3GPP TSG CN Plenary Meeting #19
12th - 14th March 2003. Birmingham, U.K.

NP-030056

Source:	**TSG CN WG 1**
Title:	**CR to Rel-5 on Work Item TEI5 towards 23.034**
Agenda item:	**8.8**
Document for:	**APPROVAL**

Introduction:

This document contains **1** CR, **Rel-5 to** Work Item **"TEI5"**, that have been agreed by **TSG CN WG1**, and are forwarded to TSG CN Plenary meeting #19 for approval.

N1-030091 is linked to N3-030116 / 117 / 118 / 119.

Spec	CR	Rev	Cat	Phase	Subject	Version-Current	Version-New	Meeting-2nd-Level	Doc-2nd-Level
23.034	008		F	Rel-5	Use of Nb UP protocol after inter-MSC handover	5.1.0	5.2.0	N1-28	N1-030091

CR-Form-v7

CHANGE REQUEST

⌘ **23.034** CR **008** ⌘**rev** **-** ⌘ Current version: **5.1.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: UICC apps⌘ ☐ ME ☐ Radio Access Network ☐ Core Network **X**

Title: ⌘	Use of Nb UP protocol after inter-MSC handover	
Source: ⌘	Siemens AG	
Work item code:⌘	TEI5	**Date:** ⌘ 24/01/2003
Category: ⌘	**F**	**Release:** ⌘ Rel-5

Use *one* of the following categories:
 F (correction)
 A (corresponds to a correction in an earlier release)
 B (addition of feature),
 C (functional modification of feature)
 D (editorial modification)
Detailed explanations of the above categories can
be found in 3GPP TR 21.900.

Use *one* of the following releases:
 2 (GSM Phase 2)
 R96 (Release 1996)
 R97 (Release 1997)
 R98 (Release 1998)
 R99 (Release 1999)
 Rel-4 (Release 4)
 Rel-5 (Release 5)
 Rel-6 (Release 6)

Reason for change: ⌘	Since R99 it has been specified in TS 29.007 that "After a handover from a 3G MSC to another 3G MSC the user plane between the anchor MSC and the visited MSC shall comply to the Iu UP protocol if both MSC are connected via an ATM interface", but in R99 the use of ATM at the E-interface was never supported, and the use of the IuUP protocol on the E-Interface was not specified in detail. When in Release 4 the support of ATM at the E-interface was introduced as part of the work item CSSPLIT, the handling in case of two MSCs connected via an ATM interface should have been grouped together with the handling in case of two MSCs or MGWs connected via an ATM interface or IP interface. Now the standard specifies different bearers and different framing protocols with different directions of initialization for the two cases, but usually the anchor and the visited MSC do not have the necessary information to decide whether there is a MGW in the connection between the anchor and the visited MSC, and consequently which of the two cases applies.
Summary of change:⌘	It is proposed to delete the option to use the Iu UP protocol at the E-interface and to always use the Nb UP protocol.
Consequences if not approved: ⌘	The standard specifies two different alternatives for the framing protocols and the bearers between anchor and visited MSC/MGW, but usually the anchor and the visited MSC do not have the necessary information which of the two alternatives applies. As a consequence the intialization of the user plane framing protocol and the inter-MSC SRNS relocation itself may fail.
Clauses affected: ⌘	4

		Y	N			
Other specs affected:	⌘	X		Other core specifications	⌘	23.910, 29.007
			X	Test specifications		
			X	O&M Specifications		
Other comments:	⌘					

How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at http://www.3gpp.org/specs/CR.htm. Below is a brief summary:

1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

4　Main concepts

The air interface user rate in the original GSM data transmission is limited to 9,6 kbps with the 12 kbps air interface rate. The HSCSD described in the present document Stage 2 description allows higher air interface user rates to be used for transparent and non-transparent data services.

> NOTE:　In the present document the term "air interface user rate" corresponds to the transfer rate in radio interface for user data and "air interface rate" includes additional data related to transmission protocols.

HSCSD is a feature enabling the co-allocation of multiple full rate traffic channels (TCH/F) into a HSCSD configuration. The aim of HSCSD is to provide a mixture of services with different air interface user rates by a single physical layer structure. Further improvements in data rates are achieved through enhancement of the radio interface (modulation and coding schemes), which allows higher bit rates per one GSM time slot. The available capacity of a HSCSD configuration is several times the capacity of a TCH/F, leading to a significant enhancement in the air interface data transfer rate.

Figure 1 represents the network architecture to support HSCSD in A/Gb mode based on the concept of multiple independent channels in one HSCSD configuration. Figure 1a represents the network architecture to support HSCSD in GERAN Iu mode.

> NOTE:　3GPP TS 43.051 [18] does not specify the GERAN internal interface between BSC and BTS.

In case when enhanced modulation is used the number of time slots in the radio interface may not correspond to the number of data streams in the network side, for example a 28,8 kbps service may be offered through one air interface time slot, but it requires two 14,4 (16 kbps) Abis channels. Another example is bit transparent 56 kbps to 64 kbps service where two air interface time slots of 32 kbps are multiplexed onto one 64 kbps data stream on the network side.
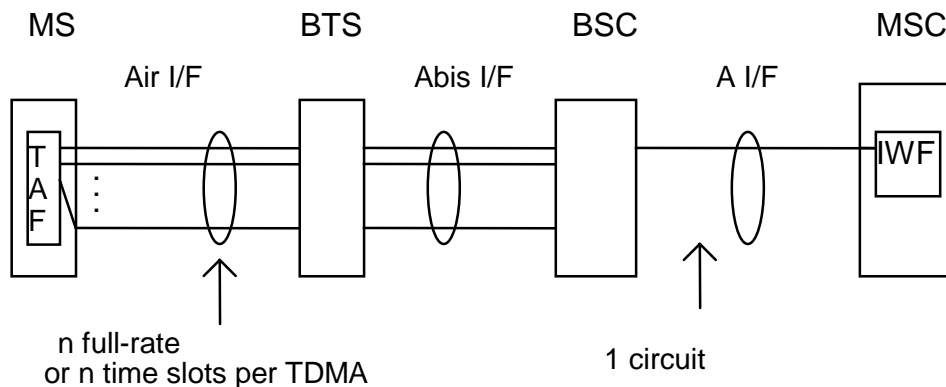

Figure 1: Network architecture for supporting HSCSD in A/Gb mode
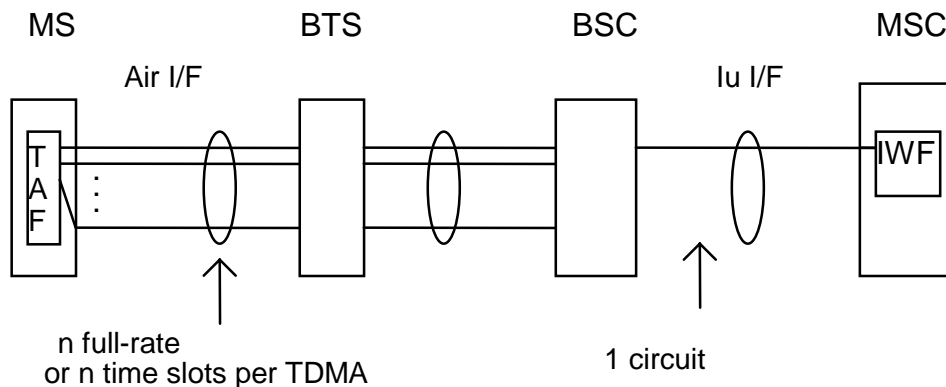

Figure 1a: Network architecture for supporting HSCSD in GERAN Iu mode

A new functionality is introduced at the network and MS to provide the functions of combining and splitting the data into separate data streams which will then be transferred via n channels at the radio interface, where n = 1, 2, 3, ... 8. Once split, the data streams shall be carried by the n full rate traffic channels, called HSCSD channels, as if they were

independent of each other, for the purpose of data relay and radio interface L1 error control, until to the point in the network where they are combined. However, logically the n full rate traffic channels at the radio interface belong to the same HSCSD configuration, and therefore they shall be controlled as one radio link by the network for the purpose of cellular operations, e.g. handover. This requires a new functionality in BSS.

The different user data substreams carried on the radio channels (one substream being the data flow over a single TCH) shall be mapped over the A interface or GERAN Iu interface, and vice versa, following the rules defined in 3GPP TS 24.008 [3] and 3GPP TS 48.020 [12].

In A/Gb mode, the use of resources on the A and E interfaces is restricted to one 64 kbps circuit by multiplexing the data streams into one A interface circuit (see ITU-T Recommendation I.460 [8]).

In GERAN Iu mode, the user plane at the Iu interface shall comply to the Iu UP protocol (3GPP TS 25.415 [20]). For transparent calls the Iu user plane is operated in transparent mode, version 1, for non-transparent calls it is operated in support mode for predefined SDU sizes, version 2.

After an inter-MSC SRNS relocation the user plane between the anchor MSC or MGW and the target MSC or MGW shall comply to.

the Iu UP protocol (3GPP TS 25.415 [20]), if both MSCs are connected via an ATM interface; and

the Nb UP protocol (3GPP TS 29.415 [22]), if the anchor MSC or MGW and the target MSC or MGW both MGWs are connected via an ATM interface or IP interface. The NbUP shall be configured in support mode, the data is transported in a 64 kbit/s bit stream (for details see 3GPP TS 29.007 [23])

If both MSCs are connected via a TDM interface the use of resources on the E interface is restricted to one 64 kbps circuit (see 3GPP TS 29.007 [23]).