3GPP TSG CN Plenary
Meeting #11, Palm Springs, U.S.A
14th - 16th March 2001

Tdoc NP-010078

Source: **TSG CN WG4**

Title: **CRs to Rel-4 on Work Item SS7IP**

Agenda item: **8.1**

Document for: **APPROVAL**

<u>**Introduction:**</u>

This document contains **1** CR on **Rel-4** Work Item **"SS7IP"**, that have been agreed by **TSG CN WG4**, and are forwarded to TSG CN Plenary meeting #11 for approval.

Spec	CR	Rev	Doc-2nd-Level	Phase	Subject	Cat	Ver_C
29.002	234		N4-010261	Rel-4	MAP over IP according to SIGTRAN	B	4.2.1

CR-Form-v3

CHANGE REQUEST

⌘ **29.002** CR **234** ⌘ rev **-** ⌘ Current version: **4.2.1** ⌘

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

Proposed change affects: ⌘ (U)SIM ☐ ME/UE ☐ Radio Access Network ☐ Core Network ☒

Title: ⌘	MAP over IP according to SIGTRAN	
Source: ⌘	CN4	
Work item code: ⌘	SS7IP	***Date:*** ⌘ 2001-02-07
Category: ⌘	B	***Release:*** ⌘ REL-4

Use one of the following categories:
F (essential 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)

Reason for change: ⌘	The WID for #7 Signalling over IP was agreed in the TSG-N Plenary #10. IP plays a significant role in UMTS according to the actual trend towards IP capable backbone networks. CN is working on specifications to introduce IP based transmission in a Bearer Independent Core Network, therefore the option to transfer #7 signalling (e.g. MAP, CAP, BSSAP+) over IP should be considered.
Summary of change: ⌘	Reference to the new TS 29.sigtran is added in order to describe how MAP can be transported over SS7 signalling networks.
Consequences if not approved: ⌘	It will not be clear how MAP can be transported over IP.

Clauses affected: ⌘	2, 6.1, 6.2
Other specs affected: ⌘	☒ Other core specifications ⌘ TS 29.002 ☐ Test specifications ☐ 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/3G_Specs/CRs.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://www.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2000-09 contains the specifications resulting from the September 2000 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.

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.

- For a specific reference, subsequent revisions do not apply.

- For a non-specific reference, the latest version applies.

[1]   3G TS 21.905: "3G Vocabulary".

[2]   GSM 02.01: "Digital cellular telecommunications system (Phase 2+); Principles of telecommunication services supported by a GSM Public Land Mobile Network (PLMN)".

[3]   3G TS 22.002: "Bearer Services Supported by a GSM Public Land Mobile Network (PLMN)".

[4]   GSM 02.03: "Digital cellular telecommunications system (Phase 2+); Teleservices Supported by a GSM Public Land Mobile Network (PLMN)".

[5]   3G TS 22.004: "General on Supplementary Services".

[6]   GSM 02.09: "Digital cellular telecommunications system (Phase 2+); Security aspects".

[7]   3G TS 22.016: "International Mobile station Equipment Identities (IMEI)".

[8]   3G TS 22.041: "Operator Determined Barring".

[9]   3G TS 22.081: "Line identification supplementary services - Stage 1".

[10]   3G TS 22.082: "Call Forwarding (CF) supplementary services - Stage 1".

[11]   3G TS 22.083: "Call Waiting (CW) and Call Hold (HOLD) Supplementary Services - Stage 1".

[12]   3G TS 22.084: "Multi Party (MPTY) Supplementary Services - Stage 1".

[13]   3G TS 22.085: "Closed User Group (CUG) supplementary services - Stage 1".

[14]   3G TS 22.086: "Advice of charge (AoC) Supplementary Services - Stage 1".

[15]   3G TS 22.088: "Call Barring (CB) supplementary services - Stage 1".

[16]   3G TS 22.090: "Unstructured Supplementary Service Data (USSD); - Stage 1".

[17]   3G TS 23.003: "Numbering, addressing and identification".

[18]   GSM 03.04: "Digital cellular telecommunications system (Phase 2+); Signalling requirements relating to routeing of calls to mobile subscribers".

[19]   3G TS 23.007: "Restoration procedures".

[20]   3G TS 23.008: "Organisation of subscriber data".

[21]   3G TS 23.009: "Handover procedures".

[22]   3G TS 23.011: "Technical realization of Supplementary Services - General Aspects".

[23]   3G TS 23.012: "Location registration procedures".

[24]   GSM 03.20: "Digital cellular telecommunications system (Phase 2+); Security related network functions".

[25]   3G TS 23.038: "Alphabets and language".

[26]   3G TS 23.040: "Technical realization of the Short Message Service (SMS) Point to Point (PP)".

[26a]   GSM 03.71: "Digital cellular telecommunications system (Phase 2+); Location Services (LCS); Functional Description; Stage 2".

[27]   3G TS 23.081: "Line Identification Supplementary Services - Stage 2".

[28]   3G TS 23.082: "Call Forwarding (CF) Supplementary Services - Stage 2".

[29]   3G TS 23.083: "Call Waiting (CW) and Call Hold (HOLD) Supplementary Services - Stage 2".

[30]   3G TS 23.084: "Multi Party (MPTY) Supplementary Services - Stage 2".

[31]   3G TS 23.085: "Closed User Group (CUG) Supplementary Services - Stage 2".

[32]   3G TS 23.086: "Advice of Charge (AoC) Supplementary Services - Stage 2".

[33]   3G TS 23.088: "Call Barring (CB) Supplementary Services - Stage 2".

[34]   3G TS 23.090: "Unstructured Supplementary Services Data (USSD) - Stage 2".

[35]   3G TS 24.008: "Mobile Radio Interface Layer 3 specification; Core Network Protocols - Stage 3".

[36]   3G TS 24.010: "Mobile radio interface layer 3 Supplementary Services specification - General aspects".

[37]   3G TS 24.011: "Point-to-Point (PP) Short Message Service (SMS) support on mobile radio interface".

[37a]   GSM 04.71: "Digital cellular telecommunications system (Phase 2+); Mobile radio interface layer 3 location services specification".

[38]   3G TS 24.080: "Mobile radio interface layer 3 supplementary services specification - Formats and coding".

[39]   3G TS 24.081: "Line identification supplementary services - Stage 3".

[40]   3G TS 24.082: "Call Forwarding (CF) Supplementary Services - Stage 3".

[41]   3G TS 24.083: "Call Waiting (CW) and Call Hold (HOLD) supplementary services - Stage 3".

[42]   3G TS 24.084: "Multi Party (MPTY) Supplementary Services - Stage 3".

[43]   3G TS 24.085: "Closed User Group (CUG) Supplementary Services - Stage 3".

[44]   3G TS 24.086: "Advice of Charge (AoC) Supplementary Services - Stage 3".

[45]   3G TS 24.088: "Call Barring (CB) Supplementary Services - Stage 3".

[46]   3G TS 24.090: "Unstructured Supplementary Services Data - Stage 3".

[47]   GSM 08.02: "Digital cellular telecommunications system (Phase 2+); Base Station System - Mobile-services Switching Centre (BSS - MSC) interface principles".

[48]   GSM 08.06: "Digital cellular telecommunications system (Phase 2+); Signalling transport mechanism specification for the Base Station System - Mobile-services Switching Centre (BSS - MSC) interface".

[49]   GSM 08.08: "Digital cellular telecommunications system (Phase 2+); Mobile Switching Centre - Base Station System (MSC - BSS) interface Layer 3 specification".

[49a]   GSM 08.08: "Digital cellular telecommunications system (Phase 2+); Mobile Switching Centre - Base Station System (MSC - BSS) interface Layer 3 specification".

[49a1]   GSM 08.31: "Digital cellular telecommunications system (Phase 2+); Location Services (LCS); Serving Mobile Location Centre (SMLC) – Serving Mobile Location Centre (SMLC); SMLC Peer Protocol (SMLCPP)".

[49b]   GSM 08.71: "Digital cellular telecommunications system (Phase 2+); Location Services (LCS); Serving Mobile Location Centre - Base Station System (SMLC - BSS) interface Layer 3 specification".

[50]   GSM 09.01: "Digital cellular telecommunications system (Phase 2+); General network interworking scenarios".

[51]   3G TS 29.002: "Mobile Application Part (MAP) specification".

[52]   GSM 09.03: "Digital cellular telecommunications system (Phase 2+); Signalling requirements on interworking between the Integrated Services Digital Network (ISDN) or Public Switched Telephone Network (PSTN) and the Public Land Mobile Network (PLMN)".

[53]   GSM 09.04: "Digital cellular telecommunications system (Phase 2+); Interworking between the Public Land Mobile Network (PLMN) and the Circuit Switched Public Data Network (CSPDN)".

[54]   GSM 09.05: "Digital cellular telecommunications system (Phase 2+); Interworking between the Public Land Mobile Network (PLMN) and the Packet Switched Public Data Network (PSPDN) for Packet Assembly/Disassembly facility (PAD) access".

[55]   3G TS 29.006: "Interworking between a Public Land Mobile Network (PLMN) and a Packet Switched Public Data Network/Integrated Services Digital Network (PSPDN/ISDN) for the support of Packet Switched data transmission services".

[56]   3G TS 29.007: "Digital cellular telecommunications system (Phase 2+); General requirements on interworking between the Public Land Mobile Network (PLMN) and the Integrated Services Digital Network (ISDN) or Public Switched Telephone Network (PSTN)".

[57]   GSM 09.08: "Digital cellular telecommunications system (Phase 2+); Application of the Base Station System Application Part (BSSAP) on the E-interface".

[58]   3G TS 29.010: "Information element mapping between Mobile Station - Base Station System and BSS - Mobile-services Switching Centre (MS - BSS - MSC) Signalling procedures and the Mobile Application Part (MAP)".

[59]   3G TS 29.011: "Signalling interworking for Supplementary Services".

[59a]   GSM 09.31: "Digital cellular telecommunications system (Phase 2+); Location Services (LCS); Base Station System Application Part LCS Extension (BSSAP-LE)".

[60]   GSM 09.90: "Digital cellular telecommunications system (Phase 2+); Interworking between Phase 1 infrastructure and Phase 2 Mobile Stations (MS)".

[61]   GSM 12.08: "Digital cellular telecommunications system (Phase 2); Subscriber and Equipment Trace".

[62]   ETS 300 102-1 (1990): "Integrated Services Digital Network (ISDN); User-network interface layer 3 specifications for basic call control".

[63]   ETS 300 136 (1992): "Integrated Services Digital Network (ISDN); Closed User Group (CUG) supplementary service description".

[64]   ETS 300 138 (1992): "Integrated Services Digital Network (ISDN); Closed User Group (CUG) supplementary service Digital Subscriber Signalling System No.one (DSS1) protocol".

[65]   ETS 300 287: "Integrated Services Digital Network (ISDN); Signalling System No.7; Transaction Capabilities (TC) version 2".

[66]   ETR 060: "Signalling Protocols and Switching (SPS); Guide-lines for using Abstract Syntax Notation One (ASN.1) in telecommunication application protocols".

[67]   ITU-T Recommendation E.164: "Numbering plan for the ISDN era".

[68]   ITU-T Recommendation E.212: "Identification plan for land mobile stations".

[69]   ITU-T Recommendation E.213: "Telephone and ISDN numbering plan for land mobile stations".

[70]   ITU-T Recommendation E.214: "Structuring of the land mobile global title for the signalling connection control part".

[71]   CCITT Recommendation Q.699: "Interworking between the Digital Subscriber Signalling System Layer 3 protocol and the Signalling System No.7 ISDN User part".

[72]   ITU-T Recommendation Q.711: "Specifications of Signalling System No.7; Functional description of the Signalling Connection Control Part".

[73]   ITU-T Recommendation Q.712: "Definition and function of SCCP messages".

[74]   ITU-T Recommendation Q.713: "Specifications of Signalling System No.7; SCCP formats and codes".

[75]   ITU-T Recommendation Q.714: "Specifications of Signalling System No.7; Signalling Connection Control Part procedures".

[76]   ITU-T Recommendation Q.716: "Specifications of Signalling System No.7; Signalling connection control part (SCCP) performances".

[77]   ITU-T Recommendation Q.721 (1988): "Specifications of Signalling System No.7; Functional description of the Signalling System No.7 Telephone user part".

[78]   ITU-T Recommendation Q.722 (1988): "Specifications of Signalling System No.7; General function of Telephone messages and signals".

[79]   ITU-T Recommendation Q.723 (1988): "Specifications of Signalling System No.7; Formats and codes".

[80]   ITU-T Recommendation Q.724 (1988): "Specifications of Signalling System No.7; Signalling procedures".

[81]   ITU-T Recommendation Q.725 (1988): "Specifications of Signalling System No.7; Signalling performance in the telephone application".

[82]   ITU-T Recommendation Q.761 (1988): "Specifications of Signalling System No.7; Functional description of the ISDN user part of Signalling System No.7".

[83]   ITU-T Recommendation Q.762 (1988): "Specifications of Signalling System No.7; General function of messages and signals".

[84]   ITU-T Recommendation Q.763 (1988): "Specifications of Signalling System No.7; Formats and codes".

[85]   ITU-T Recommendation Q.764 (1988): "Specifications of Signalling System No.7; Signalling procedures".

[86]   ITU-T Recommendation Q.767: "Specifications of Signalling System No.7; Application of the ISDN user part of CCITT signalling System No.7 for international ISDN interconnections".

[87]   ITU-T Recommendation Q.771: "Specifications of Signalling System No.7; Functional description of transaction capabilities".

[88]   ITU-T Recommendation Q.772: "Specifications of Signalling System No.7; Transaction capabilities information element definitions".

[89]   ITU-T Recommendation Q.773: "Specifications of Signalling System No.7; Transaction capabilities formats and encoding".

[90]   ITU-T Recommendation Q.774: "Specifications of Signalling System No.7; Transaction capabilities procedures".

[91]   ITU-T Recommendation Q.775: "Specifications of Signalling System No.7; Guide-lines for using transaction capabilities".

[92]   ITU-T Recommendation X.200: "Reference Model of Open systems interconnection for CCITT Applications".

[93]   ITU-T Recommendation X.208 (1988): "Specification of Abstract Syntax Notation One (ASN.1)".

[94]   ITU-T Recommendation X.209 (1988): "Specification of basic encoding rules for Abstract Syntax Notation One (ASN.1)".

[95]   ITU-T Recommendation X.210: "Open systems interconnection layer service definition conventions".

[97]   3G TS 23.018: "Basic Call Handling".

[98]   3G TS 23.078: "Customised Applications for Mobile network Enhanced Logic (CAMEL) Phase 3 - Stage 2".

[99]   3G TS 23.079: "Support of Optimal Routeing (SOR) - Stage 2".

[100]   GSM 03.68: "Digital cellular telecommunications system (Phase 2+); - Stage 2".

[101]   GSM 03.69: "Digital cellular telecommunications system (Phase 2+); - Stage 2".

[102]   ANSI T1.113: "Signaling System No. 7 (SS7) - ISDN User Part".

[103]   3G TS 23.054 "Shared Inter Working Function (SIWF) - Stage 2".

[104]   3G TS 23.060: "General Packet Radio Service (GPRS) Description; Stage 2".

[105]   3G TS 29.060: "General Packet Radio Service (GPRS); GPRS Tunnelling Protocol (GTP) across the Gn and Gp Interface".

[106]   3G TS 29.018: "General Packet Radio Service (GPRS); Serving GPRS Support Node (SGSN) - Visitors Location Register (VLR); Gs interface layer 3 specification".

[107]   3G TS 23.093: "Technical Realization of Completion of Calls to Busy Subscriber (CCBS); Stage 2".

[108]   3G TS 23.066: "Support of Mobile Number Portability (MNP); Technical Realisation Stage 2".

[109]   ANSI T1.112 (1996): "Telecommunication – Signalling No. 7 - Signaling Connection Control Part (SCCP)".

[110]   3G TS 23.116: "Super-Charger Technical Realisation; Stage 2."

[111]   ITU-T Recommendation Q.711: "Specifications of Signalling System No.7; Signalling System No. 7 – Functional Description of the Signalling Connection Control Part".

[112]   ITU-T Recommendation Q.712: "Specifications of Signalling System No.7; Signalling System No. 7 – Definition and Function of SCCP Messages".

[113]   ITU-T Recommendation Q.713: "Specifications of Signalling System No.7; Signalling System No. 7 – SCCP formats and codes".

[114]   ITU-T Recommendation Q.714: "Specifications of Signalling System No.7; Signalling System No. 7 – Signalling Connection Control Part Procedures".

[115]   ITU-T Recommendation Q.716: "Specifications of Signalling System No.7; Signalling System No. 7 – Signalling Connection Control Part (SCCP) Performance".

[116]   ITU-T Q.850, May 1998: "Usage of cause and location in the Digital Subscriber Signalling System No. 1 and the Signalling System No. 7 ISDN User Part".

[117]   3G TS 22.135: "Multicall; Service description; Stage 1".

[118]   3G TS 23.135: "Multicall supplementary service; Stage 2".

[119]   3G TS 24.135: "Multicall supplementary service; Stage 3".

[120]   3G TS 25.413: "UTRAN Iu Interface RANAP Signalling".

[121]   3G TS 29.202: "SS7 signalling transport in core network"

Next Modified Section

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6   Requirements concerning the use of SCCP and TC

6.1   Use of SCCP

The Mobile Application Part (MAP) makes use of the services offered by the Signalling Connection Control Part (SCCP).

MAP supports the following SCCP versions:

- Signalling Connection Control Part, Signalling System no. 7 CCITT ('Blue Book SCCP');

- Signalling Connection Control Part, Signalling System no. 7 ITU-T Recommendation (07/96) Q.711 to Q.716 ('White Book SCCP'). Support of White Book SCCP at the receiving side shall be mandated from 00:01hrs, 1st July 2002(UTC). However, for signalling over the MAP E-interface to support inter-MSC handover/relocation, the support of White Book SCCP shall be mandated with immediate effect.

A White Book SCCP message will fail if any signalling point used in the transfer of the message does not support White Book SCCP. Therefore it is recommended that the originator of the White Book SCCP message supports a drop back mechanism or route capability determination mechanism to interwork with signalling points that are beyond the control of GSM/UMTS network operators.

In North America (World Zone 1) the national version of SCCP is used as specified in ANSI T1.112. Interworking between a PLMN in North America and a PLMN outside North America will involve an STP to translate between ANSI SCCP and ITU-T/CCITT SCCP.

The SCCP is identified as an MTP3-user and the transport of SCCP messages between two entities shall be accomplished according to the 3GPP TS 29.202 [121].

Next Modified Section

6.2   Use of TC

The Mobile Application part makes use of the services offered by the Transaction Capabilities (TC) of Signalling System No. 7. ETS 300 287, which is based on CCITT White Book Recommendations Q.771 to Q.775, should be consulted for the full specification of TC.

The MAP uses all the services provided by TC except the ones related to the unstructured dialogue facility.

From a modelling perspective, the MAP is viewed as a single Application Service Element. Further structuring of it is for further study.

Transaction Capabilities refers to a protocol structure above the network layer interface (i.e., the SCCP service interface) up to the application layer including common application service elements but not the specific application service elements using them.

TC is structured as a Component sub-layer above a Transaction sub-layer.

The Component sub-layer provides two types of application services: services for the control of end-to-end dialogues and services for Remote Operation handling. These services are accessed using the TC-Dialogue handling primitives and TC-Component handling primitives respectively.

Services for dialogue control include the ability to exchange information related to application-context negotiation as well as initialisation data.

Services for Remote Operation handling provide for the exchange of protocol data units invoking tasks (operations), and reporting their outcomes (results or errors) plus any non-application-specific protocol errors detected by the component sub-layer. The reporting of application-specific protocol errors by the TC user, as distinct from application process errors, is also provided. The Transaction sub-layer provides a simple end-to-end connection association service over which several related protocol data units (i.e. built by the Component Sub-Layer) can be exchanged. A Transaction termination can be prearranged (no indication provided to the TC user) or basic (indication provided).
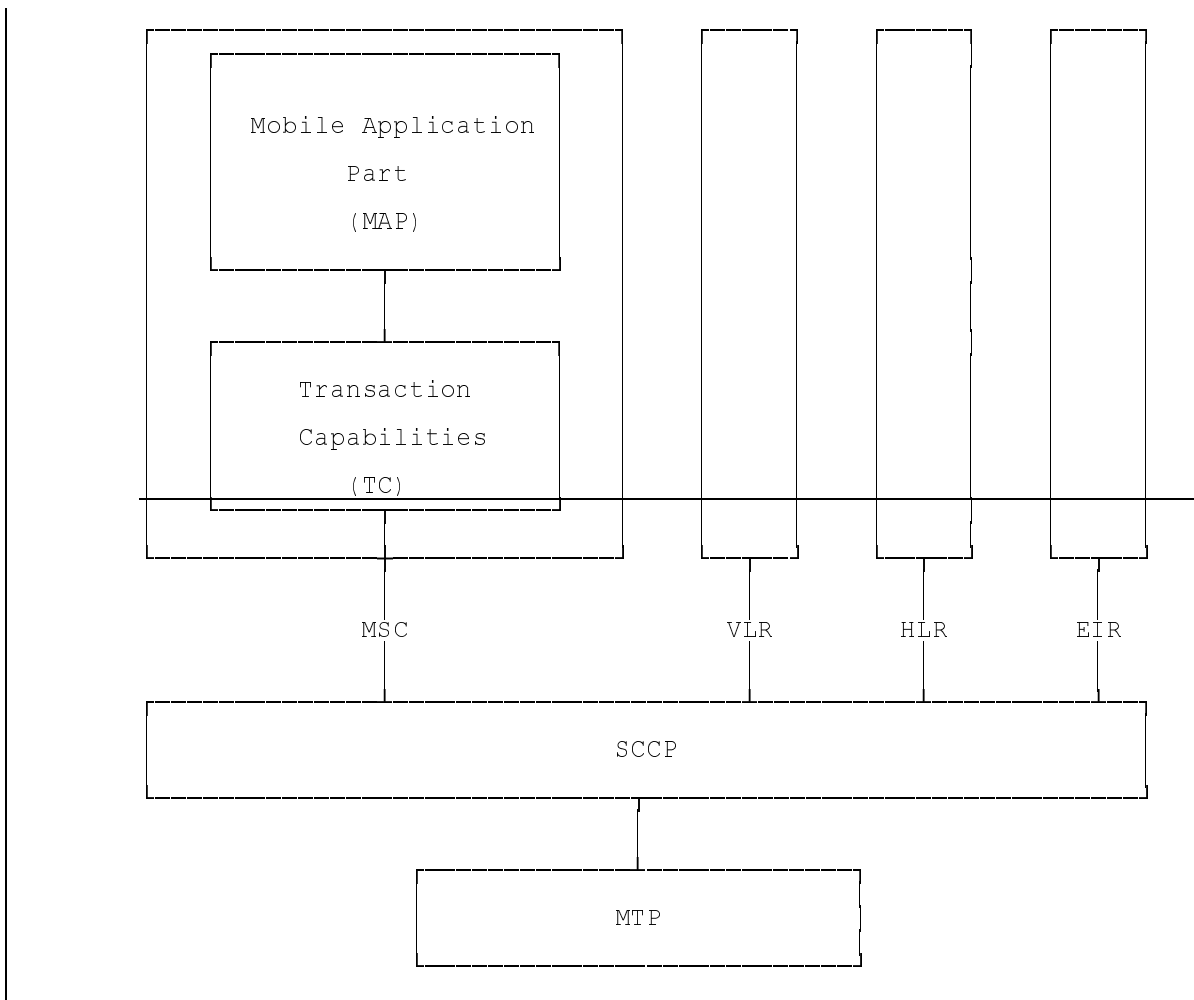

Figure 6.2/1: Facilities for supporting the Mobile Application Part in Signalling System No.7