Technical Specification Group Services and System Aspects **TSGS#27(05)0094**
Meeting #27, Tokyo, Japan
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Source: TSG-SA WG4

Title: CR TS 26.244 on Extended presentations in 3GP files for MBMS (Release 6)

Document for: Approval

Agenda Item: 7.4.3

The following CR, agreed at the TSG-SA WG4 meeting #34, is presented to TSG SA #27 for approval.

Spec	CR	Rev	Phase	Subject	Cat	Vers	WG	Meeting	S4 doc
26.244	008	1	Rel-6	Extended presentations in 3GP files for MBMS	B	6.2.0	S4	TSG-SA WG4#34	S4-050171

3GPP TSG-SA WG4 Meeting #34
Lisbon, Portugal, 21-25 February 2005

Tdoc ⌘S4-050171

CR-Form-v7

CHANGE REQUEST

⌘ **26.244** **CR** **008** ⌘ **rev** **1** ⌘ Current version: **6.2.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: UICC apps⌘ ☐ ME ☒ Radio Access Network ☐ Core Network ☐

Title:	⌘	Extended presentations in 3GP files for MBMS
Source:	⌘	TSG SA WG4
Work item code:	⌘	PSSrel6-Stage3
Date:	⌘	15/03/2005
Category:	⌘	**B**
Release:	⌘	Rel-6

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
B *(addition of feature),*
C *(functional modification of feature)*
D *(editorial modification)*
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:

2	*(GSM Phase 2)*
R96	*(Release 1996)*
R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
Rel-4	*(Release 4)*
Rel-5	*(Release 5)*
Rel-6	*(Release 6)*

Reason for change:	⌘	Added functionality for 3GP files used in MBMS: support for extended presentations (SMIL, images etc)
Summary of change:	⌘	• A new profile defining extended presentations for MBMS is added. • The ISO base media file format reference is updated to a new edition that includes tools for locating media files inside a 3GP file. • The updates have no impact on existing profiles or other services, such as MMS and PSS, using 3GP files.
Consequences if not approved:	⌘	3GP files with extended presentations cannot be included in MBMS. The reference to the underlying format (ISO) behind 3GP will become obsolete.

Clauses affected:	⌘	2, 5.2.1, 5.2.3, 5.4.6, 5.5, 7.6, 10.1, 10.3, 11

Other specs affected:	⌘	Y	N		⌘
			X	Other core specifications	
			X	Test specifications	
			X	O&M Specifications	

Other comments:	⌘	

How to create CRs using this form:
Comprehensive information and tips about how to create CRs can be found at http://www.3gpp.org/specs/CR.htm.
Below is a brief summary:

1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

2 References

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[7] ISO/IEC 14496-12:2005~~3~~ | 15444-12:2005~~3~~: "Information technology – Coding of audio-visual objects – Part 12: ISO base media file format" | "Information technology – JPEG 2000 image coding system – Part 12: ISO base media file format".

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[31] IETF RFC 2234: "Augmented BNF for Syntax Specifications: ABNF", Crocker D. and Overell P., November 1997.

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5 Conformance

5.1 General

The 3GPP file format is structurally based on the ISO base media file format defined in [7]. However, the conformance statement for 3GP files is defined here by addressing constraints and extensions to the ISO base media file format, registration of codecs, file identification (file extension, brand identifier and MIME type) and profiles. If a 3GP file contains codecs or functionalities not conforming to this specification they may be ignored, i.e. a 3GP compliant file parser may ignore non-compliant boxes.

5.2 Definition

5.2.1 Limitations to the ISO base media file format

The following limitation to the ISO base media file format [7] shall apply to a 3GP file:

- compact sample sizes ('stz2') shall not be used for tracks containing H.263, MPEG-4 video, AMR, AMR-WB, AAC or Timed text.

NOTE: The extended presentation format (see clause 11) is defined by using the Meta box of the ISO base media file format (second edition) [7] that was not present in the first edition. Hence, extended presentations in 3GP files are explicitly signalled via the Extended-presentation profile (see clause 5.4.6).

5.2.2 Registration of codecs

Code streams for H.263 video [9], MPEG-4 video [10], H.264 (AVC) video [29], AMR narrow-band speech [11], AMR wide-band speech [12], Extended AMR wide-band audio [21], Enhanced aacPlus audio [23, 24, 25], MPEG-4 AAC audio [13], and timed text [4] can be included in 3GP files as described in clause 6 of the present document.

5.2.3 Extensions

The following extensions to the ISO base media file format [7] can be used in a 3GP file:

- streaming-server extensions (see clause 7);
- asset information (see clause 8);
- video-buffer information (see clause 9);
- ~~encryption (see clause 10);~~
- AVC file format (see [20]).

If SDP information is included in a 3GP file, it shall be used as defined by the streaming-server extensions.

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5.4.6 Extended-presentation profile

The 3GP Extended-presentation profile is branded '3ge6' and is used in MBMS. It enables a 3GP file to carry any kind of multimedia presentation composed of tracks, media files and a scene description.

The following constraint shall apply to 3GP files conforming to Extended-presentation profile:

- there shall be an extended presentation as defined in clause 11.

The following requirement shall apply to a player conforming to this profile. A conforming player

- shall render the content of the 3GP file as prescribed by the contained scene description file (primary item).

5.5 File-branding guidelines

The file-type brands defined in this specification are used to label 3GP files belonging to Release 6 and conforming to one or more profiles. 3GP files may also conform to earlier Releases or even to other file formats, such as MP4, which is also derived from the ISO base media file format [7].

Table 5.1 contains a non-exhaustive list of examples with 3GP files for various purposes. Note, however, that it only gives typical or suggested uses. Both writers and readers of files should exercise care when using brand identifiers. It is worth repeating the general guidelines here, remembering that a brand identifies a specification or a conformance point in a specification; its presence in a file indicates both:

- that the file conforms to the specification; it includes everything required by, and nothing contrary to the specification (though there may be other material);

- that a reader implementing that specification (possibly only that specification) is given permission to read and interpret the file.

All 3GP files of Release 5 or later shall contain the compatible brand 'isom' indicating that they conform to the ISO base media file format, unless the reader is required to interpret extensions specific to the AVC file format [20], for which case the compatible brand 'avc1' shall be used instead (see note 2), or extensions specific to extended presentations (see clause 11), for which case the compatible brand 'iso2' shall be used (see note 3). The major brand shall be included in the compatible brands list as well. If a file contains more than one (3GPP) brand in the compatible brands list, the major brand indicates the "best use" of the file. For example, a Release-5 file with audio combined with Timed text is best played by a Release-5 player, but may also be played by a Release-4 player that does not support timed text.

NOTE 1: Since movie fragments are not allowed in Release 4 and Release 5, a fragmented 3GP file should not contain '3gp4' or '3gp5' as brand or compatible brand. A player that does not support movie fragments will only be able to play the first fragment of a fragmented file.

NOTE 2: Consider the brands 'isom' and 'avc1'. The first indicates conformance to the base structure of the ISO base media file format (first version) [7]. The second, conformance to the AVC-specific extensions (structures such as sample groups, for example) [20]. A file labelled as 'isom' and 'avc1' conformant is indicating that either these extensions are not present, or if present, they can be ignored (as an 'isom' reader will not understand them). If the writer desires that only readers supporting the extensions read a file, then the 'isom' brand would be omitted. These extensions are all optional (i.e. none are required to be in a file, though if they are, an 'avc1'-conformant reader must interpret them), and therefore a file not using them is still 'avc1' conformant.

NOTE 3: The second version of the ISO base media file format [7] defines the brand 'iso2' that in addition to 'isom' indicates conformance to extensions to the first version.

Table 5.1: Examples of brand usage in 3GP files

Conformance	Suffix	Brand	Compatible brands	Example content
MMS and download: Files shall contain one or more of the brands 3gp4, 3gp5 and 3gp6. It is good practice to include compatible brands of earlier releases to enable legacy players to play the files.				
Release 4	.3gp	3gp4	3gp4	H.263 and AMR
Release 5, 4	.3gp	3gp5	3gp5, 3gp4, isom	H.263 and AMR
Release 6, 5, 4	.3gp	3gp6	3gp6, 3gp5, 3gp4, isom	H.263 and AMR
Release 6, 5, 4	.3gp	3gp6	3gp6, 3gp5, 3gp4, isom	H.263, AMR and Timed text
Release 6, 5	.3gp	3gp6	3gp6, 3gp5, isom	Timed text
Release 6	.3gp	3gp6	3gp6, isom	H.264 (AVC) and AMR
Release 6	.3gp	3gp6	3gp6, isom	fragmented H.263 and AMR
Progressive download and MMS				
Release 6, 5, 4	.3gp	3gr6	3gr6, 3gp6, 3gp5, 3gp4, isom	H.263
Release 6, 5, 4	.3gp	3gr6	3gr6, 3gp6, 3gp5, 3gp4, isom	interleaved H.263 and AMR
Release 6	.3gp	3gr6	3gr6, 3gp6, isom	fragmented and interleaved H.263 and AMR
Release 6	.3gp	3gr6	3gr6, 3gp6, avc1	interleaved H.264 (AVC) and AMR
Streaming servers: Some files may in principle also be used for MMS or download.				
Release 6	.3gp	3gs6	3gs6, isom	AMR and hint track
Release 6	.3gp	3gs6	3gs6, isom	2 tracks H.263 and 2 hint tracks
Release 6, 5, 4	.3gp	3gs6	3gs6, 3gp6, 3gp5, 3gp4, isom	H.263, AMR and hint tracks
MBMS extended presentations:				
Release 6	.3gp	3ge6	3ge6, iso2	SMIL, AMR and JPEG images
General purpose: Files that are not yet suitable for MMS, download or PSS streaming servers.				
Release 6	.3gp	3gg6	3gg6, isom	4 tracks H.263 (and no hint tracks)
Release 6	.3gp	3gg6	3gg6, isom	2 tracks H.263, 3 tracks AMR
3GP file, also conforming to MP4				
Release 4, 5 and MP4	.3gp	3gp5	3gp5, 3gp4, mp42, isom	MPEG-4 video
MP4 file, also conforming to 3GP				
Release 5 and MP4	.mp4	mp42	mp42, 3gp5, isom	MPEG-4 video and AAC

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7.6 SRTP

Hinted content may require the use of SRTP [19] for streaming, e.g. for integrity protection, by using the hint-track format for SRTP defined here. It consists of a dedicated sample entry, which will be ignored by 3GP servers not capable of handling SRTP.

SRTP hint tracks are formatted identically to RTP hint tracks defined in [7], except that:

- the sample entry name is changed from 'rtp ' to 'srtp' to indicate to the server that SRTP is required;
- an extra box is added to the sample entry which can be used to instruct the server in the nature of the on-the-fly encryption and integrity protection that must be applied.

Samples of an SRTP hint track follow the same syntax for constructing RTP packets as RTP hint tracks.

An SRTP Hint Sample Entry ('srtp') shall include an SRTP Process Box ('srpp') that may instruct the server as to which SRTP algorithms should be applied. It is defined in [7] and included in Table 7.4 for information.

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10 Encryption

10.1 General

A 3GP file may include encrypted media together with information on key management and requirements for decrypting and/or serving encrypted media. Tracks containing encrypted media use dedicated sample entries for encrypted media, which will be ignored by 3GP readers not capable of handling encrypted media. 3GP readers capable of detecting encrypted media are able to obtain “in the clear” the sample entries that apply to the decrypted media as well as all requirements for decrypting the media. Moreover, 3GP readers supporting extended presentations (see clause 11) referring to media files rather than media tracks are provided with all requirements for decrypting media files.

Clause 10.2 and 10.3 are provided here for information in the context of 3GP files. The definitions follow from [7].

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10.3 Key management

The necessary requirements for decrypting media are stored in the Protection scheme information box. For the case of media tracks, it contains the Original format box, which identifies the codec of the decrypted media. For both media tracks and media files, it contains the Scheme type box, which identifies the protection scheme used to protect the media, and the Scheme information box, which contains scheme-specific data (defined for each scheme). It is out of the scope of this specification to define a protection scheme.

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11 Extended presentation format

11.1 General

A 3GP file may include an extended presentation that consists of media files in addition to tracks for audio, video and text. Examples of such media files are static images, e.g. JPEG files, which can be stored in a 3GP "container file". A 3GP container file that includes an extended presentation must include a scene description that governs the rendering of all parts of the file.

11.2 Storage format

A 3GP file with an extended presentation shall include a Meta box ('meta') at the top level of the file as defined in [7]. The Meta box shall include the following boxes:

- Handler box with handler '3gsd' (3GPP scene description);
- Primary item box identifying the scene description file;
- Item information box;
- Item location box (see below).

A scene description file (e.g. a SMIL file) shall be included either in an XML box or as an item located by the Item location box. The scene description file may refer to both tracks and media files (items).

A 3GP file that contains media files and/or a scene description file not stored in an XML box shall include an Item location box locating all contained files. Each item of the Item location box shall also be included in the Item information box in order to specify its filename (item name) and MIME type. By referring to a Protection scheme information box in the Item protection box, the Item information box can also indicate whether the content of an item is protected (encrypted) as defined in [7] and discussed in clause 10 of the present specification.

11.3 URL forms for items and tracks

All media files and the scene description file included in a 3GP file are logically located in the same directory as the 3GP file itself. In general, the Meta box of a 3GP file serve as a container of files that logically "shadow" files outside the 3GP file. See the description of URL forms for Meta boxes in [7] for further details. The Movie box ('moov') of a 3GP file contains all media tracks.

The scene description file (primary item) of a 3GP file addresses other resources by using relative URLs. In particular it addresses

- media files (items) by referring to their filenames;
- media tracks by referring to the Movie box with the relative URL "#box=moov".

The default is to address all tracks of the Movie box. However, it is possible to address individual media tracks in the Movie box by referring to their track IDs. The relative URL of a track is defined in terms of ABNF [31] as follows:

relative-track-URL = "#box=moov;track_ID=" track-number* ("," track-number)

track-number = 1*digit

Hence, individual tracks are referenced by listing their numbers, e.g. "#box=moov;track_ID=1,3".

Note: It is possible to include a 3GP file with tracks as a media file (addressed by filename) rather than using a top-level Movie box for tracks. However, this way the included 3GP file will be "hidden" one layer and interleaving between individual tracks and items less transparent.

11.4 Example

The following example consists of a slide show in SMIL consisting of three images shown with the duration of 3 seconds each and an AMR clip that is played in parallel. The presentation is built from a number of separate files:

- SMIL file: "scene.smil";
- 3GP file with AMR: "audioclip.3gp";
- Image files: "pic1.jpg", "pic2.jpg" and "pic3.jpg".

These files can be packaged into a single 3GP file "presentation.3gp" as an extended presentation. The overall presentation is governed by the SMIL file located as the primary item of "presentation.3gp":

```
<smil xmlns="http://www.w3.org/2001/SMIL20/Language">
  <head>
    <layout>
      <root-layout width="176" height="144"/>
      <region id="pics" left="0" width="176" height="144"/>
    </layout>
  </head>
  <body>
    <par>
      <audio src="#box=moov" dur="9s"/>
      <seq>
        <img region="pics" src="pic1.jpg" dur="3s"/>
        <img region="pics" src="pic2.jpg" dur="3s"/>
        <img region="pics" src="pic3.jpg" dur="3s"/>
      </seq>
    </par>
  </body>
</smil>
```

The audio track resides in the Movie box and is referred to as "#box=moov", whereas the images are included as media files in the Meta box.