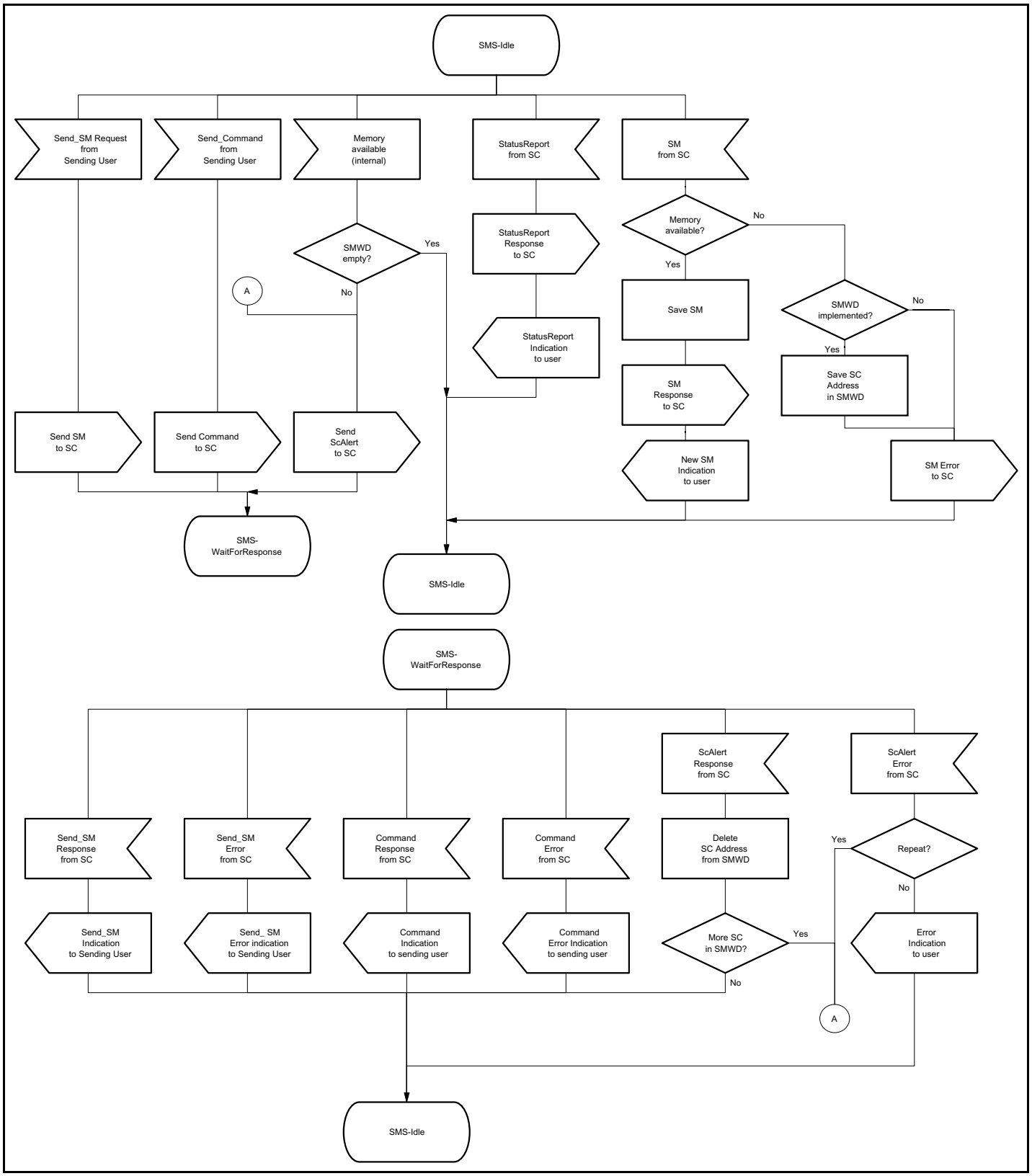


Figure 1SEQARABIC - Overall SDL

7 SS-Short Message Service stage 2 description

7.1 Functional model

7.1.1 Functional model description

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

FE1	Short Message Sending User Agent
FE2	Sending User Service Control Entity
FE3	Service Centre Control Entity
FE4	Receiving User Service Control Entity
FE5	Short Message Receiving User Agent
FE6	Sending User Message Centre
FE7	Receiving User Message Centre

The following relationships shall exist between these FEs:

ra	between FE1 and FE2
rb	between FE2 and FE3 and FE6 and FE3
rc	between FE3 and FE4 and FE4 and FE7
rd	between FE4 and FE5

Figure 3SEQARABIC shows these FEs and relationships.

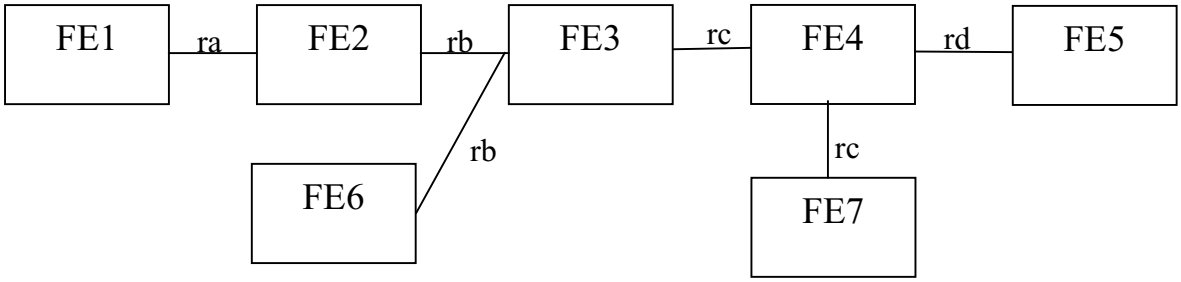


Figure 3SEQARABIC - Functional Entities

7.1.2 Description of Functional Entities

7.1.2.1 Short Message Sending User Agent

This Functional Entity:

- submits the Short Message Text and optional elements to FE2;
- submits Command elements to FE2;
- receives Submit Reports for sent SMs or Commands from FE2;
- receives Status Reports from FE2;
- submits Delivery Report elements for received Status Reports to FE2;

7.1.2.2 Sending User Service Control Entity

This Functional Entity:

- composes Short Messages using the Short Message Text and optional elements from FE1, adding additional elements if necessary, and sends them to FE3;
- composes Commands using the elements from FE1, adding additional elements if necessary, and sends them to FE3;

- receives Submit Reports and Status Reports from FE3;
- sends Submit Reports and Status Reports to FE1;
- receives Delivery Report elements from FE1 and sends them to FE3.

7.1.2.3 Service Centre Control Entity

This Functional Entity:

- receives Short Messages from FE2 or FE6, stores them and attempts to deliver them to FE4 until the Validity Period expires;
- composes and sends Submit Reports and Status Reports to FE2 or FE6 (e.g. the original Sender of the Short Message);
- deletes Short Messages when the Validity Period is expired;
- receives Commands from FE2 or FE6 and executes them on the Short Message given in the Command Data if they are still available in the SC;
- receives Delivery Reports from FE4 and
- optionally, receives SC-Alert from FE4.

7.1.2.4 Receiving User Service Control Entity

This Functional Entity:

- receives Short Messages from FE3;
- sends the Short Message Text and optional elements to FE5 or
- sends the Short Messages to FE7
- receives Delivery reports from FE5 or FE7and sends them to FE3,

optionally

- keeps a list of SC (SMWD) which attempted to deliver a Short Message while the Receiving User was not reachable and
- sends ScAlert messages to FE3 or
- receives ScAlert from FE7 and sends them to FE3.

7.1.2.5 Short Message Receiving User Agent

This Functional Entity:

- receives Short Message Text and optional elements from FE4;
- submits Delivery Report elements to FE4;
- delivers the Short Message to the Receiving User.

7.1.2.6 Sending User Message Centre

This Functional Entity

- receives Short Message or Command elements;
- composes and sends Short Messages to FE3;
- composes and sends Commands to FE3;
- receives Submit Reports from FE3;
- receives Status Reports from FE3;
- sends Delivery Reports to FE3.

7.1.2.7 Receiving User Message Centre

This Functional Entity:

- receives Short Messages from FE4 and stores them;

- submits Delivery Reports to FE4;
- indicates the reception of a new Short Message to the Receiving User and

optionally

- keeps a list of SC (SMWD) which attempted to deliver a Short Message while the Receiving User was not reachable and
- sends SC-Alert messages to FE4.

7.1.3 Relationship of functional model to Basic Call functional model

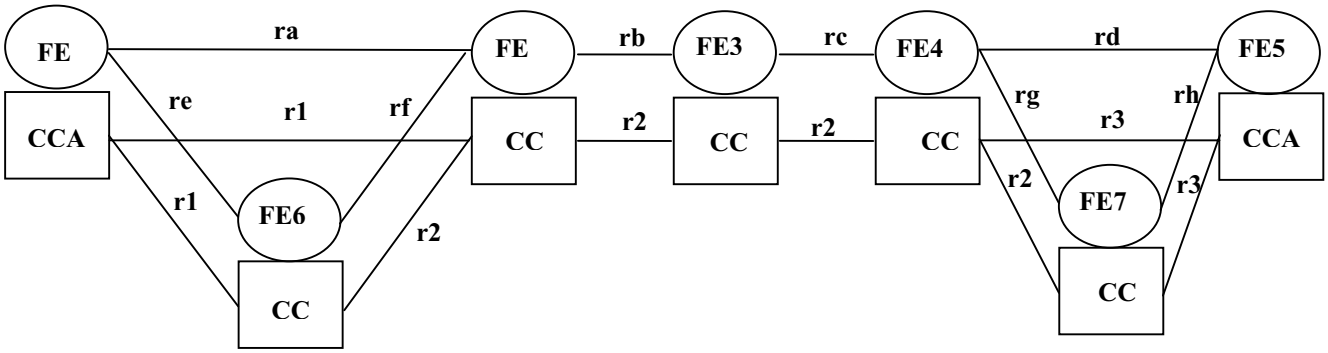


Figure 5SEQARABIC - Functional Entity Model Relationship

Editor's NOTE: Signalling flows are only CISC, therefore it seems reasonable to delete the above section. It is currently not updated!

7.2 Information flows

7.2.1 Definition of Information flows

In the tables listing the elements in information flows, the column headed "Request" indicates which of these elements are mandatory (M) and which are optional (O) in a request/indication information flow, and the column headed "Confirm" (confirmed information flows only) indicates which of these elements are mandatory (M) and which are optional (O) in a response/confirmation information flow.

7.2.1.1 ra_SmsSubmit

ra_SmsSubmit is a confirmed information flow across ra from FE1 to FE2 used to submit Short Message elements from the Short Message Sending User Agent to the Sending User Service Control Entity. Table 1 lists the elements within the ra_SmsSubmit information flow.

Table 1 - Contents of ra_SmsSubmit

Element	Request	Confirm
Receiving User's number	M	
Sending User's number	O	
Short Message Reference	O	
Protocol Identifier	O	O
Status-Report-Request	O	
Reply-Path	O	
Reject-Duplicates	O	
Class	O	O
Compressed	O	O
Short-Message-Text	M	O (NOTE 1)
Validity-Period	O	
User Data Header	O	O
SMSC Control Parameters	O	O
Service-Centre-Time- Stamp		M

NOTE 1

The Short-Message-Text element in an SmsSubmit response/ confirmation is only available for use by the Service Centre.

7.2.1.2 rb_SmsSubmit

rb_SmsSubmit is a confirmed information flow across rb from FE2 to FE3 and from FE6 to FE3 used to submit the Short Message from the Sending User Service Control Entity or Sending User Message Centre, respectively, to the Service Centre Entity. Table 2 lists the elements within the rb_SmsSubmit information flow.

Table 2 - Contents of rb_SmsSubmit

Element	Request	Confirm
Receiving User's number	M	
Sending User's number	M	
Short Message Reference	M	
Protocol Identifier	M	O
Status-Report-Request	M	
Reply-Path	M	
Reject-Duplicates	M	
Class	O	O
Compressed	M	O
Short-Message-Text	M	O (NOTE 2)
Validity-Period	O	
User Data Header	O	O
Service-Centre-Time-Stamp		M

NOTE 2

The Short-Message-Text element in an SmsSubmit response/ confirmation is only available for use by the Service Centre

7.2.1.3 rc_SmsDeliver

rc_SmsDeliver is a confirmed information flow across rc from FE3 to FE4 and from FE4 to FE7 used to submit the Short Message from the Service Centre Entity to the Receiving User Service Control Entity and from the Receiving User Service Control Entity to the Receiving User Message Centre. Table 3 lists the elements within the rc_SmsDeliver information flow.

Table 3 - Contents of rc_SmsDeliver

Element	Request	Confirm
Sending User's number	M	
Receiving User's number	M	
Protocol Identifier	M	O
Service-Centre-Time-Stamp	M	
Priority	M	
More-Messages-to-Send	M	
Status-Report-Indication	M	
Reply-Path	M	
Class	O	O
Compressed	M	O
Short-Message-Text	M	O (NOTE 3)
User Data Header	O	O
Sending User's name	O	

NOTE 3

The Short-Message-Text element in an SmsDeliver response/confirmation flow is only available for use by the Receiving User entity.

7.2.1.4 rd_SmsDeliver

rd_SmsDeliver is a confirmed information flow across rd from FE4 to FE5 used to submit the Short Message from the Receiving User Service Control Entity to the Short Message Receiving User Agent. Table 4 lists the elements within the rd_SmsDeliver information flow.

Table 4 - Contents of rd_SmsDeliver

Element	Request	Confirm
Sending User's number	M	
Receiving User's number	O	
Protocol Identifier	O	O
Service-Centre-Time-Stamp	O	
Priority	O	
More-Messages-to-Send	O	
Status-Report-Indication	O	
Reply-Path	O	
Class	O	O
Compressed	O	O
Short-Message-Text	M	O (NOTE 4)
User Data Header	O	O
Sending User's name	O	

NOTE 4

The Short-Message-Text element in an SmsDeliver response/ confirmation is only available for use by the Receiving User entity.

7.2.1.5 ra_SmsStatusReport

ra_SmsStatusReport is a confirmed information flow across ra from FE2 to FE1 used to submit a Status Report from the Sending User Service Control Entity to the Short Message Sending User Agent. Table 5 lists the elements within the ra_SmsStatusReport information flow.

Table 5 - Contents of ra_SmsStatusReport

Element	Request	Confirm
Short Message Reference	O (NOTE 5)	
Service-Centre-Time-Stamp	M	
Discharge-Time	M	
Receiving User's number	M	
Destination Address	M	
Status	M	
Priority	O	
More-Messages-to-Send	O	
Status-Report-Qualifier	O	
Receiving User's Name	O	
Protocol Identifier	O	O
Class	O	O
Compressed	O	O
Short-Message-Text	O	O (NOTE 6)
User Data Header	O	O

NOTE 5

Where the SmsStatusReport is the result of an SmsCommand and the Command Type was an Enquiry, the Short Message Reference returned in the SmsStatusReport shall be the Short Message Number which was sent in the SmsCommand (i.e. the Short Message Reference of the previously submitted Short Message to which the Enquiry refers).

NOTE 6

The Short-Message-Text information in an SmsStatusReport response/ confirmation is only available for use by the Receiving User entity.

7.2.1.6 rb_SmsStatusReport

rb_SmsStatusReport is a confirmed information flow across rb from FE3 to FE2 and from FE3 to FE2 used to submit a Status Report from the Service Centre Entity to the Sending User Service Control Entity and from the Service Centre Entity to the Sending User Message Centre. Table 6 lists the elements within the rb_SmsStatusReport information flow.

Table 6 - Contents of rb_SmsStatusReport

Element	Request	Confirm
Short Message Reference	M	
Service-Centre-Time-Stamp	M	
Discharge-Time	M	
Receiving User's address	M	
Destination Address	M	
Status	M	
Priority	M	
More-Messages-to-Send	M	
Status-Report-Qualifier	M	
Receiving User's Name	O	
Protocol Identifier	O	O
Class	O	O
Compressed	O	O
Short-Message-Text	O	O (NOTE 7)
User Data Header	O	O

NOTE 7

The Short-Message-Text element in an SmsStatusReport response/ confirmation is only available for use by the Receiving User.

7.2.1.7 ra_SmsCommand

ra_SmsCommand is a confirmed information flow across ra from FE1 to FE2 used to transfer a Command from the Short Message Sending User Agent to the Sending User Service Control Entity. Table 7 lists the elements within the ra_SmsCommand information flow.

Table 7 - Contents of ra_SmsCommand

Element	Request	Confirm
Receiving User's address	M	
Short Message Reference	O	
Short Message Number	M	
Protocol Identifier	M	O
Command-Type	M	
Command-Data	O	
Status-Report-Request	O	
Service-Centre-Time-Stamp		M
Short-Message-Text		O (NOTE 8)
Class		O
Compressed		O
User Data Header		O

NOTE 8

The Short-Message-Text element in an SmsCommand response/ confirmation is only available for use by the Service Centre.

7.2.1.8 rb_SmsCommand

rb_SmsCommand is a confirmed information flow across rb from FE2 to FE3 and FE6 to FE3 used to transfer a Command from the Sending User Service Control Entity to the Service Centre Entity and from the Sending User Message Centre to the Service Centre Control Entity, respectively. Table 8 lists the elements within the rb_SmsCommand information flow.

Table 8 - Contents of rb_SmsCommand

Element	Request	Confirm
Receiving User's address	M	
Short Message Reference	M	
Short Message Number	M	
Protocol Identifier	M	O
Command-Type	M	
Command-Data	O	
Status-Report-Request	O	
Service-Centre-Time-Stamp		M
Short-Message-Text		O (NOTE 9)
Class		O
User Data Header		O
Compressed		O

NOTE 9

The Short-Message-Text element in a SmsCommand response/ confirmation is only available for use by the Service Centre.

7.2.1.9 rd_ScAlert

rd_ScAlert is a confirmed information flow across rd from FE5 to FE4 used to transfer a ScAlert from the Short Message Receiving User Agent to the Receiving User Service Control Entity. Table 9 lists the elements within the rd_ScAlert information flow.

Table 9 - Contents of rd_ScAlert

Element	Request	Confirm
Party Number	O	O

7.2.1.10 rc_ScAlert

rc_ScAlert is a confirmed information flow across rc from FE4 to FE3 and from FE7 to FE4 used to transfer a ScAlert from the Receiving User Service Control Entity to the Service Centre Entity and from the Receiving User Message Centre to the Receiving User Service Control Entity, respectively. Table 10 lists the elements within the rc_ScAlert information flow.

Table 10 - Contents of rc_ScAlert

Element	Request	Confirm
Party Number	M	M

7.2.2 Information flow sequences

A stage 3 standard for SS-SMS shall provide signalling procedures in support of the information flow sequences specified in the figures. In addition, signalling procedures should be provided to cover sequences arising from error situations, interactions with Basic Calls, interactions with other supplementary services, different topologies etc.

Within a column representing an SS-SMS Functional Entity, the numbers refer to Functional Entity actions listed in 7.3.

7.2.2.1 Submission of a Short Message

Figure 7SEQARABIC shows in generic form the information flow sequence for submission of a Short Message when in the case when the Short Messages are stored in and sent from a Terminal.

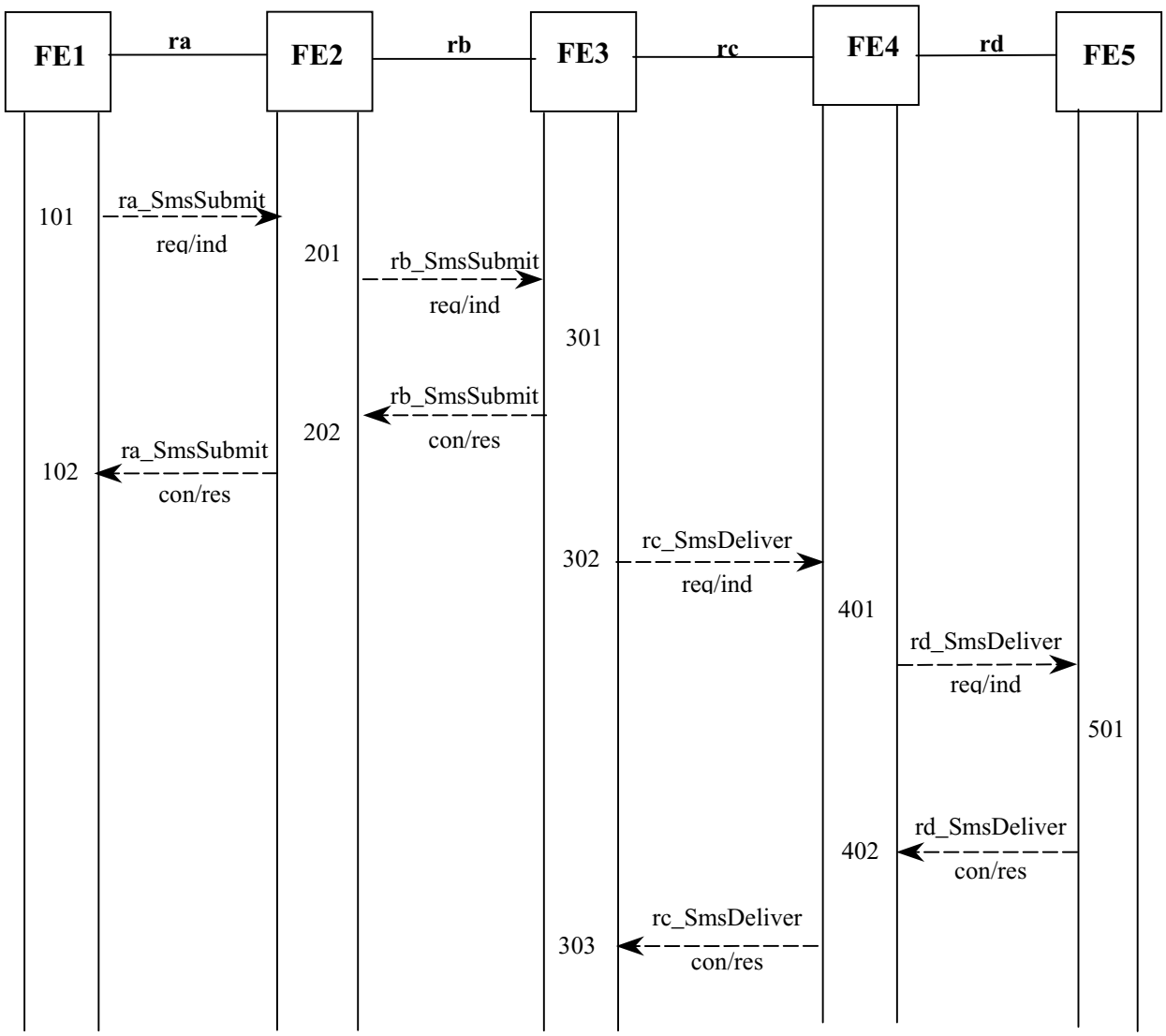


Figure 7SEQARABIC - Information flow sequence for Short Message Transfer, Terminal-case

Figure 9 shows in generic form the information flow sequence for submission of a Short Message from FE6 to FE7.

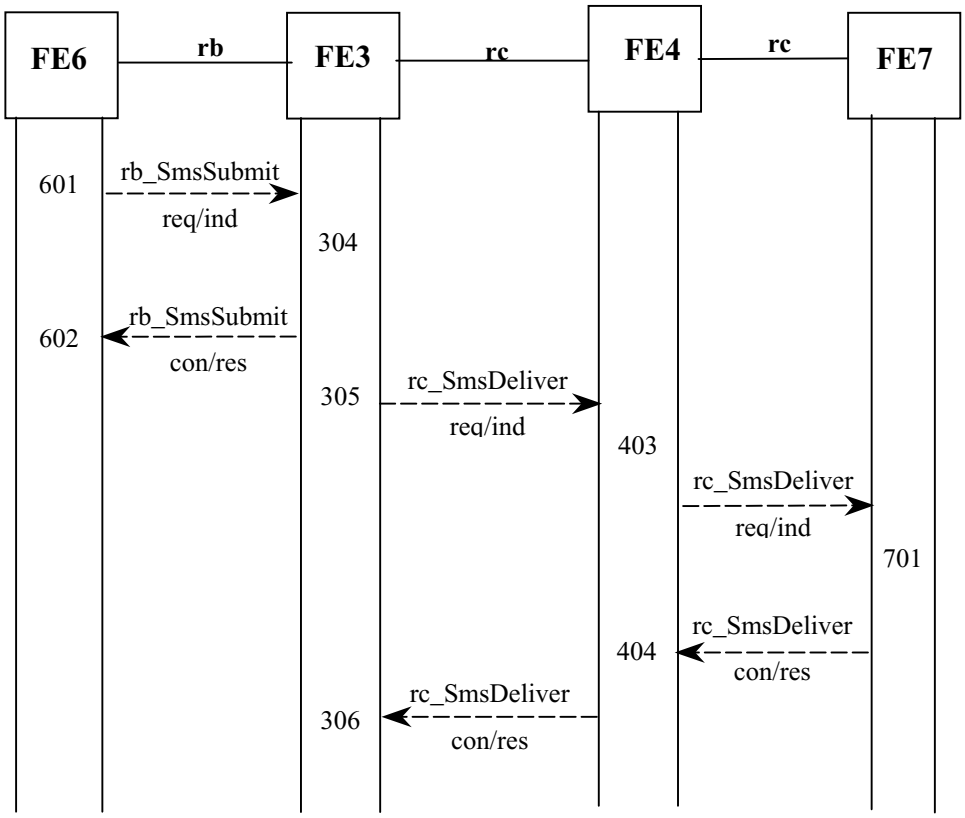
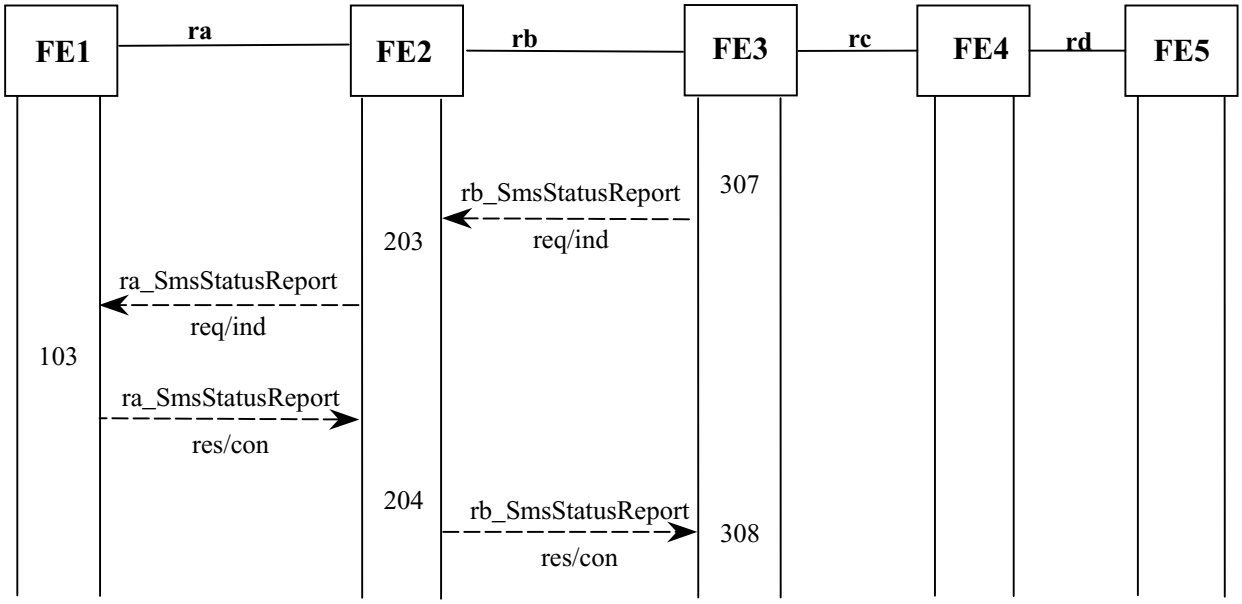


Figure 9 - Information flow sequence for Short Message transfer - Message-Centre-case

7.2.2.2 Delivery of a Status Report

Figure 10 shows in generic form the information flow sequence for the submission of a Status Report from FE3 to FE1.



REFMERGEFORMATFigure 10 - Information flow sequence for Status Report Transfe - Terminal-case

Figure 11 shows in generic form the information flow sequence for the submission of a Status Report from FE3 to FE6.

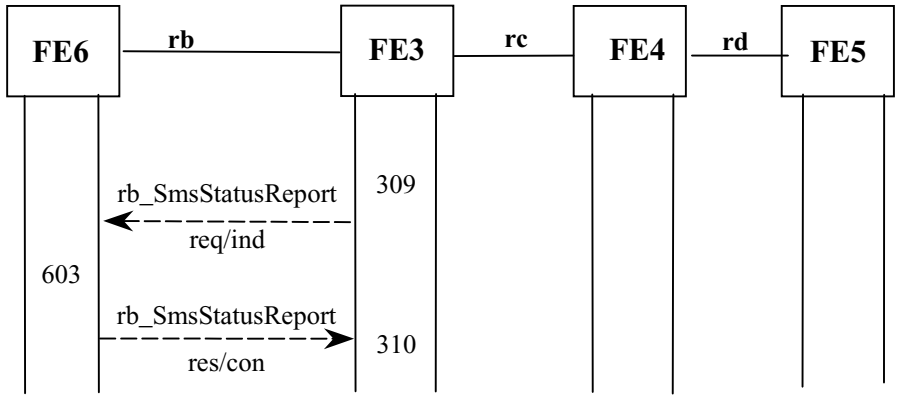


Figure 11 - Information flow sequence for Status Report Transfer - Message-Centre-case

7.2.2.3 Transfer of an SmsCommand

Figure 14SEQARABIC shows in generic form the information sequence flow for the transfer of an SmsCommand from FE1 to FE3.

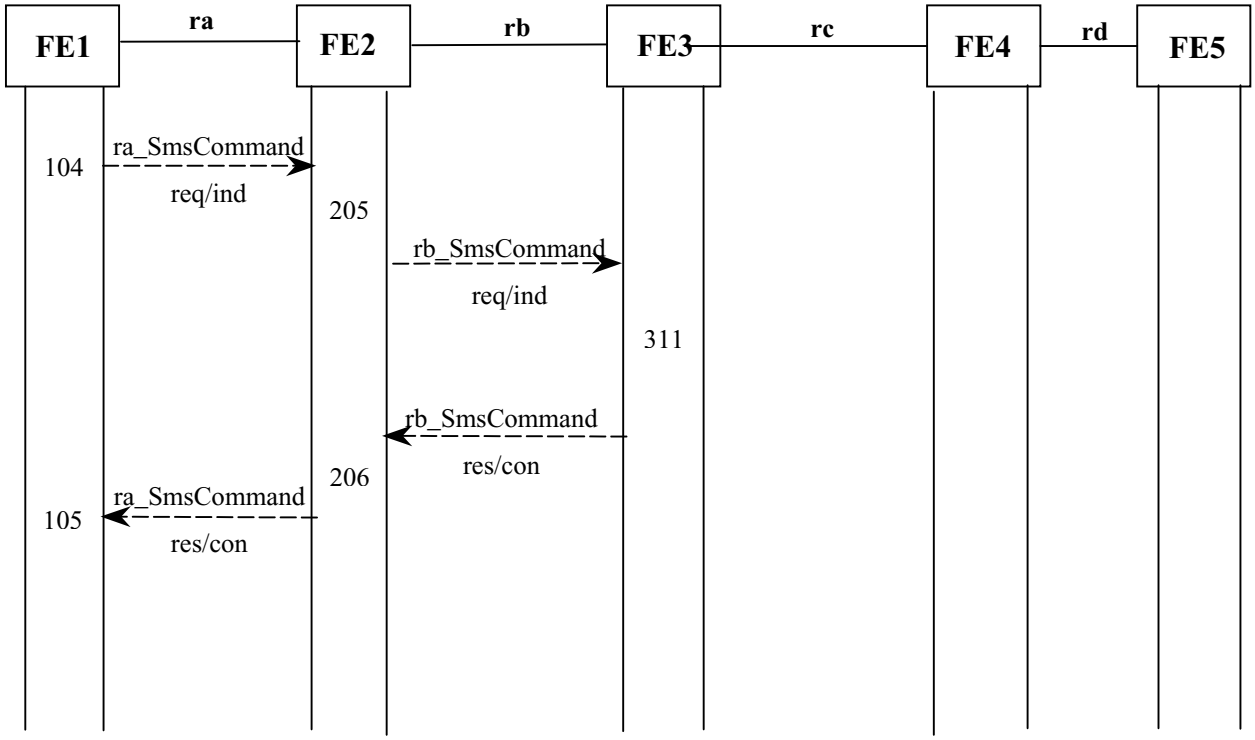


Figure 14SEQARABIC - Information flow sequence for Command Transfer - Terminal-case

Figure 16 shows in generic form the information flow sequence for the submission of a Command from FE6 to FE3.

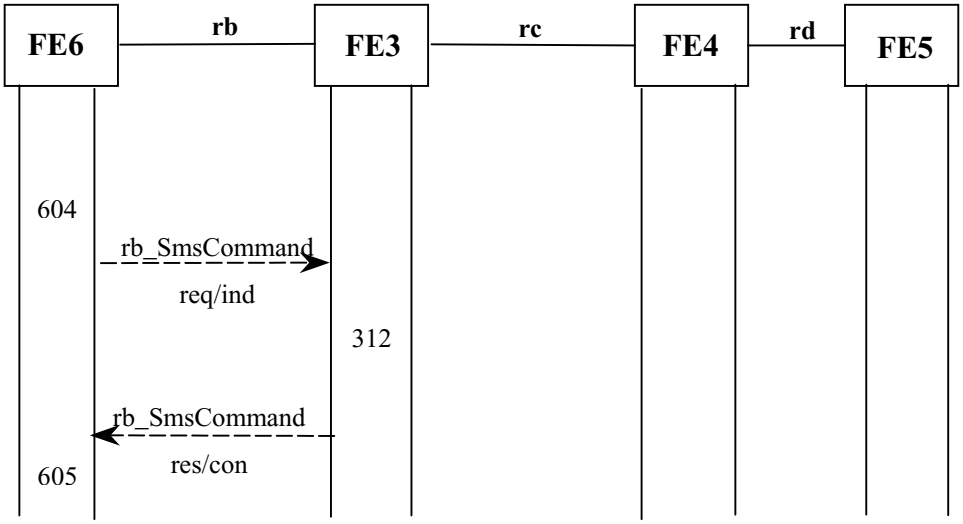


Figure 16 - Information flow sequence for Command Transfer - Message-Centre-case

7.2.2.4 Transfer of an ScAlert

Figure 17SEQARABIC shows in generic form the information flow sequence for the transfer of an ScAlert from FE4 to FE3.

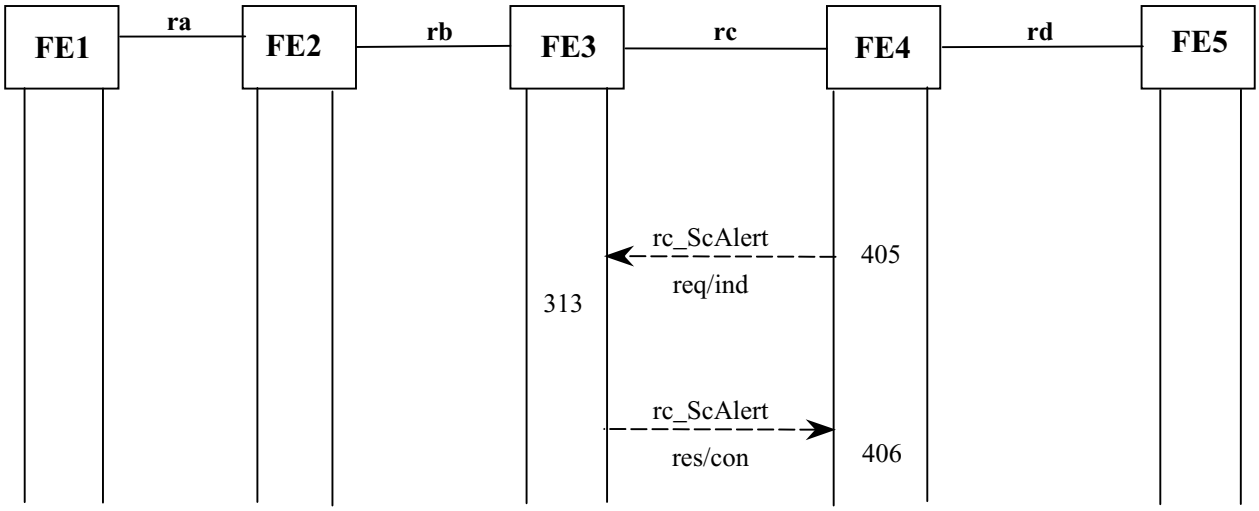


Figure 17SEQARABIC - Information flow sequence for ScAlert Transfer - Terminal-case

Figure 19 shows in generic form the information flow sequence for the transfer of an ScAlert from FE7 to FE3.

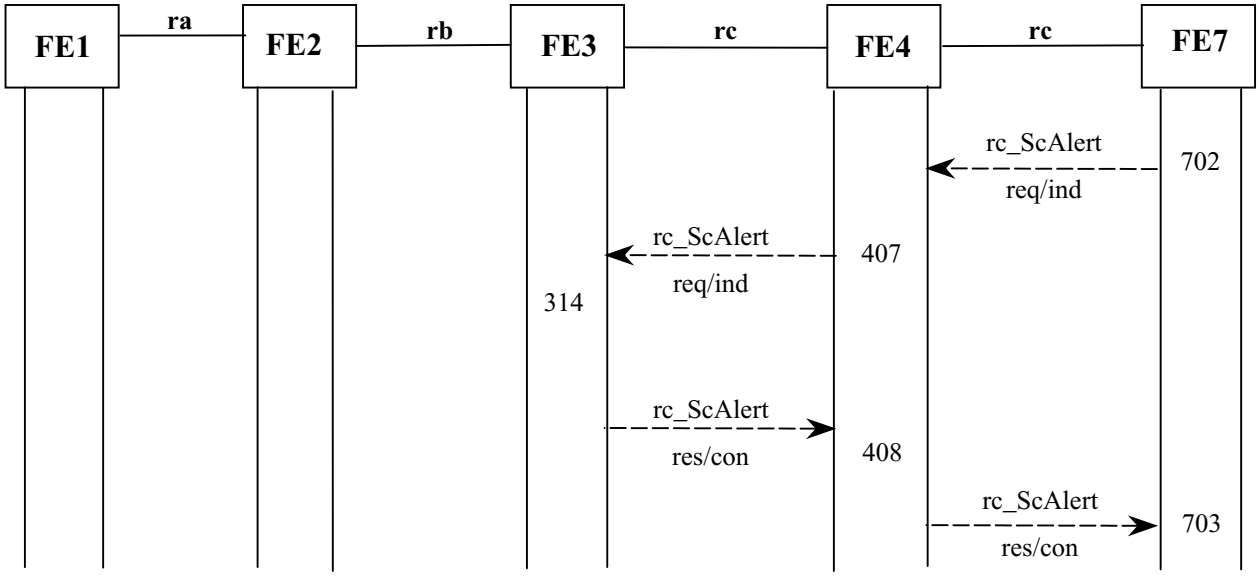


Figure 19 - Information flow sequence for ScAlert Transfer - Message-Centre-case

7.3 Functional Entity Actions

7.3.1 Functional Entity actions of FE1

101 Send ra_SmsSubmit request/indication to FE2 as received from the user.

102 Receive ra_SmsSubmit response/confirmation from FE2 and deliver it to the user.

103 Receive ra_SmsStatusReport request/indication from FE2 and deliver it to the user. Send ra_SmsStatusReport response/confirmation to FE2.

104 Send ra_SmsCommand request/indication to FE2 as received from the user.

105 Receive ra_SmsCommand response/confirmation from FE2 and deliver it to the user.

7.3.2 Functional Entity actions of FE2

201 Receive ra_SmsSubmit request/indication from FE1, add additional elements if necessary and send rb_SmsSubmit request/indication to FE3.

202 Receive rb_SmsSubmit response/confirmation from FE3 and send ra_SmsSubmit response/confirmation to FE1.

203 Receive rb_SmsStatusReport request/indication from FE3, check the elements and send ra_SmsStatusReport request/indication to FE1.

204 Receive ra_SmsStatusReport response/confirmation from FE1 and send rb_SmsStatusReport response/confirmation to FE3.

205 Receive ra_SmsCommand request/indication from FE1, add additional elements if necessary and send rb_SmsCommand request/indication to FE3.

206 Receive rb_SmsCommand response/confirmation from FE3 and send ra_SmsCommand response/confirmation to FE1.

7.3.3 Functional Entity actions of FE3

301 Receive rb_SmsSubmit request/indication from FE2, check if parameters are correct and store the Short Message. Send rb_SmsSubmit response/confirmation to FE2.

302 Compose rc_SmsDeliver request/indication message using the stored Short Message data and send it to FE4.

303 Receive rc_SmsDeliver response/confirmation from FE4; this may trigger the sending of rb_SmsStatusReport (see action 307).

304 Receive rb_SmsSubmit request/indication from FE6, check if parameters are correct and store the Short Message. Send rb_SmsSubmit response/confirmation to FE6.

305 Compose rc_SmsDeliver request/indication message using the stored Short Message data and send it to FE4.

306 Receive rc_SmsDeliver response/confirmation from FE4; this may trigger the sending of rb_SmsStatusReport (see action 309).

307 If the user requested a Status Report in a previously sent SmsSubmit or SmsCommand then compose rb_SmsStatusReport request/indication message and send it to FE2.

308 Receive rb_SmsStatusReport response/confirmation from FE2.

309 If the user requested a Status Report in a previously sent SmsSubmit or SmsCommand then compose rb_SmsStatusReport request/indication message and send it to FE6.

310 Receive rb_SmsStatusReport response/confirmation from FE6.

311 Receive rb_SmsCommand request/indication from FE2 and action it on the Short Message identified by the elements in the command. Send rb_SmsCommand response/confirmation to FE2.

312 Receive rb_SmsCommand request/indication from FE6 and action it on the Short Message identified by the elements in the command. Send rb_SmsCommand response/confirmation to FE6.

313 Receive rc_ScAlert request/indication from FE4 and send rc_ScAlert response/confirmation to FE4. If there are Short Messages or Status Reports waiting to be delivered to this Receiving User invoke delivery procedure (see action 302).

314 Receive rc_ScAlert request/indication from FE4 and send rc_ScAlert response/confirmation to FE4. If there are Short Messages or Status Reports waiting to be delivered to this Receiving User invoke delivery procedure (see action 305).

7.3.4 Functional Entity actions of FE4

401 Receive rc_SmsDeliver request/indication from FE3, check if elements are correct and send rd_SmsDeliver request/indication to FE5.

402 Receive rd_SmsDeliver response/confirmation from FE5 or FE7 and send rc_SmsDeliver response/confirmation to FE3.

403 Receive rc_SmsDeliver request/indication from FE3, check if elements are correct and send rc_SmsDeliver request/indication to FE7.

404 Receive rc_SmsDeliver response/confirmation from FE7 and send rc_SmsDeliver response/confirmation to FE3.

405 Send rc_ScAlert request/indication to FE3.

406 Receive rc_ScAlert response/confirmation from FE3.

407 Receive rd_ScAlert request/indication from FE7, add additional elements if necessary, and send rc_ScAlert request/indication to FE3.

408 Receive rc_ScAlert response/confirmation from FE3 and send rd_ScAlert response/confirmation to FE7.

7.3.5 Functional Entity actions of FE5

501 Receive rd_SmsDeliver request/indication from FE4, deliver the Short Message to the user and send rd_SmsDeliver response/confirmation to FE4.

7.3.6 Functional Entity actions of FE6

601 On request of the user send rb_SmsSubmit request/ indication to FE3.

602 Receive rb_SmsSubmit response/ confirmation from FE3 and indicate result to the user.

603 Receive rb_SmsStatusReport request/indication from FE3 and indicate it to the user. Send rb_SmsStatusReport response/confirmation to FE3.

604 On user request send rb_SmsCommand request/indication to FE3.

605 Receive rb_SmsCommand response/confirmation from FE3 and indicate result to the user.

7.3.7 Functional Entity actions of FE7

701 Receive rc_SmsDeliver from FE4, store the Short Message if possible, indicate the reception of the new message to the user and send rc_SmsDeliver response/ confirmation to FE4.

702 On an internal indication send an rc_ScAlert request/indication to FE4.

703 Receive an rc_ScAlert response/confirmation from FE4.

ANNEX A

1. Description of PDU elements

1.1 Class

Indication how the message was handled at the originating entity (concerning displaying, storage, acknowledging).

1.2 Command Data

Data relating to the operation requested by the Sending User which is to be performed by the Service Centre.

1.3 Command Type

Type of operation that the Service Centre is to perform.

1.4 Compressed

Indication whether the text of the Short Message is compressed or not.

1.5 Discharge Time

Indicates the time at which a previously submitted Short Message was successfully deliver to or attempted to deliver to the Receiving User's Service Control Entity or disposed of by the Service Centre.

1.6 More-Messages-to-Send

Indication that there are more messages waiting in that Service Centre to be sent to that particular Receiving User.

1.7 Priority

Requests a delivery attempt to a terminal irrespective of whether or not it has been identified as temporarily absent or having no memory available.

1.8 Protocol Identifier

This refers to a higher layer protocol or indicates interworking with a certain type of telematic device. The terminal will interpret unsupported values as the value (0) but shall store them exactly as received. In the case of interworking the sending terminal requests the SC to convert the SM into a format suitable for the receiving terminal.

1.9 Receiving User's Name

This is the Receiving User's name.

1.10 Receiving User's Number

This is the Receiving User's PISN number.

1.11 Reject-Duplicates

Instructs the SC to reject or accept a Short Message still held in the Service Centre.

1.12 Reply-Path

Requests a SC to handle a reply sent in response to a previously sent Short Message. This may happen even though this SC is not known to the receiving terminal.

1.13 Sending User's Name

This is the Name of the Sending User.

1.14 Sending User's Number

This is the Sending User's PISN number.

1.15 Service-Centre-Time-Stamp

Time of Arrival of the Short Message at the Service Centre. The same time value will also be carried in the SmsStatusReport relating to a particular Short Message. This will allow the entity receiving the Status

Report to associate a particular SmsSubmit with a subsequent SmsStatusReport by correlating the two SCTS values.

1.16 Short Message Number

Reference Number of a previously submitted Short Message on which to operate on. For Command Types which are not for a specific Short Message this field shall be ignored when received.

1.17 Short Message Reference

This is a Reference-Number identifying the Short Message uniquely to the Service Centre.

1.18 Short Message Text

140 octet of data containing the message text.

1.19 SMSC Control Parameters

Control Parameters specifying when the SC shall return a Status Report to the Sending User. Status-Report-Request must be set for SMSC Control Parameters to be enable.

1.20 Status

Indicates the Status of a previously submitted Short Message and certain Commands for which a Status Report has been requested.

1.21 Status Report Indication

Indication of whether or not the Sending User has requested a Status Report.

1.22 Status Report Qualifier

Indication of whether this Status Report is a response to an SmsCommand or to an SmsSubmit.

1.23 Status-Report-Request

Request to the Service Centre to send Status Report.

1.24 User Data Header

Sequence of a single or several User Data Header(s).

1.25 Validity-Period

Time to live for a Short Message in a Service Centre.

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Switzerland

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