3GPP TSG_CN#7   **NP-000046**

ETSI SMG3 Plenary Meeting #7,
Madrid, Spain
13th – 15th March 2000

Agenda item: **5.3.3**

Source: **TSG_N WG3**

Title: **CRs to 3G Work Item Multimedia**

Introduction:

This document contains **"3"** CRs on **Work Item Multimedia,** that have been agreed by **TSG_N WG3,** and are forwarded to **TSG_N Plenary** meeting #7 for approval.

WG Tdoc	Spec	CR	Rev	Cat	Phase	Current V.	New V.	Subject
N3-000112	29.007	014		B	R99	3.3.0	3.4.0	FALLBACK TO SPEECH IN A CS MULTIMEDIA CALL SETUP
N3-000086	27.001	014		F	R99	3.3.0	3.4.0	Corrections related to MULTIMEDIA
N3-000083	27.001	010		B	R99	3.3.0	3.4.0	FALLBACK TO SPEECH IN A CS MULTIMEDIA CALL SETUP

CHANGE REQUEST

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27.001	**CR**	**010**	Current Version:	3.3.0

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ ↑ *CR number as allocated by MCC support team*

For submission to: **TSG-CN#7**
list expected approval meeting # here ↑

for approval **X**
for information ☐

strategic ☐
non-strategic ☐

(for SMG use only)

Form: CR cover sheet, version 2 for 3GPP and SMG   *The latest version of this form is available from: ftp://ftp.3gpp.org/Information/CR-Form-v2.doc*

Proposed change affects:
(at least one should be marked with an X)

(U)SIM ☐   ME **X**   UTRAN / Radio ☐   Core Network **X**

Source:	TSG-CN3		**Date:**	2000-03-03

Subject:	Changes to support a fallback to speech in a circuit switched multimedia call

Work item:	Multimedia

Category:

(only one category shall be marked with an X)

			Release:		
F	Correction	☐		Phase 2	☐
A	Corresponds to a correction in an earlier release	☐		Release 96	☐
B	Addition of feature	**X**		Release 97	☐
C	Functional modification of feature	☐		Release 98	☐
D	Editorial modification	☐		Release 99	**X**
				Release 00	☐

Reason for change:	Increased user friendliness in a multimedia call setup.

Clauses affected:	8.3.3

Other specs affected:

Other 3G core specifications	**X**	→ List of CRs:	24.008, 29.007
Other GSM core specifications	☐	→ List of CRs:	
MS test specifications	☐	→ List of CRs:	
BSS test specifications	☐	→ List of CRs:	
O&M specifications	☐	→ List of CRs:	

Other comments:	

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8.3.3   Indication of Compatibility Requirements to the PLMN

8.3.3.1   Indication in case of Mobile terminating calls

In support of:

- PSTN originated calls, and

- ISDN originated calls using 3.1 kHz audio Bearer Capability (BC), as well as

- ISDN originated calls using unrestricted digital Bearer Capability but not specifying all parameters for deducing a Bearer Service.

Mobile specific requirements to be dealt with in the Bearer Capability information element the call confirmed message has been introduced in the call control protocol (3G TS 24.008). This also allows for renegotiation of specific parameters at the beginning of the connection set-up process. The specific parameters are:

a) mobile specific requirements:

- Connection element (transparent/non transparent);

- Structure (note 1);

- Synchronous/Asynchronous (note 8)

- Rate adaptation/other rate adaptation (note 9)

- User information layer 2 protocol (note 1);

- Intermediate rate (note 2), (note 3);

- Modem Type (note 1), (note 3);

- User Rate (note 3);

- Compression ,

- Fixed network user rate, (note 3) (note 4)

- Other modem type, (note 3) (note 4)

- User initiated modification indication (note 4)

The following parameters are indicated by the MS to the network, only:

- Acceptable channel codings (note 5)

- Maximum number of traffic channels, (note 5)

- Wanted air interface user rate (note 6) (note 7)

- Asymmetry preference indication (note 7)

NOTE 1: This parameter is correlated with the value of the parameter connection element.

NOTE 2: For non-transparent services this parameter is correlated with the value of the parameter negotiation of intermediate rate requested.

NOTE 3: Modification of these parameters may be proposed by the MS. The Network may accept it or not.

NOTE 4: This parameter shall be included by the MS only in case it was received from the network.

NOTE 5: This parameter shall be included only in case the parameter 'fixed network user rate' is included.

NOTE 6: This parameter shall be included only for non-transparent services and in case the parameter 'fixed network user rate' is included.

NOTE 7: This parameter has to be included if EDGE channel coding(s) are included in Acceptable channel codings. In cases where this parameter would not otherwise be included, the value is set to 'Air interface user rate not applicable' or 'User initiated modification not requested' or "No preference'.

NOTE 8: For FTM and PIAFS, this parameter may be negotiated as in Table B.4e. How the subscription for BS20 is assured, is an operator matter.

NOTE 9: For FTM, PIAFS or Multimedia, this parameter may be negotiated as in Table B.4f.

    b) requirements with effects at the partner terminal:

- Number of data bits;

- Number of stop bits;

- Parity.

The MS indicates the radio channel requirement in the call confirmed message. If the MS indicates the support of "dual" (HR and FR channels) the final decision, which radio channel is chosen, is done by the network in an RR message. The radio channel requirement is ignored in UMTS, see Table B.5a in Annex B .

If the network proposes optional support of both transparent and non transparent connection elements but does not indicate a user information layer 2 protocol, the MS shall set the appropriate value, if choosing non transparent in the call confirmed message and out-band flow control is not requested, see B.1.1.2.

Additionally the values of the parameters structure, modem type and intermediate rate have to be set in conformance with the values of the parameters radio channel requirements, negotiation of intermediate rate requested and connection element.

Section B.1.1.2 and table B.1 in the annex B describe the negotiation procedure. Annex B table B.4 describes the selection of the modem type and the dependence on the value of the parameter connection element. Annex B table B.4 describes the selection of the intermediate rate and user rate and their dependence upon the value of the NIRR parameter and the equipment capabilities.

The following MT cases can be deduced from the individual call set-up request conditions

    a) If the set-up does not contain a BC information element, the MS in the call confirmed message shall include any BC information (single or multiple BC-IE). In case of multiple BC-IEs one BC-IE must indicate the information transfer capability "speech". A speech BC-IE together with a 3.1kHz multimedia BC-IE indicates the support of a fallback to speech (ref. to TS 29.007 and TS 24.008).

    b) If the set-up message contains a single BC-IE, the MS in the call confirm message shall use either a single BC-IE, if it wants to negotiate mobile specific parameter values, or, unless otherwise specified in annex B, no BC-IE, if it agrees with the requested ones.

    c) If the set-up contains a multiple BC-IE, the MS in the call confirmed message shall use either a multiple BC-IE, if it wants to negotiate mobile specific parameter values, or, unless otherwise specified in annex B, no BC-IE, if it agrees with the requested ones. In case of a 3.1kHz multimedia setup the MS can either accept the possibility of a fallback to speech by responding with two BC-IEs or with no BC-IEs or turn the call to a speech call by sending only a speech BC-IE in the call confirm message or turn the call to a multimedia only call (i.e. no fallback to speech allowed) by sending only a multimedia BC-IE in the call confirm message. Alternatively a single BC-IE containing fax group 3 only shall be used if a multiple BC-IE requesting speech alternate fax group 3 is received and the MS is not able to support the speech capability. Annex B, table B.7, describes the negotiation rules.

If the BC-IE contains 3.1 kHz ex PLMN, the MS is allowed to negotiate all mobile specific parameter values listed above. If the BC-IE contains facsimile group 3, the MS is allowed to negotiate the connection element (transparent/non transparent) only. In any case, if the set-up message requests a "single service", the MS must not answer in the call confirmed message requesting a "dual service" and vice versa.

However, for dual services with repeat indicator set to circular (alternate) the MS may change the sequence of dual BC-IEs within the call confirmed message (preceded by the same value of the repeat indicator), if it wants to start with a different Bearer Capability than proposed by the network as the initial one.

In addition, the MS may propose to the network to modify User Rate, Modem Type and Intermediate Rate in the CALL CONFIRMED message. The network may accept or release the call.

If the BC-IE received from the network contains the parameters 'fixed network user rate', 'other modem type' and possibly the 'user initiated modification', the MS can either:

a) if in GSM, discard these parameters, or

b) include the possibly modified values for the 'fixed network user rate' and 'other modem type' in the BC-IE of the call confirmed message. The network might accept or reject the modified values. In this case the MS shall also include the parameters 'maximum number of traffic channels' and 'acceptable channel codings'. Additionally for non-transparent services, the MS shall also include the parameters 'wanted air interface user rate' and the 'user initiated modification indication'.

In case a),The MS shall use the fall-back bearer service indicated by the remaining parameters of the BC-IE on a single slot configuration (reference GSM 04.21).

In GSM case b), a single slot configuration shall be used by the MS, in case the 'maximum number of traffic channels' is set to "1 TCH" and the 'user initiated modification indication' is set either to "user initiated modification not required" or to "user initiated modification up to 1TCH may be requested"; other wise the MS shall use a multislot configuration (reference GSM 04.21).

In case the 'acceptable channel codings' is indicated by the MS, the decision which channel coding is used is done by the network and indicated to the mobile station with an RR message. This RR message may also assign an asymmetric channel coding. The 'acceptable channel codings' parameter takes precedence over the 'negotiation of intermediate rate requested' parameter for non-transparent services. Also the intermediate rate and user rate per traffic channel in a multislot configuration are not indicated by the 'intermediate rate' and 'user rate' parameters of the BC-IE, but depend on the chosen channel coding only.

If the parameters 'fixed network user rate', 'other modem type' were not included in the BC-IE received, or no BC-IE was received, the MS shall not include these parameters in the CALL CONFIRMED message (i.e. octets 6d, 6e, 6f, and 6g ref. to 3G TS 24.008).

8.3.3.2   Indication in case of Mobile originating calls

In support of mobile originating calls the values of BC-IE parameters are requested in the set-up message from the MS. If the MS indicates the support of both transparent and non transparent connection elements the network shall return its choice in the call proceeding message. The MS is not allowed to indicate support of both transparent and non transparent, if the MS also requests out-band flow control, i.e. it does not indicate a layer 2 protocol.

Additionally the value of the parameter modem type has to be set depending on the value of the parameter connection element as described in annex B, table B.4a.

The set-up message contains a single or multiple BC-IE. In case of multiple BC-IEs one BC-IE must indicate the information transfer capability "speech".

In case of a multimedia call the setup message contains either a multimedia BC-IE indicating a multimedia only call request (i.e. no fallback to speech allowed) or both a speech BC-IE and a 3.1kHz multimedia BC-IE to indicate the support/request of a fallback to speech (ref. to TS 29.007 and TS 24.008).

If the set-up message requests a "single service", the network must not answer in the call proceeding message requesting a "dual service" and vice versa. Alternatively the network shall answer with a single BC-IE containing fax group 3 if a multiple BC-IE requesting speech alternate fax group 3 is received but the network does not allow the use of this alternate service. Annex B, table B.7, describes the negotiation rules. If the MS requests a "dual service" the network is not allowed to change the sequence of the service.

If the set-up message is indicates that negotiation of intermediate rate is requested then the network shall behave as described in annex B, table B.4b.

Unless otherwise specified in annex B, if no BC-IE parameter needs negotiation it is up to the network if it sends a CALL PROC message (with or without a BC-IE) towards the MS or not.

For multislot, TCH/F14.4, and EDGE operations and in UMTS the MS shall include an appropriate set of the parameters 'fixed network user rate', 'other modem type', 'maximum number of TCH' and 'acceptable channel codings' in the BC-IE of the SETUP message. If EDGE channel coding(s) are included in ACC in case of transparent calls, the 'Wanted air interface user rate'-parameter shall be set to 'Air interface user rate not applicable' and the 'User initiated modification indication'-parameter to 'User initiated modification not requested'. In a non-transparent multislot operation, the MS shall also include the parameters 'wanted air interface user rate' and 'user initiated modification indication' in the BC-IE of the SETUP message. In a non-transparent TCH/F14.4 or EDGE operation or in UMTS the MS shall also include the parameter 'wanted air interface user rate'. In non-transparent EDGE operation the MS shall also include the parameter 'asymmetry preference indication'. It shall also set the other parameters of the BC-IE (i.e. 'user rate') to values identifying fall-back values. Depending on the network two situations can be distinguished:

a) The network supports the requested operation:

In this case the network must include the parameter 'fixed network user rate', 'other modem type' and possibly 'user initiated modification' in the BC-IE(s) of the CALL PROCEEDING message, irrespective whether or not they contain modified values or just a copy of the received ones.

The 'acceptable channel codings' indicated by the MS in the SETUP message takes precedence over the 'negotiation of intermediate rate requested' parameter for non-transparent services. The intermediate rate per traffic channel and the user rate per traffic channel is dependent on the chosen channel coding only. The chosen channel coding is indicated to the mobile station by the network with an RR message.

b) The network does not support the requested operation:

In this case, in GSM, the BC-IE of the CALL PROCEEDING message will not contain the parameters fixed network user rate' and 'other modem type' or no BC-IE will be included in the CALL PROCEEDING message at all. The mobile station shall then discard the parameters 'fixed network user rate', 'other modem type', 'maximum number of TCH', 'acceptable channel codings' 'wanted air interface user rate' and 'user initiated modification indication' sent with the SETUP message and apply the fall-back bearer service.

In case a), a single slot configuration shall be used by the MS, in case the 'maximum number of traffic channels' is set to "1 TCH" and the 'user initiated modification indication' is set either to "user initiated modification not requested" or to "user initiated modification up to 1TCH may be requested".

In case b), The MS shall use the fall-back bearer service indicated by the remaining parameters of the BC-IE on a single slot configuration (reference GSM 04.21).

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27.001	**CR**	**014**	Current Version:	**3.3.0**

GSM (AA.BB) or 3G (AA.BBB) specification number ↑   ↑ *CR number as allocated by MCC support team*

For submission to: **TSGN 07**   for approval **X**   strategic ☐   *(for SMG*
list expected approval meeting # here ↑   for information ☐   non-strategic ☐   *use only)*

Form: CR cover sheet, version 2 for 3GPP and SMG   The latest version of this form is available from: ftp://ftp.3gpp.org/Information/CR-Form-v2.doc

Proposed change affects: (U)SIM ☐   ME **X**   UTRAN / Radio ☐   Core Network **X**
(at least one should be marked with an X)

Source: TSG N WG3   **Date:** 2000-02-29

Subject: Corrections related to multi media

Work item: Multi media

Category: F   Correction   **X**   **Release:**   Phase 2   ☐
              A   Corresponds to a correction in an earlier release   ☐   Release 96   ☐
(only one category   B   Addition of feature   ☐   Release 97   ☐
shall be marked   C   Functional modification of feature   ☐   Release 98   ☐
with an X)   D   Editorial modification   ☐   Release 99   **X**
                                                                                    Release 00   ☐

Reason for change: The rules for renegotiation of BC-IE parameters rate adaptation need to be broadened.

Clauses affected: Section B.1.1.2

Other specs affected: Other 3G core specifications   ☐   → List of CRs:
              Other GSM core specifications ☐   → List of CRs:
              MS test specifications   ☐   → List of CRs:
              BSS test specifications   ☐   → List of CRs:
              O&M specifications   ☐   → List of CRs:

Other comments:

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Table B.4f: Negotiation of Rate adaptation/Other rate adaptation

Mobile Terminated Call:

	BC-parameter Rate adaptation/Other rate adaptation	
Bearer type	Message SETUP	Message CALL CONF
FTM[1]	V.110, I.460 and X.30	X.31 flag stuffing
PIAFS[2]	V.110, I.460 and X.30	PIAFS
Multimedia	V.110, I.460 and X.30[3]	H.223 and H.245
	No rate adaptation[5]	H.223 and H.245

1) This negotiation is possible, only if ITC=UDI, FNUR=56 kbit/ and CE=NT or "both" is signalled in the SETUP message. The MS shall signal FTM as specified in B.1.2.3.

2) This negotiation is possible, only if ITC=UDI, FNUR=32 kbit/s and CE= "both" is signalled in the SETUP message. The UE shall signal PIAFS as specified in B.1.2.4.

3) This negotiation is possible, only if ITC=UDI or RDI, FNUR=32 or 56 kbit/s and CE=T or "both" is signalled in the SETUP message. The MS shall signal 3G-H.324/M as specified in B.1.3.1.7.

5) This negotiation is possible, only if ITC=3.1 kHz, FNUR=28.8 kbit/s, MT=V.34 and CE=T or "both" is signalled in the SETUP message. The MS shall signal 3G-H.324/M as specified in B.1.3.2.3.

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29.007	**CR**	**014**	Current Version:	**3.3.0**

GSM (AA.BB) or 3G (AA.BBB) specification number ↑   *↑ CR number as allocated by MCC support team*

For submission to: **TSG_CN#7**   for approval **X**   strategic ☐   *(for SMG*
list expected approval meeting # here ↑   for information ☐   non-strategic ☐   *use only)*

Form: CR cover sheet, version 2 for 3GPP and SMG   The latest version of this form is available from: ftp://ftp.3gpp.org/Information/CR-Form-v2.doc

Proposed change affects: (U)SIM ☐   ME **X**   UTRAN / Radio ☐   Core Network **X**
(at least one should be marked with an X)

Source: TSG_CN WG3   **Date:**   2000-03-03

Subject: Changes to support a fallback to speech in a circuit switched multimedia call set-up

Work item: Multimedia

Category: F Correction   **Release:** Phase 2 ☐
          A Corresponds to a correction in an earlier release   Release 96 ☐
(only one category   B Addition of feature   **X**   Release 97 ☐
shall be marked   C Functional modification of feature   Release 98 ☐
with an X)   D Editorial modification   Release 99 **X**
          Release 00 ☐

Reason for change: Increased user friendliness in a multimedia call set-up.

Clauses affected: 2, 9

Other specs affected:
Other 3G core specifications	**X**	→ List of CRs:	24.008, 27.001
Other GSM core specifications	☐	→ List of CRs:	
MS test specifications	☐	→ List of CRs:	
BSS test specifications	☐	→ List of CRs:	
O&M specifications	☐	→ List of CRs:	

Other comments:

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2   Normative references

[xx]   ITU-T Recommendation V.8: "Procedures for starting sessions of data transmission over the public switched telephone network"

[xx]   TS 26.111: "Codec for Circuit Switched Multimedia Telephony Service; Modifications to H.324"

9.4   3G-H.324/M calls over 3.1kHz audio

~~3G-H.324/M calls provide over 3.1kHz audio(e.g. 28.8kbit/s transparent data or 33.6kbit/s transparent data).~~ In case of 3G-H.324/M calls over 3.1kHz audio, the IWF shall ~~modem function is used to~~ provide the V.34 modem modulation and the V.8 procedure with the indication of H.324 support in the call function category of the V.8 handshaking. H.223 & H.245 flow is not terminated in the modem function.

~~If the V.8 procedure fails to detect V.34 modem, or the handshake and the establishment of the digital connection is not successful after a suitable period the modem function should disconnect the line. Fallback to speech or other modem remains for further study.~~

The performance of V.8bis by the modem function is FFS.

9.4.1   Mobile originated multimedia call

Call setup

The setup message sent by the MS contains either a multimedia BC-IE indicating a multimedia only call request (i.e. no fallback to speech allowed) or both a speech BC-IE and a 3.1kHz multimedia BC-IE to indicate the support of a fallback to speech (ref. to TS 27.001 and TS 24.008).

The MSC shall not accept a requested service to which the user has no subscription. On the condition the user has the required subscriptions (i.e. to multimedia and/or speech) the following applies:

- In case of a multimedia only BC-IE the MSC may accept the setup as such or with modifications sent to the MS in the call proceeding message (ref. to TS 27.001).

- In case of both a speech BC-IE and a 3.1kHz multimedia BC-IE the MSC may either accept the possibility of a fallback to speech by responding with two BC-IEs or with no BC-IEs or turn the call to a speech call by sending only a speech BC-IE in the call confirm message or turn the call to a multimedia only call by sending only a multimedia BC-IE in the call confirm message. (Ref. to TS 27.001.)

The IWF V.34 modem shall initiate the ITU-T V.8 handshaking and indicate the support of H.324/M in the call function category of the V.8 handshaking. If the called party's modem does not indicate a H.324 support in its V.8 inband signalling response, the IWF may clear the call. If the called party responds with a modem answering tone but there is no V.8 response at all, the IWF shall clear the call.

Fallback to speech after setup

If the MSC has accepted the possibility of a fallback to speech and the IWF modem does not recognize the answering tone of the called modem within the expiration of a timer started at the reception of the answer message, the MSC IWF shall initiate an In Call Modification procedure (ref. to TS 24.008) in order to fall back to a speech mode. As a result of the procedure the IWF resource shall be released and a speech channel shall be set up between the calling MS and the fixed network. If the fallback fails e.g. due to a failing In Call Modification procedure, the IWF shall clear the call.

A recommended minimum value for the timer is 3 seconds (ref. to the ITU-T V.25 recommendation).

9.4.2   Mobile terminated multimedia call

Call setup

If the user has a subscription to both the multimedia bearer service and the speech teleservice and if the network supports both services and the fallback functionality, the MSC shall send both a multimedia BC-IE and a speech BC-IE in the setup message to the mobile station. If the user has a subscription only to the multimedia bearer service the MSC shall send only a multimedia BC-IE.

In case of both a speech BC-IE and a 3.1kHz multimedia BC-IE in the setup the mobile station may either accept the possibility of a fallback to speech by responding with two BC-IEs or with no BC-IEs or turn the call to a speech call by

sending only a speech BC-IE in the call confirm message or to a multimedia only call (i.e. no fallback to speech allowed) by sending only a multimedia BC-IE in the call confirm message. In case of a multimedia only BC-IE in the setup the MS may accept the setup as such or with modifications sent to the MSC in the call confirm message.

If no service definition is available in the network, the MSC shall send no BC-IE(s) to the mobile station in the call setup. The MSC shall perform a subscription check to the multimedia and/or speech service(s) requested by the mobile station in the call confirm message and shall not accept a requested service to which the user has no subscription.

The IWF V.34 modem ~~expects to receive~~shall await the ITU-T V.8 handshaking to be initiated by the calling party's modem and ~~to~~shall recognize the support of H.324 in the call function category of the incoming V.8 handshaking. If the calling party's modem does not indicate a H.324 support in its V.8 inband signalling, the IWF may clear the call. If the calling modem tries to handshake another than V.34 modem scheme, the IWF shall clear the call.

Fallback to speech after setup

If the MSC supports a fallback to speech and the user has a subscription to the speech service and the mobile station accepts the possibility of a fallback to speech in the call confirm message and the IWF modem does not recognize a call tone nor a V.8 Call Indication nor a V.8 Call Menu within the expiration of a timer started at the sending of the ANSam answer tone (i.e. the calling party is not a V.34 modem), the IWF shall initiate an In Call Modification procedure (ref. to TS 24.008) in order to fall back to a speech mode. As a result of the procedure the IWF resource shall be released and a speech channel shall be set up between the called MS and the fixed network. If the fallback fails e.g. due to a missing subscription to speech or a failing In Call Modification procedure, the IWF shall clear the call.

A recommended minimum timer value is 3 seconds (ref. to the ITU-T V.8 recommendation).