TSG-SA WG 1 (Services) meeting #12   TSG S1 (01) 0575
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Title:	**Liaison Statement on UE Functionality Split**
Source:	**SA1**
To:	**T2, T3, S2, S3, N1**
Cc:	
Attachments:	**S1-010343**

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SA1 has discussed UE functionality split. This discussion has included the scenarios originally raised in T2 and also input made directly to SA1. As a result of this discussion SA1 has concluded the points identified below. Other 3GPP technical groups are asked to use these decisions as an input to their work in defining release 5. SA1 has started a new technical report on requirements for UE functionality split. The aim is to stabilise this report by the September TSGs.

General

Initially work should focus on the case where there is only one active SIM or USIM involved.

Cases with a single TE and multiple TEs should be considered. However if work on the single TE case is easier then it may be desirable to complete this case sooner.

The cases described relate to PS-domain and IMS services. Any scenarios related to CS-services are for further study.

Single SIM/USIM, Single TE and Single MT

The case described in S1 010343 should be the starting point. The group agreed that:

- One scenario to be supported in release 5 is the case of a radio module connected to or embedded in a computer. The computer will contain IP-based applications that can communicate via the PS domain. The radio module will contain all the basic 3GPP protocols. The terms "connected to" and "basic 3GPP protocols" need further study.
- In the above scenario the IP-multimedia subsystem client may be implemented in the computer. Other types of client software also need to be supported.
- It shall be possible to develop applications in the computer that use mobile services independently of the specific radio module being used. For example the application developer should not need to write different applications for 2G/3G radio modules made by different companies.

Topics for further study:
- Which APIs are to be standardised and to what extent? From an SA1 perspective this might translate in to which use-cases need to be supported.

- Should the "radio module" and the "driver software" be treated as a single unit and assumed to be provided from the same source? Should it be possible to use a generic driver for different modules?
- The definition of a TE and MT in this context needs to be developed.
- Impact of using a wireless rather than physical connection between the TE and MT.

Single SIM/USIM, Multiple TE and Single MT

It was agreed that this case also needs to be considered. This case is similar to the above except that multiple TEs are connected to the same MT.

Topics for further study:
- Addressing
- Security – can all TEs gain access to all services?
- Contention – how are scarce resources shared between different TEs?

Source: Nortel Networks, Xircom, Sierra Wireless

Subject: UE Functionality Split

1. Introduction

A number of scenarios for UE-split have been discussed in 3GPP. So far these have been rather complicated and it has been hard to make progress in the work. It is proposed that SA1 identifies a small number of scenarios that are believed to represent the most important and useful short-term requirements and that these then be adopted as the release 5 focus. Other scenarios may still be considered for later releases.

The scenarios selected for release 5 should:
- correspond to likely physical scenarios for available equipment,
- offer attractive commercial opportunities,
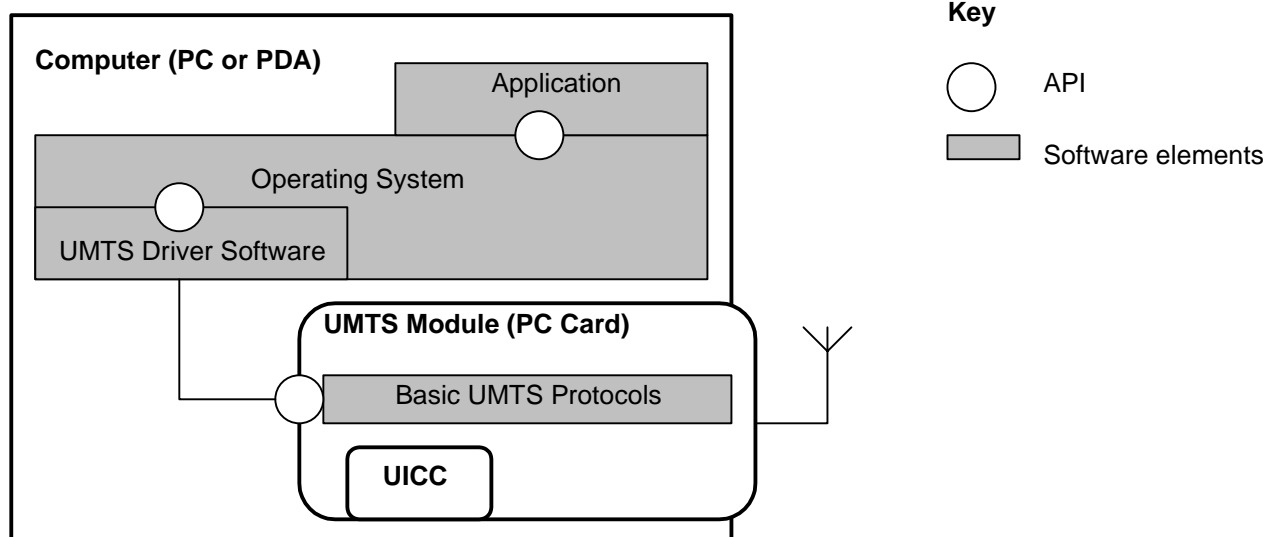- be relatively technically simple.

2. Proposed Focus

Examination of existing devices and trends highlights one scenario as being particularly important in the short term. This is the case of a UMTS PC-Card or similar physical module plugged in to a computer such as a PDA or PC. Clearly there is strong growth in the use of portable computers of all types. Being able to use these machines in conjunction with UMTS is an important business opportunity.

Within this physical configuration many types of functional split between the UMTS module and the computer are possible. However one case in particular is important to consider because it is equivalent to the generic way computers treat other types of network interface cards, and it corresponds to the vast majority (or possibly all) available and planned products. In this configuration the basic UMTS protocols are implemented in the UMTS module. The computer contains the following elements:
- driver software to control the UMTS module and interface it to the computer operating system
- software applications using network protocols (such as IP) which are routed to other computers via the card.

The scenario under discussion is illustrated below.

It is important to understand that the model described here is motivated by the generic solutions the computer industry has adopted to allow a wide variety of physical network types to be supported in the same Operating System and transparently to the applications. Computer operating systems provide applications with a "socket" for each network protocol. At the level of the application the physical network type is hidden behind the socket. Thus an application using IP will not normally be aware of whether the IP packets are being routed over an Ethernet LAN or a UMTS PDP context. Similarly the OS provides a range of APIs for network cards to interface with – allowing new cards and network types to be easily added.

Computer (PC or PDA)

Application

Operating System

UMTS Driver Software

UMTS Module (PC Card)

Basic UMTS Protocols

UICC

Key

◯ API

�▪ Software elements

Proposed Scenario

In the past the scenario above may not have required detailed treatment in 3GPP. In release 99 the scope of the UMTS standard was limited to the UMTS Module and perhaps the interface in to this module (the AT command set). However with the introduction of the IP Multimedia Subsystem (IMS) in release 5 the situation is radically changed. Now we have one IP application – the IMS client – which is explicitly covered by the UMTS standard.

Technically the IMS client is a software client using IP to communicate to the IMS network elements in a peer-to-peer way. If the IMS client is implemented on the computer it sits in the area labelled "application" in the diagram. Deploying IMS clients as software in the computer offers important advantages:

- The IMS client capabilities can evolve without changing hardware or firmware. This will improve service velocity.
- The IMS client can integrate with the user's other business, entertainment and communications tools.
- The IMS client can take advantage of the physical characteristics of computer (eg large display, memory, processing power)
- By using a different network module IMS services may be accessed via other network types – providing seamless desktop and wireless services.

3. Conclusion

SA1 is asked to endorse the following points and actions:
1. A limited list of target scenarios for UE functionality split needs to be identified for release 5.
2. One scenario to be supported in release 5 is the case of a UMTS module connected to or embedded in a computer. The computer will contain IP-based applications that can communicate via UMTS. The UMTS module will contain all the basic UMTS protocols.
3. In the above scenario the IP-multimedia subsystem client may be implemented in the computer.
4. SA1 should identify in detail the requirements for the above scenario
5. Based on these requirements other groups in 3GPP should address the technical and security issues.
6. Other candidate scenarios for release 5 should also be evaluated. A possible extension of the case described is to have a wireless interface between the computer and the UMTS module.