

ETSI TS 122 038 V3.0.0 (2000-01)

Technical Specification

**Digital cellular telecommunications system (Phase 2+) (GSM);
Universal Mobile Telecommunications System (UMTS);
SIM Application Toolkit (SAT); Service description;
Stage 1
(3G TS 22.038 version 3.0.0 Release 1999)**



Reference

DTS/TSGS-0122038U

Keywords

GSM, UMTS

ETSI

Postal address

F-06921 Sophia Antipolis Cedex - FRANCE

Office address

650 Route des Lucioles - Sophia Antipolis
Valbonne - FRANCE
Tel.: +33 4 92 94 42 00 Fax: +33 4 93 65 47 16
Siret N° 348 623 562 00017 - NAF 742 C
Association à but non lucratif enregistrée à la
Sous-Préfecture de Grasse (06) N° 7803/88

Internet

secretariat@etsi.fr
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Foreword

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Foreword

This Technical Specification has been produced by the 3GPP.

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1 Scope

This ETSI Technical Specification defines the stage one description of the SIM application Toolkit (SAT). 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 application Toolkit (SAT) which are sufficient to provide a complete service.

It is highly desirable however, that technical solutions for a SIM application Toolkit (SAT) 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.

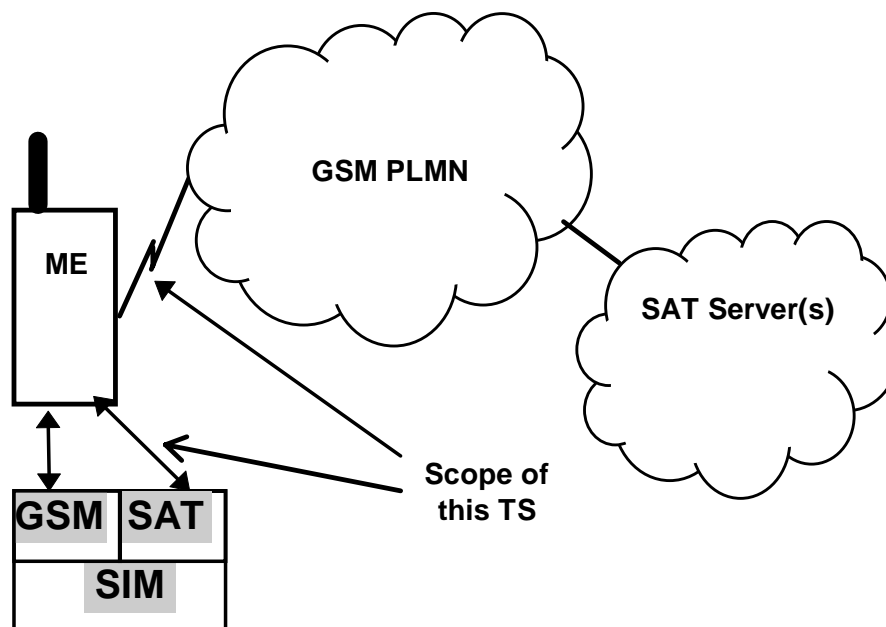


Figure 1: Scope of this TS

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

SAT 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: 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 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 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 PLMN subscription who has entered into an agreement with a SAT serving environment for SAT services. Access to SAT services through 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

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

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

4 Description

SAT provides a standardised execution environment for applications stored on the SIM card and the ability to utilize certain functions of the supporting mobile equipment. SAT provides mechanisms which allow applications, existing in the SIM, to interact and operate with any ME which supports the specified mechanism(s) thus ensuring interoperability between a SIM 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 SAT is the highly secure environment provided by the SIM card. This is further enhanced by the fact that the subscriber and the issuer of the SIM and also the SAT 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 SAT execution environment into MSs (i.e. ME+SIM) is a significant step forward in their evolution. The ability of MSs to support SAT represents an extension of the 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 SIMs capability profiles is supported.

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

5 High level SAT requirements

The high level requirements of SAT 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 SAT 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 SIM from a SAT server, and upgrade existing applications via the PLMN
- the means to transfer content automatically or on demand to or from the SIM from or to a SAT server
- the means to transfer content directly from one SAT application to a second MS with a SAT application via the PLMN

- the need for an inherent security architecture such that it shall be possible for both the SAT and SAT server sides of a connection to be authenticated (possibly implicitly by the use of digital signature or ciphering). The SAT 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 SAT services
- the means for SAT applications on the SIM to communicate with other PLMN nodes
- the means for the ME and SIM to exchange SAT capability information
- provision of SAT API(s) to facilitate the development and downloading of SAT 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 SAT 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 application environment
- the means for the network operator to provide and manage the SAT 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 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 application to control the PLMN services/supplementary services via the standardized MMI. Only the originator (i.e. either user or SAT 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/ME interface requirements

6.1 SAT APIs

The SAT-API is defined in GSM 02.19 [6].

The SAT API for the GSM SIM 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 based services can be developed and loaded onto SIMs (independent of the SIM manufacturer), quickly and, if necessary, remotely, after the card has been issued. The SAT 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 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 a number with a specific priority as indicated by the SIM; set up a data call to a number with specific bearer capability and priority, all parameters are indicated by the SIM.
- 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-initialize 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.

7 SAT 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 shall fully control the display of all actions and all network-responses concerned with the operation of the application. SAT 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 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 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 applications shall be provided.

It shall be possible for the SAT-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 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 is indicated to the ME by means of a proactive SIM 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 by the ME via the SIM 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 indicates to the ME the text to be displayed and the SAT function which is to be assigned to a ME soft-key.

7.6 User control of the SAT execution environment

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

- i) the SAT execution environment is enabled/disabled
- ii) the SAT execution environment is not allowed to make automatic calls
- iii) the SAT execution environment is allowed to make automatic calls but only with user confirmation
- iv) the SAT 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 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 including SMS, USSD etc. but excluding user initiated interactions modified by SAT.

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

8 Network interface requirements

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".

8.2 Communication control capability

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

It shall be possible for:

- the SIM to initiate and terminate a (SIM initiated) communication request with or without explicit confirmation by the user
- the SIM to allow, bar or modify a communication request initiated by the user
- the SIM 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 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 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 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 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 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
- circuit switched data

10 Charging requirements

It shall be possible to charge the subscriber for the use of SAT applications.

It shall be possible to charge for the following activities:-

- subscription:
 - the subscriber's registration to use SAT services
- application transfer (download):
 - the transfer of applications and/or information to a subscriber's SAT MS
- application upgrading (download):
 - the upgrading of previously transferred applications to a subscriber's SAT MS
- application use:
 - the use of applications by a subscriber's SAT MS
- content:
 - the provision of content within a SAT application
- roaming:
 - the use of SAT 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 and existing security mechanisms shall not be compromised with the introduction of SAT services.

The security of the PLMN, the SIM and the SAT 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 card is the security provided by the chip technology combined with the encryption and challenge/response procedures. The enhancement of the SIM card by SAT shall not reduce nor endanger the current security. In addition, the SAT 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-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 initiated;
- SAT modified,

and also to indicate the degree of user involvement:

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

The SAT application ID shall be provided where applicable.

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

13 Roaming

The SAT 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 feature. PLMN supplementary services shall not have any knowledge of SAT based services.

14.2 Line Identification

14.2.1 Calling Line Identification Presentation (CLIP)

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

14.10 Completion of Call to Busy Subscriber (CCBS)

SAT 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. 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 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.

16 Compatibility of SAT MS's and applications

16.1 SAT Classification

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

The objective is to:-

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

The development and maintenance of the SAT specification is done in accordance to the ETSI release procedure 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 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 card/SAT application compatibility within a given Release. The SAT Class is distinct and unrelated to the existing PLMN MS Classmark. The SAT 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 features are supported by the MEs. Capability negotiations between the SIM and the ME are performed at the feature level, independent of the SAT 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 ME classification identifies support by a SAT ME for a defined level of SAT functionality, but does not necessarily imply support of other levels of SAT classification.

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

16.2 ME/SIM operation

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

- the SIM shall control (i.e. allow or prevent) the access to the network.
This allows the SIM to prevent the use of a subscription (which may rely on the support of SAT features for correct operation) in an uncontrolled manner.
- if access to a PLMN is not prevented the ME shall support the non-SAT PLMN features without restriction.

16.3 ME/SIM capability information exchange

The SIM and the ME shall exchange SAT capabilities prior to network attach.

This exchange of information is important since the SIM then knows what the ME is capable of, and the SIM can thus adapt the service made available to the user accordingly. If the SIM does not receive any ME capability information it shall assume that the ME does not support SAT.

A SIM that supports SAT shall not attempt to invoke SAT functions in the ME if the ME has not indicated SAT support.

An ME that supports SAT shall not attempt to invoke SAT functions in the SIM if the SIM has not indicated that SAT is supported and is active.

16.4 ME and SIM 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 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 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 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

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

History

Document history		
V3.0.0	January 2000	Publication