

Agenda Item: 9.4.3
Source: Telecom Italia Mobile
Title: CR to 22.15
Document for: Approval

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|--|-----------------|--|--|
| CHANGE REQUEST No : | | A003 | Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly. |
| Technical Specification GSM | | 22.15 | Version: 3.00 |
| Submitted to SMG | For approval | Without presentation ("non-strategic") | With presentation ("strategic") |
| <small>list SMG plenary meeting no. here ↑</small> | for information | | X |

PT SMG CR cover form is available from: http://docbox.etsi.org/tech-org/smg/Document/smg/tools/CR_form/crf28_1.zip

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

Work item: UMTS Charging and Billing

Source: Telecom Italia Mobile **Date:** 04/03/99

Subject: Upgrading of UMTS Charging and billing features

| | | | | | |
|--|---|-------------------------------------|-----------------|------------|-------------------------------------|
| Category: | F Correction | <input type="checkbox"/> | Release: | Phase 2 | <input type="checkbox"/> |
| | A Corresponds to a correction in an earlier release | <input type="checkbox"/> | | Release 96 | <input type="checkbox"/> |
| <small>(one category and one release only shall be marked with an X)</small> | B Addition of feature | <input type="checkbox"/> | | Release 97 | <input type="checkbox"/> |
| | C Functional modification of feature | <input checked="" type="checkbox"/> | | Release 98 | <input type="checkbox"/> |
| | D Editorial modification | <input type="checkbox"/> | | Release 99 | <input checked="" type="checkbox"/> |

Reason for change: On-line charging control mechanisms require the definition of the events determining the exchange of charging information between the Mobile Station, the Serving Network and the Home Environment.
 A section on itemized billing has been introduced in order to specify an off-line charging control mechanism.

Clauses affected: Sections 6, 7

Other specs affected:

| | | | |
|-------------------------------|--------------------------|----------------|--|
| Other releases of same spec | <input type="checkbox"/> | → List of CRs: | |
| Other core specifications | <input type="checkbox"/> | → List of CRs: | |
| MS test specifications / TBRs | <input type="checkbox"/> | → List of CRs: | |
| BSS test specifications | <input type="checkbox"/> | → List of CRs: | |
| O&M specifications | <input type="checkbox"/> | → List of CRs: | |

Other comments:



help.doc

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

6 Transfer of Charging Information

The efficient transfer of charging information between serving networks and from serving networks to home environments requires a standardised interface between these entities. Transfer of charging information between serving network and home environment shall be done at the following times:

- when a chargeable event occurs
- when a chargeable event is initiated by the user
- when a chargeable event is initiated by the user
- when a chargeable event terminates
- at regular intervals during a chargeable event
- whenever required by the Home environment

The format of the charging information exchanged (see 5.1) shall be standardised. It shall be possible for the relevant parties to agree minimum and maximum age of call information transferred between themselves.

6.1 Integrity, Secrecy and Validation of Content and Receipt of Charging Information

The transmission mechanism for charging information collected in 5.1 above shall ensure its integrity and secrecy.

A mechanism to validate the source and integrity of the information shall be provided so that:

- The home environment shall be able to validate the source and integrity of the charging information supplied by the serving network;
- The serving network shall be able to validate the source and integrity of the charging information supplied by the user;
- The serving network shall have proof that services were provided to a specified user.

7 Accounting and Settlement

The serving network shall collect and process the charging data generated in its network elements. The record of each individual transaction shall be reported to the home environment at short notice in order to provide itemised bills, and to deal with any disputes regarding charges both for users and for other UMTS networks and home environment.

7.1 Delegation of charging authority

The registration process allows the home environment to authenticate users before they incur any charges. Once authenticated, the home environment then delegates authority to the serving network operator with which he has a direct commercial relationship to incur charges for services supplied to that user.

The charging control mechanism shall be able to supervise all the possible traffic scenarios (e.g. incoming, outgoing, roaming, call forwarding, simultaneous calls, multimedia calls) and all the possible traffic types (e.g. speech, circuit data, packet data, broadcast messages).

The direct commercial relationship may be with either the serving network operator if known directly by the home environment or a network operator known to the home environment. This procedure uses each network as trusted third parties in a chain of delegation between entities, thus allowing commercial transactions between entities who

have no direct commercial dealings. There shall be an authentication procedure between all entities in the UMTS system which have a commercial relationship.

7.2 Fraud Control and Cost Control

Mechanisms shall be provided which allow fraud control by the serving networks and the home environment, and shall allow cost control by the user.

7.2.1 Fraud Control by the Home Environment

Charging information shall be collected by the home environment in short time intervals from all serving networks which its users are allowed to use. The billing system in the home environment shall process the information in real time and provide the means to set charge thresholds per time interval upon which some actions may be started, such as informing the customer care centre or even barring the user in the HLR.

7.2.2 Fraud Control by the Serving Network

Charging information shall be collected from the network elements and processed in short time intervals. This will allow the serving network to always be aware of the exposure to visitors. A limit for the accumulated charges for all visitors from one home environment or a limit per visitor may be agreed between the home environment and the serving network.

7.2.3 Cost Control by the User

7.2.3.1 Charging Limit

The user shall be able to set in his home environment a limit for the accumulated charges per time interval. Upon exceeding this limit or prior to incurring a charge which would exceed the limit, certain actions may be desired by the user:

- notification to the user, requesting to extend the limit, or
- HLR barring allowing no further originating calls, or
- HLR barring cancelling the roaming permission.

7.2.3.2 Advice of Charge

A mechanism shall be standardised providing an indication to the chargeable party(if involved in the chargeable event) of the charges to be levied for a chargeable event. This mechanism shall be able to handle all possible charging scenarios, and all service -and tariff variants that a home environment may offer to the user.

In particular it shall be possible to inform the charged party of:

- tariff changes due to location area changes (e.g. rural, metropolitan, indoor, fixed/cordless)
- tariff changes due to handover
- tariff expected when using advance addressing mechanisms
- tariff changes due to service modifications (e.g. bearers added/subtracted during a multimedia call, QoS changes)
- charges expected for incoming traffic (e.g. roaming, call forwarding, broadcast information received)

7.3.3 Itemised billing

Apart from all the typical data contained in an itemised bill (e.g. bearer/teleservice, B-number, date/time, duration) it shall be possible to provide additional information such as:

- quality of service provided
- voice services details (e.g. codecs)
- data services details (e.g. web browsing, e-mail, ftp, telnet, LAN access)
- multimedia calls details
- valued added services details (e.g. video on demand, goods/services purchased, type of broadcast information received)