3RD GENERATION PARTNERSHIP PROJECT 2 "3GPP2"

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3GPP SA4
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Re: "Liaison to 3GPP on alignment of 3GPP2 C.S0050 and 3GPP TS 26.244, TS26.245 and TS26.246"

Dear 3GPP SA4;

3GPP2 TSG-C 1.2 wishes to thanks those members of SA4 who participated in our file formats discussion. We also thank those who helped arrange the "social" during the May Montreal meetings as well as those who attended. From our side "a good and helpful time was had by all".

In the spirit of future co-operation, 3GPP2 desires to keep 3GPP informed on the direction of our next file format specification C.S0050 Revision A and our understanding of how this release currently compares to TS 26.234 Release 5 and TS 26.244 Release 6. We would also like to inform 3GPP SA4 that we intend to directly reference the AMRSampleEntry, TextSampleEntry and H263SampleEntry, as well as 26.245 for Timed Text, in our update. We would appreciate if 3GPP SA4 keeps 3GPP2 community informed of changes in the above and other aspects of 26.244 and 26.245, and 3GPP SMIL in 26.246. Please find attached a more detailed comparison. You will find that SMIL specification in C.S0050 started with 3GPP SMIL in TS 26.234, but provides additional enhancements as explained below.

3GPP2 would also like to be informed if any clarifications are needed or additional features are anticipated.

Requested actions:

3GPP2 requests to be kept informed of changes in 26.244, 26.245 and 26.246

3GPP2 takes the action of keeping 3GPP SA4 informed of changes in C.S0050

3GPP2 would also like to be informed if any clarification of our understanding is needed

Regards,

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3GPP2 Understanding of 3GPP additions to TS 26.244 for Release 6.0

This section describes 3GPP2's understanding of features or descriptions added to the ".3gp" file format specification (TS 26.244) for Release 6. Specification now includes:

- Streaming Server Extensions and Progressive Download Profile,
- Detailed (but not exhaustive) description of 3GPP, MPEG and ISO compatible brands including brands indicating support for progressive download,
- Description for storage and generation of SDP fields,
- Asset information and sub-boxes,
- Video buffering information (still finalizing),
- Support for H.264 (still finalizing).
- Encryption and Key management including EncryptedVideoSampleEntry, EncryptedAudioSampleEntry, and EncryptedTextSampleEntry.

Summary Differences in C.S0050 with TS 26.234

- Includes additional 3GPP2 Speech codecs (13K, EVRC and SMV)
- Does not prohibit fragmentation in .3g2
- Includes Compact Multimedia Format (CMF), a binary, container file format for multimedia elements with embedded time synchronization information.
- Enhances SMIL

These differences are further elaborated in the following sections.

Compact Multimedia Format (CMF)

CMF can be employed to create multimedia content with 13K vocoder speech, WAVE/RIFF sound, IMA ADPCM sound, (compact) MIDI, text, JPEG pictures, PNG pictures, BMP pictures and animation data in messaging and other applications.

Typical applications of CMF include:

- Multimedia ringers with graphics, text, (compact) MIDI and speech
- Audio postcard messages with speech and JPEG
- Advertisements with graphics, text and audio
- Karaoke with graphics
- Animated cartoons with (compact) MIDI, text and speech

In the current version, the following applications are supported.

- Talking Picture: Used primarily for messaging applications. Contains JPEG or PNG for graphics/image data and audio.
- Audio-only Profile: Used primarily for ringers and other audio only applications such as the audio portion of a game application. Contains (compact) MIDI and 13K Vocoder or ADPCM.
- Picture Ringers : This profile is an enhancement to above capabilities and combines pictures, audio and (compact) MIDI.

CMF uses the application/cmf media type and the .cmf file extension.

Annex A. File formats Difference with 3GPP (Informative)

Annex A from C.S0050 1.0

A.1 Relations between ISO, 3GPP, and 3GPP2 file format

ISO defines ISO Base Media File Format as a basis of developing a media container for various usages. It describes a basic architecture of the multimedia file, and mandatory /optional elements in it. There are some extensions over ISO Base Media File Format, one of which is an MP4 file format to support MPEG-4 visual/audio codecs and various MPEG-4 Systems features such as object descriptors and scene descriptions.

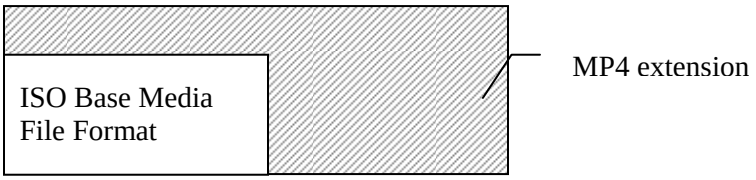

Figure A 1: File formats in ISO

3GPP extended ISO Base Media File Format to incorporate new media codecs and a timed text feature. They also use MPEG-4 visual/audio codecs, a portion of MP4 extension is included. The relation is depicted in Figure A.2. It is noted that 3GPP file format does not use some features in ISO Base Media File Format.

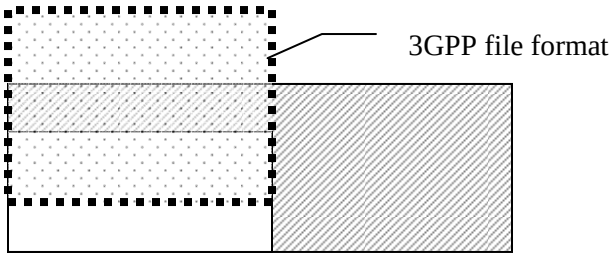

Figure A 2: 3GPP file format

3GPP2 employs full aspects of ISO Base Media File Format. It also adds new codecs and extends a 3GPP timed text. On the other hand, it only uses the same portion of MP4 extension as 3GPP does. Figure A.3 illustrates it.

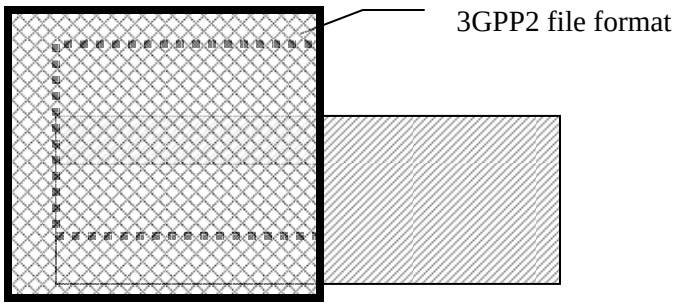

Figure A 3: 3GPP2 file format

A.2 Differences between 3GPP2 and 3GPP

a) Features in ISO Base Media File Format

- Movie fragment

3GPP2 does not prohibit this feature while 3GPP does. It may be useful for various applications, e.g., pseudo-streaming and live authoring of a movie file.

b) New extensions

- QCELPSampleEntry and 13K speech support in MP4AudioSampleEntry
- SMVSampleEntry
- EVRCSampleEntry

These codecs are used in 3GPP2 and there are no definitions in 3GPP file format, so their encapsulations are defined.

c) File identifications

3GPP2 has its own file extension, MIME types, and file brand identifier.

A.3 Usage of 3GPP branding

Conditions for using 3GPP branding are as follows:

- The media types contained in the ".3g2" file are restricted to those identified for use in the ".3gp" file format [TS 26.234], specifically AMR and AMR-WB speech, MPEG4 and H.263 video, MPEG4 AAC audio, and timed text without optional *textwrap* feature.
- The file does not include fragmented media.

It is left to the implementer to understand the implications of the absence of minor versioning support in the compatible branding list.

Annex C. SMIL Profile Difference between 3GPP2 and 3GPP (Informative)

Approved text for C.S0050-A

C.1 Additional functionality

This informative annex includes the difference between the 3GPP2 SMIL specification and the 3GPP SMIL profile specification. The 3GPP2 SMIL profile described in the present document is a superset of the 3GPP SMIL profile [X] and a subset of the SMIL 2.0 Language Profile. The additional modules to the 3GPP SMIL profile are the following, which are all optional:

- SMIL 2.0 Animation Module – BasicAnimation
- SMIL 2.0 Layout Module – AudioLayout
- SMIL 2.0 Timing and Synchronization Modules – AccessKeyTiming and MultiArcTiming

BasicAnimation module is added according to improvement of user agent capability, and intended to enhance the presentation. User agents that implement the semantics of this module shall at least support **animate** element specified in SMIL 2.0. In the 3GPP2 SMIL specification, animating a video object and animating over a video object is not supported.

AudioLayout module controls aural media volumes via '**soundLevel**' attribute. If AudioLayout module is used together with BasicAnimation module, content authors can animate audio volume, such as fade in/out in a SMIL presentation. See Annex D for details.

AccessKeyTiming module enhances interactivity by assigning a use event to a specific access key, such as a dial key. It reduces restrictions on input devices on terminals. MultiArcTiming module allows any number of offset-values, event-values, and accesskey-values for '**begin**' and '**end**' attributes, by separating them by semicolon.

Also the following name value pairs for MediaParam module are additional to 3GPP SMIL profile.

MIME type of the media object	value of the '**name**' attribute	value of the '**value**' attribute	Intended rendering of the media content.
application/text, application/xhtml+xml, application/vnd.wap.xhtml+xml, text/plain	font-family	Allowed values are all generic font family names defined by CSS2 [X].	The text document is rendered with the font-family that is determined by the font matching algorithm of CSS2 [X].
image/jpeg, image/gif, image/png, text/plain	tile	true or false	The media element is tiled (repeated). All tiling covers the region. For the tiled media, no animation and no transition shall be used.
image/jpeg, image/gif, image/png, text/plain	opacity	Alpha value within the range 0.0 (fully transparent) to 1.0 (fully opaque). Default value is 1.0.	The media element is rendered where opaque colors are made transparent.

C.2 Interoperability between 3GPP2 SMIL and 3GPP SMIL

W3C SMIL 2.0 recommendation allows user agents to securely ignore unknown element or attribute using SkipContentControl mechanism; the default value of '**skip-content**' attribute of SkipContentControl module (specified in both 3GPP2 SMIL and 3GPP SMIL) is "true", which means that the content of the element is ignored. Similarly unimplemented attributes should be treated as if they were not specified. Therefore interoperability between 3GPP2 SMIL profile and 3GPP SMIL profile is guaranteed, as far as a user agent can correctly parse the namespaces for both 3GPP2 SMIL and 3GPP SMIL.