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**Title:**           **Procedure for the Definition of User Equipment Capabilities in 3GPP**

**Document for:** **Information**

**Attention:**       **Agenda item 11**

**Agenda Item:**


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## 1. Introduction

This document proposes a procedure to identify the User Equipment (UE) capabilities required to support UMTS services. The proposed procedure is designed to smooth the development and introduction of new services into UMTS including the planning of UMTS networks, through the definition of minimum sets of functions and requirements. These would to be used as default for the negotiation (if required) of capabilities classes between the UE and Network. For such minimum sets, the terminal conformance test specification should be provided.


## 2. Background

In October 1998, SMG2 UMTS Layer 1 experts group agreed to the elaboration of document XX.21 describing the required Layer 1 capabilities for the User Equipment. Though, the scope of that document was limited to physical layer parameters having a direct effect on the classification of user equipment, it was quickly apparent that the need to agree UE capabilities was not restricted only to Layer 1. The proposal contained in this document has grown out of the recognition that the required capabilities to support given services, impact on many different aspects of the UE, and therefore on many different 3GPP working groups.

## 3. Required User Equipment Capabilities

In order to support service creation through capability negotiation in UMTS, the required capabilities have to be identified for all aspects of the terminal, and for a range of envisaged services. It is therefore proposed that each working group, whose work has an impact on terminal design, elaborates its own UE capabilities document.

To this end, it is necessary to establish a basis from which such a set of UE capabilities documents can evolve. We therefore propose to separate the UE capabilities required for supporting generic or specific services, from the more fundamental capabilities required in order for the UE to "exist" in the network. We shall call the former "UE service capabilities" and the latter "UE baseline capabilities", where UE baseline capabilities are sets of capabilities to support control channels, registration and the capability negotiation mechanism, and UE service capabilities are for the traffic channels and user services. It is apparent that no UE will ever posses only the UE baseline capabilities (as this provides no service to the user) but that all UEs will support at least one UE service capability in addition to the baseline.

The first step is to agree the UE baseline capabilities that should give a UE the ability to detect and register to a network, and to establish a connection with the Network, following the negotiation of UE and Network capabilities. After registration, the UE is in a position to initiate a connection to support user services. The second step in the procedure is to define the UE service capabilities required to support those user services. Each working group of the 3GPP should be able to identify from its own perspective, the UE baseline capabilities required to support the registration functionality. Those UE baseline capabilities would then form the basis of that group's UE capabilities document.

The ability to support services should be seen as additional to the UE baseline capabilities. In the second step each group should be able to clearly identify the UE service capabilities (over and above the baseline capabilities), required to support a given service, and list those capabilities in its UE capabilities document.

### 4. Proposed Framework for elaborating UE  Service Capabilities

The responsibility for defining required UE service capabilities from a system point of view, rests with TSG SA WG1. TSG T WG2 can use that information to identify the UE service capabilities required of a UE, which can then be included in a report on terminal features.

Individual working groups can use the information in that report to establish which services are required. Each working group (e.g. R1, R2, R4, S3, etc.) can then ensure that its UE capabilities document includes the required capabilities to support the envisaged user services.

### 5. Schedule

Work on the first step of the proposed procedure can proceed in each group, in advance of any definition of specific services or service capabilities. A detailed schedule that is in line with the ARIB requirements for the start of a commercial 3G service, is given in Annex A. Conformance test specification for minimum sets of UE capabilities should be provided by the end of 1999.

### 6. Summary

- Capabilities have to be defined for many different aspects of the UMTS UE, and to support many different services.

- To facilitate the definition of these capabilities, we propose to separate the capabilities that are required to support user services (i.e. UE service capabilities), from those that are required for co-existence in the network and control purposes (UE baseline capabilities).

- Each working group should agree the baseline capabilities required for a UE to function in the UMTS network, independently of the capabilities required to support user services.

- Each working group should produce a UE capabilities document using the UE baseline capabilities relevant to that group, as a starting point. The UE service capabilities that are defined elsewhere can then be agreed and added to that document, as required.

- The specification for terminal conformance test should be at first based on minimum sets of UE capabilities.

We recommend that TSG SA approve this procedure for the definition of UE capabilities. Even though this document has been presented to the other TSGs for information, we propose that SA send them a liaison statement indicating that the procedure is acceptable from a 3GPP Program viewpoint (a draft liaison statement is attached at Annex B).

We further propose that each TSG identify which of its working groups are generating specifications that have an impact on the UE, and direct those working groups to produce a baseline UE capabilities document according to the first step of this procedure.

**Annex A**

**Proposed schedule for definition of UE Capabilities**

- Proposed schedule for UE baseline capabilities

| Responsibilities | Target document | Schedule |
|---|---|---|
| Each working group | List of all functions and requirements for registration to network and capability negotiation | April 99 |
| TSG T WG2 | - Review of lists<br>- Identify minimum sets of UE baseline capabilities from the terminal view point | May 99 |
| Each working group | Definition of minimum sets of UE baseline capabilities | June 99 |
| TSG T WG2 | Review of the above documents | July 99(*1) |
| TSG T WG1 | Definition of terminal conformance test | Dec 99(*2) |
| Each working group | Definition of UE baseline capabilities | [TBD] |

- Proposed schedule for UE service capabilities

| Responsibilities | Target document | Schedule |
|---|---|---|
| TSG SA WG1 | List of all services or service creation capabilities | April 99 |
| TSG T WG2 | - Review of lists<br>- Identify minimum sets of services from the terminal view point | May 99 |
| TSG SA WG1 | Definition of minimum sets of services | June 99 |
| Each working group | List of all functions and requirements for each service | June 99 |
| TSG T WG2 | - Review of lists<br>- Identify minimum sets of UE service capabilities from the terminal view point | July 99(*1) |
| Each working group | Definition of minimum sets of UE service capabilities | Sep 99 |
| TSG T WG2 | Review of the above documents | Oct 99 |
| TSG T WG1 | Definition of terminal conformance test for minimum sets of UE service capabilities | Dec 99(*2) |
| Each working group | Definition of UE service capabilities | [TBD] |

(*1) Requirement of TSG T WG2

(*2) Requirement of TSG T WG1

**Annex B**

**Proposed Liaison Statement on Procedure for the definition of UE capabilities in 3GPP**

**To:     TSG CN, TSG RAN, TSG T**

**Cc:     SMG**

**From:   TSG SA**

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TSG SA has considered the proposed procedure in document TSG SA 99/xxx for the definition of UE capabilities in 3GPP, and has decided that from a 3GPP Program viewpoint, the procedure is acceptable.

TSG SA therefore, requests all TSGs to identify which of its working groups are generating specifications that have an impact on the UE, and to direct those working groups to produce a baseline UE capabilities document according to the first step of the accepted procedure. TSG SA also asks all TSGs to take the proposed schedule into account in their subsequent workplan.