

SMPTE REGISTERED DISCLOSURE DOCUMENT



Professional Metadata (PMD) Specification

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1 Scope

This document defines the syntax of Professional Metadata (PMD).

2 Normative References

The following standards contain provisions which, through reference in this text, constitute provisions of this specification. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this registered disclosure document are encouraged to investigate the possibility of applying the most recent edition of the standards indicated below.

ISO 639-1:2002, Codes for the representation of names of languages -- Part 1: Alpha-2 code

ISO 639-2:1998, Codes for the representation of names of languages -- Part 2: Alpha-3 code

ISO/IEC 10646:2014, Information technology -- Universal Coded Character Set (UCS)

ETSI TS 103 190-1 V1.3.1 (2018-02), Digital Audio Compression (AC-4) Standard; Part 1: Channel based coding

ATSC A/336:2018, Content Recovery in Redistribution Scenarios

IETF RFC 4122:2005, A Universally Unique Identifier (UUID) URN Namespace

SMPTE RP 2092-1:2015, Advertising Digital Identifier (Ad-ID®) Representations

SMPTE RP 2079:2013, Digital Object Identifier (DOI) Name and Entertainment ID Registry (EIDR) Identifier Representations

3 Terms and Definitions

3.1 Payload

Group of metadata

3.2 Audio Metadata Payload

Group of audio metadata

3.3 PMD

Professional Metadata

3.4 CM

Complete Main

3.5 M&E

Music and Effects

3.6 D

Dialog element (mono)

3.7 VDS

Video Descriptive Service (mono)

3.8 O

Generic object (mono), i.e. PA feed

3.9 ED2

Enhanced Dolby E

3.10 UTF-8

Variable width character encoding in Unicode using one to four 8-bit bytes, as defined in ISO/IEC 10646

3.11 Audio Essence Signal

Mono audio signal (track) included in the audio essence associated with PMD

3.12 Audio Bed

Combination of audio essence signals that produce a set of channels corresponding to a fixed speaker configuration

3.13 Audio Object

Audio element that is sourced from a single audio essence signal and which may include dynamic characteristics

3.14 Audio Element

Audio beds or audio objects, generated from audio essence signals

3.15 Audio Presentation

Combination of audio elements that correspond to a single end-user experience

4 PMD Payload Syntax

PMD Payloads are described in a syntax roughly based on C language syntax, but simplified for ease of reading. Field elements contained in the payload bit stream are designated by bold face font.

5 PMD Payloads

5.1 Audio Presentation Description (APD)

5.1.1 Audio Presentation Description General

An Audio Presentation Description payload describes the audio elements that are combined to produce audio presentations. Each audio presentation corresponds to a single end-user experience.

5.1.2 Audio Presentation Description Payload Syntax

Syntax	No. of Bits
audio_presentation_description_payload() {	
do {	
audio_presentation_id	9
speaker_config	5
langcod	15
do {	
audio_element_id	12
} while (audio_element_id != 0)	
} while (bytes remain)	
}	

5.1.3 Audio Presentation Description Payload Fields

5.1.3.1 audio_presentation_id

This field specifies the audio presentation identifier, which is used to uniquely identify this presentation in other PMD payloads. Allowed values are 1-511, 0 is reserved.

5.1.3.2 speaker_config

This field specifies the channel makeup of the presentation being specified. It takes values as shown in Table 3.

5.1.3.3 langcod

This field specifies a two or three character code value representing an ISO 639-1 or 639-2 language identifier. The 15 bits are split into 3 groups of 5 bits, each group represents a lower case character logically called **charval**, encoded with the scheme listed in Table 1.

Table 1 – Character Encoding

charval	Meaning
0x0	ISO 639-1 termination
0x1 – 0x1b	a – z (1-27)
0x1c – 0x1f	RESERVED

5.1.3.4 audio element id

This field specifies the audio element identifier for any audio beds or objects that belong to the presentation. Allowed identifiers are in the range 1 – 4095, as listed in Table 2. A presentation may have any number of element identifiers associated to it. The list is terminated by an element identifier of value 0. In use cases where multiple beds are within a single presentation they are summed prior to the presentation being rendered.

Table 2 – Audio Element ID

element_id	Meaning
0x0	Element list termination
0x1 – 0xffff	Audio element identifier

5.2 Audio Presentation Names (APN)

5.2.1 Audio Presentation Names General

The Audio Presentation Names payload describes human-readable informative descriptions of audio presentations.

5.2.2 Audio Presentation Names Payload Syntax

Syntax	No. of Bits
<pre> audio_presentation_names_payload() { do { audio_presentation_id langcod do { charval } while (charval != 0) } while (bytes remain) } </pre>	9 15 8

5.2.3 Audio Presentation Names Payload Fields

5.2.3.1 audio_presentation_id

This field specifies the identifier of the audio presentation to which the following name will be associated. Allowed values are 1-511, 0 is reserved.

5.2.3.2 langcod

This field specifies a two or three character code value representing an ISO 639-1 or 639-2 language identifier. The 15bits are split into 3 groups of 5 bits, each group represents a lower case character logically called **charval**, encoded with the scheme listed in Table 1.

5.2.3.3 charval

This field specifies a series of UTF-8 encoded characters that will be appended to this string to form the complete name. To terminate and complete the string this value is set to 0.

5.3 Presentation Loudness Description (PLD)

5.3.1 Presentation Loudness Description General

The Presentation Loudness Description payload describes the loudness information of an audio presentation.

5.3.2 Presentation Loudness Description Payload Syntax

Syntax	No. of Bits
presentation_loudness_description_payload() { audio_presentation_id do { further_loudness_info() } while (bytesremain) }	9 var

5.3.3 Presentation Loudness Description Payload Fields

5.3.3.1 audio_presentation_id

This field specifies an audio presentation identifier to which this loudness payload applies, allowed values are 1-511, 0 is reserved.

5.3.3.2 further_loudness_info

This field contains programme loudness data as specified in the further_loudness_payload defined in ETSI TS 103 190-1 v1.2.1 section 4.2.14.3.

5.4 Audio Bed Description (ABD)

5.4.1 Audio Bed Description General

The Audio Bed Description payload describes audio elements that are channel-based beds. A bed is created by mixing up to 255 source audio signals, each with its own mixing gain value, to produce a set of channels that are intended to be output to the specified speaker configuration.

5.4.2 Audio Bed Description Payload Syntax

Syntax	No. of Bits
<pre> audio_bed_description_payload() { do { audio_element_id speaker_config type if (type == 1) { source_abd_id } do { target source source_gain } while (target != 0) } while (bytes remain) } </pre>	12 5 1 12 6 8 6

5.4.3 Audio Bed Description Payload Fields

5.4.3.1 audio_element_id

This field specifies the unique audio element identifier for this bed audio element. The audio element identifier is used to uniquely identify this particular audio element within the overall audio presentation. Each audio_element_id value shall be uniquely assigned to either a bed or object audio element within an audio presentation. Allowed values are 1 – 4095, a value of 0 is reserved.

5.4.3.2 speaker_config

This field specifies the number of channels present and their position within the bed. It takes values as shown in Table 3.

Table 3 - Audio Bed Speaker Config

speaker_config	Meaning
0x0	2.0
0x1	3.0
0x2	5.1
0x3	5.1.2
0x4	5.1.4
0x5	7.1.4
0x6	9.1.6
0x7 – 0x1c	RESERVED
0x1d	Portable Speakers
0x1e	Portable Headphone
0x1f	Not Indicated

5.4.3.3 type

This field indicates whether or not the audio source is from or is derived from another bed, *i.e.* a custom downmix or remap of an existing ABD element. It takes values as shown in Table 4.

Table 4 - Audio Bed Type

type	Meaning
0x0	Original
0x1	Derived

5.4.3.4 source_abd_id

This field, when present, specifies an ABD instance to be used as the audio signal source, 1 – 4095, 0 is reserved. The value of this field shall match the audio_element_id of a channel bed audio element, and shall not match the audio_element_id of an object audio element. The ABD instance is used as the signal source rather than the audio essence signals, i.e. the referenced bed is rendered first, then its output channels are routed to the input channels of this ABD instance.

5.4.3.5 target

This field specifies the identity of the output speaker position. It takes values as shown in Table 5.

Table 5 - Audio Output Target

target	Meaning
0x0	END-OF-CHANNELS*
0x1	Left
0x2	Right
0x3	Center
0x4	LFE
0x5	Left Surround
0x6	Right Surround
0x7	Left Rear Surround
0x8	Right Rear Surround
0x9	Left Top Front
0xa	Right Top Front
0xb	Left Top Middle
0xc	Right Top Middle
0xd	Left Top Rear
0xe	Right Top Rear
0xf	Left Front Wide
0x10	Right Front Wide
0x11 – 0x3f	RESERVED

*NOTE: target='0' is used to indicate that the channel list has finished.

5.4.3.6 source

This field specifies the index (track or channel number) of the audio essence signal that contains the source audio data for the target speaker position.