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Information technology — Coded representation of immersive media —

Part 32: Carriage of haptics data

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Foreword

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A list of all parts in the ISO/IEC 23090 series can be found on the ISO and IEC websites.

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Information technology — Coded representation of immersive media —

Part 32: Carriage of haptics data

1 Scope

This document specifies carriage of haptic media in ISO base media files.

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 14496-12:2022, *Information technology — Coding of audio-visual objects — Part 12: ISO base media file format*

ISO/IEC 23009-1:2022, *Information technology — Dynamic adaptive streaming over HTTP (DASH) — Part 1: Media presentation description and segment formats*

ISO/IEC/DIS 23090-31, *Information technology — Coded representation of immersive media — Part 31: Haptics Coding*

3 Terms, definitions, and abbreviated terms

3.1 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO/IEC 23090-31 and the following 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
band
component in a channel for containing effects for a specific range of frequencies

[SOURCE: ISO/IEC 23090-31:2025, 3.1.3]

3.1.2
channel
component in a perception containing one or more bands rendered on a device at a specific body location

[SOURCE: ISO/IEC 23090-31:2025, 3.1.4]

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3.1.3
experience
top level haptic component containing perceptions and metadata

[SOURCE: ISO/IEC 23090-31:2025, 3.1.7]

3.1.4
ISOBMFF track
timed sequence of related samples (q.v.) in an ISO base media file

[SOURCE: ISO/IEC 14496-12:2022, 3.1.46, modified – "ISOBMFF" was added before "track" and Note 1 to entry removed.]

3.1.5
MIHS band track
ISOBMFF track having the `'hapt'` handler type and an `MIHSBandSampleEntry`

3.1.6
MIHS sample
sample belonging to an MIHS track

3.1.7
MIHS stream
bitstream conforming to the MIHS format

Note 1 to entry: MIHS format is described in ISO/IEC 23090-31.

3.1.8
MIHS track
ISOBMFF track having the `'hapt'` handler type and an `MIHSSampleEntry`

3.1.9
metadata
global information about an experience, perception, channel or band

Note 1 to entry: ISO/IEC 14496-12 also uses the term "metadata" but with a different meaning from ISO/IEC 23090-31, hence this clarification.

[SOURCE: ISO/IEC 23090-31:2025, 3.1.10, modified — Note 1 to entry has been added.]

3.1.10
perception
haptic perception containing one or more channels of a specific modality

[SOURCE: ISO/IEC 23090-31:2025, 3.1.16]

3.1.11
sample
all the data associated with a single time

Note 1 to entry: No two samples within a track can share the same decoding timestamp; no two samples can share the same composition timestamp.

Note 2 to entry: In non-hint tracks, a sample is, for example, an individual frame of video, a series of video frames in decoding order, or a compressed section of audio in decoding order; in hint tracks, a sample defines the formation of one or more streaming packets.

[SOURCE: ISO/IEC 14496-12:2022, 3.1.34]

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3.2 Abbreviated terms

ISOBMFF	ISO base media file format (specified in ISO/IEC 14496-12)
MPD	Media Presentation Descriptor
MIHS	MPEG-I haptic stream
MPEG	Moving Pictures Expert Group
MPEG-I	MPEG immersive media

4 Overview

4.1 General

4.2 provides the overall architecture for the storage of MIHS streams in ISOBMFF.

4.3 provides information for synchronizing MIHS streams with other media.

4.4 provides a summary of the referenceable code points, in tabular format.

Clause 5 specifies extensions to the ISOBMFF for the storage of MIHS streams.

Clause 6 specifies encapsulation and signalling for the delivery of MIHS streams over MPEG-DASH.

4.2 Haptic media

4.2.1 Structure of haptic media

ISO/IEC 23090-31 describes haptic experiences composed of perceptions containing channels, which in turn contafin bands, as shown in Figure 1.

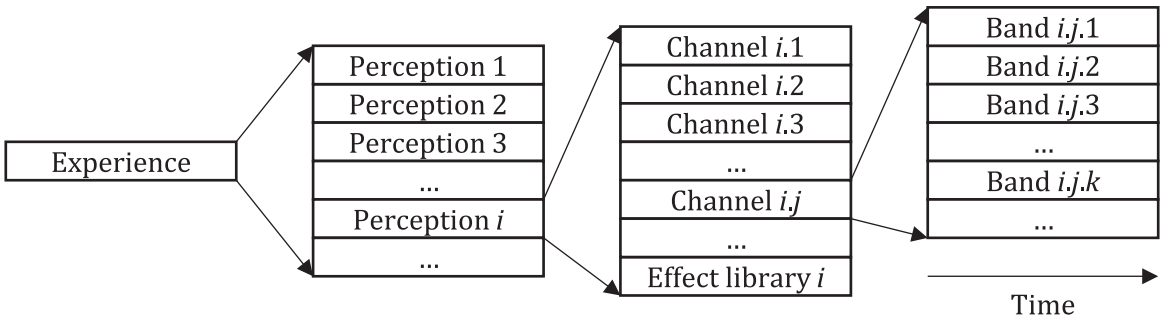


Figure 1 — Structure of haptic media.

Experiences, perceptions, channels, and bands also contain metadata, which does not depend on time.

A perception may additionally contain an effect library comprising haptic effect definitions. Bands may reference haptic effects in their containing perception's effect library.

Bands additionally contain haptic effect definitions or references to effects in the containing perception's effect library to be presented at specific times, possibly following external events.

4.2.2 MIHS streams

ISO/IEC 23090-31 describes an MIHS format for streaming haptic media. An MIHS stream is composed of MIHS units. Each MIHS unit is composed of MIHS packets.

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