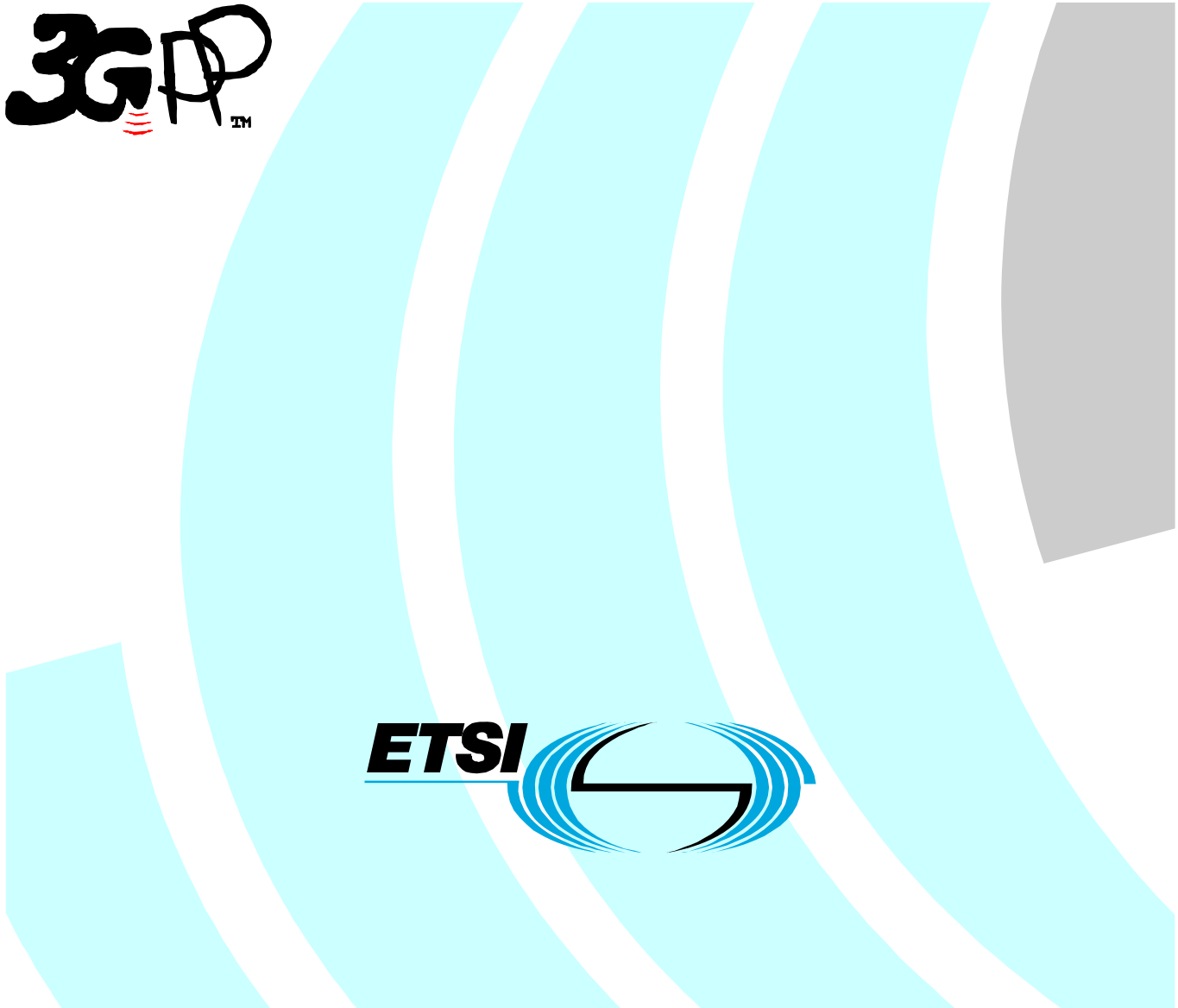
ETSI TR 129 998-5-4 V8.0.0 (2009-01)

Technical Report

**Universal Mobile Telecommunications System (UMTS);
Open Service Access (OSA) Application Programming Interface (API) Mapping for Open Service Access;
Part 5: User Interaction Service Mapping;
Subpart 4: API to SMS Mapping
(3GPP TR 29.998-05-4 version 8.0.0 Release 8)**



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Contents

Foreword

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Introduction

Structure of the OSA API Mapping (3GPP TR 29.998)

The present document is part 5 subpart 4 of a multi-part deliverable covering the Open Service Access (OSA); Application Programming Interface (API) Mapping for OSA.

Table: Overview of the OSA APIs & Protocol Mappings 29.198 & 29.998-family

OSA API specifications 29.198-family						OSA API Mapping - 29.998-family	
29.198-01	Overview					29.998-01	Overview
29.198-02	Common Data Definitions					*29.998-02*	*Not Applicable*
29.198-03	Framework					*29.998-03*	*Not Applicable*
Call Control (CC) SCF	29.198-04-1 Common CC data definitions	29.198-04-2 Generic CC SCF	29.198-04-3 Multi-Party CC SCF	29.198-04-4 Multi-media CC SCF	29.198-04-5 Conf. CC SCF	29.998-04-1	Generic Call Control – CAP mapping
						29.998-04-2	*Generic Call Control – INAP mapping*
						29.998-04-3	*Generic Call Control – Megaco mapping*
						29.998-04-4	Multiparty Call Control – ISC mapping
29.198-05	User Interaction SCF					29.998-05-1	User Interaction – CAP mapping
						29.998-05-2	*User Interaction – INAP mapping*
						29.998-05-3	*User Interaction – Megaco mapping*
						29.998-05-4	**User Interaction – SMS mapping**
29.198-06	Mobility SCF					29.998-06-1	User Status and User Location – MAP mapping
						29.998-06-2	User Status and User Location – SIP mapping
29.198-07	Terminal Capabilities SCF					*29.998-07*	*Not Applicable*
29.198-08	Data Session Control SCF					29.998-08	Data Session Control – CAP mapping
29.198-09	*Generic Messaging SCF*					*29.998-09*	*Not Applicable*
29.198-10	Connectivity Manager SCF					*29.998-10*	*Not Applicable*
29.198-11	Account Management SCF					*29.998-11*	*Not Applicable*
29.198-12	Charging SCF					*29.998-12*	*Not Applicable*
29.198-13	Policy Management SCF					*29.998-13*	*Not Applicable*
29.198-14	Presence & Availability Management SCF					*29.998-14*	*Not Applicable*
29.198-15	Multi Media Messaging SCF					*29.998-15*	*Not Applicable*
29.198-16	Service Broker SCF					*29.998-16*	*Not Applicable*

1 Scope

The present document investigates how the OSA User Interaction Interface Class methods defined in 3GPP TS 29.198-5 [5] can be mapped onto CAMEL Application Part operations and Mobile Application Part operations, within the context of SMS. The mapping of the OSA API to the CAP and relevant MAP operations is considered informative, and not normative. An overview of the mapping TR is contained in the introduction of the present document as well as in 3GPP TR 29.998-1 [10].

The OSA specifications define an architecture that enables application developers to make use of network functionality through an open standardised interface, i.e. the OSA API's. The API specification is contained in the 3GPP TS 29.198 series of specifications. An overview of these is available in the introduction of the present document as well as in 3GPP TS 29.198-1 [1]. The concepts and the functional architecture for the Open Service Access (OSA) are described by 3GPP TS 23.198 [3]. The requirements for OSA are defined in 3GPP TS 22.127 [2].

2 References

- References are either specific (identified by date of publication and/or edition number or version number) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.

[1] 3GPP TS 29.198-1: "Open Service Access (OSA); Application Programming Interface (API); Part 1: Overview".

[2] 3GPP TS 22.127: "Service Requirement for the Open Services Access (OSA); Stage 1".

[3] 3GPP TS 23.198: "Open Service Access (OSA); Stage 2".

[4] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".

[5] 3GPP TS 29.198-5: "Open Service Access (OSA); Application Programming Interface (API); Part 5: Generic user interaction".

[6] 3GPP TS 29.002: "Mobile Application Part (MAP) specification".

[7] 3GPP TS 29.078: "Customised Applications for Mobile network Enhanced Logic (CAMEL) Phase 3; CAMEL Application Part (CAP) specification".

[8] 3GPP TS 22.101: "Service Aspects; Service Principles".

[9] ITU-T Recommendation Q.850: "Usage of cause and location in the Digital Subscriber Signalling System No. 1 and the Signalling System No. 7 ISDN User Part".

[10] 3GPP TR 29.998-1: "Open Service Access (OSA); Application Programming Interface (API) Mapping for OSA; Part 1: General Issues on API Mapping".

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions given in TS 29.198-1 [1] apply.

3.2 Abbreviations

For the purposes of the present document, the abbreviations given in TS 29.198-1 [1] apply.

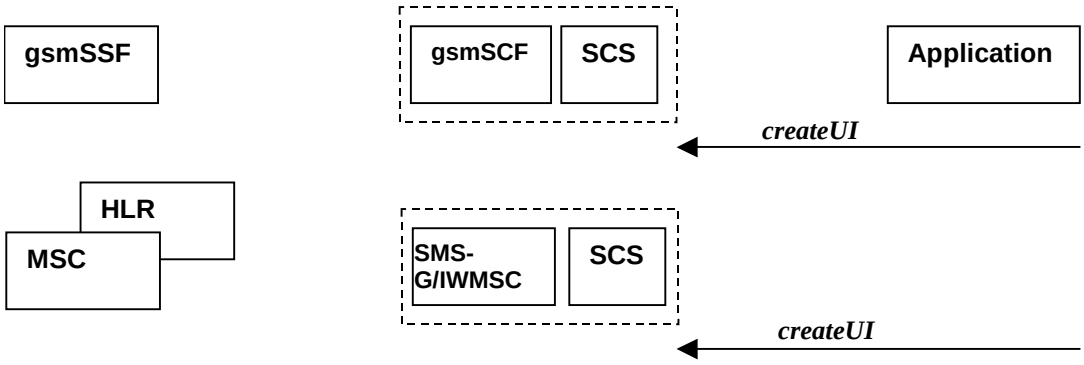
4 Generic Message Transfer Service SMS Call Flows

4.1 User Interaction

The User Interaction interface is used by applications to interact with end users. The API supports call and non-call related User Interaction. In mapping the User Interaction interface to SMS call flows, only non-call related User Interaction is applicable.

4.1.1 createUI

createUI is a method that is used to create a new (non call related) user interaction object.



NOTE: There are no associated CAP or MAP, SMS call flows.

Figure 4-1: Call Flow for createUI

Table 4-1: Normal Operation

Pre-conditions	The application has been instructed to initiate a non call related User Interaction
1	The application invokes the ***createUI*** method
2	The SCS creates a new UI object

Parameter Mapping

None.

4.1.2 createUICall

createUICall is a method that does not map to SMS delivery.

4.1.3 enableUINotification

enableUINotification is a method that enables the reception of a user initiated user interaction. The user initiates this interaction by means of a CAMEL Phase 3 enabled MO SMS.

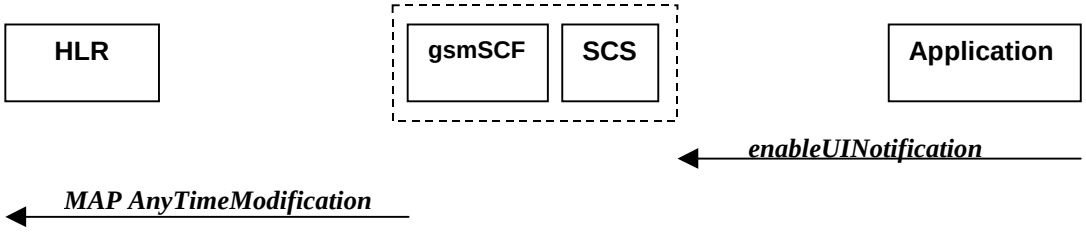


Figure 4-2: Call Flow for enableUINotification

Two alternatives have been identified:

1. The application requests notifications to be enabled (see table 4-2).
2. HLR rejects CSI updates (see table 4-3).

Table 4-2: Normal Operation

Pre-conditions	**An agreement is established between the network operator and the service provider for the event notification to be enabled**
1	The application invokes the ***enableUINotification*** method
2	The gsmSCF sends a MAP ***AnyTimeModification*** to the HLR in order to Activate the necessary CAMEL Subscription Information (SMS-CSI) (see note)
NOTE: CAMEL phase 3 only allows for activation/deactivation of the CSI and not modification of the contents of the CSIs. As the SMS-CSI relates only to MO messaging, only originating addresses are considered. For SMS-CSI only DP SMS_Collected_Info is supported.	

Table 4-3: Error condition

Pre-conditions	**gsmSCF had previously sent a MAP** *AnyTimeModification* **message to the HLR as a result of an** *enableUINotification* **request from the application**
1	HLR rejects the request to update the CSI
2	The gsmSCF sends an internal message to the SCS to indicate the up date failure
3	The SCS invokes the exception on ***enableUINotification***

Table 4-4: Parameter Mapping

From: enableUINotification	**To: MAP AnyTimeModification**
appInterface	
	gsmSCFAddress
eventCriteria (TpUIEventCriteria):	
OriginatingAddress	subscriberIdentity (see note)
DestinationAddress	
ServiceCode	
assignmentID	
	modificationRequestFor-CallForwardingSS-Data
	modificationRequestFor-CallBarringSS-Data
	modificationRequestFor-CSI Requested CSI = SMS-CSI ModifyNotificationFlag Modify CSI State = Activate
NOTE: In case an address range is used, a separate MAP AnyTimeModificationRequest shall be sent for every address in the range.	

4.1.4 disableUINotification

disableUINotification is a method that allows the application to remove notification for UI related actions previously set.

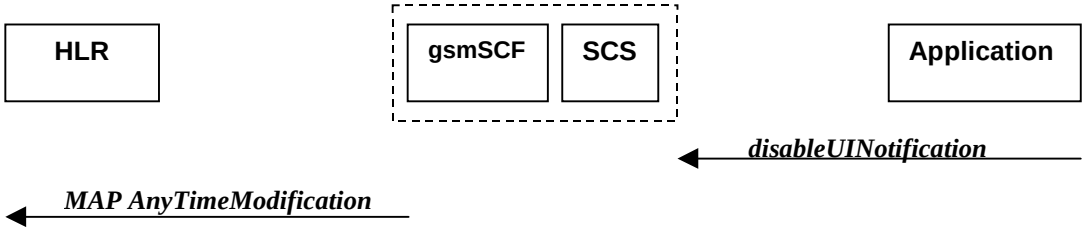


Figure 4-3: Call Flow for disableUINotification

Table 4-5: Normal Operation

Pre-conditions	An agreement is established between the network operator and the service provider for the event notification to be disabled
1	The application invokes the ***disableUINotification*** method
2	The gsmSCF sends a MAP ***AnyTimeModification*** to the HLR in order to de-activate the CAMEL subscription Information (SMS-CSI). Note that CAMEL Phase 3 only allows the capability to activate/deactivate CSI and not to modify the triggering information

Table 4-6: Parameter Mapping

From: disableUINotification	To: MAP AnyTimeModification
assignmentID	
	gsmSCFAddress
	subscriberIdentity (see note)
	modificationRequestFor-CallForwardingSS-Data
	modificationRequestFor-CallBarringSS-Data
	modificationRequestFor-CSI - Requested CSI = SMS-CSI - ModifyNotificationFlag - Modify CSI State = Deactivate
NOTE: A separate MAP AnyTimeModificationRequest shall be sent for every originating address in the prior enableUINotification and known to the IpUIManager.	

4.1.5 userInteractionEventNotify

userInteractionEventNotify is a method that notifies the application of a user initiated request for user interaction.

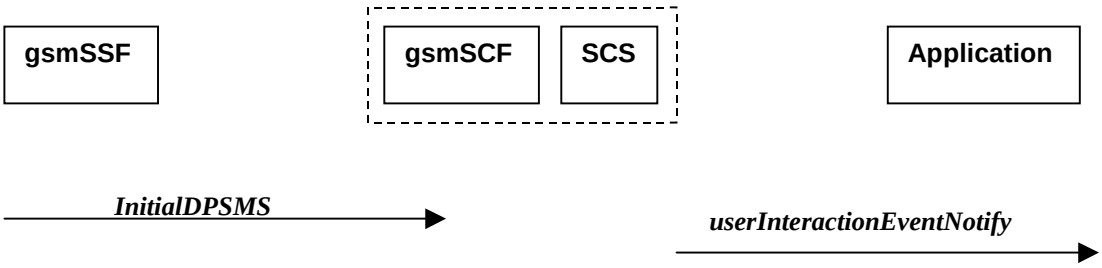


Figure 4-4: Call Flow for userInteractionEventNotify

Table 4-7

Pre-conditions	CAMEL MO SMS interaction between gsmSSF and gsmSCF
1	The gsmSCF has previously enabled the SMS-CSI DP triggers using the MAP AnyTimeModification for the origination mobile subscriber address
2	The gsmSCF receives the CAP ***InitialDPSMS*** from the gsmSSF
2	The gsmSCF sends an equivalent internal message to the SCS
3	The SCS identified the correct application that enable the notification request from the subscriber and invokes the ***userInteractionEventNotify*** method

Table 4-8: Parameter Mapping

From: initialDPSMS	To: *userInteractionEventNotify*
	ui
	eventInfo (TpUIEventInfo) :
CallingPartyNumber	OriginatingAddress
DestinationSubscriberNumber	DestinationAddress
ServiceKey	ServiceCode
	DataTypeIndication (= TP-DataCodingScheme)
EventType	DataString
	assignmentID
	appInterface (output)
IMSI	
LocationInfo in MSC (C)	
LocationInfor in SGSN (C)	
Time&Timezone	
TP-ShortMessageSubmissionSpecificInfo	
TP-ProtocolIdentifier	
TP-DataCodingScheme (=DataTypeIndication in eventInfo above)	
TP-ValidityPeriod (C)	
SMSC Address	
NOTE: C = Conditional, supplied if available.	

4.1.6 userInteractionAborted

userInteractionAborted is a method that indicates to the application that the User Interaction service instance has terminated or closed abnormally. No further communication will be possible between the User Interaction service instance and the application.

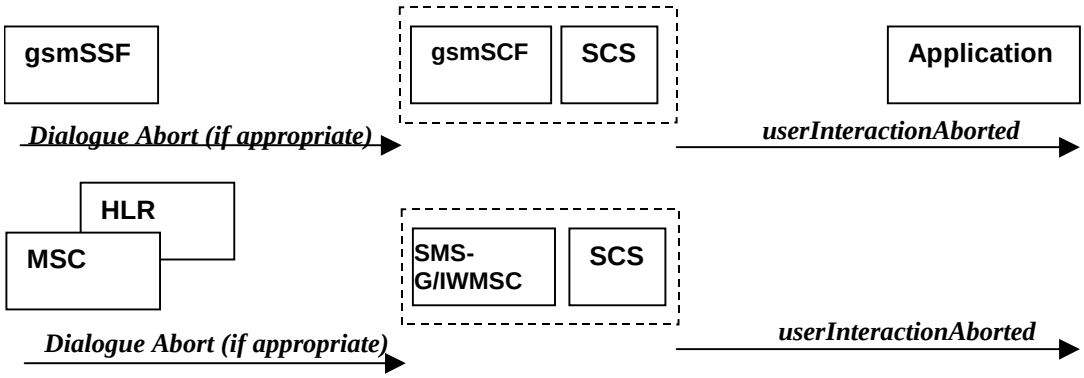


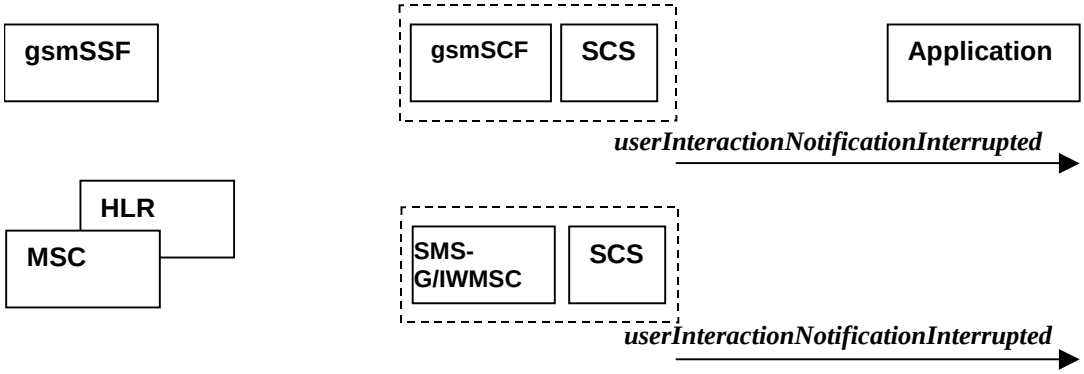
Figure 4-5: Call Flow for userInteractionAborted

Parameter Mapping

None.

4.1.7 userInteractionNotificationInterrupted

userInteractionNotificationInterrupted is a method that indicates to the application that all user interaction event notifications have been temporarily interrupted.



NOTE: There are no associated CAP or MAP, SMS Call Flows.

Figure 4-6: Call Flow for userInteractionNotificationInterrupted

Table 4-9: Normal Operation

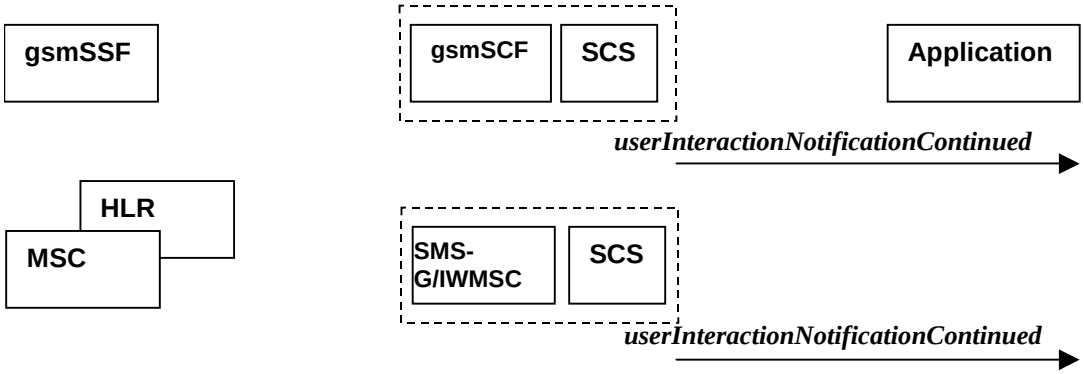
Pre-conditions	User interaction event notifications have been enabled using the *enableUINotification* method on the UIManager interface
1	The SCS has detected, or has been informed of, a fault which prevents further user interaction events from being notified
2	The SCS invokes the ***userInteractionNotificationInterrupted*** method

Parameter Mapping

None.

4.1.8 userInteractionNotificationContinued

userInteractionNotificationContinued is a method that indicates to the application that user interaction event notifications will again be possible.



NOTE: There are no associated CAP or MAP, SMS Call Flows.

Figure 4-7: Call Flow for userInteractionNotificationContinued

Table 4-10: Normal Operation

Pre-conditions	User interaction event notifications have been interrupted and *userInteractionNotificationInterrupted* method has been invoked
1	The SCS detects that user interaction event notifications are again possible
2	The SCS invokes the ***userInteractionNotificationContinued*** method

Parameter Mapping

None.

4.1.9 userInteractionFaultDetected

userInteractionFaultDetected is a method that indicates to the application that a fault has been detected in the user interaction. This method is invoked e.g. if the call has been deassigned.

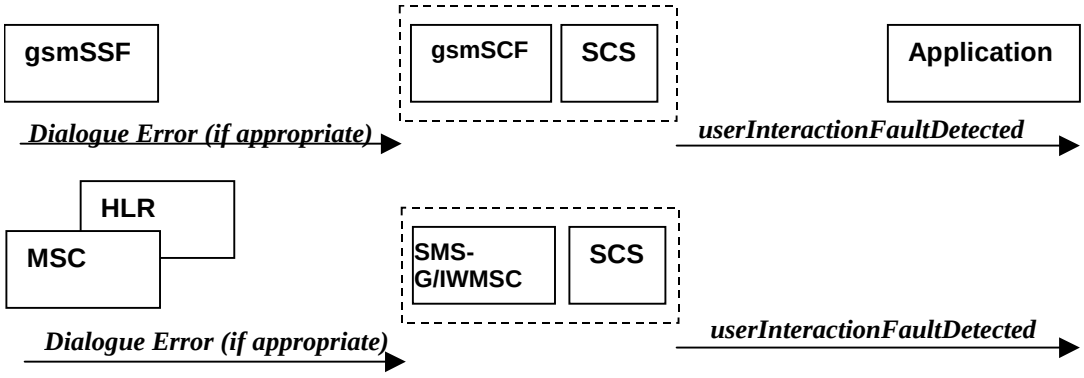


Figure 4-8: Call Flow for userInteractionFaultDetected

Two scenarios have been identified:

1. Interaction between a gsmSSF and gsmSCF (see table 4-11).
2. Interaction between a HLR or MSC and SMS-G/IWMSC (see table 4-12).

Table 4-11: Normal Operation

Pre-conditions	User interaction is in progress between the gsmSSF and gsmSCF
1	The gsmSCF detects or receives an indication that there is an error in the user interaction
2	The gsmSCF sends an equivalent internal message to the SCS
3	The SCS invokes the ***userInteractionFaultDetected*** method to the appropriate application

Table 4-12

Pre-conditions	User interaction is in progress between the HLR or MSC and the SMS-G/IWMSC
1	The SMS-G/IWMSC detects or receives an indication that there is an error in the user interaction
2	The SMS-G/IWMSC sends an equivalent internal message to the SCS
3	The SCS invokes the ***userInteractionFaultDetected*** method to the appropriate application

Table 4-13: Parameter Mapping

From: Dialogue Error	To: *userInteractionFaultDetected*
	userInteractionIdentifier
	fault
ReturnError	

4.1.10 sendInfoReq

sendInfoReq is an asynchronous method that sends information to the user.

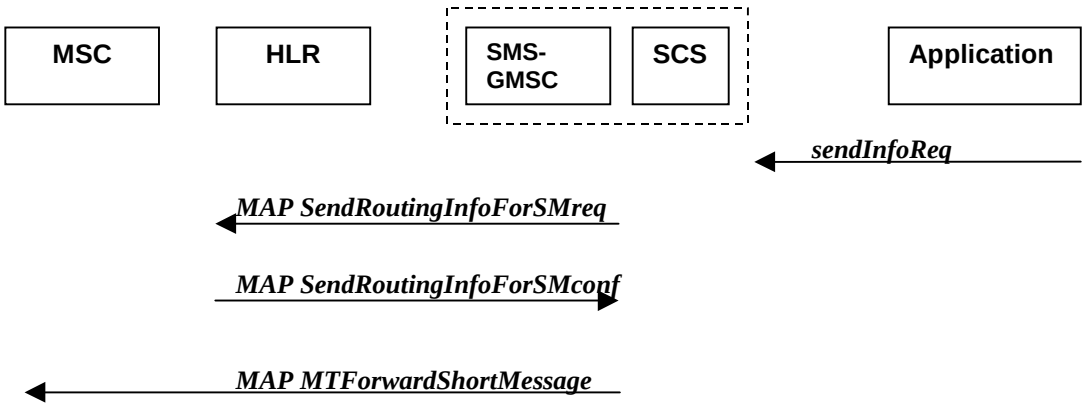


Figure 4-9: Call Flow for sendInfoReq (scenario 1)

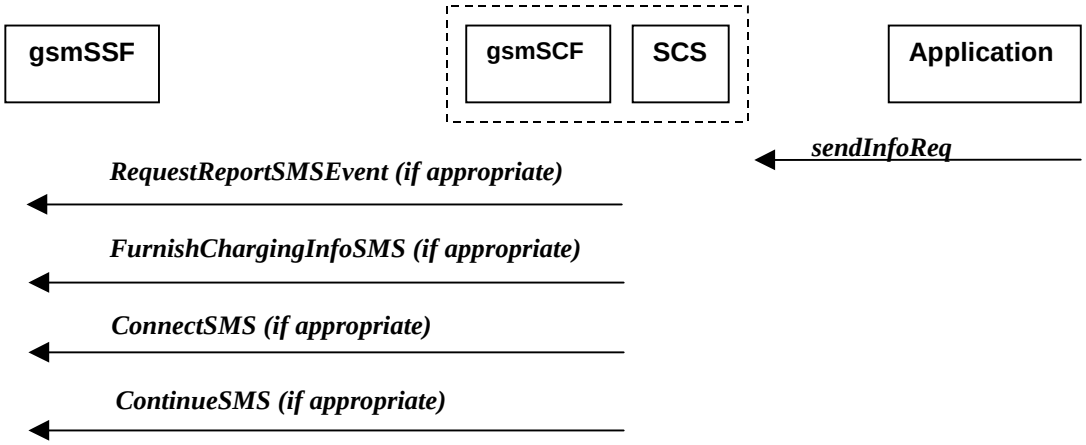


Figure 4-10: Call Flow for sendInfoReq (scenario 2)

Two Alternatives have been identified:

1. MT SMS based interaction between the SMS-GMSC and MS (see table 4-14).
2. CAMEL MO SMS based interaction between the gsmSCF and gsmSSF (see table 4-15).

Table 4-14: Normal Operation

Pre-conditions	SMS interaction required by application
1	The application invokes the sendInfoReq method
2	The SCS sends an equivalent internal message to the SMS-GMSC
3	The SMS-GMSC sends a MAP ***SendRoutinginfoForSM*** message to the HLR to obtain the serving MSC . If the MSC address is returned the SMS-GMSC will send one or more MAP ***MTForwardShortMessage*** messages.

Table 4-15

Pre-conditions	A control relationship exists between the gsmSCF and gsmSSFas a result of a prior *InitialDPSMS* message being received by the gsmSCF
1	The application invokes the ***sendInfoReq*** method
2	The SCS sends an equivalent internal message to the gsmSC
3	The gsmSCF sends a ***RequestReportSMS*** message to the gsmSSF if the application requested a response in order to request an ***EventReportSMS*** message at a future point in time indicating SMS submission or failure. If the application logic has specified cost in the ***sendInfoReq***, the gsmSCF shall send a ***FurnishChargingInfoSMS*** to the gsmSSF. If the application modifies the target address for the original MO SMS, the gsmSCF shall send a ***ConnectSMS*** message to the gsmSSF, and if no address modification has been carried out by the application, a ***ContinueSMS*** message is sent from the gsmSCF to gsmSSF.

Table 4-16: Parameter Mapping (Scenario 1)

From: sendInfoReq	To: MAP SendRoutingInfoForSM
userInteractionSessionID	
info (choice)	
infoID	
InfoData	
infoAddress	
variableInfoSet	
variablePartInteger	
variablePartAddress	MSISDN
variablePartTime	
variablePartDate	
variablePartPrice	
repeatIndicator	
responseRequested	
assignmentID	
	SM-PRI –(Note set enabled for direct SMS service)
	ServiceCentreAddress

Table 4-17

From: sendInfoReq	To: MAP MTForwardShortMessage
userInteractionSessionID	
	SM RP DA = IMSI/LMSI from SRI Conf
	SM RP OA = SMS-GMSC Address (Not used in Reply)
	SM RP UI = 03.40 SMS-Deliver
	MessageTypeIndicator
	MoreMessagesToSend = RepeatIndicator
	ReplyPath = Not set for SendInfoReq (see Note)
	StatusReportInd = ResponseRequested
	OrigAddress (application SME)
info (choice)	
infoID	
infoData	Encoded in ShortMessagePDU; DataCoding Scheme,UserDataLength & UserData
infoAddress	
variableInfoSet	
variablePartInteger	
variablePartAddress	
variablePartTime	SC Time Stamp
variablePartDate	SC Time Stamp
variablePartPrice	
RepeatIndicator = MMS in UI above	
ResponseRequested = SRI in UI above	
assignmentID	
NOTE: SendInfoReq does not request a reply message, therefore the reply path shall be disabled. Replies to the message from the handset should be returned to the enabled SMSC for the handset. The SMSC can either discard replies or be configured to contact the application SME.	

Table 4-18: Scenario 2

From: sendInfoReq	To: RequestReportSMSEvent
userInteractionSessionID	
info (choice)	
infoID	
infoData	
infoAddress	
variableInfoSet	
repeatIndicator	
responseRequested	SMSEvent ; Enable an event if a sendInfoRes is needed
assignmentID	

Table 4-19

From: sendInfoReq	To: FurnishChargingInfoSMS
userInteractionSessionID	
info (choice)	
infoID	
infoData	
infoAddress	
variableInfoSet	
variablePartInteger	
variablePartAddress	
variablePartTime	
variablePartDate	
variablePartPrice	FCI Billing Charging Characteristics
repeatIndicator	
responseRequested	
assignmentID	

Table 4-20

From: sendInfoReq	To: ConnectSMS
userInteractionSessionID	
	CallingPartysNumber
info (choice)	
infoID	
infoData	
infoAddress	
variableInfoSet	
variablePartInteger	
variablePartAddress	DestinationSubscriberNumber
variablePartTime	
variablePartDate	
variablePartPrice	
repeatIndicator	
responseRequested	
assignmentID	
	SMSCAddress

No mapping exists between *sendInfoReq* and *continueSMS*.

4.1.11 sendInfoRes

sendInfoRes is an asynchronous method that informs the application about the start or the completion of a ***sendInfoReq()***. This response is called only if the application has requested a response.

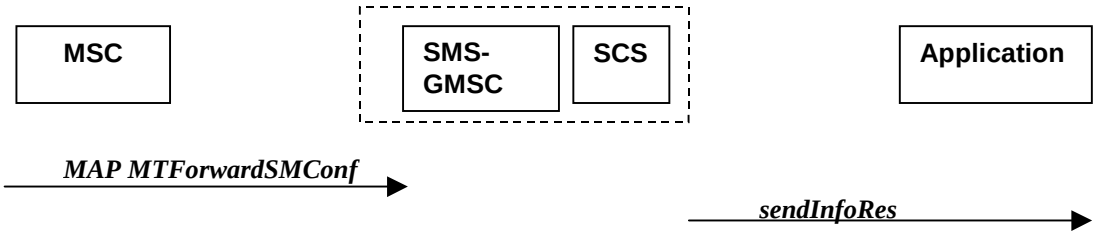


Figure 4-11: Call Flow for sendInfoRes (scenario 1)

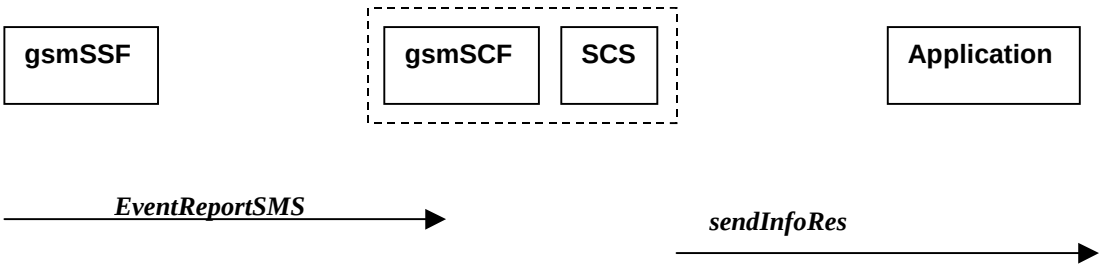


Figure 4-12: Call Flow for sendInfoRes (scenario 2)

Two alternatives have been identified:

1. SMS based interaction between the MS and the SMS-GMSC (see table 4-21).
2. Notification from gsmSSF to gsmSCF of an event previously requested by a RequestReportSMSEvent (see table 4-22).

Table 4-21: Normal Operation

Pre-conditions	The application has previously invoked the *sendInfoReq* method and has requested a notification
1	The SMS-GMSC receives a MAP ***MT-ForwardShortMessage confirmation*** message from the MSC
2	The SMS-GMSC sends an equivalent internal message to the SCS
3	The SCS identifies the correct application and invokes the ***sendInfoRes*** method

Table 4-22

Pre-conditions	
1	The gsmSCF has previously requested the gsmSSF to monitor for a particular SMS related event (e.g. SMS_Submitted, SMS_Failure) using the CAP ***RequestReportSMSEvent*** method.
2	The gsmSSF detects the SMS event and forwards the CAP ***EventReportSMS*** message to the gsmSCF
2	The gsmSCF sends an equivalent internal message to the SCS
3	The SCS identified the correct application that previously requested notification of the event, and invokes the ***sendInfoRes*** method

Table 4-23: Parameter Mapping (Scenario 1)

From: MAP MT-ForwardShortMessage	To: sendInfoRes
	userInteractionSessionID
	assignmentID
	response

Table 4-24: Scenario 2

From: CAP EventReportSMS	To: sendInfoRes
	userInteractionSessionID
	assignmentID
EventType smsSubmitted	Response = P_UI_MESSAGE_STORED
EventSpecificInfo	
MISC SMS Info	

4.1.12 sendInfoErr

sendInfoErr is an asynchronous method that indicates that the request to send information was unsuccessful.

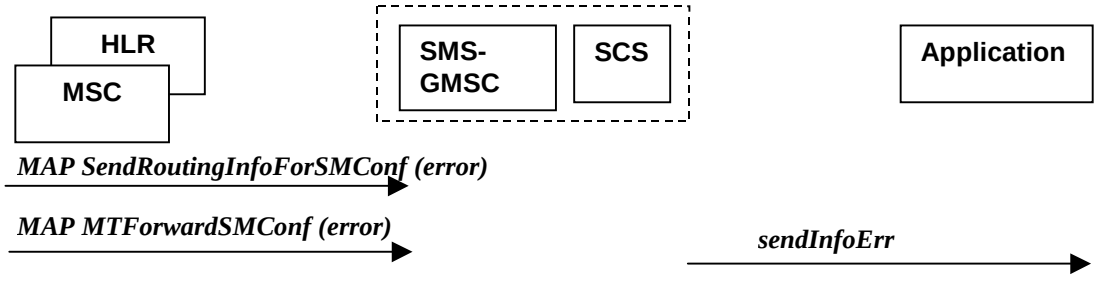


Figure 4-13: Call Flow for sendInfoErr (scenario 1)

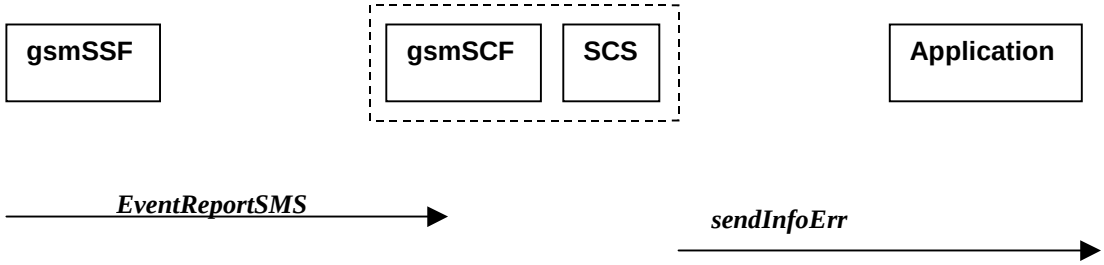


Figure 4-14: Call Flow for sendInfoErr (scenario 2)

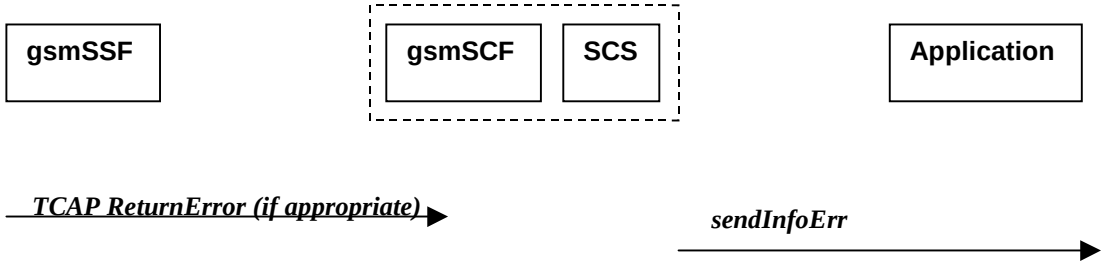


Figure 4-15: Call Flow for sendInfoErr (scenario 3)

Three alternatives have been identified:

1. MT SMS based interaction between the SMS-GMSC and MSC (see table 4-25).
2. MO SMS, notification from gsmSSF to gsmSCF of an event previously requested by a RequestReportSMSEvent (see table 4-26).
3. MO SMS, dialogue error returned from gsmSSF to gsmSCF in response to prior message attempt required in relation to a *sendInfoReq* (see table 4-27).

Table 4-25: Normal Operation

Pre-conditions	**The application has previously invoked the *sendInfoReq* method**
1	As part of the MT SMS delivery dialogue the SMS-GMSC is returned an error from either the HLR originated **sendRoutingInfoForSMConf**, or MSC originated **MTForwardSMConf**
2	The SMS-GMSC sends an equivalent internal message to the SCS
3	The SCS identifies the correct application and invokes the ***sendInfoErr*** method

Table 4-26

Pre-conditions	**The application has previously invoked the *sendInfoReq* method (see note)**
1	The gsmSCF has previously requested the gsmSSF to monitor for a particular SMS related event (e.g. SMS_Submitted, SMS_Failure) using the CAP ***RequestReportSMSEvent*** method
2	The gsmSSF detects the SMS event and forwards the CAP ***EventReportSMS*** message to the gsmSCF
3	The gsmSCF sends an equivalent internal message to the SCS
4	The SCS identified the correct application that previously requested notification of the event, and invokes the ***sendInfoErr*** method
NOTE: **responseRequested** shall be required in order to request notification of the subsequent event.	

Table 4-27

Pre-conditions	The application has previously invoked the *sendInfoReq* method (see note)
1	As a result of the contents of the ***sendInfoReq***, the gsmSCF has sent one of the following messages to the gsmSSF, RequestReportSMSEvent, FurnishChargingInfoSMS, ConnectSMS, ContinueSMS
2	If any individual message fails, a TCAP dialogue error shall be returned from gsmSSF to gsmSCF
3	The gsmSCF sends an equivalent internal message to the SCS
4	The SCS identified the correct application that previously requested notification of the event, and invokes the ***sendInfoErr*** method
5	Depending on the message in error, the application may be required to release the SMS processing using the ***release*** method
NOTE: **responseRequested** may or may not be required.	

Table 4-28: Parameter Mapping (Scenario 1)

From: MAP SendRoutingInfoForSM	To: sendInfoErr
	userInteractionSessionID
InvokeID	assignmentID
UserError	error

Table 4-29

From: MAP MTForwardSM	To: sendInfoErr
	userInteractionSessionID
InvokeID	assignmentID
UserError	error

Table 4-30: Scenario 2

From: CAP EventReportSMS	To: sendInfoErr
	userInteractionSessionID
	assignmentID
EventType smsFailure	
EventSpecificInfo FailureSpecificInfo	error
MISC SMS Info	

Table 4-31: Scenario 3

From: TCAP Return Error	To: sendInfoErr
	userInteractionSessionID
InvokeID	assignmentID
Error	error

4.1.13 sendInfoAndCollectReq

sendInfoAndCollectReq is an asynchronous method that plays an announcement or sends other information to the user and collects some information from the user. The announcement usually prompts for a number of characters (for example, these are digits or text strings such as "YES" if the user's terminal device is a phone).

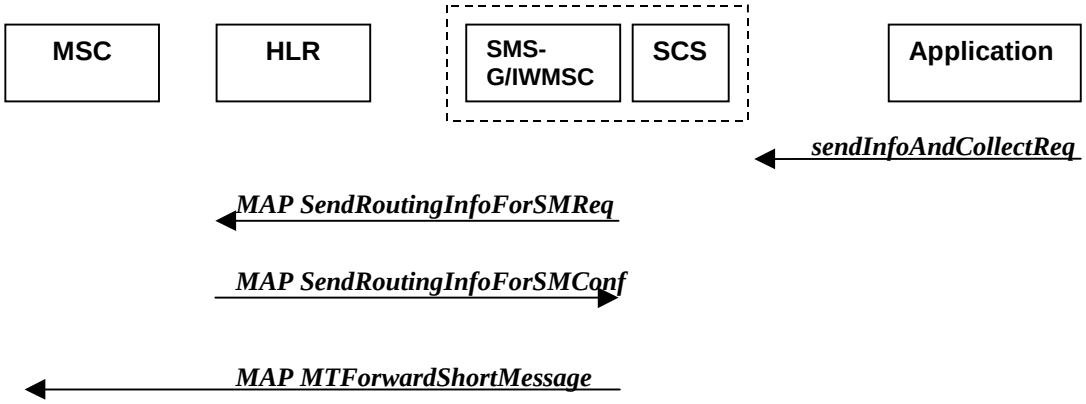


Figure 4-16: Call Flow for sendInfoAndCollectReq (scenario 1)

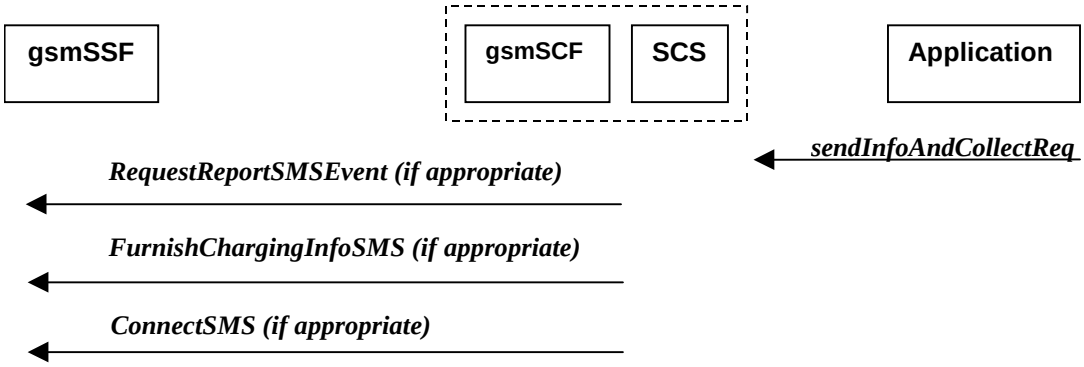


Figure 4-17: Call Flow for sendInfoAndCollectReq (scenario 2)

Two Alternatives have been identified.

1. MT SMS based interaction between the SMS-G/IWMSC and the MS (see table 4-32).
2. CAMEL MO SMS based interaction between the gsmSCF and gsmSSF (see table 4-33).

Table 4-32: Normal Operation

Pre-conditions	SMS interaction requierd by application. SMS Gateway and Interworking MSC functionality supported on the same node.
1	The application invokes the ***sendInfoAndCollectReq*** method
2	The SCS sends an equivalent internal message to the SMS-GMSC
3	The SMS-GMSC sends a MAP ***SendRoutinginfoForSM*** message to the HLR to obtain the serving MSC . If the MSC address is returned the SMS-GMSC will send one or more MAP ***MTForwardShortMessage*** messages with the address of the SMS-GMSC as the service centre address for this message (SM_RP_OA), **and** the ReplyPath Flag in the SM_RP_UI enabled. This ensures that SMS replies are returned to the collocated SMS-IWMSC.

Table 4-33

Pre-conditions	**A control relationship exists between the gsmSCF and gsmSSF as a result of a prior *InitialDPSMS* message being received by the gsmSCF**
1	The application invokes the ***sendInfoAndCollectReq*** method
2	The SCS sends an equivalent internal message to the gsmSCF
3	The gsmSCF sends a ***RequestReportSMS*** message to the gsmSSF if the application requested a response in order to request an ***EventReportSMS*** message at a future point in time indicating SMS submission or failure. If the application logic has specified cost in the ***sendInfoAndCollectReq***, the gsmSCF shall send a ***FurnishChargingInfoSMS*** to the gsmSSF
4	Whether modification of the destination of the original MO SMS takes place or not, the gsmSCF shall send a ***ConnectSMS*** message to the gsmSSF in order to set the calling party address to be used when replying to the SMS to the address of the gsmSCF
NOTE: The ***ContinueSMS*** method does not map to the ***SendInfoAndCollectReq*** operation. Also the SMS-CSI triggers enabled in the network, ensure that the reply SMS results in an ***InitialDPSMS*** being delivered to the gsmSCF. See subclause 4.1.14. This ***InitialDPSMS*** shall contain the collected information in response to the ***sendInfoAndCollectReq*** – this is limited to the first octet of the SMS-SUBMIT PDU, and indicates that a response message has been returned to the original message.	

Table 4-34: Parameter Mapping (Scenario 1)

From: sendInfoAndCollectReq	**To: MAP SendRoutingInfoForSM**
userInteractionSessionID	
info (choice)	
infoID	
InfoData	
infoAddress	
variableInfoSet	
variablePartInteger	
variablePartAddress	MSISDN
variablePartTime	
variablePartDate	
variablePartPrice	
criteria	
repeatIndicator	
responseRequested	
assignmentID	
	SM-PRI –(Note set enabled for direct SMS service)
	ServiceCentreAddress

Table 4-35

From: sendInfoAndCollectReq	To: MAP MTForwardShortMessage
userInteractionSessionID	
	SM RP DA = IMSI/LMSI from SRI Conf
	SM RP OA = SMS-GMSC Address USED in reply
	SM RP UI = 03.40 SMS-Deliver
	MessageTypeIndicator
	MoreMessagesToSend = RepeatIndicator
	ReplyPath = Set for SendInfoAndCollectReq (see Note)
	StatusReportInd = ResponseRequested
	OrigAddress (application SME)
info (choice)	
infoID	
infoData	Encoded in ShortMessagePDU; DataCoding Scheme,UserDataLength & UserData
infoAddress	
variableInfoSet	
variablePartInteger	
variablePartAddress	
variablePartTime	SC Time Stamp
variablePartDate	SC Time Stamp
variablePartPrice	
criteria	
RepeatIndicator = MMS in UI above	
ResponseRequested = SRI in UI above	
assignmentID	
NOTE: SendInfoAndCollectReq requests a reply SMS message, therefore the reply path shall be enabled. Replies to the message from the handset should be returned to the SMS-G/IWMSC.	

Table 4-36: Scenario 2

From: sendInfoAndCollectReq	To: RequestReportSMSEvent
userInteractionSessionID	
info (choice)	
infoID	
infoData	
infoAddress	
variableInfoSet	
criteria	
repeatIndicator	
responseRequested	SMSEvent ; Enable an event if a sendInfoAndCollectRes is needed to confirm message delivered.
assignmentID	

Table 4-37

From: sendInfoAndCollectReq	To: FurnishChargingInfoSMS
userInteractionSessionID	
info (choice)	
infoID	
infoData	
infoAddress	
variableInfoSet	
variablePartInteger	
variablePartAddress	
variablePartTime	
variablePartDate	
variablePartPrice	FCI Billing Charging Characteristics
criteria	
repeatIndicator	
responseRequested	
assignmentID	

Table 4-38

From: sendInfoAndCollectReq	To: ConnectSMS
userInteractionSessionID	
	CallingPartysNumber = gsmSCF Address
info (choice)	
infoID	
infoData	
infoAddress	
variableInfoSet	
variablePartInteger	
variablePartAddress	DestinationSubscriberNumber
variablePartTime	
variablePartDate	
variablePartPrice	
criteria	
repeatIndicator	
responseRequested	
assignmentID	
	SMSCAddress
NOTE: Modification of the SMSCAddress in the connectSMS above should not influence the reply path, as the parameter in the connectSMS is the target SMSC for the MO message prior to MT delivery attempt.	

4.1.14 sendInfoAndCollectRes

sendInfoAndCollectRes is an asynchronous method that returns the information collected to the application.

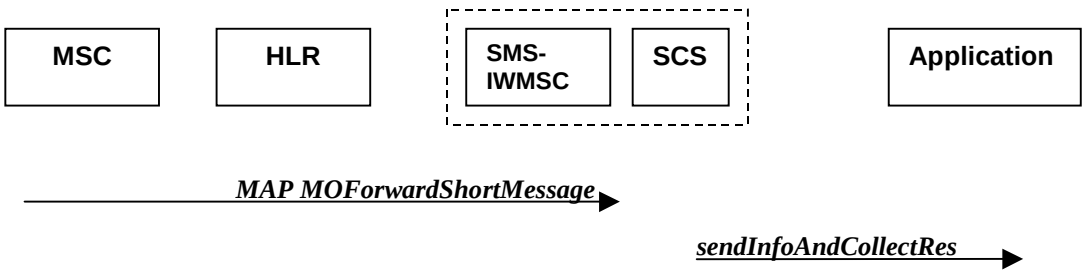


Figure 4-18: Call Flow for sendInfoAndCollectRes (scenario 1)

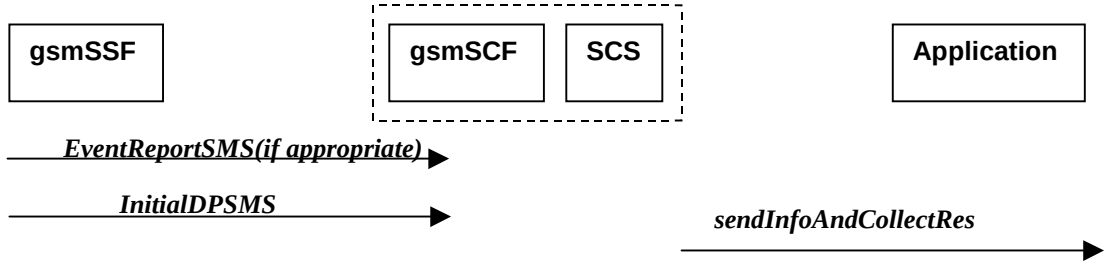


Figure 4-19: Call Flow for sendInfoAndCollectRes (scenario 2)

Two alternatives have been identified:

1. SMS based interaction between the SMS-G/IWMSC and MS (see table 4-39).
2. CAMEL MO SMS interaction between gsmSSF and gsmSCF (see table 4-40).

Table 4-39: Normal Operation

Pre-conditions	The application has invoked a *sendInfoAndCollectReq*()
1	The SMS-IWMSC receives a MAP ***MOForwardShortMessage*** message from the MSC
2	The SMS-IWMSC sends an equivalent internal message to the SCS
3	The SCS invokes the ***sendInfoAndCollectRes*** method to the correct applications

Table 4-40

Pre-conditions	The gsmSCF has previously enabled the SMS-CSI DP triggers using the MAP *AnyTimeModification* for the origination mobile subscriber address
1	The gsmSCF may have previously requested the gsmSSF to monitor for a particular SMS related event (e.g. SMS_Submitted, SMS_Failure) using the CAP ***RequestReportSMSEvent*** method. This shall result in the ***EventReportSMS*** method being sent to the gsmSCF.
2	The gsmSCF has previously issued a ***ConnectSMS*** for a previous MO SMS delivery and modified the Calling Parties Number to the address of the gsmSCF so that reply SMS messages addressed to the gsmSCF are considered in response to the original MO SMS. The delivery of an ***InitialDPSMS*** where the destinationSunscriberNumber is the gsmSCF is an indication that the related MO SMS is in response to a prior message delivered as a result of the **sendInfoAndCollectReq**.
3	The gsmSCF sends an equivalent internal message to the SCS when either ***EventReportSMS*** or ***InitialDPSMS*** are received.
4	The SCS identified that the messages are in response to a prior ***sendInfoAndCollectReq*** and invokes the ***sendInfoAndCollectRes*** method

Post condition

After the application has been informed of the *sendInfoAndCollectRes* method. It shall continue to handle the SMS as outlined in subclause 4.1.5.

Table 4-41: Parameter Mapping (Scenario 1)

From: MAP MO ForwardShortMessage	To: sendInfoAndCollectRes
	userInteractionSessionID
	assignmentID
	response
SMS-SUBMIT PDU	Info (only the User data component is mapped)

Table 4-42: Scenario 2

From: CAP EventReportSMS	To: sendInfoAndCollectRes
	userInteractionSessionID
	assignmentID
EventType smsSubmitted	response = P_UI_MESSAGE_STORED
EventSpecificInfo	
MISC SMS Info	
	info

Table 4-43

From: initialDPSMS	To: *sendInfoAndCollectRes*
	userInteractionSessionID
	assignmentID
	response
CallingPartyNumber	
DestinationSubscriberNumber	
ServiceKey	
EventType	
IMSI	
LocationInfo in MSC (C)	
LocationInfor in SGSN (C)	
Time&Timezone	
TP-ShortMessageSubmissionSpecificInfo	info
TP-ProtocolIdentifier	
TP-DataCodingScheme	
TP-ValidityPeriod (C)	
SMSC Address	
NOTE: C = Conditional, supplied if available.	

4.1.15 sendInfoAndCollectErr

sendInfoAndCollectErr is an asynchronous method that indicates that the request to send information and collect a response was unsuccessful.

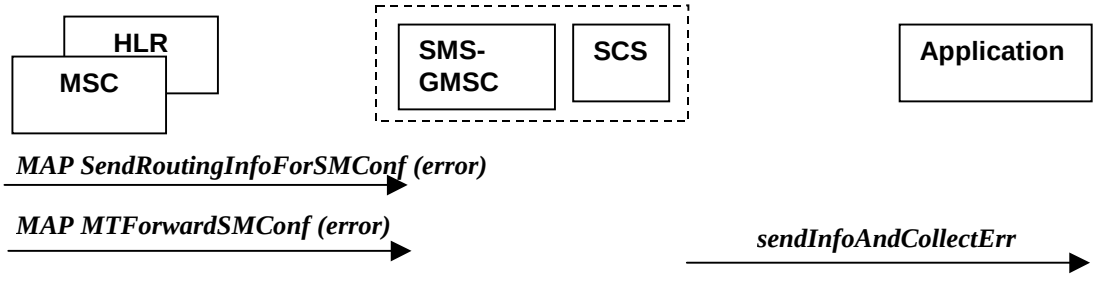


Figure 4-20: Call Flow for sendInfoAndCollectErr (scenario 1)

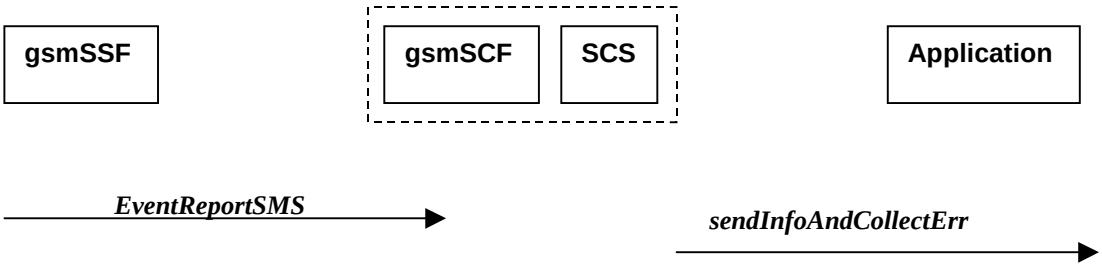


Figure 4-21: Call Flow for sendInfoAndCollectErr (scenario 2)

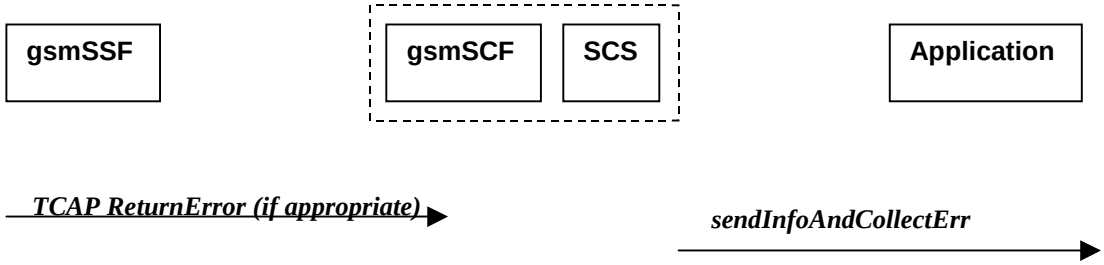


Figure 4-22: Call Flow for sendInfoAndCollectErr (scenario 3)

Three Alternatives have been identified:

1. MT SMS based interaction between the SMS-GMSC and MS (see table 4-44).
2. MO SMS, notification from gsmSSF to gsmSCF of an event previously requested by a RequestReportSMSEvent (see table 4-45).
3. MO SMS, dialogue error returned from gsmSSF to gsmSCF in response to prior message attempt required in relation to a ***sendInfoAndCollectReq*** (see table 4-46).

Table 4-44: Normal Operation

Pre-conditions	**The application has previously invoked the** *sendInfoAndCollectReq* **method**
1	As part of the MT SMS delivery dialogue the SMS-GMSC is returned an error from either the HLR originated **sendRoutingInfoForSMConf**, or MSC originated **MTForwardSMConf**
2	The SMS-GMSC sends an equivalent internal message to the SCS
3	The SCS identifies the correct application and invokes the ***sendInfoAndCollectErr*** method

Table 4-45

Pre-conditions	**The application has previously invoked the** *sendInfoAndCollectReq* **method (see note)**
1	The gsmSCF has previously requested the gsmSSF to monitor for a particular SMS related event (e.g. SMS_Submitted, SMS_Failure) using the CAP ***RequestReportSMSEvent*** method
2	The gsmSSF detects the SMS event and forwards the CAP ***EventReportSMS*** message to the gsmSCF
3	The gsmSCF sends an equivalent internal message to the SCS
4	The SCS identified the correct application that previously requested notification of the event, and invokes the ***sendInfoAndCollectErr*** method
NOTE: **responseRequested** shall be required in order to request notification of the subsequent event.	

Table 4-46

Pre-conditions	**The application has previously invoked the** *sendInfoAndCollectReq* **method (see note)**
1	As a result of the contents of the ***sendInfoAndCollectReq***, the gsmSCF has sent one of the following messages to the gsmSSF, RequestReportSMSEvent, FurnishChargingInfoSMS, ConnectSMS
2	If any individual message fails, a TCAP dialogue error shall be returned from gsmSSF to gsmSCF
3	The gsmSCF sends an equivalent internal message to the SCS
4	The SCS identified the correct application that previously requested notification of the event, and invokes the ***sendInfoAndCollectErr*** method
5	Depending on the message in error, the application may be required to release the SMS processing using the ***release*** method
NOTE: **responseRequested** may or may not be required.	

Table 4-47: Parameter Mapping (Scenario 1)

From: MAP SendRoutingInfoForSM	To: sendInfoAndCollectErr
	userInteractionSessionID
InvokeID	assignmentID
UserError	error

Table 4-48

From: MAP MTForwardSM	To: sendInfoAndCollectErr
	userInteractionSessionID
InvokeID	assignmentID
UserError	error

Table 4-49: Scenario 2

From: CAP EventReportSMS	To: sendInfoAndCollectErr
	userInteractionSessionID
	assignmentID
EventType smsFailure	
EventSpecificInfo FailureSpecificInfo	error
MISC SMS Info	

Table 4-50: Scenario 3

From: TCAP Return Error	**To:** *sendInfoAndCollectErr*
	userInteractionSessionID
	assignmentID
error	error

4.1.16 release

release is a method that requests that the relationship between the application and the user interaction object be released. It causes the release of the used user interaction resources and interrupts any ongoing user interaction.

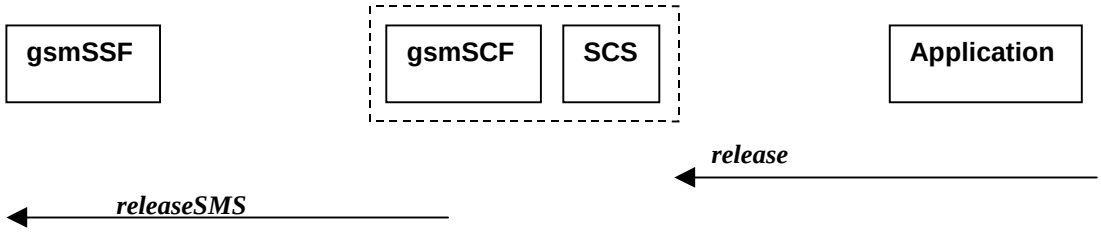


Figure 4-23: Call Flow for release

Table 4-51: Normal Operation

Interaction between gsmSSf and gsmSCF as a result of receiving InitialDPSMS.

Pre-conditions	The gsmSSF has previously delivered a InitialDPSMS to the gsmSCF
1	The application invokes a release
2	The SCS sends an equivalent internal message to the gsmSCF
3	The gsmSCF sends a CAP ***releaseSMS***to the gsmSSF

Table 4-52: Parameter Mapping

From: release	**To: CAP** releaseSMS
userInteractionSessionID	
	Cause

4.1.17 abortActionReq

abortActionReq is an asynchronous method that aborts a user interaction operation. This is a method that does not map to SMS.

4.1.18 abortActionRes

abortActionRes is an asynchronous method that confirms that the request to abort a user interaction operation on a call was successful. This is a method that does not map to SMS.

4.1.19 abortActionErr

abortActionErr is an asynchronous method that indicates that the request to abort a user interaction on a call resulted in an error. This is a method that does not map to SMS.

Annex A:
Change history

Change history							
Date	**TSG #**	**TSG Doc.**	**CR**	**Rev**	**Subject/Comment**	**Old**	**New**
Mar 2001	CN_11	NP-010131	011	--	CR 29.998: for moving TR 29.998 from R99 to Rel 4 (N5-010159)	3.2.0	1.0.1
Jun 2001	CN_12	NP-010329	--	--	Approved at TSG CN#12 and placed under Change Control	2.0.0	4.0.0
Jun 2002	CN_16	--	--	--	Automatically upgraded to Rel-5 (i.e. no change/CR). The overview of the enlarged 29.198/29.998-family was updated in the Introduction.	4.0.0	5.0.0
Dec 2004	CN_26	--	--	--	Automatically upgraded to Rel-6 (i.e. no change/CR). The overview of the enlarged 29.198/29.998-family was updated in the Introduction.	5.0.0	6.0.0
Mar 2007	CT_35	--	--	--	Automatic upgrade to R7 (no CR needed)	6.0.0	7.0.0
Dec 2008	CT_42	--	--	--	Upgraded unchanged from Rel-7	7.0.0	8.0.0

History

Document history		
V8.0.0	January 2009	Publication