Source:	**TSG-SA WG4 Chairman**
Title:	**TSG-SA WG4 Status Report at TSG-SA#13**
Document for:	**Information**
Agenda Item:	**7.4.1**

Executive Summary

Since TSG-SA#12, TSG-SA WG4 (Codec Working Group) has held one plenary meeting: SA4#18 (September 3rd – 7th, 2001).

AMR Wideband (AMR-WB) speech codec (Rel-5): AMR-WB codec characterisation Phase 1B (3G channels) is ongoing. Host laboratories have started processing of speech samples and are expected to complete the work by end of September. The listening test results will be available by TSG-SA#14. In order to accelerate the payment to Phase 1B host laboratories, SA4 asks for authority to formal approval of the host laboratory work within SA4. This will avoid the need to wait until TSG-SA#14 for payment to host laboratories. As reported earlier, the AMR-WB codec has participated as one candidate for standardisation of ITU-T wideband speech codec at bit rates around 16 kbit/s. At Rapporteur's meeting of ITU-T Q.7/16 in July 2001, codec selection test results were presented and the AMR-WB codec was selected. Formal selection process still continues in ITU-T. Additional characterisation testing is needed for formal selection.

Multimedia Codecs and Protocols for Conversational Packet-Switched Services (Rel-5): TS on Default Codecs (TS 26.235) has been finalised and approved earlier. The work to produce the other output TS from this work item, Transport Protocols, was started at SA4#18. This TS will give definition of the required protocol usage within Conversational Packet Switched Multimedia Services.

Extended Transparent End-to-end Packet Switched Streaming Service (Rel-5): SA4#18 reviewed draft Service Requirements on Rel-5 Streaming from SA1 and sent comments back to SA1. Further progress in Service Requirements, essential for guiding the technical work in SA4, is expected to take place at SA1 ad-hoc on streaming in mid-October. SA4 has scheduled ad-hoc meeting on Packet Switched Multimedia in late October to progress the Rel-5 streaming work. SA4#18 carried out initial discussions on Rel-5 extensions in streaming, mainly on file formats, scene description and capability exchange. Initial drafting of the specifications has been started based on the Rel-4 versions, but further discussions and any decisions are pending on the progress in finalising Service Requirements in SA1.

Proposed new work item (Work Task) on "Floating-point ANSI-C code for the AMR-WB speech codec" is brought for approval. The target is to prepare a floating-point specification of the AMR-WB codec similarly as has been done earlier for the AMR narrowband codec. The fixed-point C-code (given in TS 26.173 for AMR-WB) is meant for DSP implementations and it is therefore not efficient for an implementation on PC or other general-purpose processors often used as multimedia implementation platforms. A floating-point codec specification would be useful for multimedia applications. Like for AMR, the fixed-point specification is the only allowed implementation of the AMR-WB codec for the speech service, and the use of the floating-point code is limited to other services. The bit-exact fixed-point C-code also remains the preferred implementation for all services. The proposed work is a Work Task belonging to the Feature "Wideband Telephony Service (AMR-WB)"

CRs: CRs are brought for approval to TSs 26.104, 26.131, 26.132, 26.173, 26.231, 26.234, and 26.975

Note: Annex B (separate file) of this report contains a copy of the slides presentation to TSG-SA#13.

1. Introduction

Since TSG-SA#12, TSG-SA WG4 (Codec Working Group) has held one plenary meeting SA4#18 in September.

Meetings held:
SA4#18: Sept 3-7, 2001 hosted by Fraunhofer Institute in Erlangen, Germany

Calendar of next SA4 (and SA4 SWG ad-hoc) meetings:
TFO SWG ad-hoc:	Oct 11-12, 2001	to be hosted by Siemens in Munich, Germany
PSM SWG ad-hoc #3:	late October (tbd)	host and venue to be defined
SA4#19:	Dec 3-7, 2001	to be hosted by NTT DoCoMo in Tokyo, Japan
SA4#20:	Feb 18 – 22, 2002	Host: tbd
SA4#21:	May 20 – 24, 2002	Host: tbd
SA4#22:	July 22 – 26, 2002	Host: tbd
SA4#23:	Sept 30 – Oct 4, 2002	Host: tbd
SA4#24:	Nov 11 – 15, 2002	Host: tbd

Altogether 67 delegates participated in SA4#18. There were 108 documents for the meeting. During the meeting the Speech Quality (SQ) and Packet Switched Multimedia (PSM) SWGs met. PSM is clearly the largest SWG as the number of participants.

Annex A of this document contains a list of all SA4 input documents to TSG-SA#13. Annex B (in a separate file) contains a copy of the slides presentation of SA4 progress report at TSG-SA#13. The input documents from SA4 are contained in Tdocs SP-0100451 until SP-0100459.

2. Progress in Release 5 Work items

2.1 Wideband Telephony Service (AMR-WB)

AMR-WB speech codec characterisation Phase 1B (3G channels) is ongoing. Host laboratories (ARCON and LMGT) have been contracted and the work is in process. The host laboratories are expected to complete their work of processing speech samples for the listening tests by end of September (3rd week of September). In order to accelerate the payment to host laboratories, SA4 asks authority from TSG-SA#13 to formally approve the host laboratory work within SA4. This will allow payment to the host laboratories after TSG-SA#13 upon finishing the host laboratory work (and will avoid the need to wait until TSG-SA#14 for the payment).

The Phase 1B results will be available by TSG-SA#14. Listening laboratories for Phase 1B have been identified: ARCON (American English), BT (British English), Dynastat (American English and Spanish), France Telecom R&D (French), LMGT (American English), Nokia (Finnish), Nortel Networks (Canadian English), NTT-AT (Japanese), and T-Nova (German).

The provisional schedule for the Characterisation Phase 1B is:
- 14 September Error Patterns available to Host Labs
- 3rd week September Host Labs expected to complete Host Lab work
- 3rd week September Reports of Host Labs to SA4 reflector *(target)*
- 21 September Reports of Host Labs approval by correspondence (at SA4 level)
- 24 - 27 September TSG-SA#13: Host Lab work approval (at TSG-SA level)
- mid November Reports from Listening Labs to SA4 reflector
- 3 -7 December SA4#19: Presentation of Phase 1B results, Listening Lab work approval (at SA4 level)
- 17 - 20 December TSG-SA#14: Presentation of Phase 1B results, Listening Lab work approval (at TSG-SA level)

Table 1 shows a summary of all planned experiments for AMR-WB characterisation (including phases 1A, 1B and 2). The complete characterisation consists of 10 experiments. The first six experiments belong to Phase 1A. They have been carried out and were reported at TSG-SA#12. The ongoing Phase 1B contains experiments 7 and 8. Experiments 9 and 10 will be performed in Phase 2. A budget of 250 kEURO is available for the complete characterisation (funding from codec proponents that participated in the AMR-WB Selection Phase).

The characterisation test results will be included in Technical Report on AMR-WB Characterisation (TR 26.976). A draft version of TR 26.976 (v.0.3.0), containing results from Verification Phase and Characterisation Phase 1A, was presented for information at TSG-SA#12 in Tdoc SP-010302.

Table 1: Summary of AMR-WB characterisation phase experiments

Ph.	Exp.	Characterises systems:	Test type	Title	No. of test conditions	No. of languages
1A	1	All systems	ACR	Input levels and self-tandeming	56	2
	2	All systems	ACR	Interoperability Performance in Real World Wideband Scenarios.	56	2
	3	All systems	ACR	Interoperability Performance in Real World Narrowband Scenarios.	56	1
	4	All systems (GSM GMSK)	DCR	Performance of VAD/DTX/CNG Algorithm	40	1
	5	GSM GMSK	ACR	The Effect of Static Errors under Clean Speech Conditions.	48	2
	6a	GSM GMSK	DCR	The Effect of Background Noise 1 in Static C/I Conditions.	40	1
	6b	GSM GMSK	DCR	The Effect of Background Noise 2 in Static C/I Conditions.	40	1
1B	7a	3G (Note 1)	ACR	The Effect of Static Errors under Clean Speech Conditions.	56	1
	7b	3G (Note 1)	ACR	The Effect of Static Errors under Clean Speech Conditions.	56	1
	8a	3G (Note 1)	DCR	The Effect of Background Noise 3 in Static C/I Conditions.	48	1
	8b	3G (Note 1)	DCR	The Effect of Background Noise 4 in Static C/I Conditions.	48	1
	8c	3G (Note 1)	DCR	The Effect of Background Noise 5 in Static C/I Conditions.	48	1
2	9a	EDGE 8-PSK (Note 2)	ACR	EDGE Characterisation, FR/HR/QR-channel The Effect of Static Errors under Clean Speech Conditions, set 1	(tbd)	1
	9b	EDGE 8-PSK (Note 2)	ACR	EDGE Characterisation, FR/HR/QR-channel The Effect of Static Errors under Clean Speech Conditions, set 2	(tbd)	1
	10	PS-systems (Note 2)	ACR (tbd)	Testing for Packet-Switched (PS) conversational and streaming applications	(tbd)	1
				Total Number of experiments:		18

Note 1: Experiments 7 and 8 will be performed in Phase 1B.
Note 2: Experiments 9 and 10 will be performed in Phase 2. The detailed test plan for these experiments is FFS.

Table 2: Status list of AMR-WB codec specifications under SA4 responsibility

Deliverable	Title	Latest version	Comment/Status	Approval

Deliverable	Title	Latest version	Comment/Status	Approval
TS 26.171	AMR Wideband Speech Codec; General description	2.0.0	Approved at TSG-SA#11 in Tdoc SP-010082.	Approved at TSG-SA#11
TS 26.173	AMR Wideband Speech Codec; C-source code	2.0.0	Approved at TSG-SA#11 in Tdoc SP-010083.	Approved at TSG-SA#11
TS 26.174	AMR-WB speech codec; test sequences	2.0.0	Approved at TSG-SA#11 in Tdoc SP-010084.	Approved at TSG-SA#11
TS 26.190	AMR Wideband Speech Codec; Transcoding Functions	2.0.0	Approved at TSG-SA#11 in Tdoc SP-010085.	Approved at TSG-SA#11
TS 26.191	AMR Wideband Speech Codec; Error concealment of erroneous or lost frames	2.0.0	Approved at TSG-SA#11 in Tdoc SP-010086.	Approved at TSG-SA#11
TS 26.192	AMR Wideband Speech Codec; CN for AMR Speech Traffic Channels	2.0.0	Approved at TSG-SA#11 in Tdoc SP-010087.	Approved at TSG-SA#11
TS 26.193	AMR Wideband Speech Codec; Source Controlled Rate operation	2.0.0	Approved at TSG-SA#11 in Tdoc SP-010088.	Approved at TSG-SA#11
TS 26.194	AMR Wideband Speech Codec; VAD for AMR Speech Traffic Channels	2.0.0	Approved at TSG-SA#11 in Tdoc SP-010089.	Approved at TSG-SA#11
TS 26.201	AMR Wideband Speech Codec; Speech Codec Frame Structure	2.0.0	Approved at TSG-SA#11 in Tdoc SP-010090.	Approved at TSG-SA#11
TS 26.202	AMR-WB speech codec; interface to Iu and Uu	2.0.0	Approved at TSG-SA#11 in Tdoc SP-010091.	Approved at TSG-SA#11
TR 26.976	Wideband Speech Codec Performance Characterization	0.3.0	Phase 1A carried out by TSG-SA#12. Draft TR v0.3.0 presented for information at TSG-SA#12 in Tdoc SP-010302 Phase 1B is ongoing, and will be completed by TSG-SA#14. Phase 2 schedule t.b.d	Approval expected at TSG-SA#14

Tdoc SP-010455 contains two CRs to the AMR-WB C-code specification TS 26.173. These CRs bring minor corrections (correction of a loop counter in encoder reset function and aligning encoder parameter format to the C-code).

As reported earlier, the 3GPP AMR-WB codec has participated as one candidate for standardisation of ITU-T wideband speech codec at bit rates around 16 kbit/s. At Rapporteur's meeting of ITU-T Q.7/16 in July 2001, ITU-T codec selection test results were reviewed and the AMR-WB codec was selected. However, formal selection process still continues. Additional characterisation testing of AMR-WB is needed for formal selection.

2.2 Multimedia Codecs and Protocols for Conversational Packet-Switched Services

TS on Default Codecs (TS 26.235) has already been finalised. It was approved at TSG-SA#11 (and was corrected to belong to Rel-5 at TSG-SA#12). The work to produce the other TS of this work item on "Transport Protocols for PS conversational multimedia applications" was started at SA4#18. This TS will give definition of the required protocol usage within Conversational Packet Switched Multimedia Services (which is based on IM Subsystem). When ready, the TS will define media type requirements (e.g., RTP session description parameters) and gives pointers to the relevant call and bearer control specifications.

Table 3: Status list of specifications for Multimedia Codecs and Protocols for Conversational PS Services

Deliverable	Title	Latest Version	Comment/Status	Approval

Deliverable	Title	Latest Version	Comment/Status	Approval
TS 26.235	Packet Switched Conversational Multimedia Applications; Default Codecs	2.0.0	Approved at TSG-SA#11 in Tdoc SP-010095.	Approved at TSG-SA#11 (Rel-4). Moved to Rel-5 TSG-SA#12.
TS 26.xyz	Transport Protocols for PS conversational multimedia applications	-	Work started at SA4#18. Initial draft exists.	TSG-SA#14
TR 26.xyz	Performance characterization of default codecs for PS conversational multimedia applications	-	-	TSG-SA#14 or later

2.3 Cellular Text Telephone Modem for Global Text Telephony (GTT)

All three Cellular Text Telephone Modem (CTM) specifications under the responsibility of SA4 were approved during TSG-SA#10 and TSG-SA#11.

Table 4: Status list for GTT specifications under the responsibility of SA4

Deliverable	Title	Latest Version	Comment/Status	Approval
TS 26.226	GTT Cellular Text Telephone Modem; General Description	2.0.0	Approved at TSG-SA#10 in Tdoc SP-000569.	Approved at TSG-SA#10
TS 26.230	GTT Cellular Text Telephone Modem; Transmitter C-code Description	2.0.0	Approved at TSG-SA#10 in Tdoc SP-000570.	Approved at TSG-SA#10
TS 26.231	GTT Cellular Text Telephone Modem; Minimum Performance Specification	2.0.0	Approved at TSG-SA#11 in Tdoc SP-010092.	Approved at TSG-SA#11

Tdoc SP-010456 presents a CR to TS 26.231 to change muting of the output of transmitter to start from the 4th information bit (instead of the 5th) at the beginning of a TTY burst. When muting is started from the 5th information bit, a full TTY character may leak into the speech encoder and may be recognised as an extra (repeated) TTY character at the receiver side. The CR corrects this problem.

2.4 Extended Transparent End-to-end Packet Switched Streaming Service

SA1 has prepared a draft of Service Requirements for Rel-5 Streaming Service and this was received at SA4#18. As requested, SA4 reviewed the draft and sent comments back to SA1, and as Cc to the other relevant WGs (SA2, SA3, SA4, SA5 and T2).

At SA4#18, initial discussions were carried out on Rel-5 extensions on streaming, mainly on file formats, scene description and capability exchange. Initial drafting of the specifications has been started based on the Rel-4 versions, but further discussions and any decisions are pending on the progress of finalising Service Requirements in SA1.

Some documents were received on Digital Rights Management (DRM). However, discussion was postponed until SA1 has defined Service Requirements and these documents were just noted and sent for information to SA1 (Cc to SA3 and T2). Similarly, communication from WMF (World Multimedia Forum) on content provider's DRM requirements was passed to SA1. Charging aspects and the supported architectures was raised at SA4#18, but the issues were noted as falling into the scope of SA2 and SA5. A related document was passed to SA2 and SA5 for comments and advice.

Further progress in Service Requirements, essential for guiding the technical work in SA4, is expected to take place at SA1 ad-hoc on streaming in mid-October. SA4 has scheduled ad-hoc meeting #3 on Packet Switched Multimedia in late October to progress the Rel-5 streaming work.

Table 5: Status list of specifications for Extended Transparent End-to-end PS Streaming Service

Deliverable	Title	Latest Version	Comment/Status	Approval

Deliverable	Title	Latest Version	Comment/Status	Approval
	Stage 2 (SA4, SA2)	-	Pending upon finalisation of Stage 1 in SA1	TSG-SA#14
TS 26.233	Packet-switched Streaming Services (PSS); General Description	-	Initial draft exists within SA4	TSG-SA#14
TS 26.234	Packet-switched Streaming Services (PSS); Protocols and Codecs	-	Initial draft exists within SA4	TSG-SA#14

3. New Work Items

A new Work Item is proposed on preparing a floating-point specification of the AMR-WB speech codec. A floating-point specification of the AMR (narrowband) speech codec has been prepared earlier and is given in TS 26.104. The intention in this new work item is to prepare a floating-point specification of the AMR-WB codec similarly as was done earlier for the AMR codec. The proposed work is a Work Task belonging to the Feature "Wideband Telephony Service (AMR-WB)". The Work Item description is found in Tdoc SP-010459.

When the AMR-WB codec is used in multimedia applications, it is increasingly likely that the implementation platform for the codec is something else than a DSP. In particular, the PC platform carries special importance since it is the usual implementation platform for video telephony and other multimedia applications. The AMR-WB C-code in TS 26.173 is provided in fixed-point form optimised for DSP implementations. Therefore, the specification is not efficient for an implementation on a PC or other general-purpose processors. For these, a floating-point code (optimised for execution speed) suits better the implementation platform than the fixed-point code. In addition, the floating-point C-code would lower the threshold for implementation of the AMR-WB codec for non-3G platforms and thus improve interoperability of 3G multimedia telephones and non-3G systems.

Since a floating-point implementation is not bit-exact with the fixed-point AMR-WB C-code this will raise a potential issue of interoperability and quality. Therefore, the floating-point code will be tested and verified to have good quality and interoperability with the fixed-point code.

Like for AMR, the fixed-point specification (TS 26.173) will be the only allowed implementation of the AMR-WB codec for the speech service. The use of the floating-point code is limited to other services. The bit-exact fixed-point C-code also remains the preferred implementation for all services.

4. Maintenance of earlier releases

The following maintenance CRs are presented for approval:

SP-010452   **CRs to TS 26.104 Corrections to encoder-decoder operations AMR-NB floating point (R99 and Rel-4).** This Tdoc contains two CRs (R99, Rel-4) to define parameter size table independently of decoder, to convert the remaining floating-point operations in decoder into fixed-point operations, and to bring minor corrections to the C-code. Two CRs (R99, Rel-4) correct the possibility for underflow in error concealment.

SP-010453   **CRs to TS 26.131 Introduction of ANR tolerance of 3 dB (R99, Rel-4 and Rel-5).** Three CRs (R99, Rel-4, Rel-5) are brought to introduce of 3 dB tolerance to the nominal for Ambient Noise Rejection requirement. This permits a more optimal trade-off in voice processing and between terminal size and shape than does the nominal value.

SP-010454   **CRs to TS 26.132 on Test signals and Bandwidth of test signals for acoustic testing (R99, Rel-4 and Rel-5).** Three CRs (R99, Rel-4, Rel-5) are brought to remove inconsistency in band-limitation between test signal specification and requirements. One CR (Rel-5) adds speech like test signals according to ITU-T P.501 as test signals for Ambient Noise Rejection (like has been done for other test cases earlier). A related CR (Rel-5) is brought limiting the use of ITU-T P.501 to avoid possible problems in comparing test results.

SP-010457   **CRs to TS 26.234 Corrections to Transparent end-to-end packet switched streaming service (PSS); Protocols and codecs (Rel-4)**. This contains six CRs (Rel-4). The use of scene description in 3GPP is defined in more detail (by specifying a 3GPP PSS4 SMIL language profile). Definition of H.263 video codec is changed from "H.263 baseline" to "H.263 profile 0 level 10" since the latter explicitly specifies the required computational performance capabilities for decoder implementations. Some references are also updated, and a mistake in SDP attribute list in informative Annex A is corrected. Text formatting is defined more precisely to avoid possible misunderstanding that additional text formatting apart from XHTML is not allowed. Also, guidelines are added to informative Annex B to discourage inclusion of figures in XHTML basic and encourage bringing figures by means of SMIL.

SP-010458   **CRs to TR 26.975 Clarification of 3G simulator settings used for AMR characterization in 3G channels (R99 and Rel-4).** Two CRs are presented (R99, Rel-4) on clarification of 3G simulator settings used for AMR characterisation tests. The performance shown for modes AMR12.2 and AMR10.2 on 3G channels is considerably worse than could be expected if the rate matching attributes of channel simulation had been properly optimised. In particular, the QoS attributes achieved for class C bits are much worse than recommended in 3GPP TS 26.102.

5. Miscellaneous

- At TSG-SA#12, the UMTS Forum requested information on whether the current 3GPP default speech coders are compatible with voice recognition systems (in Tdoc SP-010294). It was also pointed out that ETSI TC STQ Aurora Project may be able to provide information on this subject. SA4 Chairman agreed to check with his group on the compatibility issues and report back at TSG-SA#13.

At SA4#18, the request was debated with the following outcome (agreed statement from SA4):

"SA4 has not carried out any studies on the compatibility of speech codecs with voice recognition systems. There is no specific information available within SA4 which confirms or casts doubt on their suitability for use with network based voice recognition.

Distributed speech recongition (DSR) provides potential to improve performance of network based speech recognition by reducing distortion coming from transmission errors. In DSR, speech recognition parameters are extracted and coded in UE and sent over air-interface to the network. SA1 is proposing a new WI on DSR at TSG-SA#13. ETSI is currently developing a DSR standard (TC STQ Aurora). ITU-T SG 16 has launched work on DSR (referred to as Q15)."

- SA4#18 reviewed a WID proposal from SA1 on Distributed Speech Recognition (DSR). On the impact of DSR into SA4 specifications, it was noted that TS 26.235 (Packet Switched Conversational Multimedia Applications; Default Codecs) may need to be updated to incorporate the DSR codec. DSR may have impact also on transport protocols specification for conversational services. SA4 also noted that it would like to receive more details and specifications of requirements from SA1 in order to take further actions and study the feasibility of DSR.

6. Approval requested

TSG-SA WG4 requests TSG-SA#13 to:

1. Give TSG-SA WG4 the authority for formal approval of host laboratory work of AMR-WB Characterisation Phase 1B to allow payment to host laboratories upon finishing the host laboratory work (and avoiding the need to wait until TSG-SA#14 in December 2001 for the payment).

2. Approve Work Item Description "Floating-point ANSI-C code for the AMR-WB speech codec" in Tdoc SP-010459

3. Approve the CRs in Tdocs SP-010452 to SP-010458

ANNEX A: List of input documents to TSG-SA#13 from TSG-SA WG4

Number	Title	Source	Agenda item	Comment
SP-010451	TSG S4 Status Report at TSG-SA#13	SA WG4 Chairman	7.4.1	Information
SP-010452	CRs to TS 26.104 Corrections to encoder-decoder operations AMR-NB floating point (R99 and Release 4)	SA WG4	7.4.3	Approval
SP-010453	CRs to TS 26.131 Introduction of ANR tolerance of 3 dB (R99, Release 4 and Release 5)	SA WG4	7.4.3	Approval
SP-010454	CRs to TS 26.132 on Test signals and Bandwidth of test signals for acoustic testing (R99, Release 4 and Release 5)	SA WG4	7.4.3	Approval
SP-010455	CRs to TS 26.173 Corrections to AMR-WB C-code and file format description (Release 5)	SA WG4	7.4.3	Approval
SP-010456	CRs to TS 26.231 on Request to change muting of transmitter from 5th info bit to 4th info bit at beginning of a TTY burst (Release 5)	SA WG4	7.4.3	Approval
SP-010457	CRs to TS 26.234 Corrections to Transparent end-to-end packet switched streaming service (PSS); Protocols and codecs (Release 4)	SA WG4	7.4.3	Approval
SP-010458	CRs to TR 26.975 Clarification of 3G simulator settings used for AMR characterization in 3G channels (R99 and Release 4)	SA WG4	7.4.3	Approval
SP-010459	Work Item Description for Floating-point ANSI-C code for the AMR-WB speech codec	SA WG4	7.4.3	Approval

TSG-SA WG4 (Codec WG) Status Report

TSG-SA#13
September 24-27, 2001
Beijing, China

Kari Järvinen
TSG-SA WG4 Chairman

Content

- **Review of work progress**

- **Approval of contributions**

Review of work progress

- **Input documents, SA4 meetings, meeting statistics**

- **Progress in Rel-5 Work Items**
  - Wideband Telephony Service (AMR-WB)
  - Multimedia Codecs and Protocols for Conversational PS Services
  - Extended Transparent End-to-end PS Streaming Service
  - Global Text Telephony (Cellular Text Telephony Modem)
  - New WI proposal: Floating-point ANSI-C code for the AMR-WB speech codec

- **Maintenance of earlier releases**

Input documents

umber	Title	Source	Agenda item	Comment
SP-010451	TSG S4 Status Report at TSG-SA#13	SA WG4 Chairman	7.4.1	Information
SP-010452	CRs to TS 26.104 Corrections to encoder-decoder operations AMR-NB floating point (R99 and Release 4)	SA WG4	7.4.3	Approval
SP-010453	CRs to TS 26.131 Introduction of ANR tolerance of 3 dB (R99, Release 4 and Release 5)	SA WG4	7.4.3	Approval
SP-010454	CRs to TS 26.132 on Test signals and Bandwidth of test signals for acoustic testing (R99, Release 4 and Release 5)	SA WG4	7.4.3	Approval
SP-010455	CRs to TS 26.173 Corrections to AMR-WB C-code and file format description (Release 5)	SA WG4	7.4.3	Approval
SP-010456	CRs to TS 26.231 on Request to change muting of transmitter from 5th info bit to 4th info bit at beginning of a TTY burst (Release 5)	SA WG4	7.4.3	Approval
SP-010457	CRs to TS 26.234 Corrections to Transparent end-to-end packet switched streaming service (PSS); Protocols and codecs (Release 4)	SA WG4	7.4.3	Approval
SP-010458	CRs to TR 26.975 Clarification of 3G simulator settings used for AMR characterization in 3G channels (R99 and Release 4)	SA WG4	7.4.3	Approval
SP-010459	Work Item Description for Floating-point ANSI-C code for the AMR-WB speech codec	SA WG4	7.4.3	Approval

SA4 meetings

- **Meetings held:**
  - SA4#18:   Sept 3-7, 2001   Erlangen, Germany
                                                                  (host: Fraunhofer Institute)

- **Future meetings:**
  - TFO SWG: Oct 11-12, 2001   Munich, Germany (Siemens)
  - PSM SWG #3:   late October (tbd)   host tbd
  - SA4#19:   Dec 3-7, 2001   Tokyo, Japan (NTT DoCoMo)
  - SA4#20:   Feb 18 – 22, 2002   host tbd
  - SA4#21:   May 20 – 24, 2002   host tbd
  - SA4#22:   July 22 – 26, 2002   host tbd
  - SA4#23:   Sept 30 – Oct 4, 2002   host tbd
  - SA4#24:   Nov 11 – 15, 2002   host tbd

- **Meeting statistics:**
  - SA4#18: 1 week, 67 participants, 108 documents
  - 20 input LSs, 5 output LSs
  - about 450 people are registered on the SA4 e-mail list

Wideband Telephony Service (AMR-WB)

- **Characterisation Phase status:**
  - **Phase 1A - completed by TSG-SA#12**
    - *Performance without channel errors (all applications)*
    - *Performance in GSM FR GMSK channel*
  - **Phase 1B - started; to be completed by TSG-SA#14**
    - *Performance in 3G WCDMA channel*
  - **Phase 2 - to be carried out later**
    - *Preformance in EDGE 8-PSK channels*
    - *Performance in PS applications (conversational, streaming)*

- **Draft TR on AMR-WB Characterisation (TR 26.976, v.0.3.0) presented for information at TSG-SA#12: contains results from Verification Phase and Characterisation Phase 1A.**

- **Phase 1B host laboratory work (preparation of speech samples) ongoing**

Wideband Telephony Service (AMR-WB)

- **Characterisation Phase 1B provisional schedule**

  - 14 September 2001   Error Patterns available to Host Labs

  - 3rd week September 2001   Host Labs expected to complete Host Lab work

  - 3rd week September 2001   Reports of Host Labs to SA4 reflector [target]

  - 21 September 2001   Reports of Host Labs approval by correspondence (at SA4 level) [target]

  - 24 - 27 September 2001   TSG-SA#13: Host Lab work approval (at TSG-SA level) [target]

  - mid November 2001   Reports from Listening Labs to SA4 reflector

  - 3 -7 December 2001   SA4#19: Presentation of Phase 1B results, Listening Lab work approval (at SA4 level)

  - 17 - 20 December 2001   TSG-SA#14: Presentation of Phase 1B results, Listening Lab work approval (at TSG-SA level)

- **SA4 asks authority for formal approval of Phase 1B host laboratory work to allow payment upon finishing the work (and avoiding need to wait until TSG-SA#14 for the payment)**

7

Wideband Telephony Service (AMR-WB)

- **CRs: minor bug corrections to C-code specification TS 26.173**

- **ITU-T wideband codec standard at bit-rates around 16 kbit/s**
  - AMR-WB codec one candidate
  - Selection test carried out
  - At Rapporteur's meeting of ITU-T Q.7/16 in July 2001, AMR-WB codec selected. Formal selection process still continues. Additional characterisation testing of AMR-WB needs to be carried out for formal selection.

Wideband Telephony Service (AMR-WB)

Deliverable	Title	Latest version	Comment/Status	Approval
TS 26.171	AMR Wideband Speech Codec; General description	2.0.0	Approved at TSG-SA#11 in Tdoc SP-010082.	Approved at TSG-SA#11
TS 26.173	AMR Wideband Speech Codec; C-source code	2.0.0	Approved at TSG-SA#11 in Tdoc SP-010083.	Approved at TSG-SA#11
TS 26.174	AMR-WB speech codec; test sequences	2.0.0	Approved at TSG-SA#11 in Tdoc SP-010084.	Approved at TSG-SA#11
TS 26.190	AMR Wideband Speech Codec; Transcoding Functions	2.0.0	Approved at TSG-SA#11 in Tdoc SP-010085.	Approved at TSG-SA#11
TS 26.191	AMR Wideband Speech Codec; Error concealment of erroneous or lost frames	2.0.0	Approved at TSG-SA#11 in Tdoc SP-010086.	Approved at TSG-SA#11
TS 26.192	AMR Wideband Speech Codec; CN for AMR Speech Traffic Channels	2.0.0	Approved at TSG-SA#11 in Tdoc SP-010087.	Approved at TSG-SA#11
TS 26.193	AMR Wideband Speech Codec; Source Controlled Rate operation	2.0.0	Approved at TSG-SA#11 in Tdoc SP-010088.	Approved at TSG-SA#11
TS 26.194	AMR Wideband Speech Codec; VAD for AMR Speech Traffic Channels	2.0.0	Approved at TSG-SA#11 in Tdoc SP-010089.	Approved at TSG-SA#11
TS 26.201	AMR Wideband Speech Codec; Speech Codec Frame Structure	2.0.0	Approved at TSG-SA#11 in Tdoc SP-010090.	Approved at TSG-SA#11
TS 26.202	AMR-WB speech codec; interface to Iu and Uu	2.0.0	Approved at TSG-SA#11 in Tdoc SP-010091.	Approved at TSG-SA#11
TR 26.976	Wideband Speech Codec Performance Characterization	0.3.0	<u>Phase 1A</u> carried out by TSG-SA#12. Draft TR v0.3.0 presented for information at TSG-SA#12 in Tdoc SP-010302 <u>Phase 1B</u> is ongoing, and will be completed by TSG-SA#14. <u>Phase 2</u> schedule t.b.d	Approval expected at TSG-SA#14

Multimedia Codecs and Protocols for Conversational PS Services

- **TS on Default Codecs (TS 26.235) already finalised. (Approved at TSG-SA#11 and corrected to belong to Rel-5 at TSG-SA#12.)**

- **The work to produce TS on "Transport Protocols for PS conversational multimedia applications" initialised at SA4#18**

  – Will give definition of the required protocol usage within Conversational Packet Switched Multimedia Services (which is based on IM Subsystem).

  – Defines media type requirements (e.g., RTP session description parameters) and gives pointers to the relevant call and bearer control specifications.

Multimedia Codecs and Protocols for Conversational PS Services

Deliverable	Title	Latest Version	Comment/Status	Approval
TS 26.235	Packet Switched Conversational Multimedia Applications; Default Codecs	2.0.0	Approved at TSG-SA#11 in Tdoc SP-010095.	Approved at TSG-SA#11 (Rel-4). Moved to Rel-5 TSG-SA#12.
TS 26.xyz	Transport Protocols for PS conversational multimedia applications	-	Work started at SA4#18. Initial draft exists.	TSG-SA#14
TR 26.xyz	Performance characterization of default codecs for PS conversational multimedia applications	-	-	TSG-SA#14 or later

Global Text Telephony / Cellular Text Telephony Modem

- **All three Cellular Text Telephone Modem TSs under the responsibility of SA4 approved during TSG-SA#10 and TSG-SA#11.**

- **One CR will be presented (to TS 26.231)**

Deliverable	Title	Latest Version	Comment/Status	Approval
TS 26.226	GTT Cellular Text Telephone Modem; General Description	2.0.0	Approved at TSG-SA#10 in Tdoc SP-000569.	Approved at TSG-SA#10
TS 26.230	GTT Cellular Text Telephone Modem; Transmitter C-code Description	2.0.0	Approved at TSG-SA#10 in Tdoc SP-000570.	Approved at TSG-SA#10
TS 26.231	GTT Cellular Text Telephone Modem; Minimum Performance Specification	2.0.0	Approved at TSG-SA#11 in Tdoc SP-010092.	Approved at TSG-SA#11

Extended Transparent End-to-end PS Streaming Service

- **Draft Service Requirements from SA1 reviewed and comments sent back (and as "Cc" to SA2, SA3, SA4, SA5 and T2).**

- **Initial discussions carried out on Rel-5 extensions on streaming, mainly on file formats, scene description and capability exchange.**

- **Initial drafting of TSs started based on the Rel-4 versions, but discussions and any decisions pending on the progress of finalising Service Requirements in SA1.**

  - Tdocs on Digital Rights Management (DRM) noted and sent for information to SA1 (Cc to SA3 and T2).

  - Charging aspects and the supported architectures raised: noted as falling into the scope of SA5 and SA2 and passed to them for information.

Extended Transparent End-to-end PS Streaming Service

- **Further progress in Service Requirements, essential for guiding the technical work in SA4, is expected to take place at SA1 ad-hoc on streaming in mid-October.**

- **SA4 has scheduled ad-hoc meeting #3 on Packet Switched Multimedia in late October to progress the Rel-5 streaming work.**

Deliverable	Title	Latest Version	Comment/Status	Approval
	Stage 2 (SA4, SA2)	-	Pending upon finalisation of Stage 1 in SA1	TSG-SA#14
TS 26.233	Packet-switched Streaming Services (PSS); General Description	-	Initial draft exists within SA4	TSG-SA#14
TS 26.234	Packet-switched Streaming Services (PSS); Protocols and Codecs	-	Initial draft exists within SA4	TSG-SA#14

14

New WI proposal: Floating-point ANSI-C code for the AMR-WB speech codec

- **Target: Prepare a floating-point specification of the AMR-WB codec similarly as has been done earlier for the AMR narrowband codec.**

- **Background: Providing a standard floating-point codec specification is useful for multimedia applications. The fixed-point C-code (TS 26.173) is developed for DSP implementations and is therefore not efficient for implementation on PC or other general-purpose processors (often used as multimedia implementation platforms).**

- **Usage: Like for AMR, the fixed-point specification will be the only allowed implementation of the AMR-WB codec for the speech service. The use of the floating-point code is limited to other services. The bit-exact fixed-point C-code also remains the preferred implementation for all services.**

- **The proposed work is a Work Task belonging to the Feature "Wideband Telephony Service (AMR-WB)"**

Maintenance of earlier releases

- **SP-010452   CRs to TS 26.104 Corrections to encoder-decoder operations AMR-NB floating point (R99 and Rel-4).**

- **SP-010453   CRs to TS 26.131 Introduction of ANR tolerance of 3 dB (R99, Rel-4 and Rel-5).**

- **SP-010454   CRs to TS 26.132 on Test signals and Bandwidth of test signals for acoustic testing (R99, Rel-4 and Rel-5).**

- **SP-010457   CRs to TS 26.234 Corrections to Transparent end-to-end packet switched streaming service (PSS); Protocols and codecs (Rel-4).**

- **SP-010458   CRs to TR 26.975 Clarification of 3G simulator settings used for AMR characterization in 3G channels (R99 and Rel-4).**

Miscellaneous

- **At TSG-SA#12, the UMTS Forum requested information on whether the current 3GPP default speech coders are compatible with voice recognition systems.** It was also pointed out that ETSI TC STQ Aurora Project may also be able to provide information on this subject. SA4 Chairman agreed to check with his group on the compatibility issues and report back at TSG-SA#13.

At SA4#18, the request was debated with the following outcome (agreed statement from SA4):

> *"SA4 has not carried out any studies on the compatibility of speech codecs with voice recognition systems. There is no specific information available within SA4 which confirms or casts doubt on their suitability for use with network based voice recognition.*

> *Distributed speech recongition (DSR) provides potential to improve performance of network based speech recognition by reducing distortion coming from transmission errors. In DSR, speech recognition parameters are extracted and coded in UE and sent over air-interface to the network. SA1 is proposing a new WI on DSR at TSG-SA#13. ETSI is currently developing a DSR standard (TC STQ Aurora). ITU-T SG 16 has launched work on DSR (referred to as Q15)."*

Miscellaneous

- **WID proposal from SA1 on Distributed Speech Recognition (DSR) reviewed.**

  - On the impact of DSR into SA4 specifications, it was noted that TS 26.235 (Packet Switched Conversational Multimedia Applications; Default Codecs) may need to be updated to incorporate the DSR codec. DSR may have impact also on transport protocols specification for conversational services.

  - SA4 also noted that it would like to receive more details and specifications of requirements from SA1 in order to take further actions and study the feasibility of DSR.

Content

- **Report of work progress**

- **Approval of contributions**

Approval requested for

1. Give SA4 the authority for formal approval of host laboratory work of AMR-WB Characterisation Phase 1B to allow payment to host laboratories upon finishing the host laboratory work (and avoiding the need to wait until TSG-SA#14 in December 2001 for the payment).

2. Approve WID on "Floating-point ANSI-C code for the AMR-WB speech codec" in Tdoc SP-010459

3. Approve the CRs in Tdocs SP-010452 to SP-010458

Approval requested for (CRs)

SP-010452

ANSI-C code for the floating-point AMR speech codec

Spec	CR	Rev	Phase	Subject	Cat	Vers	WG	Meeting	S4 doc
26.104	009	1	R99	Correction to make encoder and decoder memories independent	F	3.2.0	S4	TSG-SA WG4#18	S4-010410R
26.104	010	1	REL-4	Correction to make encoder and decoder memories independent	A	4.1.1	S4	TSG-SA WG4#18	S4-010410R
26.104	017		R99	Correction of decoder operation in error concealment of lost frames	F	3.2.0	S4	TSG-SA WG4#18	S4-010502
26.104	018		REL-4	Correction of decoder operation in error concealment of lost frames	A	4.1.1	S4	TSG-SA WG4#18	S4-010502

SP-010453

Terminal Acoustic Characteristics for Telephony; Requirements

Spec	CR	Rev	Phase	Subject	Cat	Vers	WG	Meeting	S4 doc
26.131	007	1	R99	Introduction of ANR tolerance of 3 dB	F	3.2.0	S4	TSG-SA WG4#18	S4-010543
26.131	008		REL-4	Introduction of ANR tolerance of 3 dB	A	4.0.0	S4	TSG-SA WG4#18	S4-010544
26.131	009		REL-5	Introduction of ANR tolerance of 3 dB	A	5.0.0	S4	TSG-SA WG4#18	S4-010545

Approval requested for (CRs)

SP-010454

Speech and video telephony terminal acoustic test specification

Spec	CR	Rev	Phase	Subject	Cat	Vers	WG	Meeting	S4 doc
26.132	004		REL-5	Extended scope of test signals for Ambient Noise Rejection	B	5.0.0	S4	TSG-SA WG4#18	S4-010452
26.132	006		REL-5	Restricted scope of ITU-T P.501 test signals for 3G acoustic tests	F	5.0.0	S4	TSG-SA WG4#18	S4-010517
26.132	005		R99	Bandwidth of test signals for acoustic testing	F	3.2.0	S4	TSG-SA WG4#18	S4-010516
26.132	007		REL-4	Bandwidth of test signals for acoustic testing	A	4.0.0	S4	TSG-SA WG4#18	S4-010547
26.132	008		REL-5	Bandwidth of test signals for acoustic testing	A	5.0.0	S4	TSG-SA WG4#18	S4-010548

SP-010455

ANSI-C code for the Adaptive Multi Rate Wideband speech codec

Spec	CR	Rev	Phase	Subject	Cat	Vers	WG	Meeting	S4 doc
26.173	007		REL-5	Error in the C-code of the encoder homing function	F	5.1.1	S4	TSG-SA WG4#18	S4-010503
26.173	008		REL-5	Inconsistency in the file format description	F	5.1.1	S4	TSG-SA WG4#18	S4-010504

Approval requested for (CRs)

SP-010456

Cellular Text Telephone Modem; Minimum Performance Requirements

Spec	CR	Rev	Phase	1.1 Subject	Cat	Vers	WG	Meeting	S4 doc
26.231	001		REL-5	Request to change muting of transmitter from 5th info bit to 4th info bit at beginning of a TTY burst	F	5.0.0	S4	TSG-SA WG4#18	S4-010488R

SP-010457

Transparent end-to-end packet switched streaming service (PSS); Protocols and codecs

Spec	CR	Rev	Phase	Subject	Cat	Vers	WG	Meeting	S4 doc
26.234	001	1	REL-4	3GPP PSS4 SMIL Language Profile	F	4.0.0	S4	TSG-SA WG4#18	S4-010514
26.234	002		REL-4	Clarification of H.263 baseline settings	F	4.0.0	S4	TSG-SA WG4#18	S4-010487
26.234	003	2	REL-4	Updates to references	F	4.0.0	S4	TSG-SA WG4#18	S4-010540
26.234	004	1	REL-4	Corrections to Annex A	F	4.0.0	S4	TSG-SA WG4#18	S4-010526
26.234	005	1	REL-4	Clarifications to chapter 7	F	4.0.0	S4	TSG-SA WG4#18	S4-010527
26.234	006	1	REL-4	Clarification of the use of XHTML Basic	F	4.0.0	S4	TSG-SA WG4#18	S4-010521

Approval requested for (CRs)

SP-010458

Performance Characterization of the AMR Speech Codec

Spec	CR	Rev	Phase	Subject	Cat	Vers	WG	Meeting	S4 doc
26.975	001		R99	Clarification of 3G simulator settings used for AMR characterisation in 3G channels	F	3.0.0	S4	TSG-SA WG4#18	S4-010469R
26.975	002		REL-4	Clarification of 3G simulator settings used for AMR characterisation in 3G channels	A	4.0.0	S4	TSG-SA WG4#18	S4-010470R

End of presentation