Source:	**CN4 Chairman and Vice Chairman** Yun-Chao Hu **&** Teemu Mäkinen
Title:	**Status Report from TSG CN WG4**
Agenda item:	**6.4**
Document for:	**INFORMATION / APPROVAL**

1   Introduction

One CN4 Release 2000 Ad Hoc meeting has been held since the last TSG CN#09, which was chaired by Yun-Chao HU (LM Ericsson AB) and assisted by Kimmo Kymalainen who recently joined MCC. The CN4 Ad Hoc meeting has been held on 10-12 October and was kindly hosted by Ericsson in Stockholm, Sweden. The meeting reviewed *47* documents and produced *4* Liaison Statements and considerable progress to the Release 4 documents. It has to be noted that 25 delegates attended the CN4 Release 2000 Ad Hoc meeting.

The meeting report of the Release 2000 Ad Hoc is documented in Tdoc *NP-000631*.

The CN4#05 meeting has been held on 13 – 17 November 2000 in Paris, France and kindly hosted by Alcatel. The meeting was chaired by Yun-Chao Hu (LM Ericsson AB) and Teemu Mäkinen (Nokia) and assisted by Kimmo Kymalainen. Yun Chao addressed the Release 4 issues and Teemu took the GSM Maintenance and Release 99 issues. The meeting reviewed *216* documents and produced *51* CRs, *11* Liaison Statements, *3* Technical Specifications and *1* other output documents reviewed. Thirty-nine participants attended the meeting and they had long working days due to the number of documents to be processed.

The CN4#05 meeting report is documented in Tdoc *NP-000632*. In addition all the CN4 Liaison Statements that are sent by CN4 are documented in Tdoc *NP-000654*.

2   Questions for Advice and Decisions

2.1   Lossless SRNS Relocation for UMTS

A misalignment between TS 23.060 and 29.060 on Lossless SRNS Relocation mechanism has been identified. There is an apparent contradiction between 23.060 and 29.060 on the Release 99 lossless SRNS Relocation mechanism. In the Release 3 stage 2 and RANAP specifications (i.e. TS 23.060 & 25.413) it has been stated that a single tunnel is used for regular Iu traffic and data forwarding. This will result in a tunnel with three terminations (i.e source RNC, target RNC and SGSN). In TS 29.060 the tunnel with multiple terminations is explicit forbidden.
In 29.060, this appears to be strictly forbidden, when it is stated that (in v.3.3.0):

There has been two possible solutions identified for this misalignment:
1. Use a totally separate tunnel for forwarding and "regular" Iu. This is estimated that it would require new IE in RANAP, and changes to TS 23.060).
2. Modify the rule in GTP (29.060), to allow this scenario in the case of data forwarding.

Further detailed explanation of the issue is described in the Liaison Statement *NP-000593*. Attached to this are the discussion documents on this topic that are submitted to the previous CN4 meeting as well as a proposed CR addressing solution 2.

It has been noted that similar issues is associated to the Release 4 "Real Time SRNS Relocation for PS Domain RABs". The meeting agreed that if the R'99 Lossless SRNS Relocation has been resolved, the issue on the Release 4 "Real Time SRNS Relocation for the PS Domain RABs" will be resolved as well if solution 2 has been chosen.

An overwhelming majority within CN4 are promoting solution 2, however one company is arguing for solution 1. Based on the CN4 participant's information this conflict surfaced for about a year within TSG RAN WG3. Therefore, it has been considered that this issue needs to be escalated to the TSG Plenaries for advice and guidance how to proceed.

3   Change Requests

The CN4 meeting produced 51 Change Requests that are submitted for ratification. An overview of the CR packages is provided in Table 1.

Table 1   Agreed CN4 CRs submitted for ratification

NP-000635	7.1	CRs for R97 WI "Camel Phase 2"
NP-000636	7.2	CRs for R99 WI "Camel Phase 3"
NP-000637	7.3	CRs for R99 WI "Security"
NP-000638	7.6	CRs for R99 WI "TEI"
NP-000639	7.9	CRs for R99 WI "ASCI"
NP-000640	7.12	CRs for R99 WI "CF enhancements"
NP-000641	7.13	CRs for R99 WI "GPRS"
NP-000642	7.14	CRs for R99 WI "GTP enhancements"
NP-000643	7.15	CRs for R99 WI "Handover"
NP-000645	7.23	CRs for R98 WI "Supplementary Services"
NP-000646	7.23	CRs for R97 WI "USSD"
NP-000647	7.23	CRs for R99 WI "USSD"
NP-000648	8.12	CRs for Rel4 WI "Camel Phase 4"
NP-000649	8.19	CRs for Rel4 WI "ASCI"
NP-000650	8.19	CRs for Rel4 WI "Supplementary Services"

3.1   Release 99 and earlier

3.1.1   CAMEL
Within **CAMEL Phase 2**, it is not clear whether an entity should indicate all CAMEL phases supported or only the highest phase supported. There is already evidence of different interpretations of the standard. The CAMEL Phase 2 CRs are documented in **NP-000635**

The **CAMEL Phase 3** discussions introduced a number of corrective CRs on the issues of:
- ?? the inconsistency between the ATSI definitions of the argument and the return result would require multiple request if the SCP would like to obtain several SS data and/or CSI, despite of full capability of the return result. Solving the inconsistency provides the efficient signalling usage.
- ?? sgsn-CAMEL-SubscriptionInfo and chargingCharacteristics IE are moved from GPRSSubscriptionData IE to InsertSubscriberDataArg. This allows stand alone updating of these parameters without having to send the possibly unmodified gprsDataList and therefore improves the efficiency of the signalling usage.
- ?? the data type GSN-Address is not available to other modules. However, the CAP modules within TS 29.078 use the data type GSN-Address.

The CAMEL Phase 3 CRs are documented in **NP-000636**

3.1.2   Security
Two corrective CRs have been agreed that corrected a misalignment with the stage 2 protocol requirements
- ?? According to 33.102v3.6.0 For an UMTS subscriber the 3G-SGSN may send to 2G-SGSN MM Context of the Security type 0. Three least significant digits of the octet 5 are allocated to CKSN. However, 3G-SGSN does not have CKSN IE at all. Rather, 3G-SGSN keeps KSI IE. Textual clarification is provided to resolve the misalignment.
- ?? Octet number of the security-related field (i.e. RAND, CK, and IK) is corrected as 16 octets length.

The Security CRs are documented in **NP-000637**.

3.1.3   Technical Enhancements and Improvements (TEI)
One corrective CR has been agreed to remove the validity and formatting of a GTP-U 'Version not Supported' message since it is only specified for GTP-C in 29.060. This TEI CR is documented in **NP-000638**.

3.1.4 ASCI

Two corrective CRs have been agreed for R'98 ASCI to remove the FFS texts and added explicit explanation of a PAGING REQUEST message with priority level, and the correspondent addition of the reference to GSM 04.08 is required as well. The R'98 ASCI CRs are documented within *NP-000645*.

Four corrective CRs have been agreed for R'99 ASCI on the addition of priority within the CALL PROCEEDING message if the network is supporting eMLPP for GSM and UMTS. The R'99 ASCI CRs are documented within *NP-000639*.

3.1.5 Call Forwarding Enhancements

The stage 2 specification is out of alignment with the stage 3 (3G TS 29.002) in regards to the VLR signalling the HLR whether it can support long forwarded to numbers. This CR is documented within *NP-000640*.

3.1.6 GPRS and GTP Enhancements

Four corrective CRs have been agreed for *GPRS R'99* dealing with the following issues:

- ?? Target RNC Information IE was renamed to RAB Setup Information that was proposed in CR 29.060-090r1 and approved in CN#8.
- ?? Type value of RANAP Cause, Charging Characteristics, RAB Setup Information, Extension Header Type List, Trigger Id and OMC Identity are misaligned within the document 3G 29.060.
- ?? The Stage 2 TS 23.060 does not specify how SGSN shall select the IP address. However, the stage 3 TS 29.060 describes how the IP address shall be selected. It was considered that this is implementation dependent and therefore, shall be removed from the specification.
- ?? The lack of compatibility of the GTPv0 and GTPv1 will result in a inter SGSN handover situation where necessary information can not be signalled between SGSNs.
- ?? MS capability is changed to variable length because of misalignment

The CRS to the Work Item GPRS has been provided in *NP-000641*.

Four corrective CRs have been agreed for *GTP Enhancements* on the following issues:

- ?? The TS 29.060 Annex A contains naming convention including coding information for RAI and SGSN. For clarity it would be better to have all coding related information in one place, i.e. in 3G TS 23.003.
- ?? In all messages when the TEID-C IE is included it is accompanied by the Associated IP address, however the PDU Notification request message is not aligned with this principal.
- ?? The Teardown Indicator shall always be included in Delete PDP Context Request message by sending GSN when the last PDP context associated to a PDP address is torn down. In this case there are no outstanding Create PDP context requests for other PDP context different from the one being torn down for that PDP address.

The CRs are documented in *NP-000642*.

3.1.7 Handover

Fifteen corrective CRs were agreed for the WI Handover to correct the following issues:

- ?? Several correction to the description of the Target RNC ID has been provided on miscellaneous issues
- ?? IMSI can only be included in MAP_PREPARE_HANDOVER if available. It is possible to set up an emergency call without IMSI.
- ?? Cause code mapping between BSSMAP and RANAP is missing. This mapping is needed when performing inter-system handover.
- ?? In case of inter-system handover from GSM to UMTS, the MAP_PREPARE_HANDOVER Response should not include Chosen Channel and Speech Version (Chosen) since the existing chosen values are not applicable for UMTS access.
- ?? In case of GSM to UMTS inter-system handover, the 3G_MSC-B or 3G_MSC-B' should always initiate the Location Reporting Control procedure towards the target RNC since the MAP-E interface does not support initiation of the Location Reporting Control procedure from MSC-A.
- ?? For signalling over the MAP E-interface to support inter-MSC handover/relocation White Book SCCP has to be supported since the size of the RANAP messages exceeds to maximum size of the Blue Book SCCP payload.

These CRs are documented in *NP-000643*

3.1.8 USSD

Four corrective CRs have been agreed for *USSD R'97* to correct the following issues:

?? Various corrections of USSD procedures;

?? addition of USSD procedure description in the gsmSCF/secondary HLR

Two corrective CRs have been agreed for *USSD R'99* to correct the following issues:

?? to include the gsmSCF address as originating reference for network initiated USSD messages in order to allow screening at the HLR (fraud prevention), and

?? to allow the MSISDN (rather than IMSI) to be sent as destination reference for network/mobile initiated USSD messages.

The CRs are documented in *NP-000646* and *NP-000647*.

3.2 Release 4

3.2.1 CAMEL Phase 4

One CR has been agreed to add the CAMEL phase 4 functionality to support OR of mobile-to-mobile calls. This CR is documented in *NP-000648*.

3.2.2 Release 4 ASCI

Three CRs are approved to add the following functionalities:

?? The priority in the paging message and in the SETUP message could be different. The handling of this case for mobiles in group receive mode needs to be specified.

?? Rewording of the automatic answering to avoid any misunderstanding, and underline that automatic answering applies in idle mode or in case of called party pre-emption

These CRs are documented in *NP-000643*

3.2.3 Basic Call Processing

One CR is approved to tidy up and enhance the Subs_FSM process. This CR is documented in *NP-000650*.

4 Technical Specifications

Three Technical Specifications have been agreed by CN4 and are submitted to the CN Plenary (see Table 2).

Table 2   CN4 TSs submitted to the TSG CN#10

NP-000651	8.4	*TS 23.205 v.1.0.1 Bearer Independent CS Core Network; Stage 2*
NP-000652	8.4	*TS 29.232 v1.0.0 Media Gateway Controller (MGC) - Media Gateway (MGW) Interface; Stage 3*
NP-000653	8.4	*TS 23.153 v. 2.3.0 Out of Band Transcoder Control - Stage 2*

4.1 Bearer Independent CS Core Network

The Stage 2 TS 23.205 covers the information flow between the GMSC server, MSC server and media gateways. It shows the CS core network termination of the Iu interface in order to cover the information flow stimulus to the core network and describe the interaction with the supplementary and value added services and capabilities.

The protocol used over the Nc interface is an enhanced call control protocol supporting call bearer separation such as BICC or SIP-T. The protocol used over the Mc interface is H.248. This TS 23.205 is applicable only for ATM or IP transport in the CS core network. The TS 23.305 is documented in *NP-000651*. The CN Plenary is asked to **NOTE** TS 23.205.

The Stage 3 TS 29.232 describes the protocol to be used on the Media Gateway Controller (MGC) – Media Gateway (MGW) interface. The Media Gateway Controllers covered in this specification are the MSC server and the GMSC server. The basis for this protocol is the H.248/MEGACO protocol as specified in ITU-T and IETF. The BICC architecture as described in ITU-T Q.1902 and 3G TS 23.205 defines the usage of this protocol.

This specification describes the additional packages to H.248/MEGACO which are needed to handle 3GPP specific traffic cases. The TS 29.232 is documented in *NP-000652*. The CN Plenary is asked to **NOTE** TS 29.232.

4.2 Out of Band Transcoder Control

This Technical Specification specifies the stage 2 description of the Out-of-Band Transcoder Control for speech services. Codecs are necessary to compress speech in order to utilise efficiently the bandwidth resources both in the radio interface and in the transmission networks. Unnecessary transcoding of speech significantly degrades quality and, therefore, cellular systems try to avoid it for mobile-to-mobile calls when both UEs and the network support a common Codec type.

Although the main reason for avoiding transcoding in mobile-to-mobile calls has been speech quality, the transmission of compressed information in the CN and CN-CN interface of the cellular network also offers the possibility of bandwidth savings.

To allow transport of information in a compressed way in transmission networks, these networks make use of the transport-independent call control protocol that provides means for signalling Codec information, negotiation and selection of Codecs end-to-end.

The TS 23.153 is documented in *NP-000653*. The CN Plenary is asked to **APPROVE** TS 23.153

5 Work Item Management

NP-000609	8.2	IP Multimedia CN Subsystem, CSCF-HSS (Cx) interface	CN4

One WI has been agreed by CN4 on the CSCF-HSS (Cx) interface specification. This WI is intended to specify the data structures and the information flows of the Cx interface. It shall produce the relevant stage 2 and stage 3 specifications. A comprehensive evaluation of candidate protocols is anticipated to be performed associated to this WI. Finally, it will also describe the subscription data relevant for the provisioning of IP Multi Media.

6 N4 Calendar

3GPP N4 Meeting	Date	Place	Host
N4#06 Joint meeting CN3/CN4	15-19 January 2001 17 January 2001	Beijing, China	Ericsson China, Ericsson Sweden
N4#07 Joint meeting CN3/CN4	26 February -2 March 2001 T.B.A.	Sophia Antipolis, France	ETSI
N4#08	14-18 May 2001	USA?	The North American Friends of 3GPP
N4#09	09-13 July 2001	Dusseldorf, Germany	Mannesmann
N4#10	15-19 October 2001	UK	Vodafone, BT
N4#11	26-30 November 2001	T.B.D	T.B.D

7 Acknowledgements

I would like to thank Teemu Mäkinen for his support as the vice-chairmanship of CN4 and chairing of some sessions of CN#05. I would like to thank Kimmo Kymalainen for his excellent support to the N4 community and Teemu and myself specifically.

I would like to thank all the participants for their hard work and sometimes patience. I would like to thank also all the editors who had challenging time constraints to provide the documents.

And at last but not least I would like to thank all the hosts for their excellent arrangements for our meetings and I hope that we can still rely on the volunteership of the hosts for future meetings. Without the co-operation of the hosts the 3GPP N4 meetings would be less effective and efficient in performing their tasks to deliver the specifications according to time schedule.