TSG-T2#3
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Source: **Samsung Electronics Research Institute**

Title: **Proposed revision to WI on Terminal capabilities**

Document for: **Decision**

Agenda Item:

Title

Definition of Terminal Capabilities

Intended Output

Technical ~~Specifications~~Reports

Impact on Other Technical Specifications and Technical Reports

TBA

Technical Scope

Definitions
The capabilities of the UE can be divided into two domains:

Baseline capabilities: These are capabilities that are required for a service-less terminal to operate within a network. The baseline capabilities for a terminal include the capabilities to search for, synchronise with and register (with authentication) to a network. The negotiation of the terminal and the network capabilities, as well as the maintenance and termination of the registration are also part of the required baseline capabilities.

Service capabilities: These are capabilities that can be used either singly or in combination to deliver services to the user. The characteristic of service capabilities is that their logical function can be defined in a way that is independent of the implementation of the UMTS system (although all service capabilities are of course constrained by the implementation of UMTS). Examples: a data bearer of 144 kbps; a high quality speech teleservice; an IP teleservice; a capability to forward a speech call.

In order to realise the **baseline** and **service capabilities** for a terminal as defined above, it is necessary to identify a set of implementation capabilities, where an **Implementation capability,** is a capability that relates to a particular technical domain. Example (in the domain of the physical layer): a spreading factor of 128; Examples (in the domain of security): the A5 algorithm; a 64 bit key length; Example (in the domain of transmitter performance): a power output of 21 dBm; Example (in the domain of the Codec): support of AMR Codec; Example (in the domain of the USIM): support of CHV1;

Thus, we can defined **Baseline implementation capabilities** as a set of Implementation capabilities, in each technical domain, required to enable a terminal to support the required Baseline capabilities, and **Service implementation capabilities** as a set of Implementation capabilities, in each technical domain, required to enable a terminal to support a set of Service capabilities.

A terminal that implements only the **baseline implementation capabilities** is known as a **service-less terminal.**

The **service capabilities** of the UE provides. Service capabilities can be used either singly or in combination to deliver services to the user. The characteristic of service capabilities is that their logical function can be defined in a way that is independent of the implementation of the UMTS system (although all service capabilities are of course constrained by the implemenation of UMTS). Examples: a data bearer of 144 kbps; a high quality speech teleservice; an IP teleservice; a capability to forward a speech call.

The **implementation capabilities** that the UE implementation supports. Implemenation capabilities relate to a particular technical domain. Examples (in the domain of the air interface); a spreading factor of 128; the ability to support TDD.Examples (in the domain of security): the A5 algorithm; a 64 bit key length. Examples (in the domain of transmitter performance); a power output of 20 dBm; power control capability.

The minimum set of implemenation capabilities, in each technical domain, required to achive authentication and registration with the network is called the **baseline implemenation capabilities**. A UE that implements just these capabilities and no more is called a **no-service mobile**.

Scope

This work program has these principal objectives:
1. It should be possible to produce ~~UE's~~ terminals with different service capabilities, for example voice only ~~UE's~~ terminals should be allowed as well as multimedia terminals.
2. When ~~UE's~~ terminals provide compatible service capabilities (for example two terminals ~~UE's~~ support voice) they should be assured of successful interworking.
3. We should~~do~~ not burden UE with the requirement ~~need~~ to support mandatory implementation capabilities that are not needed to support its target service capability.

The work item is comprised of ~~the following steps:~~ the following steps:

- Identify the required service capabilities in accordance with market requirements. To be carried out by TSG-S1.

- Identify, in each technical domain, the baseline implementation capabilities required to produce a ~~no service~~service-less mobile. Produce recommendations for mandatory implemenatation features of the ~~no service~~service-less mobile (specific example: minimum authentication key length supported). To be carried out by each technical group in each domain that affects the Terminal ~~UE~~.

- Identify the implementation capabilities, in each technical domain, that are required to support each given service capability. Produce recommendations for mandatory implementation capabilities required to ensure that terminals ~~UE's~~ with this service capability will successfully interwork ~~(possible example: default codec for UE's that support speech)~~. To be carried out by each technical group in each domain that affects the UE.

- Define appropriate conformance tests which test claimed service capabilities against required implemenation capabilities.

Impact on Other 3GPP Work Items

This report ~~specification~~ will identify ~~define~~ the services and service requirements which the architecture, networks, terminals etc will have to support.

To ensure harmonisation between groups, the following principles should be followed:

- implementation capabilities should be defined by the groups working on the appropriate technical domain.
- TSG-T2 should have an overview of the totality of capabilities available from other groups.
- TSG-T2 should identify certain types of terminal implemeantation (ie dual mode FDD/TDD) and asceration ascertain which of the implementation capabilities are required to produce these.
- TSG-T2 should prioritise the work.
- TSG-T2 should liaise with S1 to ensure that implementations meet service requirements.
- TSG-T2 should liaise with the groups defining implementation capabilities in each domain, to improve the understanding of capabilitieis, or advise on areas where T2 believes corrections are needed.

Proposed schedule for definition of UE Terminal Capabilities

Note: these dates are provisional, and need to be reviewed in the light of comments made that they may be unrealistically tight.

Responsibilities	Target document	Schedule
TSG SA	Approval of WI	Mar 99
Each working group	Define baseline implementation capabilities	April 99
TSG SA WG1	List of all services or service capabilities	April 99
TSG T WG2	- Review of lists of service & baseline capabilities, check for consistency,	May 99
Each working group	List implemenation capablity for each service capability	June 99
TSG T WG2	- Review of lists (implementation vs service capabilities)	July 99(*1)
Each working group	Definition of minimum sets of UE implemenation capabilities	Sep 99
TSG T WG1	Definition of terminal conformance test	Dec 99(*2)

Supporting Individual Members

NEC, Samsung, DoCoMo, [BT], [Ericsson],Telecom Modus

Rapporteur

Will be provided by NEC Tech/Samsung Electronics Research Institute. Expected to attend the terminals TSG.