

3 - 6 July, 2001

Newbury, UK

3GPP TSG-S1 UE-Split  
Dallas, Texas, USA  
26th-28th June, 2001

## TSG-SA1 UE-Split Meeting Report

### Introductions

Niels agreed as chair for this meeting.  
Tdoc list agreed.

Attendance list (see attached).

### Status of activities:

1. **S1-UE-010006:** S1 report was presented. It was reiterated that a conscious decision was made to limit the scenarios and consider the single TE and single MT case.
2. **S1-UE-010007:** The technical report is in draft stage at this stage. It was mentioned that limited attention was paid to the real problem(s). It was informed that S1 had decided that we should start from the limited case and then move to the other situation. Current standards do not allow sharing of the radio across devices simultaneously. If we use a WLAN/PAN technology to access a GSM/UMTS radio, we possibly have some security/privacy issues. But this should be a WLAN/PAN problem. However, billing, impact of dynamically changing SIM cards, and other similar issues should be 3GPP defined.

There was concern from T2 delegates that the other interesting scenarios are not being considered. However, it is agreed that the following cases will be considered:

1. Only one active SIM or USIM is involved. *This implies that there is a single bill associated with each SIM/USIM.*
2. One MT associated with one or more TEs.
3. Initially, one MT and one TE case will be considered provided that the architecture also addresses the case of a single MT associated with multiple TEs.

The question of a WLAN/PAN being used as a communication medium in the split UE case was discussed. It was clarified that the security issues in this case are specific to the WLAN/PAN technology and must be addressed elsewhere. ~~Further, if the UE functionality is split in a way such that functional entities that require secure communication are split into separate functional elements then, the presence of an appropriate security protocol over that interface is assumed. The above applies to the case of a "remote USIM"~~

3. **S1-UE-010008: S1-UE-010011:** Same document allocated multiple tdoc numbers. Also, included as attachment in S1-UE-010007. Concern about detailed work between T2 and T3 without the presence of detailed requirements. No other groups apparently replied to the LS. ~~This matter should have been raised to the plenary meetings of TSG SA and TSG T.~~
4. **S1-UE-010012:** Noted. The last 2 cases are difficult to handle if an active context (CS or PS) is present. The following key observations were made. It was agreed that these are the

basic assumptions on which future work will be based. These will be captured in the Technical report.

- A UICC/USIM is required to access the 3G network.
- Charging is linked to one particular USIM.
- The secret key and the authentication algorithm cannot be transferred out from the UICC.
- A periodic UICC presence detection is mandatory during a call.

It was agreed to capture the scenarios and their possible implications as an annex in the ~~meeting/technical~~ technical report (see Annex 1). Case 2 and Case 3 are possibly not consistent with the assumptions made earlier and can not be supported by the current 3GPP pre-release 5 (and including release 5) architecture.

5. **S1-UE-010004:** This LS reiterates some of the system limitations and concerns discussed earlier. The case of multiple, with one or more remote, UICCs was discussed. It was agreed that one UICC is associated with the UE and the remaining are part of the applications. A secure communication link may be established between the UICC associated with the UE and those associated with the applications.

It was observed that security issues must be addressed at each protocol layer. Security issues would likely imply that IMEI is collocated with MM.

What should we discuss at the meeting next week? Can provide a list of things that should not be done (or those that create potential insecure situations). For instance communication with the USIM should not be broadcast (over an insecure communication medium).

6. **S1-UE-010010:** There is disagreement with the functionality split proposed. Issues raised include: (note the this is only a functional model and not a physical model)

### **1. Suggested functions assigned to a Release 5 TE (Applies to IMS only)**

- Call Control, including all release 5 call control signalling – There is a desire to facilitate this. However, the issues to study include: Global circulation and type approval issues need to be looked at. Issues surrounding multiple instances of call control. Limitations due to the need to maintain conformance of the radio interface.
- Authenticating the IM-Subsystem subscription.  
Note: this requires direct communication with the "USIM" in the UICC in order to execute AKA. Security issues will prohibit AKA from being located on the TE (see LSs from S3, S1 and so on).
- DHCP/PPP/IP/TCP/UDP/RTP/SIP Stacks. Multiple instances can exist. This is not very clear.
- Operation of vocoders and other media codecs in the TE. The desire to facilitate this. But there are timing issues that need to be investigated. AMR requirements may be difficult to achieve on a TE.
- Control of hardware encapsulated in the TE (speaker, microphones, video cameras, displays, etc.)

### **2. Suggested functions assigned to a Release 5 MT (specific to PS-domain only) Should apply to the CS domain as well.**

- Radio attachment to the 3GPP network and authenticating the PS-subscription.
- Communicating with the UICC & SIM/USIM on behalf of the TE – Need to understand which functions need to be exposed by the MT to the TE.
- Creation/activation/deactivation of additional PDP contexts on demand from the TE --
- Transceiving PS data across the appropriate Radio Access Bearers with the RAN
- Mobility Management function (all underlying layers) is located on the MT
- IMEI is stored on the MT

#### **7. S1-UE-010009:**

It was agreed that the multiple logical TE case must be addressed as well.

Security issues unique to a wireless interface are beyond the scope of 3GPP.

BT objects to the inclusion of PS domain only in the Technical report.

The split between the TE-MT must reflect a secure and an unsecured domain. The functions that belong to each domain must be determined.

A generic way of describing an API across OSs (rewording for the abstract primitives).

A new contribution is invited on the topics.

## Annex A: Scenario Analysis

### Case 1

In this case, multiple users, (e.g. one, two or three) use one subscription and its information is stored in one USIM/UICC as shown in Fig. 1. For the car pool scenario, the car module has its own UICC with one USIM and all the passengers use this subscription. The user(s) identity is different from the subscribers' identity.

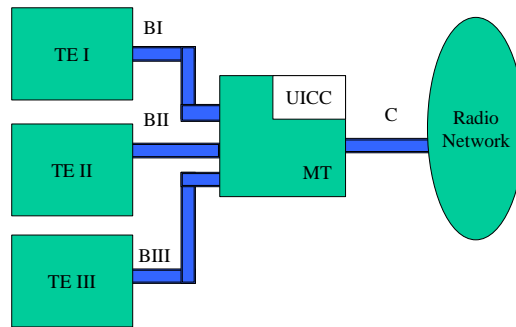


Figure 1 – Multiple users, one “borrowed” subscriber identity.

~~Multiple independent 3G paths through the network are required. WHY? The multiplexing function can do whatever it chooses. The network allows multiple PDP contexts to be activated.~~

This scenario is straightforward and all billing is for the same subscription. Independent billing is not possible (with current standards) and is not considered part of the UE-split functionality.

### Case 2

In this case, multiple users use multiple subscriptions residing in one UICC. The billing is associated with the subscriber's identity stored in the USIMs.

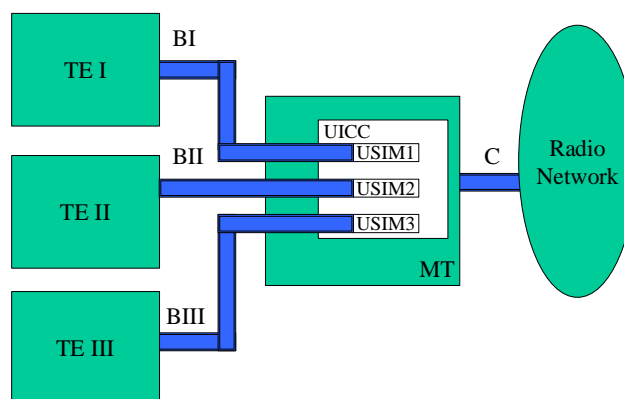


Figure 2 - Multiple users, multiple “borrowed” subscriber identities.

In release 99 we may have multiple USIMs stored on a UICC but they cannot be all active at the same time. In release 4, the support of logical channels on the UICC enables multiple USIM activation.

However, for any registered USIM, it is assumed that only one SIM/USIM can be active at any given time.

### Case 3

In this case, every user uses subscription per device and each device (e.g. PC, PDA) has an UICC/USIM. For the car pool scenario, the car module does not use an USIM/UICC, even if an USIM/UICC is physically present in the car module.

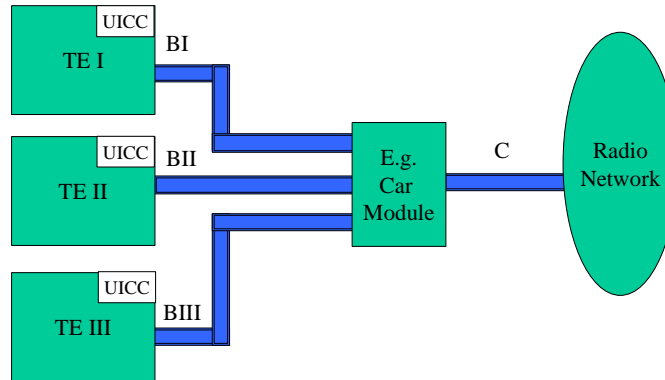


Figure 3 - Multiple users, multiple “owned” subscriber identities.

The car module is used as transmitter with multiplexing capabilities and the CK and the IK are handled by the TEs.

**What are the functions of the car module in this case? I think that this scenario comes up every now and then in SMG/3GPP.**

If C is considered as a standard radio interface, consideration similar to case 2 applies. Due to security concerns this case is not possible, since USIM/SIM applications must be collocated with the MM on the MT.

### Case 4

In this scenario, every user has a subscription i.e. each user has one UICC/USIM that resides in a device such as the mobile phone (like in case 3). However, when the user becomes a passenger, in a car pool environment, two approaches are considered:

- The user stops using the UICC of his device and the device notifies the network that from now on, it will use the car module USIM/UICC, as in case 2 (figure 4).
- "Mobile hand-over": the user continues using the initial UICC and the radio transmitter of the car module (figure 4). This case can also evolve into having a second TE using the UICC from the ME and using the radio transmitter from the car module (figure 5).

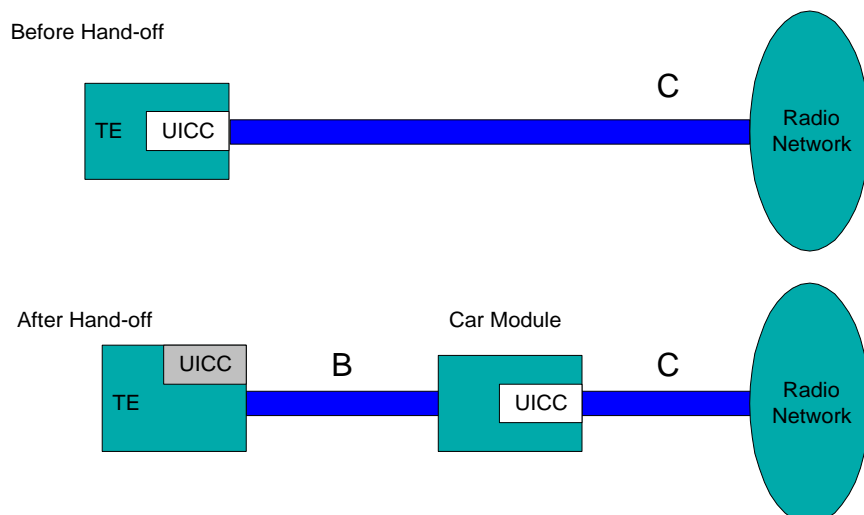


Figure 4 - Hand-off to a “borrowed” subscriber identity.

Hand-off during “IDLE” state may be possible for CS/PS domains using services offered by each domain. Significant issues arise if this must be accomplished during “active” state. The assumption is that the handoff is accomplished using existing supplementary services (call forwarding, explicit call transfer etc). This is under the assumption that after the handoff the functional split will be the same as the TE and MT split case discussed earlier.

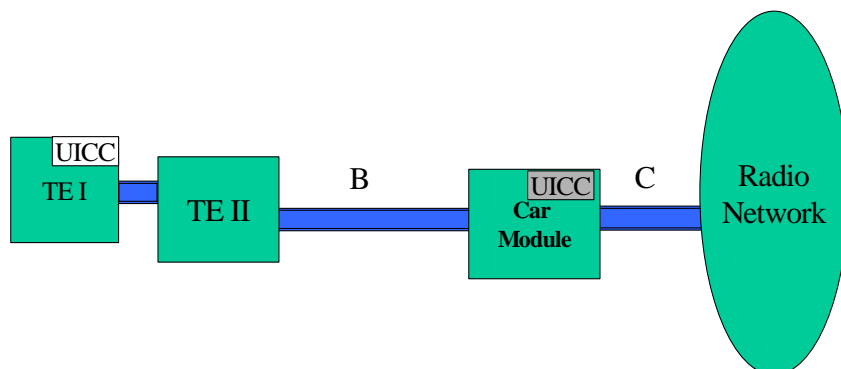


Figure 5 – Hand-off, but retain and lend “own” subscriber identity.

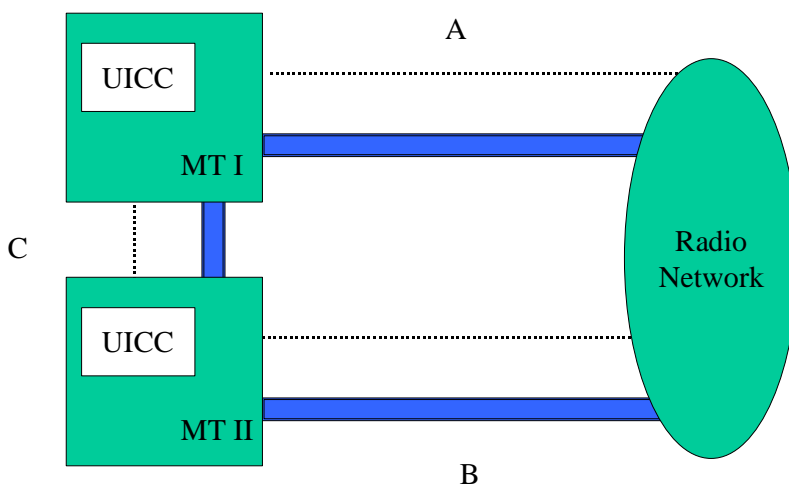
In the "mobile hand-over" case, the TE transmits the messages, including the CK and IK keys, received from the UICC to the car module through the local link. The transfer of the CK and IK between the TE and the car module can raise a security issue.

This is not possible since the USIM/SIM application and the MM function should be collocated and on the MT.

Case 5:

This scenario requires the two UICCs to co-exist; in the example, UICC I hands over the call to UICC II. Another scenario is the two MTs loadshare the traffic on a per packet basis with significant routing and charging issues.

As discussed previously, relative to interface A, MT1s will regard mT2 as a TE. Relative to interface B, MT2 will regard MT1 as a TE. Any load sharing between the two is an application issue (see previous cases for detailed comments). The USIM/SIM application in MT1 will be billed for all data on interface A and that on MT2 will be billed for data on interface B.



As discussed before

## Tdoclist

Tdoc	Subject	SOURCE
S1-UE-010001	Document List for UE-Split Dallas Meeting	Chairman
S1-UE-010002	Agenda for UE-Split Dallas Meeting	Chairman
S1-UE-010003	Meeting report	Chairman
S1-UE-010004	LS from SA3 on Security and UE split	SA3
S1-UE-010005	Draft Technical Report on UE-Split	Nortel, SW
S1-UE-010006	Report of UE Functionality Split Adhoc	TSG SA1
S1-UE-010007	Liaison Statement on UE Functionality Split	TSG SA1
S1-UE-010008	LS from T2 on functionality Split	T2
S1-UE-010009	Comments on requirements report	Nortel, SW, Xircom
S1-UE-010010	TE and MT functionality split	Nortel, SW, Xircom
S1-UE-010011	Discussion document on UE functionality split over physical devices	T2 (00793)
S1-UE-010012	T3-010250,	T3
S1-UE-010013		
S1-UE-010014		
S1-UE-010015		
S1-UE-010016		
S1-UE-010017		
S1-UE-010018		
S1-UE-010019		
S1-UE-010020		