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Agenda Item: **5.1.3**

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SP-000058		22.038	001		R99	USIM/SIM Application Toolkit, Service	D	3.0.0	3.1.0
SP-000058		22.038	002		R99	Addition requirements for bearer	B	3.0.0	3.1.0

TSG-SA Working Group 1 meeting #7
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***Document* TP-00120**
e.g. for 3GPP use the format TP-99xxx
or for SMG, use the format P-99-xxx

3G CHANGE REQUEST

Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.

22.038	CR	001	Current Version:	3.0.0

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

For submission to:	TSG SA1#7	for approval	X	strategic		(for SMG use only)
list expected approval meeting # here ↑		for information		non-strategic	X	

Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from: ftp://ftp.3gpp.org/Information/CR-Form-v2.doc*

Proposed change affects: *(at least one should be marked with an X)*	(U)SIM	X	ME	X	UTRAN / Radio		Core Network	

Source: TSG SA1 **Date:** 04/02/00

Subject: SIM/USIM Application Toolkit, Service Description, Stage 1

Work item:

Category: *(only one category shall be marked with an X)*

F	Correction		**Release:**	Phase 2	
A	Corresponds to a correction in an earlier release			Release 96	
B	Addition of feature			Release 97	
C	Functional modification of feature			Release 98	
D	Editorial modification	X		Release 99	X
				Release 00	

Reason for change: The transfer of GSM specifications for 3GPP requires an editorial update. Text referring to the GSM system needs to be changed to refer to both the GSM and 3G systems.

Clauses affected: All Clauses

Other specs affected:

Other 3G core specifications		→ List of CRs:
Other GSM core specifications		→ List of CRs:
MS test specifications		→ List of CRs:
BSS test specifications		→ List of CRs:
O&M specifications		→ List of CRs:

Other comments:

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3rd Generation Partnersl Technical Specification Group Services a Aspects; SIMSIM/USIM Application Toolkit (SAT/USAT); Service description; Stage 1 (3G TS 22.038 version 3.0.10)

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Contents

Foreword

This Technical Specification has been produced by the 3GPP.

The contents of the present document are subject to continuing work within the TSG and may change following formal TSG approval. Should the TSG modify the contents of this TS, it will be re-released by the TSG with an identifying change of release date and an increase in version number as follows:

Version 3.y.z

where:

- x the first digit:
  - 1 presented to TSG for information;
  - 2 presented to TSG for approval;
  - 3 Indicates TSG approved document under change control.
- y the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.
- z the third digit is incremented when editorial only changes have been incorporated in the specification;

1 Scope

This ETSI Technical Specification defines the stage one description of the ~~SIM~~SIM/USIM application Toolkit (~~SAT~~SAT/USAT). Stage one is an overall service description, primarily from the subscriber's and serving environment's points of view, and does not deal with the details of the human interface itself.

This TS includes information applicable to network operators, serving environments and terminal, switch and database manufacturers.

This TS contains the core requirements for a ~~SIM~~SIM/USIM application Toolkit (~~SAT~~SAT/USAT) which are sufficient to provide a complete service.

It is highly desirable however, that technical solutions for a ~~SIM~~SIM/USIM application Toolkit (~~SAT~~SAT/USAT) should be sufficiently flexible to allow for possible enhancements. Additional functionalities not documented in this TS may implement requirements which are considered outside the scope of this TS. This additional functionality may be on a network-wide basis, nation-wide basis or particular to a group of users. Such additional functionality shall not compromise conformance to the core requirements of the service.

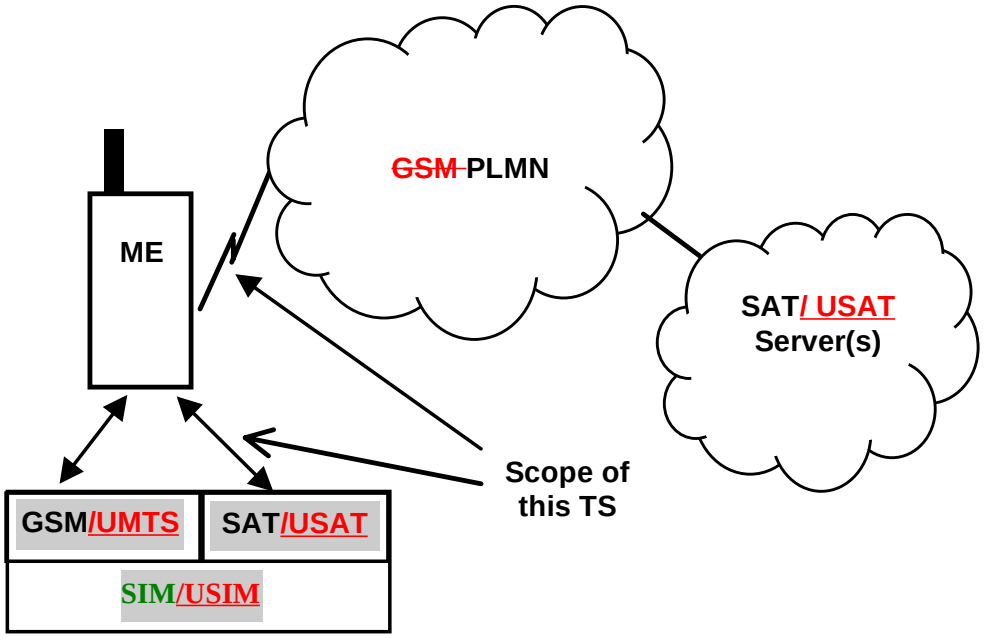

Figure 1: Scope of this TS

As indicated in Figure 1, the scope of this TS encompasses the ~~SAT~~SAT/USAT functionality in the ~~MS~~ UE/MS (comprising ~~SIM~~SIM/USIM and ME) and the interaction with the PLMN environment. The ~~SAT~~SAT/USAT Server is not necessarily a separate entity as shown in the figure; nodes providing ~~SAT~~SAT/USAT services may also exist within the PLMN. The functionalities of the ~~SAT~~SAT/USAT servers (such as charging aspects, security level classification etc.) are not covered by this specification.

~~SAT~~The requirements are considered to be applicable to both GSM and UMTS systems.

~~Note: The present document covers description for SIM only. The document needs to be updated to make it applicable to 3GPP.~~

2 References

References may be made to:

a) specific versions of publications (identified by date of publication, edition number, version number, etc.), in which case, subsequent revisions to the referenced document do not apply; or

b) all versions up to and including the identified version (identified by "up to and including" before the version identity); or

c) all versions subsequent to and including the identified version (identified by "onwards" following the version identity); or

d) publications without mention of a specific version, in which case the latest version applies.

A non-specific reference to an ETS shall also be taken to refer to later versions published as an EN with the same number.

2.1 Normative references

[1] GSM 01.04 (ETR 350): Digital cellular telecommunications system (Phase 2+); Abbreviations and acronyms

[2] GSM 02.48: Security mechanisms for the SIM Application Toolkit; Stage 1

[3] GSM 03.48: Security mechanisms for the SIM Application Toolkit; Stage 2

[4] ~~GSM 11.11~~TS 31.111 : Specification of the Subscriber Identity Module - Mobile Equipment interface

[5] GSM 11.14: Specification of the SIM Application Toolkit for the Subscriber Identity Module - Mobile Equipment interface.

[6] GSM 02.19: Subscriber Identity Module Application Programming Interface (SIM API)

[7] TR 21.905: "Vocabulary for 3GPP Specifications"

3 Definitions and abbreviations

3.1 Definitions

For the purposes of this TS the following definitions apply:

applet: a small program that is intended not to be run on its own, but rather to be embedded inside another application

application: ~~SAT~~SAT/USAT information in the form of software, applications, associated resources (e.g. libraries) and/or data

content: data and/or information associated with, or independent of, a particular application which may be presented to or collected from a user

~~SAT~~SAT/USAT service: a service enhanced (or made possible) by ~~SAT~~SAT/USAT technology

~~SAT~~SAT/USAT execution environment: the ~~SAT~~SAT/USAT execution environment provides the mechanisms to operate single or multiple ~~SAT~~SAT/USAT-applications

~~SAT~~SAT/USAT serving environment: an entity which delivers ~~SAT~~SAT/USAT services to the subscriber. This is normally the PLMN operator, but could be an entity with ~~SAT~~SAT/USAT responsibility (which may have been delegated by the PLMN operator)

~~SAT~~SAT/USAT subscriber: the owner of a PLMN subscription who has entered into an agreement with a ~~SAT~~SAT/USAT serving environment for ~~SAT~~SAT/USAT services. Access to ~~SAT~~SAT/USAT services though other types of networks is out of scope of this specification

~~SAT~~SAT/USAT server: a node supporting ~~SAT~~SAT/USAT services in the ~~SAT~~SAT/USAT service environment

user: the user of a ~~SAT~~SAT/USAT ~~MS~~ UE/MS , who may or may not be the subscriber

3.2 Abbreviations

For the purposes of this TS the following abbreviations apply:

API	Application Programming Interface
CAMEL	Customized Applications for Mobile network Enhanced Logic
CS	Circuit Switched
CSE	CAMEL Service Environment
IN	Intelligent Network
ME	Mobile Equipment
MExE	Mobile Station (Application) Execution Environment
MMI	Man Machine Interface
MS	Mobile Station
NO	Network Operator
PLMN	Public Land Mobile Network
SAT	SIM Application Toolkit
SCI	Subscriber Controlled Input

SIM	Subscriber Identity Module
UE	User Equipment
USAT	USIM Application Toolkit
USIM	Universal Subscriber Identity Module

Further abbreviations are given in GSM 01.04 [1] and TS 21.905 [7].

4 Description

SATSAT/USAT provides a standardised execution environment for applications stored on the SIMSIM/USIM card and the ability to utilize certain functions of the supporting mobile equipment. SATSAT/USAT provides mechanisms which allow applications, existing in the SIMSIM/USIM, to interact and operate with any ME which supports the specified mechanism(s) thus ensuring interoperability between a SIMSIM/USIM and an ME, independent of the respective manufacturers and operators. A transport mechanism is provided enabling applications to be down-loaded and/or updated.

A significant aspect of SATSAT/USAT is the highly secure environment provided by the SIMSIM/USIM card. This is further enhanced by the fact that the subscriber and the issuer of the SIMSIM/USIM and also the SATSAT/USAT applications have a "trusted relationship" (e.g. the subscriber trusts the issuer of the card to charge correctly for the resources used). This allows certain features, such as call control, to be implemented with a degree of freedom which would not be acceptable in a "non-trusted relationship".

The introduction of the SATSAT/USAT execution environment into MS UE/MSs (i.e. ME+SIMSIM/USIM) is a significant step forward in their evolution. The ability of MS UE/MSs to support SATSAT/USAT represents an extension of the MS UE/MS's and PLMN capabilities. In order to allow current and future technologies to exploit and benefit from this, a standardized means of exchanging the MEs' and SIMSIM/USIM s capability profiles is supported.

This Technical Specification defines an enhancement of the SIMSIM/USIM /ME interface for GSM Phase 2+ and future systems.

5 High level SATSAT/USAT requirements

The high level requirements of SATSAT/USAT are as follows:-

- provide the user with additional user interface functionalities to control and invoke services (e.g. menus, icons, etc.)
- to provide means for the user to personalize applications by means of parameters, if such parameters are made available by the application
- provide support of a wide variety of applications
- provide the means for SATSAT/USAT to interact with the user via the input and output devices of the ME
- the means to transfer applications automatically or on demand to the SIMSIM/USIM from a SATSAT/USAT server, and upgrade existing applications via the PLMN
- the means to transfer content automatically or on demand to or from the SIMSIM/USIM from or to a SATSAT/USAT server
- the means to transfer content directly from one SATSAT/USAT application to a second MS UE/MS with a SATSAT/USAT application via the PLMN
- the need for an inherent security architecture such that it shall be possible for both the SATSAT/USAT and SATSAT/USAT server sides of a connection to be authenticated (possibly implicitly by the use of digital signature or ciphering). The SATSAT/USAT server shall maintain security of subscribers personal data and PLMN data
- it shall be possible to charge subscribers for the use of PLMN or third party SATSAT/USAT services
- the means for SATSAT/USAT applications on the SIMSIM/USIM to communicate with other PLMN nodes
- the means for the ME and SIMSIM/USIM to exchange SATSAT/USAT capability information
- provision of SATSAT/USAT API(s) to facilitate the development and downloading of SATSAT/USAT applications
- Categorisation of applications in either "Mandatory" or "Conditional" shall allow application management. For conditional-applications the means for the user to manage (i.e. identify version, delete, modify, save etc.) the applications and content on the SATSAT/USAT MS UE/MS shall be possible. Modification of the application by the user is, however, explicitly not allowed

- It shall be possible for the user to deactivate the ~~SIM~~SIM/USIM application environment

- the means for the network operator to provide and manage the ~~SAT~~SAT/USAT execution environment resources and also to provide and manage (i.e. identify version, activate, de-activate, delete, modify, download etc.) those services of the management control class "mandatory"

- the means to trace (e.g. for billing and customer care purposes) the source of origin of a particular communication activity

- the means for the ~~SAT~~SAT/USAT application to fully control the display of all actions and network-responses related to the operation of the application. Optionally under user control the ME may display the individual actions/responses

- the means for the ~~SAT~~SAT/USAT application to control the PLMN services/supplementary services via the standardized MMI. Only the originator (i.e. either user or ~~SAT~~SAT/USAT application) of the action shall directly receive the results/responses of that action (e.g. network response to an SCI). Optionally under user control the ME may display the individual actions/responses.

Some of the above requirements are subsequently elaborated.

6 ~~SAT~~SAT/USAT/ME interface requirements

6.1 ~~SAT~~SAT/USAT APIs

The ~~SAT~~SAT/USAT-API is defined in GSM 02.19 [6].
The ~~SAT~~SAT/USAT API for the GSM ~~SIM~~SIM/USIM card shall allow application programmers easy access to the functions and data described in GSM 11.11 [4] and GSM 11.14 [5], such that ~~SIM~~SIM/USIM based services can be developed and loaded onto ~~SIM~~SIM/USIM s (independent of the ~~SIM~~SIM/USIM manufacturer), quickly and, if necessary, remotely, after the card has been issued. The ~~SAT~~SAT/USAT API shall support pro-active functions as described in GSM 11.14 [5] and transport functions as described in GSM 11.11 [4].

6.2 ~~SAT~~SAT/USAT proactive capability

The ~~SAT~~SAT/USAT proactive capability is a mechanism whereby the ~~SIM~~SIM/USIM can request specific actions to be taken by the ME by issuing "proactive commands" thus establishing and maintaining an interactive dialogue with the user and/or communicating with the network..
The ME shall inform the ~~SIM~~SIM/USIM of the success or otherwise of each command issued to it by the ~~SIM~~SIM/USIM , and also indicate the command details and if applicable add more specific information.
The proactive command set allows the ~~SAT~~SAT/USAT to instruct the ME to:

- display text supplied by the USAT/SAT~~SIM~~ on the ME's display, with an indication of priority (normal or high), and a defined action (user activity or timeout) to terminate the text display.

- display a text string and obtain the response in the form of a single user keystroke or a string of keys entered by the user and pass the response to the ~~SIM~~SIM/USIM . If the response is designated as private by the ~~SIM~~SIM/USIM the ME shall not display the users response on the screen.

- set up a voice call to a number with a specific priority as indicated by the ~~SIM~~SIM/USIM ; set up a data call to a number with specific bearer capability and priority, all parameters are indicated by the ~~SIM~~SIM/USIM .

- set up a GPRS context to an address specified by the ~~SIM~~SIM/USIM , performing the necessary network attachment if applicable.

- send a short message to the network. The short message text is supplied by the ~~SIM~~SIM/USIM to the ME in either packed or unpacked SMS 7-bit alphabet, or UCS2 alphabet; send a SS control, SS MMI string or USSD string, indicating which alphabet is used where applicable.

- send and receive GPRS packets to a specified GPRS context using the GPRS bearer service.

- play a tone in the appropriate audio device.

- negotiate, within reasonable tolerances, a periodic "polling" of the ~~SIM~~SIM/USIM Toolkit.

- refresh the image (if applicable) of the ~~SIM~~SIM/USIM data contained in the ME memory, either entirely, or partially, or instruct the ME to re-initialize completely.

- set up an event list in the ME such that the ~~SIM~~SIM/USIM is informed by the ME when a ~~SIM~~SIM/USIM indicated event has occurred.
- set up an additional menu in the ME, by issuing the ME with a menu list, and allow indication back to the ~~SIM~~SIM/USIM of the user selected menu item.
- provide requested information from the ME to the ~~SIM~~SIM/USIM, for example the MCC, MNC and IMEI.
- communicate bi-directionally with an auxiliary device, e.g. a second card reader.
- set up, refresh and interrogate several timers, and inform the ~~SIM~~SIM/USIM when these expire, within reasonable tolerances.
- display additional MMI information such as display information or tones with commands that employ network resources, with an indication to the ME as to the required level of ME generated MMI as a result of the interaction with the network.
- allow the ME to display help information with the commands, by providing the associated text, related to the user action (e.g. menu selection).

Unless otherwise stated the following shall apply:

- The format of text to be displayed is designated by the ~~SIM~~SIM/USIM and is either SMS default alphabet (packed or unpacked) or UCS2 alphabet.
- The format of the response from the ME is designated by the ~~SIM~~SIM/USIM and is either keypad digit (0-9, *, #, +), SMS default alphabet characters or UCS2 alphabet characters.

7 ~~SAT~~SAT/USAT User Interface requirements

7.1 Data presentation requirements (e.g. Display)

In order to be able to create and operate applications with a homogeneous display(s) ~~SAT~~SAT/USAT shall fully control the display of all actions and all network-responses concerned with the operation of the application. ~~SAT~~SAT/USAT shall, upon completion/closure of the application, return full control to the ME.
The display of information shall be either in the form of text (i.e. alphanumeric characters) or in graphical form or both.
Optionally under user control the ME may display the individual actions/network responses.

7.2 Data acquisition requirements (e.g. Keypad)

In order to be able to create and operate applications with a homogeneous user interface ~~SAT~~SAT/USAT shall fully control the function associated with the user input for example via the keypad of the ME. Exceptions to this are keys which are "dedicated ME keys" such as the ON/OFF key. ~~SAT~~SAT/USAT shall, upon completion/closure of the application, return full control to the ME.

7.3 Access requirements (e.g. Menu)

A simple, powerful method for the user to access and interact with certain ~~SAT~~SAT/USAT applications shall be provided.
It shall be possible for the ~~SAT~~SAT/USAT-Application to set up a user interface (e.g. menu, icons) via the capabilities provided by the ME to allow the user to interact with a ~~SAT~~SAT/USAT application using, for example, the display and keypad.

7.4 Menu capability

7.4.1 Set up capability

The menu set up capability is a mechanism whereby the menu items (menu entries/structure etc.) required by the ~~SAT~~SAT/USAT is indicated to the ME by means of a proactive ~~SIM~~SIM/USIM command(s). The menu set up capability is not directly available to the user. As an option this may include "help information" items.

7.4.2 Selection capability

The menu selection capability is a mechanism whereby the menu item selected by the user is indicated to the ~~SAT~~SAT/USAT by the ME via the ~~SIM~~SIM/USIM interface. As an option this may include "help information" items.

7.5 Soft-key capability

The soft-key allocation capability is a mechanism whereby the ~~SIM~~SIM/USIM indicates to the ME the text to be displayed and the ~~SAT~~SAT/USAT function which is to be assigned to a ME soft-key.

7.6 User control of the ~~SAT~~SAT/USAT execution environment

The user shall be able to enable/disable the ~~SAT~~SAT/USAT execution environment via the ME as follows:

i) the ~~SAT~~SAT/USAT execution environment is enabled/disabled

ii) the ~~SAT~~SAT/USAT execution environment is not allowed to make automatic calls

iii) the ~~SAT~~SAT/USAT execution environment is allowed to make automatic calls but only with user confirmation

iv) the ~~SAT~~SAT/USAT execution environment is allowed to make automatic calls without user confirmation.

In addition it shall be possible for the user to independently enable/disable the AT command feature.

The ME shall inform the ~~SAT~~SAT/USAT execution environment of the current status each time the status is changed and at power up.

Note that for ease of reading the term "automatic call" is used but this shall be taken to mean any network interaction initiated by ~~SAT~~SAT/USAT including SMS, USSD etc. but excluding user initiated interactions modified by ~~SAT~~SAT/USAT.

The user shall be notified by the ME if service access is prevented as the result of partially or completely disabling the ~~SAT~~SAT/USAT execution environment. It shall be possible to enable the ~~SAT~~SAT/USAT execution environment if service access has been prevented.

8 Network interface requirements

8.1 ~~SAT~~SAT/USAT ~~SIM~~SIM/USIM /Network interaction

~~SAT~~SAT/USAT/Network interaction is required such that the ~~SAT~~SAT/USAT and the network can bi-directionally exchange data transparently through the ME, using the "over the air protocol" employing any of the transport mechanisms defined in the section "~~SAT~~SAT/USAT bearer requirements".

8.2 Communication control capability

The communication control capability is a mechanism whereby the use of communication resources is either initiated by the ~~SAT~~SAT/USAT application or modified by the ~~SAT~~SAT/USAT application subsequent to a user action. If supported by the ME, the ME shall, at the time of the user initiated communication request, inform the ~~SIM~~SIM/USIM of the current cell location identity. The ~~SIM~~SIM/USIM shall indicate to the ME if the presentation of information (display, tones etc.) shall be restricted to the explicit presentation of ~~SAT~~SAT/USAT supplied information or if it is required to present standard PLMN information (e.g. network responses) in addition to the ~~SAT~~SAT/USAT supplied information.

It shall be possible for:

- the ~~SIM~~SIM/USIM to initiate and terminate a (~~SIM~~SIM/USIM initiated) communication request with or without explicit confirmation by the user
- the ~~SIM~~SIM/USIM to allow, bar or modify a communication request initiated by the user
- the ~~SIM~~SIM/USIM to replace a user initiated communication request by another communication request (e.g. replace call request by an SS action etc.).

It shall be possible for the ~~SAT~~SAT/USAT serving environment to enable/disable the communication control capability. As an option, dependant on the subscribers subscription and the application, the user may enable/disable the communication control capability. The user shall be notified by the ME in case network service is lost as the result of disabling the communication control capability.

The communication control capability applies to all mobile originated requests independent of the applicable bearer service. Explicitly it applies to voice calls and to all services listed in the section "~~SAT~~SAT/USAT bearer requirements" (e.g. SMS, supplementary service, circuit switched connection etc.).

The source of the communication request shall be indicated to the network as defined in section "security, traceability requirements".

8.3 Service Interworking requirements

The ~~SAT~~SAT/USAT application shall be able to use all PLMN services and supplementary services (SS) including those functions available to the user via the standardized MMI (e.g. 2 SEND for Call Hold). Only the originator (i.e. either user or ~~SAT~~SAT/USAT application) of the action shall directly receive the results/responses of that action (e.g. network response to an SCI). Optionally under user control the ME may display the individual actions/responses.

9 ~~SAT~~SAT/USAT bearer requirements

~~SAT~~SAT/USAT shall support the transmission (mobile originated) and the reception (mobile terminated) of data by means of:

- SMS
- USSD
- Cell Broadcast (mobile originated excluded)
- SMS via GPRS
- GPRS
- circuit switched data

10 Charging requirements

It shall be possible to charge the subscriber for the use of ~~SAT~~SAT/USAT applications.
It shall be possible to charge for the following activities:-

- subscription:

  the subscriber's registration to use ~~SAT~~SAT/USAT services

- application transfer (download):

  the transfer of applications and/or information to a subscriber's ~~SAT~~SAT/USAT ~~MS~~ UE/MS

- application upgrading (download):

  the upgrading of previously transferred applications to a subscriber's ~~SAT~~SAT/USAT ~~MS~~ UE/MS

- application use:

  the use of applications by a subscriber's ~~SAT~~SAT/USAT ~~MS~~ UE/MS

- content:

  the provision of content within a ~~SAT~~SAT/USAT application

- roaming:

  the use of ~~SAT~~SAT/USAT applications by a subscriber when roaming

- transport:

  the use of a transport/bearer service (e.g. SMS)

11 Security requirements

The integrity of the ~~SIM~~SIM/USIM and existing security mechanisms shall not be compromised with the introduction of ~~SAT~~SAT/USAT services.
The security of the PLMN, the ~~SIM~~SIM/USIM and the ~~SAT~~SAT/USAT applications shall not be able to be compromised by an external execution environment.
Applications running within an external execution environment are considered "non-trusted" until a secure authentication and identification procedure has been successfully performed. MExE is considered to be an external execution environment. MExE is not covered by this specification.
Applications designed using the features in this specification may require additional methods to provide additional data confidentiality, data integrity, and data sender validation, or any subset thereof.

11.1 Secure Environment requirements

A major aspect of the ~~SIM~~SIM/USIM card is the security provided by the chip technology combined with the encryption and challenge/response procedures. The enhancement of the ~~SIM~~SIM/USIM card by ~~SAT~~SAT/USAT shall not reduce nor endanger the current security. In addition, the ~~SAT~~SAT/USAT environment shall maintain (or improve) the same high levels of security. Adequate (future) measures shall be taken to ensure the fulfilment of this requirement also with future advances in technologies/services (either network-centric and/or ~~MS~~ UE/MS-centric).

12 Traceability requirements

It shall be possible for the network operator to trace (i.e. identify) the source of following transactions:

- Call set up;
- Mobile initiated Short Messages;
- GPRS session set-up;
- Control messages for Supplementary Services;
- Mobile initiated USSD messages.

It shall be possible to differentiate between the following categories:

- user initiated;
- ~~SAT~~SAT/USAT initiated;
- ~~SAT~~SAT/USAT modified,

and also to indicate the degree of user involvement:

- confirmation by user;
- indication to user;
- no knowledge by user.

The ~~SAT~~SAT/USAT application ID shall be provided where applicable.

Note: traceability is required, for example, for customer care and charging purposes.

13 Roaming

The ~~SAT~~SAT/USAT execution environment shall be supported when roaming providing a roaming agreement for the necessary transport/bearer service(s) (e.g. SMS, GPRS) is currently valid.

14 Interaction with supplementary services

14.1 General

This subclause defines the interaction between PLMN supplementary services and the ~~SAT~~SAT/USAT feature. PLMN supplementary services shall not have any knowledge of ~~SAT~~SAT/USAT based services.

14.2 Line Identification

14.2.1 Calling Line Identification Presentation (CLIP)

~~SAT~~SAT/USAT shall be able to modify the calling number that is displayed to the user.

14.2.2 Calling Line Identification Restriction (CLIR)

No interaction.

14.2.3 Connected Line Identification Presentation (COLP)

~~SAT~~SAT/USAT shall be able to modify the called number that is displayed to the user.

14.2.4 Connected Line Identification Restriction (COLR)

No interaction.

14.3 Call Forwarding

14.3.1 Call Forwarding Unconditional (CFU)

~~SAT~~SAT/USAT shall be able to modify the forwarded to number entered by the user and displayed, upon interrogation, to the user.

14.3.2 Call Forwarding Busy (CFB)

~~SAT~~SAT/USAT shall be able to modify the forwarded to number entered by the user and displayed, upon interrogation, to the user.

14.3.3 Call Forwarding on No Reply (CFNRy)

~~SAT~~SAT/USAT shall be able to modify the forwarded to number entered by the user and displayed, upon interrogation, to the user.

14.3.4 Call Forwarding on Not Reachable (CFNRc)

~~SAT~~SAT/USAT shall be able to modify the forwarded to number entered by the user and displayed, upon interrogation, to the user.

14.4 Call Completion

14.4.1 Call Hold (CH)

No interaction.

14.4.2 Call Waiting (CW)

No interaction.

14.5 Multi Party (MPTY)

~~SAT~~SAT/USAT shall be able to modify the called number entered by the user.

14.6 Closed User Group (CUG)

No interaction.

14.7 Advice of Charge (AoC)

No interaction.

14.8 Call Barring

14.8.1 Barring of all outgoing calls

No interaction.

14.8.2 Barring of outgoing international calls

14.8.2.1 Mobile originated calls

No interaction.

14.8.2.2 Forwarded Calls

No interaction.

14.8.3 Barring of outgoing international calls except those directed to the HPLMN country

No interaction.

14.8.4 Barring of all incoming calls

No interaction.

14.8.5 Barring of incoming calls when roaming

No interaction.

14.9 Explicit Call Transfer (ECT)

~~SAT~~SAT/USAT shall be able to modify the transfer number entered by the user.

14.10 Completion of Call to Busy Subscriber (CCBS)

~~SAT~~SAT/USAT shall be able to modify the number displayed to the user.

14.11 Multiple Subscriber Profile (MSP)

No interaction.

15 Interaction with network features

All services available in the network shall continue to be offered and remain applicable in addition to ~~SAT~~SAT/USAT. This includes the basic services, supplementary services and network features.

15.1 Interactions with Operator Determined Barring (ODB)

15.1.1 Barring of all outgoing calls

No interaction.

15.1.2 Barring of all outgoing international calls

No interaction.

15.1.3 Barring of all outgoing international calls except those directed to the home PLMN country

No interaction.

15.1.4 Barring of outgoing calls when roaming outside the home PLMN country

No interaction.

15.1.5 Barring of outgoing premium rate calls

No interaction.

15.1.6 Barring of incoming calls

No interaction.

15.1.7 Barring of incoming calls when roaming outside the home PLMN country

No interaction.

15.1.8 Operator Specific Barring

No interaction.

15.1.9 Barring of Supplementary Services Management

No interaction.

15.2 Interactions with Optimal Routing (OR)

No interaction.

15.3 Interactions with MExE

As an option the menu set up/display may utilize a micro-browser functionality if provided by the ME.

15.4 Interactions with CAMEL

For interworking purposes ~~SAT~~SAT/USAT shall be able to include free formatted information in the call set up for MO-calls (mobile originated calls) , MO-SMS (mobile originated SMS) and GPRS session set up. This information shall be forwarded transparently to a CAMEL-CSE.
A CAMEL-CSE shall be able to include free formatted information for MT-calls (mobile terminated calls) that shall be forwarded transparently to the ~~SAT~~SAT/USAT.

16 Compatibility of ~~SAT~~SAT/USAT ~~MS~~ UE/MS's and applications

16.1 ~~SAT~~SAT/USAT Classification

Given the wide ranging hardware capabilities of ~~SIM~~SIM/USIM cards and MEs, together with the development of ~~SAT~~SAT/USAT applications and applets, a ~~SAT~~SAT/USAT classification shall be supported to determine their respective capability and compatibility. The ~~SAT~~SAT/USAT classification shall apply both to ~~SIM~~SIM/USIM cards, MEs and applications and applets.

The objective is to:-

- classify the requirements of a ~~SAT~~SAT/USAT ~~SIM~~SIM/USIM card/applications and
- identify the commands and features supported by the ME

The development and maintenance of the ~~SAT~~SAT/USAT specification is done in accordance to the ETSI/3GPP release procedures. ~~for Phase 2+~~ . I.e. annual releases of the specifications are done providing support for new commands and enhancements of existing commands. The annual Release may both contain commands that are mandatory for that Release and commands that are optional.

The classification of the commands and features in a given Release may be done with the concept of Classes. A Class identifies a subset of functionality of the Release which will provide the user, ~~SAT~~SAT/USAT serving environment and application writer with a consistent set of commands and features.

The concept of a SAT Classes is introduced to help identify the ME, and the ~~SIM~~SIM/USIM card/~~SAT~~SAT/USAT application compatibility within a given Release. The ~~SAT~~SAT/USAT Class is distinct and unrelated to the existing PLMN ~~MS~~ UE/MS Classmark. The ~~SAT~~SAT/USAT Classes are not used during capability negotiations, but are intended to assist in designing applications by provision of a means for an application designer to identify which combinations of ~~SAT~~SAT/USAT features are supported by the MEs. Capability negotiations between the ~~SIM~~SIM/USIM and the ME are performed at the feature level, independent of the ~~SAT~~SAT/USAT class.

In addition to classifying the ME as conforming to a specific Release and if applicable a Class within the release, an ME manufacturers declaration shall be provided. This shall indicate in detail the commands and features supported by the ME. Any conformance testing shall be performed in accordance to this declaration.

A given ~~SAT~~SAT/USAT ME classification identifies support by a ~~SAT~~SAT/USAT ME for a defined level of ~~SAT~~SAT/USAT functionality, but does not necessarily imply support of other levels of ~~SAT~~SAT/USAT classification.

~~SAT~~SAT/USAT applications will be developed to execute on ~~SAT~~SAT/USAT ~~MS~~ UE/MS´s in one or more classifications. In order for ~~SAT~~SAT/USAT applications to be properly supported by a ~~SAT~~SAT/USAT ~~MS~~ UE/MS, the application shall be designated by the same classification of ~~SAT~~SAT/USAT ~~MS~~ UE/MS's on which they are intended to be executed.

16.2 ME/~~SIM~~SIM/USIM operation

In the case of an ME not supporting ~~SAT~~SAT/USAT or not supporting a certain ~~SAT~~SAT/USAT feature the following shall apply:

- the ~~SIM~~SIM/USIM shall control (i.e. allow or prevent) the access to the network.
  This allows the ~~SIM~~SIM/USIM to prevent the use of a subscription (which may rely on the support of ~~SAT~~SAT/USAT features for correct operation) in an uncontrolled manner.

- if access to a PLMN is not prevented the ME shall support the non ~~SAT~~SAT/USAT PLMN features without restriction.

16.3 ME/~~SIM~~SIM/USIM capability information exchange

The ~~SIM~~SIM/USIM and the ME shall exchange ~~SAT~~SAT/USAT capabilities prior to network attach.
This exchange of information is important since the ~~SIM~~SIM/USIM then knows what the ME is capable of, and the ~~SIM~~SIM/USIM can thus adapt the service made available to the user accordingly. If the ~~SIM~~SIM/USIM does not receive any ME capability information it shall assume that the ME does not support ~~SAT~~SAT/USAT.
A ~~SIM~~SIM/USIM that supports ~~SAT~~SAT/USAT shall not attempt to invoke ~~SAT~~SAT/USAT functions in the ME if the ME has not indicated ~~SAT~~SAT/USAT support.
An ME that supports ~~SAT~~SAT/USAT shall not attempt to invoke ~~SAT~~SAT/USAT functions in the ~~SIM~~SIM/USIM if the ~~SIM~~SIM/USIM has not indicated that ~~SAT~~SAT/USAT is supported and is active.

16.4 ME and ~~SIM~~SIM/USIM compatibility

For compatibility testing the ME manufacturers shall provide a declaration of the Release and if applicable the Class supported by the ME including the detail of all commands and features supported by the ME. It can be envisaged that ME implementations will exist that are compliant to a given release and which support commands and features from later releases.

16.5 Management Control Category requirements

The management control category of an application specifies whether or not the subscriber/user is allowed to perform ~~SAT~~SAT/USAT application management functions e.g. download/activate/de-activate the application.
Two management control categories "mandatory" and "conditional" are defined.

16.5.1 Mandatory.

Management functions of mandatory applications are restricted to the operator.
Mandatory applications provide the means for the network operator
a) to provide and manage the ~~SAT~~SAT/USAT execution environment resources
b) to provide and manage (i.e. identify version, activate, de-activate, delete, modify, download etc.) mandatory services

c) to provide ~~SAT~~SAT/USAT applications, which are required, for example, for the fulfillment of the users subscription.

16.5.2 Conditional.

The following management functions of conditional applications shall be optionally made available to the subscriber/user:

- identify version, activate, de-activate, delete, download

Modification of the application by the user is, however, explicitly not allowed.

17 Cross Phase compatibility with future Phases of ~~SAT~~SAT/USAT

Where different entities support different phases of ~~SAT~~SAT/USAT it shall operate at the highest common phase. The ~~SAT~~SAT/USAT phase 1 is the smallest common unit.

Annex A (informative): Change history

Change history					
SMG No. / TSG SA#	**TDoc. No.**	**CR. No.**	**Section affected**	**New version**	**Subject/Comments**
SMG#30	SP99-434			Version 3.0.0	Approved

Document History

Document history		
Date	**Version**	**Comment**
June 98	0.0.0	Initial draft based on MExE stage 1.
June 98	0.1.0	Output of SMG1/SMG9 joint ad hoc
August 98	0.2.0	Updated by editor reflecting discussion at joint ad hoc in June.
August 98	0.3.0	Output of SMG1/SMG9 joint ad hoc meeting
November 98	0.4.0	Output of SMG1/SMG9 joint ad hoc meeting
January 99	0.5.0	Output of SMG1/SMG9 joint ad hoc meeting
January 99	0.5.1	Improved output of SMG1/SMG9 joint ad hoc meeting, submitted to SMG1 for information, with recommendation to raise to Version 1.0.0.
March 99	1.0.0	Raised to Version 1.0.0 by SMG1 Plenary
May 99	1.0.1	Draft changes, interim output of SMG1/SMG9 ad hoc meeting.
May 99	1.1.0	Output of SMG1/SMG9 joint ad hoc meeting
May 99	1.1.1	Minor editorial changes only. Output of SMG1/SMG9 joint ad hoc meeting
June 99	1.1.2	Spelling and editorial corrections, changes agreed to by email after the 5th ad hoc
September 99	1.3.0	New version after S1 meeting
September 99	1.3.1	Final version for approval at TSG-SA Korea
October 99	2.0.0	Editorial clean-up for version 2.0.0

October 99	3.0.0	Stage 1 approved at SA#5, Kyongju, Korea

TSG-SA Working Group 1 (Services) meeting #7 **TSG S1 (00) 082**
Sophia Antipolis, France 7 - 11 February 2000 **Agenda Item: 5.7**

ETSI SMG9 Meeting #20
Rome, Italy, 18 - 21 January, 2000

Tdoc 9-00-0034

ETSI SMG9 adhoc
25 - 26 November, 1999
Newbury, UK

CHANGE REQUEST No : **002** *Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.*

Technical Specification GSM / UMTS: 22.038 Version: 3.0.0

Submitted to SMG #30 *list SMG plenary meeting no. here ↑* For approval **X** for information without presentation ("non-strategic") **X** with presentation ("strategic")

PT SMG CR cover form. Filename: crf26_3.doc

Proposed change affects: *(at least one should be marked with an X)* SIM [X] ME [X] Network [ ]

Work item: TEI

Source: SMG9 Bearer Independent Data Transfer work group **Date:** November 25 1999

Subject: Addition requirements for bearer independent data transfer feature

Category: *(one category and one release only shall be marked with an X)*

F	Correction	
A	Corresponds to a correction in an earlier release	
B	Addition of feature	X
C	Functional modification of feature	
D	Editorial modification	

Release:

Phase 2	
Release 96	
Release 97	
Release 98	
Release 99	X
UMTS	

Reason for change: The aim of this CR is to introduce additional requirements dedicated to the bearer independent data transfer feature.
This functionality enables the SIM to establish a data channel with a Server on the preferred available bearer and then to exchange data over this channel independently of the previously selected bearer.

Clauses affected: 2.1, 3.1, 6.2, 6.3, 8.1, 9

Other specs affected:

Other releases of same spec		→ List of CRs:
Other core specifications		→ List of CRs:
MS test specifications / TBRs		→ List of CRs:
BSS test specifications		→ List of CRs:
O&M specifications		→ List of CRs:

Other comments:

help.doc

<--------- double-click here for help and instructions on how to create a CR.

2.1 Normative references

[1] GSM 01.04 (ETR 350): Digital cellular telecommunications system (Phase 2+); Abbreviations and acronyms

[2] GSM 02.48: Security mechanisms for the SIM Application Toolkit; Stage 1

[3] GSM 03.48: Security mechanisms for the SIM Application Toolkit; Stage 2

[4] GSM 11.11: Specification of the Subscriber Identity Module - Mobile Equipment interface

[5] GSM 11.14: Specification of the SIM Application Toolkit for the Subscriber Identity Module - Mobile Equipment interface.

[6] GSM 02.19: Subscriber Identity Module Application Programming Interface (SIM API)

[7] GSM 04.08: Mobile radio interface layer 3 specification

[8] GSM 03.60: GPRS service description stage 2

[9] GSM 03.64: GPRS overall description of the GPRS radio interface stage 2

[10] GSM 07.60: GPRS mobile station supporting GPRS

[11] GSM 02.90: Unstructured Supplementary Service Data (USSD) Stage 1

[12] GSM 03.90: Unstructured Supplementary Service Data (USSD) Stage 2

3 Definitions and abbreviations

3.1 Definitions

For the purposes of this TS the following definitions apply:

applet: a small program that is intended not to be run on its own, but rather to be embedded inside another application
application: SAT information in the form of software, applications, associated resources (e.g. libraries) and/or data
bearer independent protocol: Mechanism at the interface between the SIM and the ME which provide access to the data bearers supported by the ME.
buffer: A dedicated memory used to temporarily store data to be sent and/or retrieved.
content: data and/or information associated with, or independent of, a particular application which may be presented to or collected from a user
data channel: allow the SIM and the network to exchange data using a selected bearer
link: radio resource
SAT service: a service enhanced (or made possible) by SAT technology
SAT execution environment: the SAT execution environment provides the mechanisms to operate single or multiple SAT-applications
SAT serving environment: an entity which delivers SAT services to the subscriber. This is normally the PLMN operator, but could be an entity with SAT responsibility (which may have been delegated by the PLMN operator)
SAT subscriber: the owner of a GSM subscription who has entered into an agreement with a SAT serving environment for SAT services. Access to SAT services though other types of networks is out of scope of this specification
SAT server: a node supporting SAT services in the SAT service environment
user: the user of a SAT MS , who may or may not be the subscriber
…

6.2 SAT proactive capability

The SAT proactive capability is a mechanism whereby the SIM can request specific actions to be taken by the ME by issuing "proactive commands" thus establishing and maintaining an interactive dialogue with the user and/or communicating with the network..

The ME shall inform the SIM of the success or otherwise of each command issued to it by the SIM, and also indicate the command details and if applicable add more specific information.

The proactive command set allows the SAT to instruct the ME to:

- display text supplied by the SIM on the ME's display, with an indication of priority (normal or high), and a defined action (user activity or timeout) to terminate the text display
- display a text string and obtain the response in the form of a single user keystroke or a string of keys entered by the user and pass the response to the SIM. If the response is designated as private by the SIM the ME shall not display the users response on the screen
- ~~-~~set up a voice call to an address~~ number~~ with a specific priority as indicated by the SIM, all parameters are indicated by the SIM
- ~~;~~ set up a data call to an address~~ number~~ with specific bearer capability and priority, all parameters are indicated by the SIM
- set up and manage a data channel (using a CSD, GPRS, SMS or USSD bearer) between the SIM and an address using information provided by the SIM
- send data through a previously set up data channel. The SIM informs the ME if the data is to be sent immediately
- retrieve data from the ME that has previously been received via a data channel. The SIM informs the ME as to how much data it expects to retrieve.

~~- set up a GPRS context to an address specified by the SIM, performing the necessary network attachment if applicable~~

- send a short message to the network. The short message text is supplied by the SIM to the ME in either packed or unpacked SMS 7-bit alphabet, or UCS2 alphabet;
- send a SS control, SS MMI string or USSD string, indicating which alphabet is used where applicable

~~- send and receive GPRS packets to a specified GPRS context using the GPRS bearer service~~

- play a tone in the appropriate audio device
- negotiate, within reasonable tolerances, a periodic "polling" of the SIM Toolkit
- refresh the image (if applicable) of the SIM data contained in the ME memory, either entirely, or partially, or instruct the ME to re-initialise completely
- set up an event list in the ME such that the SIM is informed by the ME when a SIM indicated event has occurred
- set up an additional menu in the ME, by issuing the ME with a menu list, and allow indication back to the SIM of the user selected menu item
- provide requested information from the ME to the SIM, for example the MCC, MNC and IMEI
- communicate bi-directionally with an auxiliary device, e.g. a second card reader
- set up, refresh and interrogate several timers, and inform the SIM when these expire, within reasonable tolerances
- display additional MMI information such as display information or tones with commands that employ network resources, with an indication to the ME as to the required level of ME generated MMI as a result of the interaction with the network
- allow the ME to display help information with the commands, by providing the associated text, related to the user action (e.g. menu selection).

Unless otherwise stated the following shall apply:

- The format of text to be displayed is designated by the SIM and is either SMS default alphabet (packed or unpacked) or UCS2 alphabet
- The format of the response from the ME is designated by the SIM and is either keypad digit (0-9, *, #, +), SMS default alphabet characters or UCS2 alphabet characters.

6.3 ME Capability for support of bearer independent protocol

The ME supporting bearer independent protocol shall provide to the SIM a common interface for any type of data bearer. This interface is in addition to dedicated commands (eg SMS, SS and USSD) for SAT application to exchange data with the network.
This support requires the ME to manage buffers and the links to PLMN according to SIM request.

6.3.1 Buffer management

The ME shall maintain buffers to insure that the data transferred is not lost in either direction between the SIM and the GSM PLMN. Buffer size and number of buffers is up to the ME and may vary depending on the bearers used.
The minimum size of each of the sending and receiving buffer shall be 255 bytes.

6.3.2 Link management

The communication is initiated by the SIM. The ME negotiates with the SIM and the network to establish the optimum channel considering the SIM request, the network and ME capabilities.
The ME is responsible for maintaining and restoring the link should there be a link error.
Timeouts, supplied by the SIM, will be used by the ME to make optimal use of the network.
…

8.1 SAT SIM/Network interaction

SAT/Network interaction is required such that the SAT and the network can bi-directionally exchange data ~~transparently~~ through the ME, ~~using the "over the air protocol"~~ employing any of the transport mechanisms defined in the section "SAT bearer requirements".

...

9 SAT bearer requirements

~~SAT shall support the transmission (mobile originated) and the reception (mobile terminated) of data by means of:~~
~~• SMS~~
~~• USSD~~
~~• Cell Broadcast (mobile originated excluded)~~
~~• SMS via GPRS~~
~~• GPRS~~
~~GSM circuit switched data~~

9.1 Bearers supported

SAT shall support the transmission (mobile originated) and the reception (mobile terminated) of data by means of one of the following bearers, either using dedicated commands or managed by the ME (using the Bearer independent protocol) :

BEARER	**Dedicated commands**	**Bearer independent protocol**
SMS	Yes	Yes
CSD	No	Yes

GPRS	No	Yes
USSD	Yes (MO only)	Yes
Cell Broadcast (mobile originated excluded)	Yes	No
SMS via GPRS	Yes	Yes

9.2 Bearer requirements for ME using the bearer independent protocol

9.2.1 Bearer parameters requirements

While opening a channel the SIM and the ME will exchange and negotiate parameters in order to establish a communication with the GSM PLMN.

For all the data bearer, the SIM provides the ME the following parameters :

- Destination address
- Quality of service parameters :
  - Timers to indicate the lifetime of the channels
  - Minimum Size of buffer requested
- all other bearer specific parameters

The ME returns the following parameters to the SIM:

- Channel address (Identifier)
- ***Allocated Buffers size***
- ***Channel parameters***

9.2.2 CSD Specific requirements

To establish a CSD communication the ME shall support the followings requirements

- Manage data flow control over the link
- Provide the SIM with ME's CSD capability, at power on and/or later.

9.2.3 GPRS Specific requirements

To establish a GPRS communication the ME shall support the followings requirements

- Manage data flow control over the link
- Provide the SIM with ME's GPRS capability at power on and/or later.

The support of anonymous GPRS and GPRS SMS is left for further study

9.2.3 SMS Specific requirements

To establish a SMS communication the ME shall support the followings requirements

- Manage data flow control over the link
- Perform any packing/unpacking required on the data, without compromising the data and the data validity period

9.2.4 USSD Specific requirements

To establish a USSD communication the ME shall support the followings requirements

- Manage data flow control over the link
- Perform any packing/unpacking required on the data, without compromising the data and the data validity period

…