

3GPP TSG-SA WG4 (Codec) meeting #2
Stockholm (Sweden), February 24-26, 1999

TSGS#2(99)040Rev
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Source: TSG-SA WG4

Title: Mandatory Speech Codec for Narrowband Telephony Service
Work Item Description (Revision 2)

Agenda Item: 5

x.1 TSG SA Work Area

	WG1: Services
	WG2: Architecture
	WG3: Security
X	WG4: Codec
	WG5: Network Management

x.2 Justification

The provision of the narrowband telephony service in 3G systems requires to first select and then fully specify the operation on a Mandatory Speech Codec to be implemented by all 3G terminals and network equipment. The Mandatory Speech Codec will be the default speech codec in all W-CDMA and TD-CDMA 3G systems.

x.3 Intended Output of the Work Item

Selection [Report] of the mandatory speech codec

Technical specifications of the mandatory speech codec for the provision of the Narrowband Telephony Service in 3G systems (provisional list):

- General Description
- Interface with the Radio Access Network (RAN)
- Transcoding functions
- Substitution and muting of lost frames
- ANSI-C Code
- Comfort Noise aspects
- Speech Activity Rate Control
- Voice Activity Detection
- (Other specifications could be required especially regarding the definition of the mode signaling)

Technical reports on the evaluation of the mandatory speech codec for the provision of the Narrowband Telephony Service in 3G systems (Provisional list):

- Report on the Characterization tests of the mandatory speech codec in 3G radio channels

x.4 Impact on other Technical Specifications and Technical Reports

Affects:	USIM	ME	NW	Others
Yes		X	X	
No	X			
Don't know				

x.5 Technical Scope, including the field of application of the intended output

The selection and specification of the mandatory speech codec must take advantage of the corresponding activities already completed or still ongoing within the Partner Organizations, especially in ARIB and ETSI.

ARIB will complete the evaluation of mandatory speech codec candidates by February 1999.

ETSI has been working under the assumption that the newly approved AMR should be the best candidate for the mandatory speech codec. AMR provides the high quality and flexibility expected from a default 3G speech codec.

As part of the work item, AMR and other existing speech codec should be evaluated with the objective to select the best possible solution for the mandatory speech codec. The selected candidate should fulfill the following minimum set of requirements:

- Equivalent to wireline speech codec (ADPCM - G.726) in No Errors conditions
- Limited degradation under normal operational conditions (with channel errors, in tandeming)
- Based on a proven technology
- Good trade off complexity/performance for low cost implementation in 3G systems

After the selection of the speech codec, it will be necessary to define the complete operation of the codec in FDD W-CDMA and TDD TD-CDMA channels, including the discontinuous transmission operation and/or variable rate operation.

The definition of the best channel coding for the support of the mandatory speech codec (based on existing bearers vs dedicated bearer with unequal protection) should be defined in relation with the TSG-RAN WG1.

Finally, the operation of the mandatory speech codec should be fully characterized in multiple 3G operational environment.

x.6 Impact on and Linked 3GPP Work Items

TSG-S4: Work Items on Codec for low bit rate Multimedia telephony service, 3G audio-visual terminal characteristics, Tandem free aspects for 3G and between 2G and 3G systems

Corresponding activities in TSG-SA WG2 (Architecture) and TSG-RAN WG1 (Layer 1)

Other working groups as required

x.7 Schedule of tasks to be performed

Detailed work program to be defined during the 3GPP TSG-SA WG4#2 meeting

Work Item to be approved in TSG-SA#2 (March 1999, in Fort Lauderdale, US)

Selection of Mandatory Speech codec completed by: April 1999

Baseline Specification of Mandatory Speech codec completed by: April 1999

Mandatory speech Codec Characterization in 3G radio channels (W-CDMA FDD and TD/CDMA TDD) completed by: December 1999

Final Specification completed by: December 1999

New Specifications & Technical Reports (Provisional Number)						
Spec. No.	Title	Prime resp. TSG(s)	2ndary resp. TSG(s)	Presented for information at TSG#	Approved at TSG#	Comments
XX.YY.01	Mandatory Speech Codec General Description	SA		TSG SA#x	TSG-SA#y	Editor: tbd
XX.YY.02	Mandatory Speech Codec ANSI C-Code	SA		TSG SA#x	TSG-SA#y	Editor: tbd
XX.YY.03	Mandatory Speech Codec Test Sequences	SA		TSG SA#x	TSG-SA#y	Editor: tbd
XX.YY.04	Mandatory Speech Codec Speech Transcoding Functions	SA		TSG SA#x	TSG-SA#y	Editor: tbd
XX.YY.05	Mandatory Speech Codec Error Concealment of lost frames	SA		TSG SA#x	TSG-SA#y	Editor: tbd
XX.YY.06	Mandatory Speech Codec Source Controlled Bit-Rate Operation	SA		TSG SA#x	TSG-SA#y	Editor: tbd
XX.YY.07	Mandatory Speech Codec Voice Activity Detector	SA		TSG SA#x	TSG-SA#y	Editor: tbd
XX.YY.08	Mandatory Speech Codec Frame Structure	SA		TSG SA#x	TSG-SA#y	Editor: tbd
XX.YY.09	Mandatory Speech Codec Interface to the RAN	SA		TSG SA#x	TSG-SA#y	Editor: tbd
XX.YY.10	Mandatory Speech Codec Performances Characterization	SA		TSG SA#x	TSG-SA#y	Editor: tbd
Affected existing specifications						
Spec. No.	CR	Subject			Approved at TSG#	Comments

x.8 Supporting Members

Individual Member Organization	Representing Partner
Ericsson	ETSI
GSM North America	T1
Matsushita Communication Ind. Co. Ltd.	ARIB
NEC	ARIB
Nokia	ETSI
Nortel Networks	ETSI
NTT DoCoMo	ARIB
Siemens	ETSI

x.9 Work item Rapporteur

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x.10 Responsible TSGs

TSG SA WG4 (Codec)