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**TECHNICAL REPORT**

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Universal Mobile Telecommunications System (UMTS);
LTE;
Study on Value Added Services (VAS)
for Short Message Service (SMS)
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# Contents

# Foreword

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# 1 Scope

The present document studies the service requirements associated with series of value-added features for short message service (SMS). Specifically, the objective of this document is to study potential new value-added services for SMS in 3GPP that need to be standardized.

# 2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.

- For a specific reference, subsequent revisions do not apply.

- For a non-specific reference, the latest version applies. 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 TR 21.905: "Vocabulary for 3GPP Specifications".

[2]     3GPP TS 23.040: "Technical realization of the Short Message Service (SMS)".

[3]     ITU-T E.164 (1997): "The International Public Telecommunications Numbering Plan".

[4]     IETF STD 0011 (RFC 2822): "Internet Message Format"
        URL: http://www.ietf.org/rfc/rfc2822.txt.

[5]     3GPP TS 23.204: "Support of Short Message Service (SMS) over generic 3GPP Internet Protocol (IP) access".

# 3 Definitions, symbols and abbreviations

## 3.1 Definitions

For the purposes of the present document, the terms and definitions given in [1] and the following apply:

**Short Message Forwarding:** The service permits the network to send all incoming short messages addressed to the called mobile subscriber's directory number to another directory number.

**Short Message Filtering:** The service permits the network to filter certain short messages on behalf of a called party based on the called party's preferences.

**Short Message Receipt:** The service permits the network to send one or more receipts to inform a calling party the status of sent message.

**Short Message Network Storage:** The service permits the network to help the subscriber store messages that the subscriber has sent or received.

SMS VPN service enables exchange of SMS messages between VPN (Virtual Private Network) members by using a short number, usually similar to the receiver fixed extension number, instead of using the full mobile number of the recipient.

**SMS Auto Reply:** The SMS Auto Reply service enables the subscriber to activate an automatic SMS reply in response to incoming SMS messages, both from in network subscribers as well as from foreign networks subscribers (incoming MT messages from foreign networks).

**SMS Personal Signature**: The service allows the end user to personalize its outgoing messages either with a personal remark or a business title. The service enables a user to pre-define a text that will automatically be added to all outgoing SMS messages

## 3.2 Abbreviations

For the purposes of the present document, the following abbreviations apply in addition to [1]:

SMS-SC      Short Message Service - Service Centre
SM          Short Message
VAS-SMS     Value-added Services for SMS

# 4 Use cases

## 4.1 Short Message forwarding

### 4.1.1 Short description

This use case describes a scenario where a called mobile subscriber forward incoming messages to another mobile phone.

### 4.1.2 Actors

Joe is an SMS user  of Operator A.

Sally is an SMS user of Operator B.

Note:  Operator A and Operator B may be the same

#### 4.1.2.1 Actor specific issues

Joe wants to send an SM to Sally.

Sally is roaming outside of Operator B. She brings another mobile phone with her.

#### 4.1.2.2 Actor specific benefits

Sally can take advantage of Short Message Forwarding Service.

### 4.1.3 Pre-conditions

Joe is an SMS subscriber.

Sally is subscribed to the Short Message Forwarding Service on her home network.

She sets the SM forwarding number for her original mobile phone, and wants to use another mobile phone to receive incoming SM.

### 4.1.4 Post-conditions

All incoming messages addressed to Sally's original mobile phone number are forwarded to another mobile phone.

### 4.1.5 Normal flow

- Sally prepares to travel outside coverage of Operator B.

- She sets the SM forwarding number of her original mobile phone.

- Joe sends an SM to Sally with receiving number as Sally's original number.

- Sally receives the message by using another mobile phone.

## 4.1.6     Operational and quality of experience requirements

It shall be supported that users can set certain conditions (e.g., different time periods) for message forwarding. There are no significant delays to any part of the service.

# 4.2     Short Message forwarding multiple subscriptions

## 4.2.1     Short description

This use case describes a scenario where an SM to a mobile subscriber may be forwarded to an alternative address, depending on the original delivery address being registered on the network or not.

## 4.2.2     Actors

Joe is an SMS user with home operator A.

Sally is an SMS user with home operator B.

### 4.2.2.1       Actor specific issues

Joe wants to send an SM to Sally.

Sally can use two different subscriptions with different MSISDNs[3], and she wants to receive SMs on the subscription that is in use (active). She may use two different phones or two different subscriptions from the same operator.

### 4.2.2.2       Actor specific benefits

The called party will have the SM delivered to the phone/subscription that is in use.

## 4.2.3     Pre-conditions

Joe is an SMS subscriber.

Sally has subscribed to the Short Message Forwarding ("multiple subscriptions") Service.

Sally has activated SM forwarding from her first phone/subscription to the second phone/subscription.

Sally's second phone/subscription is in use. The first phone/subscription is switched off/not active.

## 4.2.4     Post-conditions

All incoming messages addressed to Sally's first mobile phone number are forwarded to her second phone/subscription.

## 4.2.5     Normal flow

- Joe sends an SM addressed to Sally's first number.

- Sally receives the message on the phone/subscription that is in use.

## 4.2.6     Operational and quality of experience requirements

It may be supported that an operator can set a group of subscriptions for which SM are forwarded to the active/last activated subscription of that group, under the condition that the delivery address of the SM is associated to a subscription of that group and that address is not registered on the network.

# 4.3 Short Message filtering

## 4.3.1 Short description

The users do not want to receive trash or malicious messages. Some users are not allowed to send messages to premium numbers.

This use case describes how a network can help the user filter SM based on the users' (called/calling party) preferences (e.g. calling/called party's number, time to send message etc.).

## 4.3.2 Actors

Alice is an SMS user of Operator A. Bob is an SMS user of Operator A.

Sally is an SMS user of Operator B.

Tom is an SMS user. He is a youngster.

### 4.3.2.1 Actor specific issues

Alice sends an SM to Sally at 13:30PM.

Bob sends an SM to Sally.

Sally doesn't want to receive any messages from Bob and these are identified as "not wanted". Neither does she want to receive any messages from 13:00 to 14:00. Any messages sent during this period and that are not marked as "not wanted" should be stored and/or sent to Sally after the period defined by Sally. She sets the SMS filtering function via her mobile phone.

Tom is not allowed to send SMS to pre-defined numbers

### 4.3.2.2 Actor specific benefits

The called party, Sally can take advantage of SM Filtering Service.

The calling party, Tom takes advantage of SMS filtering service

## 4.3.3 Pre-conditions

Alice and Bob are SMS subscribers.

Sally is subscribed to the SM Filtering Service.

Sally adds Bob's phone number to the black list for the SM Filtering Service.

Tom's parents subscribed Tom to the SMS filtering services.

## 4.3.4 Post-conditions

Sally doesn't receive any messages from Bob.

Sally doesn't receive any messages during time period from 13:00 to 14:00.

Tom is not able to send SMS to pre-defined numbers

## 4.3.5 Normal flow

- Sally doesn't want to receive Bob's messages.

- Sally adds Bob's phone number to her black list for the SM Filtering Service.

- Bob sends SMs to Sally.

- Sallys' home network doesn't forward Bobs messages to Sally.

## 4.3.6 Operational and quality of experience requirements

It shall be supported that users can set certain conditions for message filtering.

# 4.4 Short Message receipt

## 4.4.1 Short description

This use case describes a scenario where Joe receives two SM Receipts after he sent an SM to Sally. One message receipt (aka. caller message receipt) is requested by Joe to indicate the transmit status of the message; the other message receipt (aka. callee message receipt) is from Sally, customized for Joe.

## 4.4.2 Actors

Both Joe and Sally are SMS users.

### 4.4.2.1 Actor specific issues

Joe sends an SM to Sally.

### 4.4.2.2 Actor specific benefits

Joe can know the sent messages' transmitting status (e.g., successful, failure, temporarily failure) in time. Sally can set a specific quick response for messages from Joe.

## 4.4.3 Pre-conditions

Joe is an SMS subscriber.

Joe is subscribed to the SM Receipt (caller message receipt) Service on his home network.

Sally is subscribed to the SM Receipt (callee message receipt) Service on her home network and sets a callee message receipt for Joe.

## 4.4.4 Post-conditions

Joe can obtain the status of all messages he has sent.

## 4.4.5 Normal flow

- Joe sends a message to Sally.

- Joe receives a caller message receipt: Your message sent to Sally is successful.

- Sally receives the message Joe has sent.

- The network sends the receipt to Joe with the following content: "Joe, I am now in the meeting, and I will phone you later". No interaction with Sally (or her UE) is required.

- Joe receives Sally's callee message receipt.

## 4.4.6 Operational and quality of experience requirements

It shall be supported that the callee can set different content of the receipt for different callers.

The SMS receipt can be accompanied by a newly generated SM with the content provided by the operator.

# 4.5 Short Message network storage

## 4.5.1 Short description

Users want to store their daily messages (either sent or received), but there is limited storage in their mobile phone. The network helps to store the users' messages. The network duplicates the users' certain messages to message depository, and the users can manage the messages stored via WWW/WAP portal and so on.

## 4.5.2 Actors

Both Joe and Sally are SMS users.

### 4.5.2.1 Actor specific issues

Joe wants to store his messages in the network storage.

### 4.5.2.2 Actor specific benefits

Joe can utilize the network-based storage capability.

## 4.5.3 Pre-conditions

Joe is an SMS subscriber.

Joe subscribed to the SM Network Storage Service on his home network.

Joe sets Sally's phone number for storing messages from or to her.

## 4.5.4 Post-conditions

Joe's messages sent to or received from Sally's phone will be stored in the network depository, and Joe can manage these messages.

## 4.5.5 Normal flow

- Joe sends the messages to Sally.

- The messages are sent to Sally; they are also duplicated and stored in the Message depository.

- Joe manages messages stored in the Message depository via web portal.

## 4.5.6 Operational and quality of experience requirements

It shall be supported that user can pre-set certain conditions for storage. The storage condition includes all sent messages, all received messages, messages sent to or received from one or more special phone numbers and so on.

It should be possible for the operator to prevent storage of configuration SM, notifications (e.g. voice mail, SM delivery notifications).

It shall be supported that users can transfer the messages stored in the message depository to any other mobile phone.

It shall be supported that users can inquire the messages stored in the message depository according to certain query conditions (e.g., short message receiver, short message sender, key words etc.).

It shall be supported that users can manage the stored messages via a website, and it shall be possible for the user to set access right for other users ( e.g. read only , read and download etc), in this way, other users are able to inquire his stored messages through a link to the website after valid authentication.

In case of multiple delivery attempts SM will be copied only once regardless of the number of delivery attempts.

# 4.6 Short Message to multiple destinations

## 4.6.1 Short description

When a user composes a message and sends it to N destinations, then the originating entity (MS) will send N messages to the SMS-SC and the SMS-SC will deliver N individual messages to the N destinations. Each Individual receiving entity can only know the originating address and can only reply back to the originating entity. So in the existing system, when the same message is sent to N different individuals, there is no way for each individual to know who else received the same message and no way for them to reply to 'all'. The SM-Multiple Destinations Service will allow all addressees to be visible (normal condition) and selected addressees to be invisible (privacy condition) to recipients of an SM sent to multiple destination addresses.

## 4.6.2 Actors

Alice, Bob, Joe and Sally are SMS users.

### 4.6.2.1a Actor specific issues

Joe wants to send a message to Alice, Bob and Sally.

### 4.6.2.1b Actor specific issues (recipients privacy protection)

Joe does not want Alice know that the same message is sent to other persons.

### 4.6.2.2a Actor specific benefits

Joe can utilize multiple destination address feature to send a single message to all the recipients.

Alice, Bob and Sally will be able to reply to everyone who received the initial message from Joe.

### 4.6.2.2b Actor specific benefits (recipients privacy protection)

Joe can set the recipient addresses displaying information to prevent Alice know that the same message is sent to other persons.

Alice does not know the initial message from Joe is also received by Bob and Sally.

Bob and Sally do not know the initial message was received by Alice

## 4.6.3 Pre-conditions

Joe is an SMS subscriber.

Joe subscribed to the SM Multiple Destination service on his home network.

Joe sends the message to Alice, Bob and Sally's phone number.

The distribution list has been pre-defined in VAS-SMS.

## 4.6.4a Post-conditions

Joe's message is received by Alice, Bob and Sally.

Alice, Bob and Sally know who the message has been sent to.

Alice, Bob and Sally can use the information in the received message to reply to everyone who received the message and to Joe.

### 4.6.4b Post-conditions (recipient privacy protection)

Joe's message is received by Alice, Bob and Sally.

Bob and Sally know the message has been sent from Joe to Bob and Sally

Bob and Sally can use the information in the received message to reply to all - this does not include Alice

### 4.6.5a Normal flow

- Joe sends the messages to Alice, Bob, and Sally.

- A single message is sent from Joe's mobile to the SMS-SC.

- The SMS-SC sends the message to Alice, Bob and Sally.

- Alice, Bob and Sally each receive a copy of the message.

- Alice, Bob and Sally have information on all the recipients of the message.

- Alice decides to reply to the received message and is able to reply to all (that is Bob, Joe, and Sally). So a message is sent to Bob, Joe and Sally.

- Bob decides to reply to the received message but only to Joe and Sally. So a message is sent to Joe and Sally.

- Sally just replies to Joe. So a message is sent to Joe

### 4.6.5b Normal flow (recipient privacy protecting)

- Joe sends a message to Bob, and Sally，it is blind copied to Alice

- A single message is sent from Joe's mobile to the SMS-SC.

- The SMS-SC processes the message base on the recipient displayed address information status and delivers the message to Alice, Bob and Sally.

- Alice, Bob and Sally each receive a copy of the message.

- Bob and Sally have information on all the recipients of the message except blind copied recipients, i.e. Alice in this case.

### 4.6.6 Operational and quality of experience requirements

It shall be supported that a user can include multiple destination addresses in a message. The recipient except whose addresses displaying information is blocked shall receive information on all recipients of the message.

It shall be supported that each recipient of the message can send a message back to all recipients of the original message.

## 4.7 Short Message Virtual Private Network (VPN)

### 4.7.1 Short description

This use case describes a scenario where short message is being send to a short number (identical to the destination fixed extension number) and received on mobile phone

### 4.7.2 Actors

Joe and Sally are SMS users of Operator A, belonging to Organization X

#### 4.7.2.1 Actor specific issues

Joe wants to send a short message to Sally. Joe is familiar with Sally's fixed extension number only.

#### 4.7.2.2 Actor specific benefits

The calling party, Joe will take advantage of SM VPN service.

Organization X may have reduced price agreement with operator A for short message exchange between its employees

### 4.7.3 Pre-conditions

Operator A associated Joe and Sally to organization X and enabled their SM VPN service

### 4.7.4 Post-conditions

Outgoing message sent to Sally's short number by Joe will be received on Sally's mobile phone

### 4.7.5 Normal flow

- Joe sends a short message to Sally's short number (e.g. 4 digit fixed extension number).

- The short fixed number is being replaced by Sally's Mobile number by the home network SM VPN service.

- Sally receives the message on her mobile phone.

### 4.7.6 Operational and quality of experience requirements

There shall be no significant delays to any part of the service.

## 4.8 Short Message auto reply

### 4.8.1 Short description

This use case describes a scenario where a called mobile subscriber activate an automatic SMS reply in response to incoming SMS messages.

### 4.8.2 Actors

Joe is an SMS user

Sally is an SMS user with SM Auto Reply Service

#### 4.8.2.1 Actor specific issues

Joe wants to send a short message to Sally.

Sally currently is not reachable via her mobile or does not want to receive any SMS from Joe.

#### 4.8.2.2 Actor specific benefits

The called party, Sally can take advantage of SM Auto Reply Service either for specific MO subscriber (in this case Joe) or unconditional auto reply capabilities, which means that once Sally activates the service, all messages sent to her (all incoming messages) will be automatically responded by SM Auto Reply Service

### 4.8.3 Pre-conditions

Joe is anl SMS subscriber.

Sally subscribed to the SM Auto Reply Service on her home network.

She sets the short message auto reply configuration to YES with preconfigured text to the SMS originator (in this case Joe).

## 4.8.4 Post-conditions

All incoming messages addressed to Sally's mobile phone number from specific MO number (or all incoming messages) are answered by the SM Auto Reply Service.

## 4.8.5 Normal flow

- Sally activates the SM Auto Reply Service with predefined text message.

-  Sally optionally may receive a confirmation message upon successful activation.

- Joe sends a short message to Sally.

- Joe receives an auto reply message with predefined text.

## 4.8.6 Operational and quality of experience requirements

It shall be possible that users can activate the SM Auto Reply Service to be active for different time periods.  In addition it shall be possible to configure the system to reply only once to each sender in a predefined period of time.

It shall be possible for users to configure and manage their Automatic Reply messages, e.g. edit and delete the content of the message.

It shall be possible for users to set different Automatic Reply messages to different senders.

# 4.9 Short Message personal signature

## 4.9.1 Short description

This use case describes a scenario where a pre-defined personal signature is being appended to outgoing short message.

## 4.9.2 Actors

Joe is an SMS user of Operator A.

Sally is an SMS user (her location is not relevant)

### 4.9.2.1 Actor specific issues

Joe wants to send a short message to Sally with his personal signature.

### 4.9.2.2 Actor specific benefits

The calling party, Joe will take advantage of SM Personal Signature Service.

The called party, Sally will receive a short message with additional valuable content, Joe's personal signature

## 4.9.3 Pre-conditions

Joe subscribed to the SM Personal Signature Service on his home network

He enables the service for every outgoing short message and sets his unique personal signature.

## 4.9.4     Post-conditions

All outgoing messages originated by Joe will include his personal signature.

## 4.9.5     Normal flow

- Joe enables the SM Personal Signature Service and sets his personal signature .

- Joe sends a short message to Sally.

- The Personal Signature is appended to the original short message by the home network SM Personal Signature Service

- Sally receives the message.

- Sally opens and reads the message which includes the original text plus Joes personal signature

## 4.9.6     Operational and quality of experience requirements

The SM Personal Signature Service shall support certain conditions configured by users or control system wide (e.g., append personal signature depending on the original short message length, append personal signature to certain destinations). There shall be no significant delays to any part of the service.

# 5          Requirements

## 5.1     Suggested high level requirements

The VAS-SMS shall be implemented without influencing the existing SMS service.

The VAS-SMS shall be implemented without depending on the terminal's capability.

Users shall be able to register, activate, deactivate, withdraw and reconfigure VAS-SMS via the UE, or web portals.

The VAS-SMS shall be designed and implemented in a way to provide users who joined the services one coherent and identical user experience, regardless of the SM flow and SM scenario (e.g. messages to and from applications, MO-MT in an in network and MT from Foreign Network).

## 5.2     Overall system requirements

## 5.2.1     Management of service information

- Capabilities provided to the user

The VAS-SMS shall be able to support a request from an application to query/change the choice of services for a subscriber.

The VAS-SMS shall be able to support a request from an application to query/change the subscriber's preferences for a certain service, for example:

i) To add or delete or modify a subscriber's filtering conditions by which VAS-SMScan refuse some of the subscriber's incoming messages.

ii) To modify a subscriber's signature that will be appended to an SM sent from the subscriber.

iii) To modify a subscriber's forwarding address that substitutes for the subscriber's original receiving address.

- Capabilities provided to the network

The VAS-SMS shall be able to support a request to query/change the subscriber's information, for example:

i) To get the detail information about the subscriber's service.

ii) To add or delete a subscriber's service information.

The VAS-SMS shall be able to support a request to query the handling results of the subscription service.

## 5.2.2 Short Message processing

The VAS-SMS should be able to deal with the content of an SM, for example:

i) To insert content (as agreed with the subscriber) into the original SM and form a new SM (e.g. append the signature to the SM).

ii) To compile an SM by containing operator's information (e.g. construct a delivery report).

iii) To use certain words in an SM as the filtering criteria.

The VAS-SMS should be able to convert the format of an SM into other formats (e.g. email, WAP message, etc).

## 5.2.3 Short Message forwarding

With the advent of SM forwarding there is also the issue of how to handle the situation when a user by mistake sets forwarding to wrong number (a number that is in use). Ideally a recipient should be capable of stopping the delivery of such SM to its own address. As a minimum the recipient's operator should be capable of identifying forwarded SM and stop delivery.

Infinite forwarding loops needs to be prevented.

## 5.2.4 Short Message network storage

It should be possible for the operator to support Short Message Network Storage to allow users to store the messages in the network.

It should be possible for users to store the messages in the network based on their personal settings (e.g. store all sent & received messages, store the messages from/to particular users, store the messages sent & received in a specified period of time etc).

It should be possible for users to store and manage the messages for their preference (e.g. users can set different folders to store different sort of messages, therefore it is convenient to inquire the stored messages based on message sort or key words).

It should be possible for the operator to ensure all relevant information of the messages stored in the network are consistent with that displayed to users, e.g. content of the messages, sender/recipient, sending/receiving time, etc.

## 5.2.5 Short Message to multiple destinations

It shall be able to support inclusion of multiple recipients in a message when a user sends a single message to multiple individuals.

It should be possible for all recipients of the message to be aware of other recipients.

It should be possible for a recipient to choose to whom the reply message is sent, i.e. to the original sender and to other recipients of the original message.

## 5.2.6 Management and control of network based repository

VAS-SMS should be able to provide following capabilities to support network based repository:

- The VAS-SMS should allow configuring in such a way that certain sent or received messages of a particular user can be stored persistently in a network based repository.

-    The VAS-SMS should be able to support a request from SMS-SC to persistently store a sent message in a network based repository at the time of sending.

-    The VAS-SMS should be able to support a request from an application to upload certain messages into a network based repository for persistent storage.

-    The VAS-SMS should be able to support a request from an application to retrieve/delete certain messages stored in a network based repository

-    The VAS-SMS should be able to support a request from an application to view the list of messages and related attributes (e.g. sender, recipient, date/time, etc) in a network based repository

## 5.2.7    Addressing

The VAS-SMS should support different addressing formats to identify the sender and recipient; it should support both MSISDN[3] and e-mail addressing schemes[4].

The VAS-SMS should support an alpha-numeric addressing format (similar to specified in [2]).

The VAS-SMS should be able to submit one message to multiple recipients.

The VAS-SMS should be able to support the request to hide the sender's or other recipients' addresses.

# 6          Requirements for service priority and interaction

The different rules of VAS-SMS priority and interaction are provided by operator. For example, the priority order maybe as following:

- SM Filtering

- SM Network Storage

- SM Forwarding

- etc.

The VAS-SMS should be classified by priority and triggered according to priority order.

The VAS-SMS should provide the capability to configure certain priority.

Caller SMS receipt has higher priority than Callee SMS Receipt service.

# 7          Quality of service

The quality of basic SMS service should not be affected by introducing the VAS-SMS.

The following key performance for quality of VAS-SMS shall be kept consistent with basic SMS. For example:

- SMS delivery successful rate

- authentication successful rate

- end to end data loss rate

- end to end data delay

- charging successful rate

- reliability of network and service

# 8      Charging aspects for VAS-SMS

The VAS-SMS shall provide accounting rules for accurate accounting.  It shall be able to support following charging aspects.

-   Charging Model

The VAS-SMS charging includes basic communication fee and special service fee.

Basic communication fee is paid for usage of network resource. CDR is generated by SMSC.  Special service fee is paid for usage of the VAS-SMS. CDR is generated by the VAS-SMS system. Charging models of special service fee shall include but not limit to the following items:

i) charging per VAS-SMS

ii) monthly basis

Per each service category, different charging models and rates should be configurable for the special service fee.

-   Charging principle

The following principles shall be supported according to different service categories:

i) VAS-SMS triggered by sending party – basic communication fee and special service fee are paid by the sending party.

ii) VAS-SMS services triggered by recipient – basic communication fee is paid by the sending party, whilst special service fee is paid by the recipient.

iii) Charging only happens after the status report has been received by the SMSC.

-   Charging Scheme

The VAS-SMS shall support a standardized interface to transfer CDRs and other charging related information between the VAS-SMS and the billing system for prepaid and post-paid billing solutions.

# 9      Security

Security of the VAS-SMS services shall be consistent with basic SMS service. The user shall be able to use and access the VAS-SMS services in a secure manner.

VAS-SMS should support Lawful Interception as required by Regional Regulations.

# 10      Interworking

 Interworking with existing messaging technologies and messaging services should be supported.

The VAS-SMS should be able to send the content of an SM to a reachable address, for example:

i) To send an email to email severs after converting the SM into an email.

ii) To send a WAP message to a WAP Push Gateway after converting the SM into a WAP message.

iii) To send an SM to a subscriber by sending an SM to SMSC.

iv) To send an  SM via IMS. Refer to MESSIW[5].

v) To send a delivery report .

# 11 Roaming

General roaming requirements should be compliant with roaming function of SMS.

The user should be able to experience the consistent VAS-SMS services whether in home network or roaming.

# 12 Conclusions

The current TR is to study the requirements of value-added services for SMS, which are the enhancement (or supplement) of normal GSM short message service requirements.

It is proposed that after finalization of the present TR 22.942, 3GPP should be asked to take the responsibility to create the stage 1 technical specification

The architecture and protocol of various value-added services listed in TR 22.942 shall be consistent with each other. This should be followed by Stage 2 work on VAS4SMS in 3GPP.

# Annex A:
# Change history

| Change history | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **TSG SA#** | **SA Doc.** | **SA1 Doc** | **Spec** | **CR** | **Rev** | **Rel** | **Cat** | **Subject/Comment** | **Old** | **New** | **WI** |
| SP-39 | SP-080046 | S1-080039 | 22.942 | 0001 | - | Rel-8 | F | Correcting a reference in TR 22.942 | 8.0.0 | 8.1.0 | FSVAS4S MS |
| SP-46 | - | - | - | - | - | - | - | Updated to Rel-9 by MCC | 8.1.0 | 9.0.0 | |
| 2011-03 | - | - | - | - | - | - | - | Update to Rel-10 version (MCC) | 9.0.0 | 10.0.0 | |
| 2012-09 | - | - | - | - | - | - | - | Updated to Rel-11 by MCC | 10.0.0 | 11.0.0 | |
| 2014-10 | | | | | | | | Updated to Rel-12 by MCC | 11.0.0 | 12.0.0 | |
| 2015-12 | - | - | - | - | - | - | - | Updated to Rel-13 by MCC | 12.0.0 | 13.0.0 | |
| 2017-03 | - | - | - | - | - | - | - | Updated to Rel-14 by MCC | 13.0.0 | 14.0.0 | |

# History

| Document history | | |
|---|---|---|
| V14.0.0 | March 2017 | Publication |
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