



**International  
Standard**

**ISO/IEC 23090-7**

**Information technology — Coded  
representation of immersive media —**

Part 7:

**Immersive media metadata**

**AMENDMENT 1: Common metadata  
for immersive media**

**First edition  
2022-11**

**AMENDMENT 1  
2024-12**

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Published in Switzerland

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This document was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 29, *Coding of audio, picture, multimedia and hypermedia information*.

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# Information technology — Coded representation of immersive media —

## Part 7: Immersive media metadata

### AMENDMENT 1: Common metadata for immersive media

#### *Normative references*

Add the following reference to the end of the reference list:

IEEE 754-2019. *IEEE Standard for Floating-Point Arithmetic*

#### *Introduction*

Replace:

- Clause 5 describes common metadata applicable to immersive media. This includes reference co-ordinate system related metadata and other common metadata syntax and semantics.
- Clause 6 describes metadata that applies to video and images. This includes projection formats and region-wise packing metadata metadata which applies to video and images.

with:

- Clause 5 describes common metadata applicable to immersive media, with omnidirectional media in particular. This includes reference co-ordinate system related metadata and other common metadata syntax and semantics.
- Clause 6 describes metadata that applies to video and images, with omnidirectional media in particular. This includes projection formats and region-wise packing metadata metadata which applies to video and images.
- Clause 7 describes common metadata applicable to immersive media, with Visual Volumetric Video-based Coding (V3C) and Video-based Point Cloud Compression (V-PCC) in particular. This includes extrinsic camera information, intrinsic camera information, and other 3D common metadata syntax and semantics.
- Appendices A and B on Annotations of non-timed visual volumetric data and G-PCC data.

Add the following paragraphs after the document organization list

This document follows the following guiding principles:

- 1) Common metadata and their data structures shall be defined for both 3DoF and 6DoF immersive content, separately as well as jointly, in order to be used for applications that are either specific to separate 3DoF and 6DoF immersive content or general to mixed 3DoF and 6DoF immersive content.

- 2) Basic and common data structures are defined for simple metadata, and extended and enhanced data structures are defined as extensions of basic and common metadata (e.g., viewport is an extension of viewpoint)
- 3) Metadata structures shall be defined in a way to allow their encapsulation in ISOBMFF:
  - Static: extension of containing boxes
  - Dynamic: timed metadata tracks

## Clause 7

Add the following new Clause 7 after Clause 6.

# 7 Common Metadata for Immersive Media

## 7.1 Vector3

Dimensions, positions, sizes for 3D immersive media can be defined using the following 3D vector data structure.

### 7.1.1 Syntax

```
aligned(8) class Vector3(unsigned char precision_bytes_minus1) {
    signed int((precision_bytes_minus1+1)*8) x;
    signed int((precision_bytes_minus1+1)*8) y;
    signed int((precision_bytes_minus1+1)*8) z;
}
```

### 7.1.2 Semantics

`precision_bytes_minus1`: Plus 1, specifies the precision of Vector3 components in bytes. Valid values are in the range from [0, 3].

`x`, `y` and `z`: specify the `x`, `y`, and `z` coordinate values, respectively, of a 3D point in the Cartesian coordinate system

## 7.2 Scaling

Scaling in 3-dimension is defined using the following data structure:

### 7.2.1 Syntax

```
aligned(8) class 3DScaling(unsigned char precision_bytes_minus1) {
    Vector3 scale(precision_bytes_minus1);
}
```

### 7.2.2 Semantics

`precision_bytes_minus1`: Plus 1, specifies the precision of `scale` components in bytes. Valid values are in the range from [0, 3].

`scale.x`, `scale.y`, and `scale.z` indicate the scaling extension in the Cartesian coordinates along the `x`, `y`, and `z` axes, respectively, relative to the origin (0, 0, 0).

## 7.3 Extrinsic Camera Information

Extrinsic camera information is defined using the following data structure.

### 7.3.1 Syntax

```
class CameraExtrinsics(unsigned char abs_flag, unsigned char mode, unsigned char pos_bytes_minus1, unsigned char pos_unit, unsigned char quat_bytes_minus1, unsigned char quat_den_bits_minus1) {
    if(mode & 0x1) {
        signed int((pos_bytes_minus1+1)*8) pos_x;
```