

GSM

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**Digital cellular telecommunications system (Phase 2+);
Project scheduling and open issues:
GSM Cordless Telephony System CTS, Phase 1
(GSM 10.56 version 8.0.0)**

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Contents

1. Scope	3
1.1 References	3
2. General Considerations for CTS phase 1:.....	3
2.1 Decisions at SMG.....	3
2.1.1 SMG#21:.....	3
2.1.2 SMG#22.....	3
2.1.3 SMG#23.....	3
2.1.4 SMG#24.....	3
2.1.5 SMG#25.....	4
2.2 Decisions on CTS Service Requirements	4
2.3 Decisions on CTS stage 2.....	4
2.4 Funding of CTS security algorithms.....	4
2.5 Co-operation with ETSI TC-ERM:	5
2.6 Support tools for specification work.....	5
2.7 Work item rapporteurs based on the WID	5
3. Deliverables on CTS, phase 1	5
3.1 New specifications	5
3.2 CR's to existing specifications.....	6
4. Project Plan for CTS phase 1.....	6
4.1 Scope of SMG meetings on CTS phase 1.....	6
4.2 Major Milestones for CTS phase 1	8
4.3 CTS stage 1 requirements for later phases of CTS (according to [1]).....	9
4.4 CTS stage 2 definition.....	10
4.5 Involved SMG STC's	11
4.6 CTS phase 1 overall schedule.....	12
4.7 CTS phase 1 schedule from SMG#26to SMG#27	13
4.7.1 CTS stage 1	13
4.7.2 CTS stage 2	14
4.7.3 CTS stage 3	15
4.7.4 CTS stage 3	16
5. History	17

1. Scope

The purpose of this document is to describe the schedules of the GSM Cordless Telephony System (CTS) standardisation process for its first phase. This document is also meant to describe open issues that are under discussion and the relevant technical decisions which are taken during the specification process. A comprehensive project plan forms the integral part of this document in chapter 4 (including a list of meetings relevant for CTS, Milestones, a list of open issues and an overall schedule)

This document is a 'living document' and permanently updated. Proposals for change shall be forwarded to the responsible rapporteur. The CTS specification rapporteurs should make sure that this document can always reflect the latest status of work.

This document has been introduced at the late phase of CTS phase 1, stage 1. During this definition phase several STCs besides SMG1 have already been involved (SMG2, SMG12, SMG10), however from stage 2 definition on a documented co-ordination of the standardisation seems to be essential as the work item is or soon will be handled in almost every SMG STC (see chapter 2.6).

The summary of the CTS work item progress since the introduction of CTS ad SMG#21 is reflected in chapter 2.

1.1 References

- [1] Draft GSM 02.56: "Digital cellular telecommunications system (Phase 2+); GSM Cordless Telephony System (CTS), Phase 1; Service Description; Stage 1",
- [2] Draft GSM 03.20 Annex E: "Digital cellular telecommunication system (Phase 2+); GSM Cordless Telephony System (CTS), Phase 1, Security related network functions; stage 2;
- [3] Draft GSM 03.56: "Digital cellular telecommunications system (Phase 2+); GSM Cordless Telephony System (CTS), Phase 1; Service Description; Stage 2",

2. General Considerations for CTS phase 1:

2.1 Decisions at SMG

2.1.1 SMG#21:

1. A work item proposal "GSM COMPATIBLE HOME BASE SYSTEM" is presented at SMG#21 (Tdoc 88/97).
2. It is decided, that the matter is studied by SMG 1, SMG 2, SMG 3, SMG 9 and SMG 10 and to report at SMG #22. SMG 1 should co-ordinate the feasibility study (Tdoc 287/97).

2.1.2 SMG#22

1. The concept has been considered to be feasible. The feasibility study report and updated WID has been presented (Tdoc 382/97).
2. The work item is approved at SMG#22. The title is "GSM - Cordless Telephony System (CTS)"

2.1.3 SMG#23

1. The CTS work item status and schedule is presented (Tdoc 811/97)
2. The following working assumptions are taken by SMG#23 in order to proceed on the stage 1 work:
 - operation of CTS is tied to a GSM subscription
 - CTS is to operate in the spectrum of the home network of that subscription
3. The working assumption of SMG7, that both the CTS mobile station and the CTS fixed part should be considered as terminals, was confirmed by SMG#23

2.1.4 SMG#24

Only UMTS and release 97 WI's on the agenda.

2.1.5 SMG#25

1. The CTS work item status and schedule has been presented (Tdoc 049/98). a conclusion was that the release of the CTS WI is expected for SMG#27 now.

2.1.6 SMG#26

1. Each STC presented the CTS status and the work progress.
2. The CTS radio basic assumptions were presented within the SMG2 report and endorsed by the SMG#26.
3. CTS Stage 1 was distributed for information.

2.2 Decisions on CTS Service Requirements

Responsible body: SMG STC SMG1. The list of high level requirements is contained in ANNEX A.1 and has emerged from the following meetings:

1. SMG1 CTS ad hoc meeting in Lund/Sweden 27.- 28. August 1997
a first draft version 0.1.1 has been elaborated
2. SMG1 plenary in Dresden/Germany 3. - 7. November 1997 a reworked version 0.3.0 has been agreed which takes comments of SMG3-SA into account (Tdoc SMG3-SA 315/97)
3. SMG1/SMG10 CTS ad hoc meeting Nuremberg/Germany 10. - 11. December 1997 a new version 0.5.0 has been agreed as input for the next SMG1. This version takes comments of SMG3-SA and SMG2 into account (Tdoc SMG3-SA 420/97, Tdoc SMG2 402/97, Tdoc SMG2 WPB 146/97) The features not considered for CTS phase 1 are moved to the Annex A.2 (Issues for later phases of CTS)
4. SMG1 plenary in Sophia Antipolis 12. - 16. January 1998 has discussed CTS in several ad hoc groups during the meeting. As a result a stable version of the CTS stage 1 service description has been agreed, however due to editorial needs a version 1.0.1 was prepared after the meeting and accepted by e-mail in order to have this version ready for presentation at SMG#25 (Tdoc SMG1 141/98).
5. SMG10 WPB at SMG10 plenary 4.-6. February in Worcester has reviewed and updated the CTS security requirements. In order to have a full view on CTS stage 1 at the SMG#25 plenary, the result is sent as liaison statement to SMG1 and to SMG#25 plenary (Tdoc SMG10 073/98).
6. SMG1 Plenary in Naantali 6-10. July 98 has briefly discussed about CTS. Several comments were proposed and approved. The CTS stage 1 has been upgraded according to these comments.
7. On SMG1 demand, SMG12 has reviewed the last CTS stage 1. SMG12 # 3 has considered the stage 1 stable enough to be presented to SMG #27.

2.3 Decisions on CTS stage 2

1. A decision on the CTS Radio Interface lower layer concept has been reached by SMG2 WPB meeting in April. The concept is transformed in a description of the physical aspects of the radio interface for completion of the CTS stage 2 description and will be presented at SMG2 plenary in May.
2. SMG10 has installed a number of CTS ad hoc meetings on CTS security in order to reach a stable status of the CTS overall CTS security aspects at the SMG10 plenary in April.
3. The first SMG 10 CTS ad hoc has fixed the main issues of CTS local security aspects (authentication of between the Mobile Station and the CTS Fixed Part, etc.) and pointed out the requirements for the implementation of the CTS supervising security (secure operation and subscription control of the CTS).
4. The second SMG10 CTS ad hoc meeting has fixed the principals for the PLMN security aspects of CTS.
5. SMG12 #1 has introduced a CTS reference model making a clear split between the subscription given in by the HPLMN operator and the frequency usage given by the DPLMN (Donor PLMN operator). (Tdoc SMG12 176/98). The reference model has to be studied in detail and is requested to be adapted by other STCs.
6. SMG12 #3 has introduced the CTS role model and the coverage scenario. It was agreed to produce a stabilised Stage 2 at the SMG12 #4 in September.

2.4 Funding of CTS security algorithms

1. Funding for CTS algorithms has been discussed at the SMG10 plenary in Worcester 4.-6. February 1998. The call for a funding group of potential CTS manufacturers has been summarised in Tdoc SMG10 077/98.
2. The terms of reference for the SAGE work have been approved by ETSI board #13.

2.5 Co-operation with ETSI TC-ERM:

1. As decided at SMG#23 (Tdoc 874/97), liaison functions from SMG to ERM on CTS should be established in order to provide information about the work item CTS. A presentation of the stage 2 regarding the CTS radio interface with emphasis on the frequency usage will be held by delegates of SMG2 WPB.
2. CTS subject was presented by SMG2 delegates to ERM/RM the 8th of June. It was agreed that no new spectrum allocation is needed for CTS.

2.6 Support tools for specification work

ETSI FTP Server (docboc.etsi.fr or docbox.etsi.org):

Meeting reports of the involved STCs SMG1, SMG2, SMG 3, (SMG 4), SMG 7, SMG 9, SMG 10

2.7 Work item rapporteurs based on the WID

SMG1	Mikael Dahlkvist, Ericsson
SMG2	Philippe Desblancs, Alcatel
SMG3	Jean Francois Rubon, Alcatel
(SMG4	Peter Edlund, Ericsson)
SMG7	Sada Dia, Alcatel
SMG9	Kerstin Litzén, Ericsson
SMG10	Samira Messiet, Alcatel
SMG12	Michael Roberts, Alcatel

3. Deliverables on CTS, phase 1

3.1 New specifications

Doc. Nr.	Title	Version	Rapporteur/ Company	STC	Info	Appr.
02.56	Digital cellular telecommunications system (Phase 2+); GSM Cordless Telephony System (CTS), Phase 1; Service description; Stage 1	2.0.0	Mikael Dahlkvist/ Ericsson	SMG1/ (SMG10 WPB)	SMG#25	SMG#27
03.56 Annex A	CTS phase 1 , stage 2, low er layers of the CTS radio interface	0.0.3	Philippe Desblancs/ Alcatel	SMG2 WPB	SMG#27	SMG#28
03.56	Digital cellular telecommunications system (Phase 2+); GSM Cordless Telephony System (CTS), Phase 1; CTS Architecture Description; Stage 2	0.2.0	Michael Roberts/ Alcatel	SMG12	SMG#27	SMG#28
11.56	CTS phase 1, CTS Fixed Part Tests	draft	Sada Dia/ Alcatel	SMG7	SMG#28	SMG#29
03.20 Annex E	Digital cellular telecommunications system (Phase 2+); GSM Cordless Telephony System (CTS), (Phase 1); Security related network functions; Stage 2	draft 0.2.0	Samira Messiet/ Alcatel	SMG10 WPA	SMG#26	
01.56	Digital cellular telecommunications system (Phase 2+); GSM Cordless Telephony System (CTS) (Phase 1); CTS Authentication and Key Generation Algorithms Requirements	draft	Samira Messiet/ Alcatel	SMG10 WPA		
04.56 ???	Digital cellular telecommunications system (Phase 2+); GSM Cordless Telephony System (CTS), (Phase 1) CTS Radio Interface Layer 3 Specification;	open	Jean Francois Rubon/ Alcatel	SMG3 WPA SMG2 WPA	SMG#28	SMG#28

3.2 CR's to existing specifications

CRNr.	Title	Version	Rapporteur/ Company	STC	Info	Appr.
03.22	Digital cellular telecommunications system (Phase 2+); Functions related to Mobile Station (MS) in idle mode	open	open	SMG2		
04.08	Digital cellular telecommunications system (Phase 2+); Mobile Radio Interface Layer 3 Specification	open	J.F. Rubon/ Alcatel	SMG2 SMG3		
05.01	Digital cellular telecommunications system (Phase 2+); Physical layer on the radio path; General description	open	P. Desblancs/ Alcatel	SMG2		
05.02	Digital cellular telecommunications system (Phase 2+); Multiplexing and Multiple Access on the Radio Path	open	P. Desblancs/ Alcatel	SMG2		
05.05	Digital cellular telecommunications system (Phase 2+); Radio Transmission and Reception	open	P. Desblancs/ Alcatel	SMG2		
05.08	Digital cellular telecommunications system (Phase 2+); Radio Subsystem Link Control	open	P. Desblancs/ Alcatel	SMG2		
05.10	Digital cellular telecommunications system (Phase 2+); Radio Subsystem Synchronisation	open	P. Desblancs/ Alcatel	SMG2		
05.50	Digital cellular telecommunications system (Phase 2+); Background for radio frequency (RF) requirements	open	P. Desblancs/ Alcatelopen	SMG2		
11.10Axxx	CTS phase 1, CTS Mobile Station tests	draft	Sada Dia/ Alcatel	SMG7	SMG#27	
11.11Axxx	CTS phase 1, SIM requirements	open	open	SMG9	SMG#26	

4. Project Plan for CTS phase 1

4.1 Scope of SMG meetings on CTS phase 1

Date	Meeting	Scope	[expected] Input	[expected] Output
25-29.5.98	SMG2	CTS radio interface	GSM 0x.yy CTS phase 1 , stage 2, lower layers of the CTS radio interface	detailed working plan for WPA and WPB liaison statement to SMG3 WPA on proposed working plan
2.-4.6.98	SMG3	Working Plan stage 3	concept of CTS protocols proposed working plan	agreed working plan
02.-05.6.98	SMG7	MS and FP test purposes	draft GSM 11.56 and CR to GSM 11.10	updated versions of GSM 11.56 and CR to GSM 11.10
15.19.6.98	SMG12	GSM 03.56		
22-26.6.98	SMG#26	•	•	•
6.-10.7.98	SMG1	GSM 02.56	Updates according to last meeting	STC approved GSM 02.56
28.-31.7.98	SMG10	GSM 03.20 Annex E	<ul style="list-style-type: none"> Details of PLMN security Update local CTS security 	STC approved GSM 03.20 Annex E
10.- 14.8.98	SMG12	GSM 03.56 main procedures / bearers	Scenarios of the main procedures for subscription check and frequency allocation	Updated GSM 03.56
25.-28.8.98	SMG3WPA	Local CTS protocols	Structure, MM, CC, parts of CTS radio interface	Working plan for details
31.8.-4.9.98	SMG2 WPB	CTS radio	draft GSM 03.56 Annex A	agreed GSM 03.56 Annex A for information to SMG#27
7.- 11.9.98	SMG2WPA	Local CTS protocols	Structure, RR part of CTS radio interface	Working plan for details
14.-18.9.98	SMG12	GSM 03.56 miscel. Procedures	Complete GSM 03.56	Stable GSM 03.56 for information to SMG#27
21.-25.9.98	SMG2			
22.-24.9.98	SMG3	Working Plan stage 3		detailed working plan for WPA WPB and WPC
28.9.- 2.10.98	SMG4			
September	SMG9	CR CTS on GSM 11.11	<ul style="list-style-type: none"> SMG10 Inputs SMG2 Inputs 	First draft of CR GSM 11.11

12-16.10.98	SMG#27	<ul style="list-style-type: none"> • Approval Stage 1 • Approval security • For information stage 2 	GSM 02.56 GSM 03.56 GSM 03.20 Annex E GSM 03.56 Annex A (lower layers of CTS radio interface)	Approved GSM 02.56 Approved 03.20 Annex E
26-29.10.98	SMG3WPA	Local CTS protocols	CRs on 04.xx series GSM 04.56	Approved (MM CC parts)
26-30.10.98	SMG3WPB	Signalling in the network for CTS control	??	??
2.-6.11.98	SMG2WPA	Local CTS protocols	CRs on 04.xx series GSM 04.56	Approved (RR part)
2.-6.11.98	SMG2WPB	CTS radio	CRs on 05.xx series	Approved
9-13.11.98	SMG3WPC	Signalling in the network for CTS control	??	??
16.-20.11.98	SMG2	CTS radio interface		
23.-27.11.98	SMG12	CTS architecture	GSM 03.56	Stable 03.56 for approval at SMG#28
24.-26.11.98	SMG3	CTS protocols		

4.2 Major Milestones for CTS phase 1

	Planned Date	Milestone	Status
1.	16.1.98	SMG1: Stage 1, GSM 02.56, version 1.0.0 agreed	Agreed version 1.0.1 by E-Mail after SMG1 plenary in January
2.	16.3.98	SMG: CTS stage 1 for presentation at SMG#25	
3.	31.3.98	SMG10(CTS ad hoc) and SAGE: CTS security algorithm requirements and funding of SAGE work fixed	Ongoing <ul style="list-style-type: none"> • Call for funding done • Algorithm requirements fixed in the GSM 01.56 • Approval by ETSI board done • Formal approval for the WI by SMG#26 open
4.	9.4.98	SMG10: Stage 2 agreed on CTS overall security concept (local and supervising security)	Open <ul style="list-style-type: none"> • CTS local security stable • CTS overall security, the principle of the token method is seen as valid. Detailed methods have to be discussed
5.	24.4.98	SMG2 WPB: Stage 2, concept of the lower layers of the CTS-radio interface agreed by SMG2 (WPB)	Done Liaison statements to SMG 1, SMG10, SMG12 containing the agreed concept
6.	25.5.98	SMG2: stage 2 part on lower layers of the CTS-radio interface agreed by SMG2	Open
7.	19.6.98	SMG12: Stage 2 architecture (GSM 03.56) agreed	Open <ul style="list-style-type: none"> • SMG3 internal discussion on CTS Mobility Management etc.
8.	26.6.98	SMG:	open
9.	30.9.98	SMG9: Agreed CR on GSM 11.11 (SIM)	Open <ul style="list-style-type: none"> • Input needed from , SMG2, SMG10 and other STCs
10.	16.10.98	SMG: stage 2 for presentation at SMG#26	Stage 1 approved

4.3 CTS stage 1 requirements for later phases of CTS (according to [1])

Note that later phase requirements might have to be considered in the first phase, due to compatibility reasons.

In order to make the design of the CTS radio interface “future proof”, it is of importance that services that are likely to be introduced in later phases of CTS are considered already in the design of the first phase of the CTS radio interface. The following future services shall be taken into account when the first phase of the CTS radio interface is designed (preferably by re-using the existing GSM protocols for these features):

- CTS-CTS handover in a CTS multi-cell environment.
- Data and fax services.
- Support of supplementary services on the fixed network.
- Support of mobility management on the fixed network supporting the SIM.

Furthermore, later phases of CTS may also include:

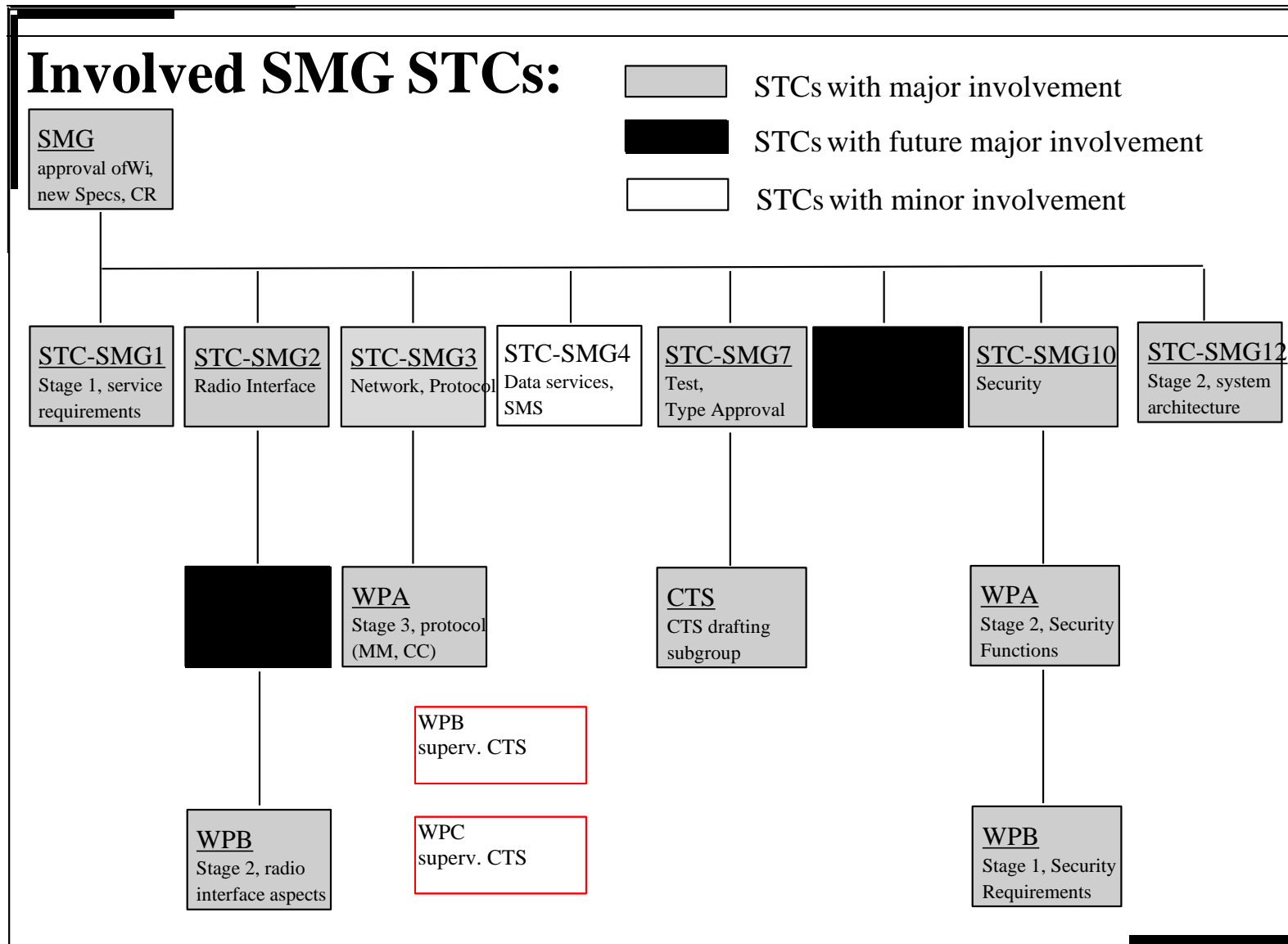
- Definition of additional protocols and interface standards towards the fixed network in order to include CTS in IN services in an efficient way.
- Support of multiple fixed lines

The CTS-GSM handover (in both directions) is a complex issue which needs further study. Thus, it shall for the moment not be considered as a candidate for CTS.

4.4 CTS stage 2 definition

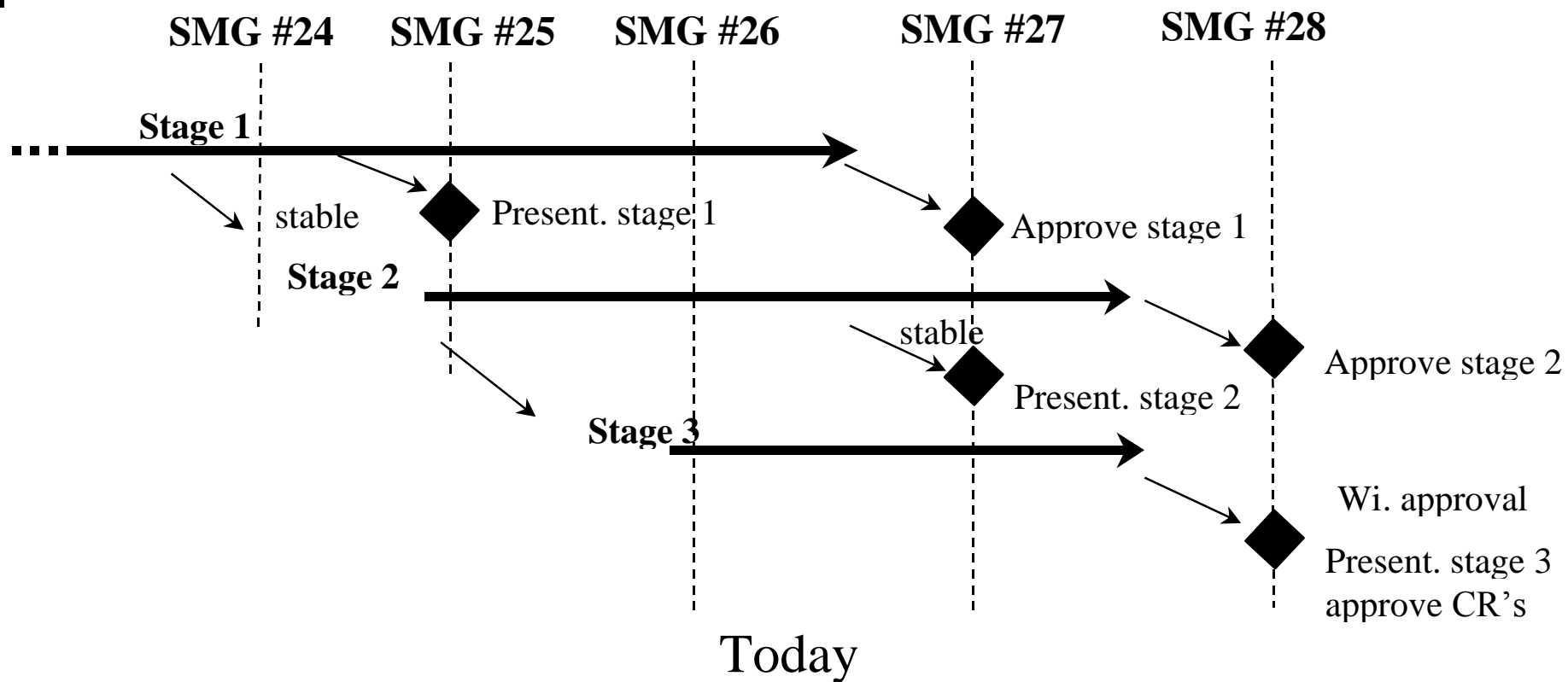
Issue	Comments	STC(s)	status
General aspects			
Review security requirements	Review of stage 2 and three based on the stage 1 security requirements	SMG10 WPB	ongoing
Local CTS aspects(Aspects of the CTS radio interface, the CTS-MS and the CTS-FP)			
CTS Radio Interface	physical aspects	SMG2 WPB	draft
Local CTS security aspects	<ul style="list-style-type: none"> CTS-FP/CTS-MS secure identification/mutual authentication, ciphering of communication Local security aspects of the initialisation, registration communication definition of local CTS security parameters and algorithms 	SMG10 (WPA)	draft see [2]
Secure storage of data and programs		SMG10 WPA	open
local CTS Procedures/ Protocols/ States	Structure of the protocol stack on the CTS radio interface, parameters, procedures	SMG12	draft
Supervising CTS aspects (network aspects, control of the local CTS)			
Reference model	Including aspects of CTS service roaming and CTS-MS roaming	SMG12	draft
Frequency allocation for the CTS radio interface	<ul style="list-style-type: none"> CTS frequency planning Coverage scenarios (Compatibility with existing/future radio systems) 	SMG2 WPB	open
CTS subscription management	<ul style="list-style-type: none"> Setting up/w ithdraw a CTS subscription Verification of CTS subscription 	SMG12	open
Authentication of the CTS subscriber in the HPLMN	Authentication of the CTS subscriber in the HPLMN (via GSM radio interface or via CTS fixed network interface)	SMG10, SMG12	draft
Protection of CTS control data		SMG10	draft
Mobility Management	<ul style="list-style-type: none"> Registration status notification of the first phase of CTS Later CTS MM solutions 	SMG12	open
Signalling	<ul style="list-style-type: none"> Signalling via the CTS fixed network interface and means of transport (PSTN/ISDN) Signalling via the GSM radio interface (bearer) Protocol structure, parameters 	SMG12	open
CTS-FP interworking function	Co-ordination of the CTS radio interface procedures and user communication with the CTS fixed network interface (e.g. dialling, accepting MT calls)	SMG12	draft
CTS -MS relay	CTS-MS carries information from the GSM radio interface via the CTS radio interface to the CTS-FP	SMG12	open
User aspects			
User aspects of the security operations	Initialisation, de initialisation, length of the CTS-PIN	SMG1, SMG10	open

4.5 Involved SMG STC's



4.6 CTS phase 1 overall schedule

CTS overall schedule (at SMG#26):



4.7 CTS phase 1 schedule from SMG#26 to SMG#27

4.7.1 CTS stage 1

Stage 1 progress till SMG#27:

June 98

SMG#26

Oct. 98

SMG#27

Review GSM 02.56

SMG1
STC Approval

GSM02.56
ad hoc (if needed)

Send for Approval

Possibly changes

SMG10 WPB
review security
requirements

4.7.2 CTS stage 2

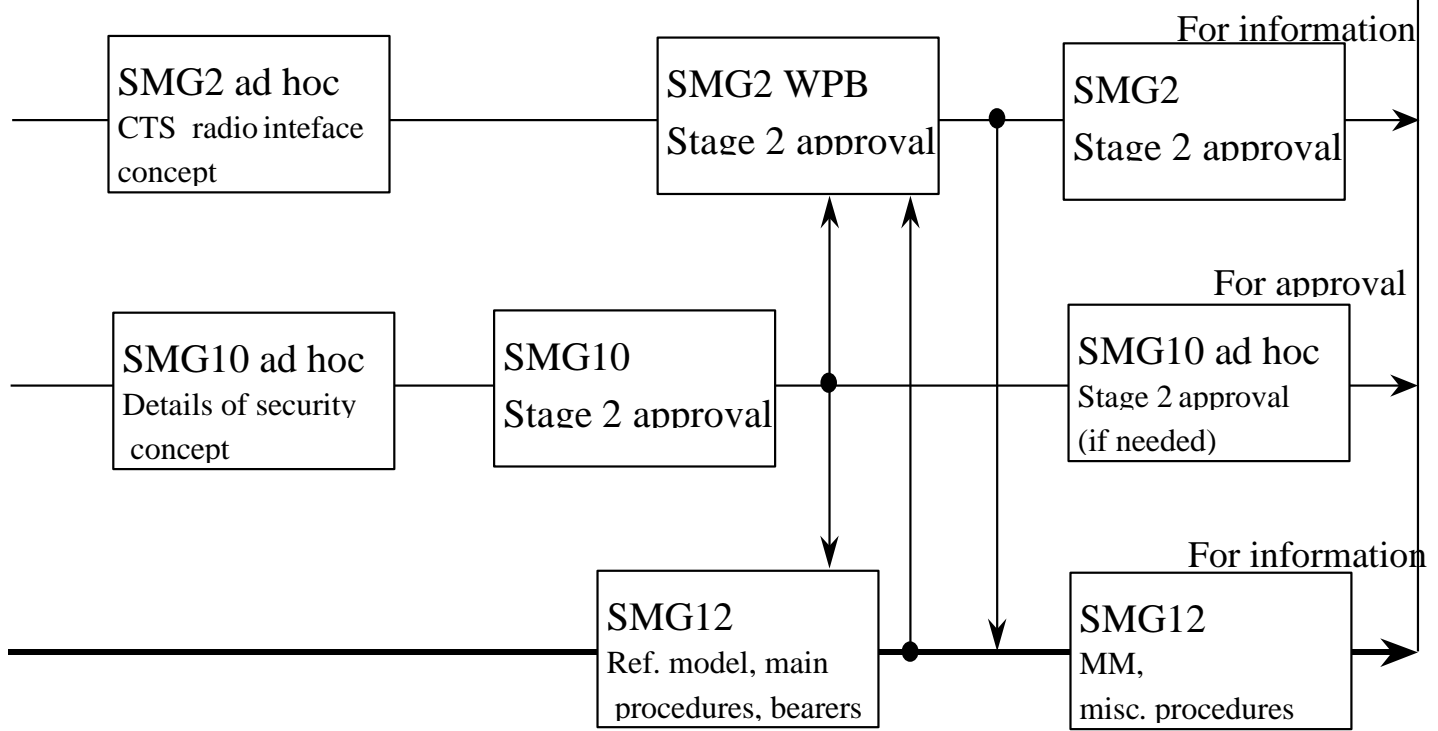
Stage 2 progress till SMG#27:

June 98

SMG#26

Oct. 98

SMG#27



4.7.3 CTS stage 3

Stage 3 progress till SMG#27:

June 98

SMG#26

Feb. 99

SMG#28

Drafting sessions
CTS radio interface protocol structure
CC, MM, RR, lower layers

SMG3 WPA
MM, CC

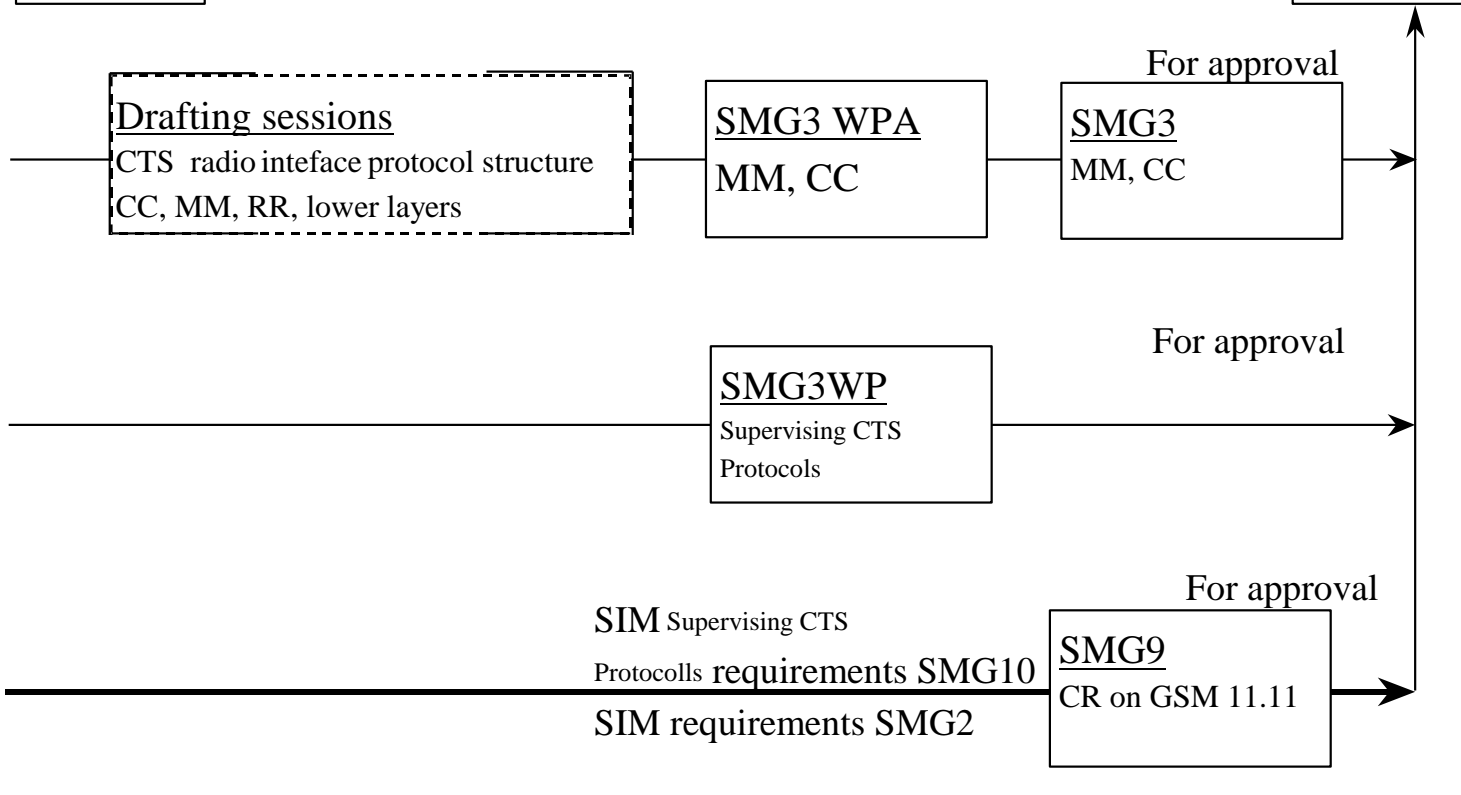
For approval
SMG3
MM, CC

SMG3WP
Supervising CTS
Protocols

For approval

SIM Supervising CTS
Protocols requirements SMG10
SIM requirements SMG2

For approval
SMG9
CR on GSM 11.11



TA progress till SMG#27:

June 98

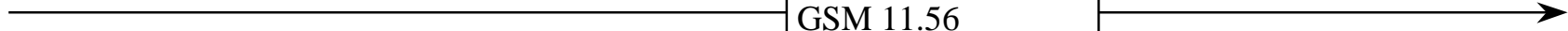
SMG#26

Feb. 99

SMG#28

Stage 2, 3 input

SMG7
GSM 11.56
CR GSM 11.0



5. History

Document history	
Note: Explicit changes in this document are not shown with revision marks	
1998- 02	Version 0.0.1 first presented at SMG10 plenary 4-6.2.1998
1998-02	Version 0.0.2 after SMG10 plenary and input for SMG 2 plenary 23 - 27.3.98
1998-03	Version 1.0.0 for presentation at SMG#25
1998-03	Version 1.0.1 included new chapter for open issues of the CTS stage 2 definition (Prepared at the SMG12 meeting 23.-27.3.98 in Bad Aibling)
1998-04	Version 1.1.0 at SMG10 plenary 6.4. - 9.4.98 in Lund
1998-05	Version 2.0.0 at the SMG plenary, #26
1998-08	Version 2.0.1 : after SMG#26 and input for SMG3WPA 25-28/08/98
2000-02	Version 7.0.0
2000-03	Version 8.0.0
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