3GPP System TSG WG1 **3GPP/TSGS.1#1(99)046**

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Sophia Antipolis, France

Title: **Proposed General Requirements for IMT-2000/UMTS Network Standardization**

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Source: NTT DoCoMo, AT&T Wireless, TIM/CSELT, T-Mobil

Agenda point: 6.2.1

Purpose : Discussion, additional Requirements for TS22.00

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1. Introduction

When 3GPP starts to work on the actual technical specifications, general requirements for IMT-2000/UMTS network standardization need to be clarified. This contribution proposes some general requirements from the operators' point of view. These should be included in the existing UMTS specification TS22.00v1.6.0

2. General Requirements

- **Efficient implementation and optimal network deployment**

  To enable operators to utilize the network resources efficiently, the optimization of the signaling load as well as the reduction of the required overall transmission capacity is a critical success factor. Therefor the standard should aim for an architecture with minimal signaling traffic and optimized transmission infrastructure. If advantageous common mobility management and common subscriber data management for CS and PS traffic should be implemented in all relevant network elements. Furthermore the standard shall support an integrated node (MSC/SGSN) for PS and CS traffic as well as separated nodes as in GSM/GPRS.

- **Support of multi vendor environment in UTRAN**

  From the viewpoint of the necessity of providing multi-vendor environments, Iub specifications shall be standardized. However, since operator dependent O&M requirements over Iub may exist, specifications should be able to be expanded flexibly according to operator specific requirements

- **New Technologies can be introduced based on Phase1 specifications**

  It is very important for operators to introduce state-of-the-art network technologies from the initial stage of IMT-2000/UMTS. These technologies enable operators to utilize network resources effectively, lower infrastructure and operation/maintenance costs, and provide attractive services which conventional technologies can not support. Therefore, phase 1 specifications shall allow operators to introduce new

technologies (such as ATM, IP,...).

The UMTS TS22.00 clause 4 should read :

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4 UMTS phasing and releases overview

The UMTS system will be defined in a phased approach. This specification addresses the UMTS phase 1 capabilities for RELEASE '99.

The UMTS phase 1 requirements can be met by the capabilities of GSM phase 2+ release 99 including specific enhancements for UMTS. Additional developments to fully meet the requirements for UMTS phase 1 standardisation are listed in this specification.

The fundamental difference between GSM and UMTS phase 1 resides in the support of high bit rate bearer services with the notion of negotiated traffic and QoS characteristics. UMTS phase 1 shall in particular support bursty and asymmetric traffic in an efficient way. This shall allow UMTS phase 1 to support single- and multi-media N-ISDN applications and single- and multi-media IP applications.

The phase 1 USIM is developed on the basis of the phase 2+ release 99 SIM. When UMTS specific requirements have not been stated in this specification it is assumed that the GSM phase 2+ release 99 specifications for the SIM is adopted for the UMTS phase 1 requirements.

No specific requirement is addressed for the mobile termination since it relates to the UMTS access stratum and to the UMTS core network (depending whether peer entities end either in the access or in the core).

Regarding the phase 1 standardisation of UMTS access network, only the UTRAN (including all UTRA modes if several modes are defined) is considered as being part of the UMTS access network. Other types of access networks are for further consideration. UTRAN is a new access network and as such all the UTRAN requirements are defined in this specification. This includes in particular the interoperability requirements put on the UTRAN and GSM BSS access networks to cater with UMTS networks operating the two types of access networks.

UMTS phase 1 shall be developed in such a way that it supports compatibility with an evolved GSM network from the point of view of roaming and handover. This could be achieved by evolving from a GSM phase 2+ network but does not exclude other developments. Therefore, phase 1 specifications shall allow operators to introduce new technologies (such as ATM, IP,...). An overall UMTS system approach is needed for UMTS phase 1 development as it is more than the addition of a UTRAN to a GSM Phase 2+ architecture. Requirements to the GSM phase 2+ core network for UMTS should be incorporated.

To enable operators to utilize the network resources efficiently, the optimization of the signaling load as well as the reduction of the required overall transmission capacity is a critical success factor. Therefor the standard should aim for an architecture with minimal signaling traffic and optimized transmission infrastructure. If advantageous common mobility management and common subscriber data management for CS and PS traffic should be implemented in all relevant network elements. Furthermore the standard shall support an integrated node (MSC/SGSN) for PS and CS traffic as well as separated nodes as in GSM/GPRS.

From the viewpoint of the necessity of providing multi-vendor environments, Iub specifications shall be standardized. However, since operator dependent O&M requirements over Iub may exist, specifications should be able to be expanded flexibly according to operator specific requirements

It should be noted that the advanced bearer capabilities of the phase 1 UMTS access network may not be fully

supported by the phase 1 UMTS core network. This however guarantees the viability of the UMTS access network to allow the scope within phase 1 to support broadband bearer services.

A standard default speech codec shall be standardised for UMTS phase 1. UMTS should support tandem free operation from day 1 to enable lower transmission and equipment costs and for higher speech quality. Crossphase compatibility issues in transcoder location should be considered when moving from Phase 1 UTRAN to later releases.