Source:	**TSG RAN Vice-Chairman**
Title:	**Draft Report of 3GPP2 workshop on Hooks and Extension**
Document for:	**Information**
Agenda Item:	**6**

REGISTRANT	COMPANY	CITY/STATE	EMAIL ADDRESS	TELEPHONE	FAX
ANDERSEN Niels	Motorola	DENMARK	npa001@email.,mot.com	45 43 48 81 10	45 43 48 82 76
BARAN Krzysztof	PTK Centertel	POLAND	kris.tech@centertel.pl	48 22 634-2941	48 22 634-2900
BARBER Clifton	Oki Telecom	Suwanee GA	cbarber@okitele.com	1-678-482-2669	1-678-482-9946
BIENIEK Piotr	PTK Centertel	POLAND	kris.tech@centertel.pl	48 22 634-2949	48 22 634-2900
BLUST Stephen	BSCC	Atlanta GA	Stephen_Blust@bscc.bls.com	1-404-249-5058	1-404-249-5157
BOLOURCHI Nader	Motorola	Piscataway NJ	Nader.Bolourchi@motorola.com	1-732-878-8483	1-732-878-8616
BOWENS Carolyn	TIA	Arlington VA	cbowens@tia.eia.org	1-703-907-7726	1-703-907-7727
BROWN Phil	Ericsson	Bloomington IL	phil.brown@cisr.com	1-309-830-0376	
CHANG Kim	Nortel Networks	Richardson TX	kimchang@nortelnetworks.com	1-972-684-1346	1-972-684-3775
CHANDER Sharat	Lucent	Naperville IL	sharat@lucent.com	1-630-713-1438	1-630-713-1921
CHU Tony	Siemens	Boca Raton FL	tony.chu@icn.siemens.com	1-561-955-6551	1-561-955-8599
COURAU Francois	Alcatel	FRANCE	francois.courau@alcatel.fr	33-0608 82 20 22	33-30 77 94 30
DeCLERCK Dan	Motorola	Arlington Heights IL	QA0150@email.mot.com	1-847-632-4596	
DENNETT Steven	Motorola	Libertyville IL	QA1404@email.mot.com	1-847-523-6868	1-847-523-0375
DETTNER Harald	Siemens	GERMANY	harald.dettner@icn.siemens.de	49 6621 169-169	49 6621 169-122
DOLAN Mike	Lucent	Naperville IL	mfdolan@lucent.com	1-630-979-1033	1-630-713-1921
EPSTEIN Mark	Qualcomm	Potomac MD	mepstein@qualcomm.com	1-301-365-6963	1-301-469-9063
FAUCONNIER Denis	Nortel Networks	FRANCE	dfauconn@nortelnetworks.com	331-39-44 43 32	331-
FAVICHIA Frank	Lucent	Whippany NJ	f2@lucent.com	1-973-386-7326	1-973-386-4147
FLYNN Gerry	Bell Atlantic Mobile	Bedminster NJ	flynnge@bam.com	1-908-306-4154	1-908-306-7731
FRANK Mark	Tektronix	Beaverton OR	mark.s.frank@tek.com	1-503-627-5131	1-503-627-4144
FRERKING Mel	BSCC	Atlanta GA	Mel_Frerking@bscc.bls.com	1-404-249-4566	1-404-249-5157

FRY George	Nokia Research	Irving TX	george.fry@nokia.com	1-972-894-4405	1-972-894-4589
FURUYA Yukitsuna	NEC	JAPAN	furuya@pccrd.fc.nec.co.jp	81-42-333-1061	81-42-333-1083
GARG Hari	Philips Consumer	Fremont CA	hari.garg@philips.com	1-510-445-5558	1-510-445-5600
GHANDOUR Pierre	Think One	Brisbane CA	pierre.ghandour@thinkone.com	1-650-875-1527	1-650-875-1505
GOGIC Aleksandar	AirTouch Cellular	Walnut Creek CA	Alex.Gogic@AirTouch.com	1-925-279-6520	1-925-279-6419
GRILLI Francesco	Qualcomm	San Diego CA	fgrilli@qualcomm.com	1-858-845-3742	1-858-658-2113
GUDMUNDSON Mikael	Ericsson	SWEDEN	mikael.gudmundson@era.ericsson.se	46 8 404-2583	46 8 757-5720
GUENTHER Roger	Lucent	Whippany NJ	rdguenther@lucent.com	1-973-739-4459	1-973-386-4555
GUTIERREZ Alberto	Nortel Networks	Richardson TX	algutier@nortelnetworks.com	1-972-685-5586	1-972-684-3775
HAMDY Walid	Qualcomm	San Diego CA	whamdy@qualcomm.com	1-858-658-4362	1-858-658-2113
HAYES Stephen	Ericsson	Richardson TX	stephen.hayes@ericsson.com	1-972-583-5773	1-801-409-6319
HOSFORD Mark					
HUANG Chenhong	Nortel Networks	Richardson TX	chuang@nortelnetworks.com	1-972-684-5569	1-972-684-3775
INKIELMAN Dorota	Centertel	POLAND	Dorota.Inkielman@centertel.pl		
ISHIDA Yoshihide	NTT America	New York NY	y.ishida@ntta.com	1-212-808-2211	1-212-661-1078
JEONG TaekSeob	Korea Telecom Freetel	KOREA	tsjung@mail.n016.co.kr	82 344 909-0610	82 344 909-0661
JIANG James	Nortel Networks	Richardson TX	jjiang@nortelnetworks.com	1-972-684-5885	1-972-684-3775
JOHNSON GARY	Hewlett-Packard	Liberty Lake WA	garyjohn@spk.hp.com	1-509-921-3324	1-509-921-3991
JONES Gary	Omnipoint Cororation	Bethesda MD	gjones@omnipoint-corp.com	1-301-951-2524	1-301-951-2580
KAWAMURA Masashi	DDI Corporation	JAPAN	kawamura@ddi.co.jp	813-3221-9682	81 3 3221-9694
KIDA Shigeru	DDI Corporation	JAPAN	kida@ddi.co.jp	813-3221-9682	81 3 3221-9694
KIM Hak Rim	Hansol PCS	KOREA	hrkimm@ms.hansol.col.kr	82-2-3488-0616	82-2-3488-0727
KIM Joseph	ETRI	KOREA	jkkim@mail.etri.re.kr	1-82-42-860-6527	1-82-42-860-5119
KIM Ook	SK Telecom	Redwood City CA	okim@sktelecom.com	1-650-568-5762	1-650-568-5760

Name	Company	Location	Email	Phone	Fax
KIM TaeHo	Korea Telecom Freetel	KOREA	thkim@mail.n016.co.kr	82 2 2016-1060	82 2 2016-1068
KIM Youn-Kwan	LG Telecom	San Diego CA	ykkim@lginfocomm.com	1-619-871-8894	1-619-350-8894
KISS Laszlo	Westel	HUNGARY	kissl@mail.matav.hu	36 1 265 8686	36 1 265 8638
KOO Junmo	SK Telecom	Redwood City CA	jmkoo@sktelecom.com	1-650-568-5762	1-650-568-5760
KRIPALANI Vera	Qualcomm	San Diego CA	verak@qualcomm.com	1-858-658-4212	1-858-658-2880
KRISTER Raith	Ericsson	RTP NC	krister.raith@ericsson.com	1-919-472-7171	1-919-472-7467
LEE Hee Joung	LGIC Ltd.	San Diego CA	hjlee@lginfocomm.com	1-858-635-5350	1-858-635-5399
LEE Sang Yun	SK Telecom	KOREA	ysl@sktelecom.com	1-82-342-710-512	1-82-342-710-517
LEE Woo Hyeon	Samsung Electronics Co	KOREA	woojaa@telecom.samsung.co.kr	82 342 779-6613	82 342 779-6699
LEROUDIER Frederic	Sprint PCS	Overland Park KS	Flerou01@sprintspectrum.com	1-913-664-8350	1-913-664-8440
LUKANDER Pertti	Nokia	FINLAND	pertti.lukander@nokia.com	3589-5113-8444	3589-5113-8452
MASEK Vladimer	Eurotel	CZECH REPUBLIC	vladimir_masek@eurotel.cz	420 2 6701-2856	420 2 6701-6323
McCONOUGHEY S	Panasonic	Gaithersburg MD	mccon@compuserve.com	1-301-926-2837	1-301-926-2506
MO Samuel	Panasonic	Princeton NJ	smo@research.panasonic.com	1-609-734-7592	1-609-987-0201
MOHAMMED Furquan	MediaOne International	RUSSIA	furquan.mohammed@rtdmc.com.ru	7 95 245-5900	7 95 245-5910
MOOHO Cho	ETRI	KOREA	mhcho@etri.re.kr	82 42 860-5624	82 42 860-6500
NAKADA Yoshinao	Lucent	JAPAN	ynakada@lucent.com	81 3 5561-5845	81 3 5561-9011
NIAZ H. Syed	Motorola	Arlington Heights IL	Syed_Niaz-qa4327@email.mot.com	1-847-632-6474	1-847-632-6999
NABILSI Muna	Ameritech	Hoffman Estates IL	mnabilsi@ameritechcell.com	1-847-765-5882	1-847-765-3709
NILSSON Mats	Ericsson	SWEDEN	mats.nilsson@lme.ericsson.se	46 8 757 0602	46 8 751 23 09
O'BRIEN Fran	Lucent	Whippany NJ	feobrien@lucent.com	1-973-386-3352	(973) 386-4555
OKASAKA Sadaatsu	Hitachi, Ltd.	JAPAN	sadaatsu_okasaka@cm.tcd.hitachi.co.jp	81 45 865-7120	81 45 865-7122
OKINAKA Hideo					
ONOE Seizo	NTT DoCoMo	JAPAN	onoe@wsp.yrp.nttdocomo.co.jp	81 468 40-3191	81 468 40-3840

06/10/1999

ORNELAS Ed	TIA	Arlington VA	eornelas@tia.eia.org	1-703-907-7420	1-703-907-7476
PANDEY Vinod	Siemens USA	Boca Raton FL	vinod.pandey@icn.siemens.com	1-561-955-6125	1-561-955-8599
PARK Jaehong	Hyundai Electronics	KOREA	parkjh@hei.co.kr	82 2 580-5395	82 2 580-5399
PARK Seong-Soo	ETRI	KOREA	sspark70@etri.re.kr	82 42 860-1235	82 42 860-6789
PARK Seungwook	Hyundai Electronics	KOREA	supark@hei.co.kr	82 2 580-5395	82 2 580-5399
PATEL Girish	Nortel Networks	Richardson TX	grpatel@nortelnetworks.com	1-972-684-2491	1-972-658-3574
PITTAMPALLI Eshwar	Lucent	Whippany NJ	pittampalli@lucent.com	1-973-386-2908	1-973-386-4555
PLUNKETT Bob	Fujitsu Ltd.	Richardson TX	Bob.Plunkett@fnc.fujitsu.com	1-972-479-2084	1-972-479-6973
PRASAD Mohit	Sony Corporation	San Diego CA	mohit.prasad@am.sony.com	1-858-942-4858	1-858-676-3748
PROCHASKA Dean	Sprint PCS	Overland Park KS	dproch01@sprintspectrum.com	1-913-664-8301	1-913-664-8440
RAO Y.S.	Qualcomm	San Diego CA	ysrao@qualcomm.com	1-858-658-3654	1-858-658-2115
RINNE Mikko					
ROBINSON Richard	Sprint PCS	Overland Park KS	Rrobin01@sprintspectrum.com	1-913-664-8321	1-913-664-8440
RYOO Changho	Ericsson Korea	KOREA	changho.ryoo@ekk.ericsson.se	82 2 397-2783	82 2 720-1647
SAITO Hidetoshi	ARIB	JAPAN	h-saito@arib.or.jp	81 3 5510 8594	81 3 3592 -1103
SAKI Seiichiro	KDD Corp.	JAPAN	se_sakai@kdd.co.jp	81 3 3347-6110	81 3 3347-6306
SAMRA Sam	CDG	Lenexa KS	ssamra@cdg.org	1-913-397-0744	1-913-390-5788
SASAKI Akio	ARIB	JAPAN	sasaki@arib.or.jp	81 3 5510 8594	81 3 3592-1103
SHAH Bharat	Qualcomm	San Diego CA	bharats@qualcomm.com	1-858-845-5547	1-858-658-2115
SHEN Rick	Qualcomm	San Diego CA	rshen@qualcomm.com	1-858-651-4709	1-858-658-2115
SHIROTA Masakazu	DDI Corporation	JAPAN	shirota@ddi.co.jp	81 3 3221-9682	81 3 3221-9694
STONE Timothy	Motorola	Arlington Heights IL	atsoos@email.mot.com	1-847-632-2818	1-847-435-2352
SURYA Gopal	ALCATEL USA	Raleigh NC	gopal.surya@usa.alcatel.com	1-919-850-5264	1-919-850-5305
TAKENAKA Sadao	Fujitsu Ltd.	JAPAN	takenaka@mcws.ts.fujitsu.co.jp	81 44 740 8107	81 44 740-8180

THOMAS Steve	AirTouch Cellular	Walnut Creek CA	steve.thomas@airtouch.com	1-925-279-6013	1-925-279-6419
TIEDEMANN Ed	Qualcomm	San Diego CA	etiedemann@qualcomm.com	1-858-658-4438	1-858-658-2113
TSENG Mitch	Nokia Inc.	Irving TX	mitch.tseng@nokia.com	1-972-894-6888	1-972-894-5525
VAKULENKO Michael	Qualcomm	ISRAEL	michaelv@qualcomm.com	972 4 850-6640	972 4 850-6510
VALTER Ferenc	Westel	HUNGARY	valterf@mail.matav.hu	36 30 984 1898	36 30 988 9586
VINODRAI C.	Bell Mobility	CANADA	cvinodr@mobility.com	1-905-282-3302	1-905-282-3337
WANG Jun	Qualcomm	San Diego CA	jwang@qualcomm.com	1-858-658-4884	1-858-845-7269
WATANABE Kunio	Fujitsu Ltd.	JAPAN	watanabe@mcws.ts.fujitsu.co.jp	81 44 754 3850	81 44 754-3880
WEE Kyu-Jin	RRL/MIC	Seoul KOREA	kjwee@cc.rrl.go.kr	82 2 710 6460	82 2 710 6449
WILLEY Dan	Motorola	Arlington Heights IL	QA1364@email.mot.com	1-847-632-3415	1-847-632-2900
YANG James	Philips	Sunnyvale CA	james.yang@sv.sc.philips.com	1-408-991-4092	1-408-991-4559
YEGANI Parviz	Ericsson	San Diego CA	pyegani@sd.us.am.ericsson.se	1-858-332-6017	1-858-332-7244
YONG Chang	Samsung	KOREA	yong@metro.telecom.samsung.co.kr	82-342-779-6822	82-342-779-6699
YUN ChanHo	Korea Telecom Freetel	KOREA	chyun@mail.n016.co.kr	82-2-2016-1083	82-2-2016-1078
ZHIQIN Wang	MII	CHINA	wangzq@bupt.edu.cn	46010-68094407	46010-68034801
ZHOU Frank	Motorola	Arlington Heights IL	QA6262@email.mot.com	1-847-435-2645	1-847-632-6999

06/10/1999

SIGNATURE

9

77

)

Title:

3GPP2 WORKSHOP ON HOOKS AND EXTENSIONS (WHE2)
MEETING SUMMARY

Source:

Clifton J. Barber

WHE2 SECRETARY

Oki Telecom, Inc.   70 Crestridge Drive Suite 150   Suwanee, Georgia 30024
(678) 482-2669   Fax (678) 482-9946   cbarber@okitele.com

Abstract:

This document summarizes the discussions and activities of the 3GPP2 workshop on hooks and extensions for compliance with the OHG Requirements.

Recommendation:

FYI

Notice:

During the period of 9/09-10/98 through 9/18/98, the second workshop on hooks and extensions (WHE2) was held at the Embassy Suites Hotel in El Segundo, CA. This report is intended to summarize the proceedings. Approximately 115 persons were in attendance.

EXECUTIVE SUMMARY

- "MC-MAP Network and Protocol Architecture" (WHE2-99-027R1) was accepted as a working assumption for the network architecture of the MC-MAP system.

- "Requirements for Interoperability Between Multi-Carrier CDMA and GSM MAP" (WHE2-99-026R1) was accepted as a working assumption for the requirements of the MC-MAP system.

  With regards to a requirement stated in WHE2-99-003 that "MC MAP signaling should not preclude support of CDMA MC-41 native mode mobiles in the same radio access network", QUALCOMM will prepare a white paper clarifying this issue. This document will be posted on the G3G AdHoc website for review by operators.

- "Support of GSM-MAP Services utilizing MC CDMA-2000 Air Interface" (WHE2-99025R2) was accepted as working assumptions for the support of GSM-MAP services of the MC-MAP system.

- The meeting summary from the first workshop (Sophia Antipolis, 8/24-26/99) (WHE2-99-028) was presented by Francois Courau (Alcatel) as FYI. This report had been previously reviewed by G3G AdHoc and all their comments had been incorporated and the document was accepted as the official summary of that workshop.

- A contribution on "DS-41 Issues Identified in the UTRA Workshop" from the 3GPP2 G3G AdHoc (WHE2-99-015) was presented by WHE2 Chair, Alberto Gutierrez (Nortel Networks). This document summarized the 3GPP2 action items and issues for further investigation from that workshop.

- To date, only 1-2 hooks have been identified (12/99 release) with a multitude of extensions (year 2000 release). Both 3GPP and 3GPP2 will require direct liaisons and continued aggressive cooperation to meet the schedule objectives.

- Regarding on-going management of the DS-41 and MC-MAP standard development activities, Francois Courau (Alcatel) will serve as the primary contact for any schedule issues related to 3GPP harmonization activities and Alberto Gutierrez (Nortel Networks) will serve as the primary contact for 3GPP2 harmonization efforts.

REPORT DETAIL

- The meeting was called to order by 3GPP2 Chair, Steve Dennett (Motorola), at 8:40 AM on 9/09/99. Steve welcomed the group to the workshop and thanked them for their participation, welcomed special guests including 3GPP members and WHE1 (the first workshop for hooks and extensions which was sponsored by ETSI and held in Sophia Antipolis last month) leaders. Steve also reviewed the basic logistics for the overall workshop activities.

- WHE2 Co-Chair, Gerry Flynn (BAM), and TIA Secretariat, Ed Ornelas (TIA), also reviewed logistic details related t the conduct of the meeting.

- WHE2 Co-Chair, Alberto Gutierrez (Nortel Networks), reviewed the proposed agenda (WHE2-99-001). This agenda was approved without objection as submitted.

- Contributions were distributed electronically and assigned to agenda items. A very small number of contribution sets were also available in hard copy for those users without laptops.

- MC-MAP REQUIREMENTS AND BACKGROUND:
  - A contribution on "Requirements for Interoperability Between Multi-Carrier CDMA and GSM MAP" from the 3GPP2 3G3 AdHoc (WHE2-99-002) was presented by Alex Gogic (Vodophone AirTouch). He highlighted requirement number eight (8) related to tandem free operation (TFO) as a prelude to the development of a global vocoder. He also highlighted requirement number ten (10) related to voice and non-voice service options and negotiations indicated that this requirement would also support a global vocoder.

    There was some discussion on the priority of the global vocoder vs the other vocoders list or not listed in the requirements (i.e., EVRC, AMR). In addition, there was some discussion on whether the services of the core network are to be supported or simply the services of the access network only. The discussion indicated that existing core network functions did need to be supported including AMR in addition to EVRC.

    Regarding requirement number six (6), the requirement was clarified to mean that seamless handoff between MC-MAP and DS-MAP, not between ANSI-41 and GSM-MAP.

    The intent of the contribution was also clarified as a long-term, forward looking view and that some of the requirements may not be mandatory for the first release. The issue of release timing was deferred to agenda item five (5) MC-MAP ISSUES/HOOKS/EXTENSIONS.
  - A contribution on "MC-MAP General Requirements" from the 3GPP2 G3G AdHoc (WHE2-99-003) was presented by Michael Vakulenko (QUALCOMM). This proposal presented a set of five (5) high level objectives and requirements for the MC-MAP system.

This contribution did specify support for existing core network functions. The MC-MAP signaling should be designed in such a way that the infrastructure can recognize the mobile operating mode. In addition, both circuit and packet data modes will be supported (including efficient support of mobile IP and GPRS). The issue of support for mobile IP was deferred to agenda item five (5) MC-MAP ISSUES/HOOKS/EXTENSIONS.

- A contribution on "Newbury GSM-CDMA Trial Report" from QUALCOMM and Vodophone Ltd. (WHE2-99-014) was presented by Ed Tiedemann (QUALCOMM) as FYI.

- A contribution on "NMT Systems and Requirements" from Westel (NMT operator in Hungary) (WHE2-99-023) was presented by Laszlo Kiss (Westel). NMT MoU has formed the Digital Interest Group (DIG) to develop a recommendation for digital NMT service. They are strongly considering CDMA-450 on GSM-MAP and would like for that to be a part of 3GPP2. Although a cdmaOne is being reviewed, MC or DS has not yet been specified.

- MC-MAP REFERENCE ARCHITECTURE:

    - A contribution on MC-MAP Network and Protocol Architecture" from the 3GPP2 G3G AdHoc (WHE2-99-004) was presented by Michael Vakulenko (QUALCOMM). This contribution proposed the radio access network architecture, signaling protocol architecture, and packet data user plan protocols. It also included a proposal to consider inclusion of vocoders in either the radio access network (RAN) or in the core network as well as "dim and burst" signaling using the dedicated control channel when the vocoder is included in the RAN.

        A 3GPP representative advised that the AMR codec is in the core network and that in-band signaling is used to adjust the rate. This in-band signaling could also be used to support "dim and burst" if "dim and burst" is actually required. The goal of comparability with the Iu interface of the GSM-MAP core network was also reiterated. Discussion of this issue was deferred to agenda item five (5) MC-MAP ISSUES/HOOKS/EXTENSIONS.

- MC-MAP SERVICE SUPPORT

    - A contribution on "Support of GSM-MAP Services utilizing MC CDMA-2000 Air Interface" from the 3GPP2 G3G AdHoc (WHE2-99-005) was presented by Frank Favichia (Lucent). This contribution presented recommendations on GSM-MAP as well as identification of issues that require further evaluation and discussion. The analysis included consideration of both Generic Procedures Supporting MAP Based CC/MM Signaling as well as detailed Protocol Requirements.

        There was some concern expressed by the participants that the document assumed changes to GSM-MAP which would impact the OHG strategy of modified signaling layers in the air interface to require minimal or no changes to the core network. A 3GPP2 G3G AdHoc representative indicated that they intended that all changes would indeed be in air interface signaling layers and did not intend to violate the OHG strategy. Restructuring of some of the tables was recommended for clarification.

Several additional editorial changes and other areas requiring clarification were identified but detailed discussions were deferred to agenda item five (5) MC-MAP ISSUES/HOOKS/EXTENSIONS.

- MC-MAP ISSUES/HOOKS/EXTENSIONS
  - A contribution on "MC/MAP Call Flow Examples" from the 3GPP2 G3G AdHoc (WHE2-99-006) was presented by Mike Dolan (Lucent). This contribution indicated that a selection is required (as identified in the contribution on "Support of GSM-MAP Services utilizing MC CDMA-2000 Air Interface" from the 3GPP2 G3G AdHoc (WHE2-99-005)) for use of either existing IS-2000 messaging response (alternative 1) or use of RRC dedicated channel for encapsulation of data and to set up the RRC link (alternative 2). This selection is the responsibility of 3GPP2 TSG-C. The call flow contribution (WHE2-99-006) assumed alternative 2 for the purpose of illustration only of the call flows and proposed associated recommendations for that implementation. Five (5) IS-2000 extensions and no hooks were recommended.

    Issues that need to be evaluated by 3GPP2, in addition to the issues identified in the contribution, include the mapping of access bearers to GSM-MAP radio bearers and the simulation of the two (2) step mapping process in GSM-MAP. 3GPP needs to provide information on common channel messaging to 3GPP2 TSG-C. Additional assistance from 3GPP experts will be solicited as required.

  - A contribution on "MC/MAP GPRS Packet Data Scenarios" from the 3GPP2 G3G AdHoc (WHE2-99-007) was presented by Mike Dolan (Lucent). This contribution provides a set of scenarios to show the interactions of the various network components of an MC/MAP system in support of GPRS packet data services. This contribution demonstrates that a new GSM-L3 message in IS-2000 can be used to carry encapsulated GMM and SM messages in an MC/MAP system supporting GPRS. No hooks and three (3) extensions were identified. In addition, 3GPP2 TSG-C needs to evaluate and resolve issues related to determine which channels (common or dedicated) are used for specific UTMS upper layer functions and to determine the tradeoffs between using a data burst messages in place of GMS-L3 messages.

  - A contribution on "MC-MAP Functional Requirements" from the 3GPP2 G3G AdHoc (WHE2-99-008) was presented by Michael Vakulenko, QUALCOMM. This contribution proposes a set of functional requirements for the MC- MAP mode of operation of the harmonized CDMA MC standard, as required by the OHG Agreement. It identified no hooks and several extensions/issues for further study for the air interface (physical, MAC, LAC, and RRC), handoff mechanisms, security aspects, and user plane issues. A presentation version of this contribution was distributed as WHE2-99-008-1.

  - A contribution on "G3G Support and Concurrent Services in cdma2000 Release A" from the QUALCOMM (WHE2-99-009) was presented by Francesco Grilli, QUALCOMM. The contribution proposes a phased approach including separation of call control functions from the rest of cdma2000 layer 3, support of multiple call models in cdma2000, and support of concurrent services in cdma2000. A presentation version of this contribution was distributed as WHE2-99-009-1.

An extension to IS-2000 for a core network identifier needs to be investigated by 3GPP2. In the 3GPP first release, initial messages are limited to 21 octets. All other messages are sent on the common channel. 3GPP must provide detailed information to 3GPP2.

At this point in the meeting, based on the meeting progress at that time, the meeting Co-Chairs formed two (2) experts focus groups as indicated below:

- EXPERT FOCUS GROUP A: Assigned to review contribution inputs and incorporate all required changes to the "Support of GSM-MAP Services utilizing MC CDMA-2000 Air Interface" contribution (WHE2-99-005). Organization and structure of that contribution should also be reviewed in light of the earlier discussions on this subject. In addition, assignment of responsibility for each issue, hook, and extension should also be completed. The group was tasked with providing an updated contribution to the WHE2 participants at the opening of the next day session for final review with the group.

- EXPERT FOCUS GROUP B: Assigned to clarify all issues related to MC-MAP general requirements and reference architecture. The group was tasked with providing updated contributions to the WHE2 participants at the opening of the next day session for final review with the group.

The Co-Chairs then recessed the general WHE2 meeting at 3:40 PM local time to allow time for the Expert Focus Groups to complete their tasks.

The meeting was reconvened on 9/10/99 at 9:00 AM local time.

- MC-MAP ISSUES/HOOKS/EXTENSIONS (continued):
  - One (1) output of EXPERT FOCUS GROUP B was presented as a contribution entitled "MC-MAP Network and Protocol Architecture" (WHE2-99-027 - an upgrade revision to WHE2-99-004) by Michael Vakulenko, QUALCOMM. The changes were reviewed in detail including the following modifications:
    - Addition of session management to include packet data
    - Classification of Figure 3 as an exemplary reference since it is not necessary
    - Clarification of vocoder location architectural concerns other than the actual location issues which was indicated as a reference architecture issue

    With minor editorial changes, the revised document (WHE2-99-027R1) was accepted as a working assumption for the network architecture of the MC-MAP system and will be included as an output of the workshop as a part of the meeting report.
  - The other output of EXPERT FOCUS GROUP B was presented as a contribution entitled "Requirements for Interoperability Between Multi-Carrier CDMA and GSM MAP" (WHE2-99-026 - upgraded from WHE2-99-002 and WHE2-99-003) by Alex Gogic (Vodophone AirTouch). This document defined the following requirements:
    - BASIC
    - EXTENDED
    - EVOLUTIONARY

Additional changes were implemented by the review discussion and the updated document (WHE2-99-026R1) was accepted as a working assumption for the requirements of the MC-MAP system and will be included as an output of the workshop as a part of the meeting report.

With regards to a requirement stated in WHE2-99-003 that "MC MAP signaling should not preclude support of CDMA MC-41 native mode mobiles in the same radio access network", QUALCOMM will prepare a white paper clarifying this issue. This document will be posted on the G3G AdHoc website for review by operators.

- The output of EXPERT FOCUS GROUP A was presented as a contribution entitled "Support of GSM-MAP Services utilizing MC CDMA-2000 Air Interface – rev 1" (WHE2-99-025 - upgraded from WHE2-99-005) by Mike Dolan (Lucent). The changes included the following:

  - Reorganization of document and deletion of irrelevant, unnecessary, or no longer needed procedures and service table entries.

  - Addition of RRC connection setup description.

  - Changed title of Section 2.1 from "Design Assumptions" to "Work Items and Issues". This section details specific action items and issues of concern with recommended action party. All items related to potential modifications to the air interface and only timers/state machines are still being reviewed in the core network. The 3GPP2 G3G AdHoc will be responsible for managing 3GPP2 action items and facilitating support of other 3GPP2 groups as appropriate

  - Defined work items and issues related to MC/DS handoff (Section 2.4.1). Specific identification of the group primarily responsible for each line item was added during the discussion as required.

  - Specific identification of the group primarily responsible for each line item in the services and features tables of Section 3 was also added during the discussion as required. These items were defined based on consensus between Mike Dolan (Lucent on behalf of 3GPP2) and Francois Courau (Alcatel on behalf of 3GPP) where the responsibility for any line item was sufficiently clear for such consensus.

  The revised document (WHE2-99-025R2) was accepted as working assumptions for the support of GSM-MAP services of the MC-MAP system and will be included as an output of the workshop as a part of the meeting report.

- DS-41 STATUS

  - The meeting summary from the first workshop (Sophia Antipolis, 8/24-26/99) (WHE2-99-028) was presented by Francois Courau (Alcatel) as FYI. This report had been previously reviewed by G3G AdHoc and all their comments had been incorporated and the document was accepted as the official summary of that workshop.

  - In addition, there has been progress on some of the action items from the first workshop by 3GPP2 G3G AdHoc which is reflected in contributions to be discussed under agenda item seven (7) DS-41 ISSUES.

- DS-41 ISSUES
  - A contribution on "DS-41 Issues Identified in the UTRA Workshop" from the 3GPP2 G3G Ad Hoc (WHE2-99-015) was presented by WHE2 Chair, Alberto Gutierrez (Nortel Networks). This document summarized the action items and issues for further investigation for 3GPP2 from that first workshop. This document will be included with this meeting report and the three (3) defined output documents for delivery to 3GPP2 TSG-C.
  - Regarding on-going management of the DS-41 and MC-MAP standards development activities, Francois Courau (Alcatel) will serve as the primary contact for any schedule issues related to 3GPP harmonization activities and Alberto Gutierrez (Nortel Networks) will serve as the key contact for 3GPP2 harmonization efforts.
    - 3GPP indicates that it plans to review the DS-41 hooks required for the December release at their 10/99 meetings. 3GPP TSG-RAN needs the definition of any additionally required DS-41 hooks from 3GPP2 TSG-C ASAP in order for 3GPP to meet their 10/6-8/99 meetings. 3GPP TSG-SA will include harmonization activities in the 3GPP workplan and coordinate the 3GPP development activities when they meet during the period 10/11-13/99.
    - 3GPP2 indicated that TSG-C meets during the week of 9/13/99 with a 3GPP2 Steering Committee meeting on 9/17/99. 3GPP2 TSG-S will meet during the period 9/20-22/99 in Nara, Japan and must (similar to 3GPP TSG-SA) coordinate activities of the 3GPP2 Workplan.
    - The group was also advised that the next OHG meeting will be held at the end of 9/99.
    - To date in both workshops, only a total of 1-2 hooks have been identified (12/99 release) with a multitude of extensions (year 2000 release).
  - A contribution on "ESN, IMSI, TMSI and cdma2000 Page Records" from the 3GPP2 G3G Ad Hoc (WHE2-99-015) was presented by Ed Tiedemann (QUALCOMM).
    - No real concern over IMSI structure and length (15 digits)
    - TMSI structure and TMSI Zone definitions are proposed.
  - A contribution on "Handover procedure from DS+ANSI-41 to IS-95/MC" from TTA (WHE2-99-018) was presented by Seoon-Soo Park (ETRI). This document proposed a DS-41 to IS-95 MC handoff strategy including a modified handoff message. However, the hard handoff proposal may mandate potential changes to IOS - such changes are contrary to the OHG Requirements. One (1) major issue is the establishment of time reference for handoff from an asynchronous system to a synchronous environment. The contributors were directed to submit this document for review and comment from 3GPP TSG-RAN1 and then 3GPP2 TSG-C. The procedure for a mobile to establish synchronization in an MC system is already a part of IS-2000.

- A contribution on "External Timing Required for cdmaOne Networks" from Motorola (WHE2-99-019) was presented by Dan DeClerck (Motorola). The contributor recommended consideration of alternatives to GPS for system timing. Loran specifically was identified as one (1) alternative. The contributor was directed to submit this to 3GPP TSG-RAN3 for informational purposes.

- A contribution on "Cell Selection, System Selection, and Registration for DS/ANSI-41 systems" from Motorola (WHE2-99-022) was presented by Dan Willey (Motorola). This document proposed specific changes to and potential other changes in IS-2000 messaging to accommodate related DS-41 operations.

  USA requirements for immediate determination (upon registration) of location information for E911 support must also be considered. Requirements must be specified/clarified by 3GPP2 for review by 3GPP TSG-RAN2.

  3GPP2 also needs to confirm support the functionality split between the RR and MM layers as implemented by 3GPP for idle mode procedures.

- A contribution on "DS-to-Analog Handoff" from the 3GPP2 G3G AdHoc (WHE2-99-013) was presented by Alberto Gutierrez (Nortel Networks). The document summarized IS-2000-5 specifications and was presented as FYI.

- A contribution on "Examples of mapping ANSI-41 services onto the 3GPP Radio Bearers" from Ericsson (WHE2-99-024) was presented by Mikael Gundmundson (Ericsson) as FYI. This document indicates no major problems in accomplishing this mapping based only on the preliminary review of this subject. The contributor also recommended that the review mapping ANSI-1 services onto 3GPP radio bearers continue in 3GPP2.

- CONCLUSION AND FINAL WRAP-UP

  - Contributions on "Proposal for Text Submitted to TG 8/1 From 3GPP and 3GPP2" (WHE2-99-020) and on "Clarification of the IMT-2000 CDMA Grouping" (WHE2-99-021), both from OHG members and Omnipoint, were presented by Gary Jones (Omnipoint) as FYI. The contributor advised that, since there have been continuing discussions on this subject, this information was no longer current. Thus the contributions were classified as out of date and were referenced as FYI only.

  - Co-Chair Alberto Gutierrez thanked all of the contributors for their hard work and to the participants for an extremely good workshop.

  - Co-Chair Gerry Flynn also expressed gratitude to Co-Chair Alberto Gutierrez, the participating PP and SDO organizations, and the TIA staff for their support.

The workshop was adjourned at 3:45 PM local time.

A listing of the contributions that were distributed is itemized below:

NUMBER	SUBJECT	SOURCE
WHE2-99-		
000	Document Register	SECRETARIAT
001	Agenda	CHAIR
002	Requirements for Interoperability Between Multi-Carrier CDMA and GSM MAP	3GPP2 G3G Ad Hoc
003	MC-MAP General Requirements	3GPP2 G3G Ad Hoc

004	MC-MAP Network and Protocol Architecture	3GPP2 G3G Ad Hoc
005	Support of GSM-MAP Services utilizing MC CDMA-2000 Air Interface	3GPP2 G3G Ad Hoc
006	MC/MAP Call Flow Examples	3GPP2 G3G Ad Hoc
007	MC/MAP GPRS Packet Data Scenarios	3GPP2 G3G Ad Hoc
008	MC-MAP Functional Requirements	3GPP2 G3G Ad Hoc
009	G3G Support and Concurrent Services in cdma2000 release A	QUALCOMM
010	MC/MAP Cell (Re)Selection	3GPP2 G3G Ad Hoc
011	MC/MAP Handoff	3GPP2 G3G Ad Hoc
012	DS-to-MC and DS-to-Analog Handoffs (Draft)	3GPP2 G3G Ad Hoc
013	DS-to-Analog Handoff	3GPP2 G3G Ad Hoc
014	Newbury GSM-CDMA Trial Report	QUALCOMM and Vodaphone Ltd.
015	DS-41 Issues Identified in UTRA Workshop	3GPP2 G3G Ad Hoc
016	ESN, IMSI, TMSI and cdma2000 Page Records	3GPP2 G3G Ad Hoc
017	Use of Tag field in Sync Channel Message	3GPP2 G3G Ad Hoc
017R1	Use of Tag field in Sync Channel Message Rev 1	3GPP2 G3G Ad Hoc
018	G3G Handover Procedures	ETRI
019	Alternatives to GPS for synchronization and timing references	Motorola
020	Proposal for Text Submitted to TG 8/1 from 3GPP and 3GPP2	OHG and Omnipoint
021	Clarification of the IMT-2000 CDMA Grouping	Omnipoint
022	Cell Selection, System Selection, and Registration for DS/ANSI-41 Systems	Motorola
023	NMT Systems and Requirements	WESTAL
024	Examples of mapping ANSI-41 services onto the 3GPP Radio Bearers	Ericsson
025	Support of GSM-MAP Services utilizing MC CDMA-2000 Air Interface - rev 1	Expert Focus Group A
025R1	Support of GSM-MAP Services utilizing MC CDMA-2000 Air Interface - rev 2	Expert Focus Group A
025R2	Support of GSM-MAP Services utilizing MC CDMA-2000 Air Interface - APPROVED	Expert Focus Group A
026	Requirements for Interoperability Between Multi-Carrier CDMA and GSM MAP - rev draft	Expert Focus Group B
026R1	Requirements for Interoperability Between Multi-Carrier CDMA and GSM MAP - APPROVED	Expert Focus Group B
027	MC-MAP Network and Protocol Architecture - Revision 1 – Draft	Expert Focus Group B
027R1	MC-MAP Network and Protocol Architecture - Revision 2 – APPROVED	Expert Focus Group B
028	Meeting summary of first workshop in Sophia	3GPP

3GPP2 Workshop on 3G Harmonization

TITLE:	**MC-MAP Network and Protocol Architecture**
SOURCE:	3GPP2 Hooks and Extensions Workshop: Requirements and Architecture AdHoc group.
PLACE – DATE:	El Segundo, California – 9-10 September 1999

1

Abstract:

This contribution proposes reference network and protocol architecture for the MC-MAP mode of operation agreed by the joint group of experts during the 3GPP2 Hooks and Extensions Workshop.

2

3

4

5

6

7

8

Contents

1. About This Document

OHG agreement defined framework for interconnection of the three air interface modes to the GSM-MAP and ANSI-41 networks. The OHG agreement suggests that multi-carrier FDD mode will be based on the cdma2000 air interface with hooks and extensions that are required to support cdma2000 on evolved GSM-MAP network (3G). That mode of operation is further called MC-MAP in this document.

This document proposes network and protocol architecture for the MC-MAP mode of the harmonized CDMA MC standard, applicable for the connection to the evolved GSM-MAP network (3G).

2. MC-MAP Network and Protocol Architecture

2.1   Network Architecture

Figure 1 shows the network architecture of the CDMA MC radio access network, which supports connection to the evolved GSM-MAP core network using the Iu-interface being defined in 3GPP.
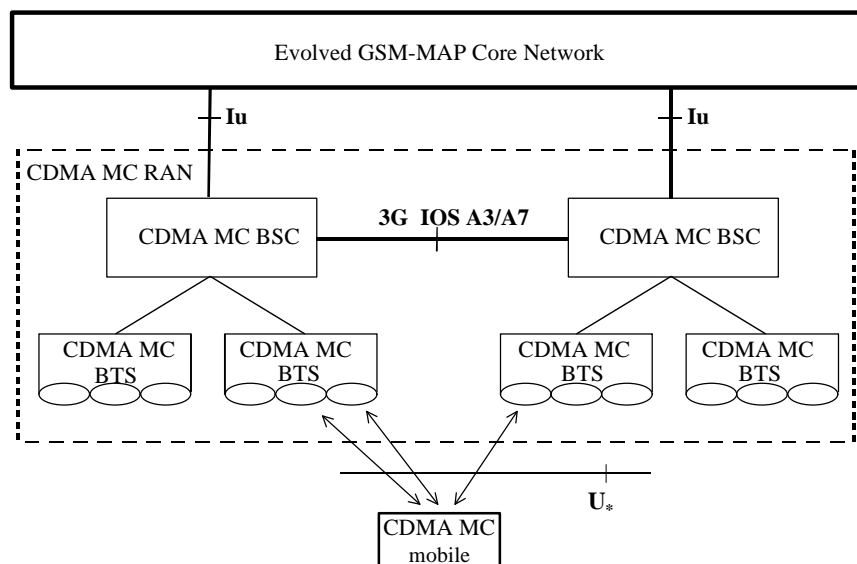

Figure 1. MC-MAP Radio Access Network Architecture

The MC-MAP radio access network is based on the 3G IOS radio access network. Hooks and extensions possibly should be added to the cdma2000 air interface

1   protocols to provide means of its connection to the evolved 3G GSM-MAP core

2   network on the Iu- interface.

3   The MC-MAP radio access network offers data transmission services to the GSM-

4   MAP core network and communicates with the core network over the Iu-

5   interface. The internal interfaces of the radio access network are based on the A3

6   and A7 interfaces defined in 3G IOS for cdma2000, with possible modifications

7   required supporting functionality related to GSM-MAP.

8   In the MC-MAP radio access network the Iu- interface substitutes the 3G IOS A-

9   and R-P- interfaces, specifically A1, A2, A5 and A10, A11 interfaces.

10 The MC-MAP mobiles should be able to support connection to the GSM-MAP

11 core network and should contain a SIM (USIM).

2.2   Protocol Architecture

13 Figure 2 shows the signaling protocol stack for connection of the CDMA MC radio

14 access network to the evolved GSM-MAP core network for both packet switched

15 and circuit switched services.
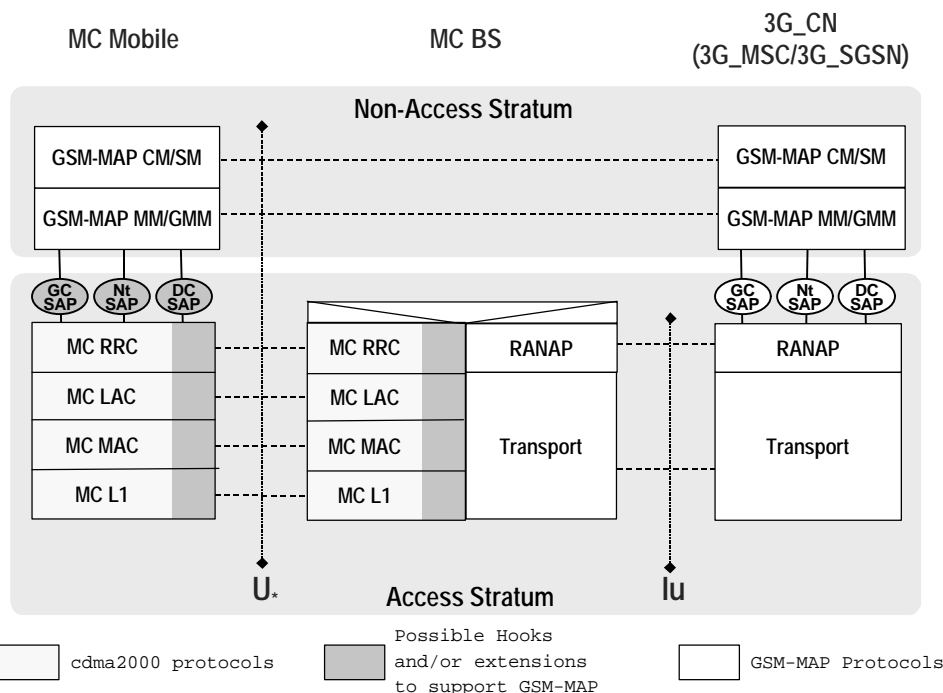
Figure 2. Signaling Protocols

18 There are two groups of protocols in the evolved GSM-MAP network. Non-Access

19 Stratum (NAS) protocols are terminated in the core network and include

20 functionality related to mobility management and service aspects of the system.

21 Access Stratum protocols are terminated in the radio access networks and are

22 responsible for the radio interface aspects of the system.

The CDMA MC protocol stack plays the role of the access stratum protocols and is extended to support upper GSM-MAP non-access stratum protocols (GSM-MAP MM and CM) and interwork with the network protocols on the Iu- interface (RANAP).

The CDMA MC radio access network protocols when connected to the GSM-MAP network comprise of the following protocols:

- CDMA MC Layer 1 with possible hooks.
- CDMA MC MAC with possible hooks and extensions.
- CDMA MC LAC with possible hooks and extensions.
- CDMA MC RRC for 3G GSM with possible hooks and extensions. The MC RRC is a combination of the cdma2000 radio resource management protocols and a signaling protocol required for interworking with the RANAP protocol on the Iu- interface.

On the mobile side, the CDMA MC protocols offer their services to the non-access stratum protocols on the Service Access Points (SAP) as required by the non-access stratum protocols. There are three types of SAPs currently defined by 3GPP on the interface between access and non-access protocols:

- General Control (GC). The GC SAP is used for transfer of broadcast system information to the non-access stratum protocols.
- Notification (Nt). The Nt SAP is used for paging and notifications.
- Dedicated Control (DC). The DC SAP is used for control of the signaling connections and transparent transfer of signaling messages between the mobile and the core network.

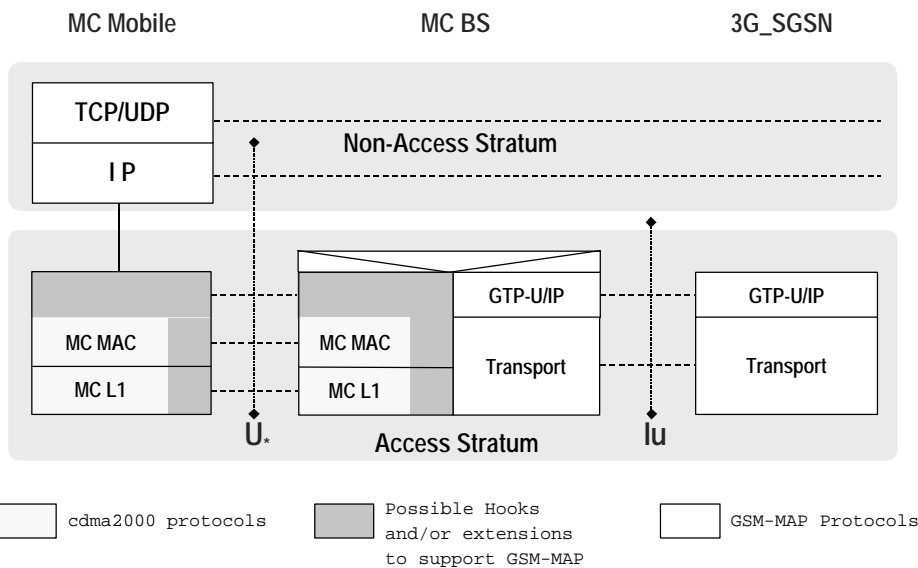Figure 3 shows user plane protocol architecture for MC-MAP packet data service based on the GPRS core network.

MC Mobile   MC BS   3G_SGSN

TCP/UDP	Non-Access Stratum	
I P		

| MC MAC | GTP-U/IP | GTP-U/IP |
| MC L1 | Transport | Transport |

| MC MAC | | |
| MC L1 | | |

U*   Access Stratum   Iu

☐ cdma2000 protocols   ☐ Possible Hooks and/or extensions to support GSM-MAP   ☐ GSM-MAP Protocols

¹

² **Figure 3. Example MC-MAP Packet Data User Plane Protocols**

³ *Note: Similar CDMA MC protocol architecture should be used for the circuit*
⁴ *switched services.*

⁵ The MC-MAP radio interface protocols on the user plane comprise of the
⁶ following protocols:

⁷ • CDMA MC Layer 1 with possible hooks.

⁸ • CDMA MC MAC with possible hooks and extensions.

⁹ A seamless interface between the GPRS LLC protocol and MC RLP
¹⁰ protocol in the MC MAC should be provided. Possible extensions should
¹¹ be included in the MC MAC protocol to map the GPRS LLC frames
¹² to/from the RLP byte stream.

¹³ # 2.3   Location of Transcoders (Vocoders)

¹⁴ Unlike in the 3G IOS architecture, in the evolved GSM-MAP architecture
¹⁵ transcoders (vocoders) are physically and logically located in the core network.
¹⁶ Support of this architecture requires extensions to the MC-MAP radio access
¹⁷ network.

¹⁸

¹⁹