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Part 18: Event message track format for the ISO base media file format

Technologies de l'information — Technologies des systèmes MPEG —

Partie 18: Format de la piste du message d'événement pour le format ISO de base pour les fichiers médias

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Foreword

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The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of document should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives or www.iec.ch/members_experts/refdocs).

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A list of all parts in the ISO/IEC 23001 series can be found on the ISO and IEC websites.

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Information technology — MPEG systems technologies —

Part 18:
Event message track format for the ISO base media file format

1 Scope

This document specifies the format of the event message track.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO/IEC 14496-12, *Information technology — Coding of audio-visual objects — Part 12: ISO base media file format*

ISO/IEC 23009-1, *Information technology — Dynamic adaptive streaming over HTTP (DASH) — Part 1: Media presentation description and segment formats*

3 Terms, definitions, abbreviated terms and notations

3.1 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

3.1.1
active event
event (3.1.2) with a start time up to start time plus duration overlapping the current media time

3.1.2
event
aperiodic sparse metadata information that is intended for a specific interval of media-time

3.1.3
event duration
duration when the *event* (3.1.2) is applicable

3.1.4
event instance
representation of the *event* (3.1.2) in the track represented by an event message instance box

3.1.5
event start time
start of the interval in media-time when event information is applicable

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3.1.6
event message track
ISO base media file format timed metadata track that carries event messages

3.2 Abbreviated terms

DASH	dynamic adaptive streaming over HTTP, as specified in ISO/IEC 23009-1
ISO-BMFF	ISO base media file format, as specified in ISO/IEC 14496-12

3.3 Notation

For the purposes of this document, the notation used in ISO/IEC 23009-1 applies.

4 General

The `DASHEventMessageBox`, defined in ISO/IEC 23009-1, is a box structure that may be used in streaming applications. Since it is a top-level box and has its own timeline, it is tricky to work within ISO-BMFF formatted media files, such as those based on the common media application format (CMAF) (see ISO/IEC 23000-19). For instance, identifying active events at any point in the media track may require scanning of a large part of that track. In addition, it is not clear what happens to `DASHEventMessageBox`es when tracks are de-fragmented. Further, `DASHEventMessageBox`es cannot be de-multiplexed from track files based on ISO/IEC 23009-1 or ISO/IEC 23000-19.

This document specifies the event message track format for the carriage of event messages in tracks of the ISO base media file format (ISO-BMFF) ISO/IEC 14496-12. This event message track format associates the timeline of the newly defined event message instance box to the track timeline. The specified track format enables all common ISO-BMFF processing such as multiplexing and de-fragmentation. In addition, multiplexing and de-multiplexing operations using top-level `DASHEventMessageBox` based on this event message track format are defined. The carriage in the event message track format makes this information more easily accessible to devices that can seek through ISO-BMFF formatted media files.

The event message track format is defined in the following clauses.

5 Background

In CMAF track files and DASH segments `DASHEventMessageBox`es may occur as top-level boxes as defined in ISO/IEC 23000-19 and ISO/IEC 23009-1. The `DASHEventMessageBox` arises in two versions as defined in ISO/IEC 23009-1:

```
aligned(8) class DASHEventMessageBox
      extends FullBox('emsg', version, flags = 0){
if (version==0) {
   string scheme_id_uri;
   string            value;
     unsigned int(32)  timescale;
   unsigned int(32)  presentation_time_delta;
   unsigned int(32)  event_duration;
   unsigned int(32)  id;
}
else if (version==1) {
    unsigned int(32)     timescale;
    unsigned int(64)   presentation_time;
    unsigned int(32)     event_duration;
     unsigned int(32)     id;
    string               scheme_id_uri;
    string             value;
}
unsigned int(8)   message_data[];
}
```

The semantics are defined in ISO/IEC 23009-1.

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