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**Email of Convenor:** young.L@samsung.com

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# Introduction

This document includes technologies under consideration for 23090-6 (Metrics)

This includes the following:

1. Viewpoint mismatch duration metric (m56832)
2. Definition of V3CViewpointSwitchingLatency and ViewpointSwitchingLatency (m61228)

# Viewpoint Mismatch Duration Metric

It is asserted that, V3C/OMAFv2 Content could be shown from a different viewpoint (viewer perspective) than its corresponding “content-viewpoint” (e.g. outside the indicated viewing space) even when no viewpoint switching occurs. A metric showing how long this situation persists would be useful as a perceived quality indicator.

A new metric is proposed (m56832) to show the duration that content is shown for a different viewpoint (viewer perspective) that that corresponding “content-viewpoint” (e.g. outside the indicated viewing space).

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Key** | | | **Type** | **Description** |
| ViewpointMismatchDuration | | | List | List of Viewpoint mismatch durations. |
|  | *Entry* | | Object | An entry for a Viewpoint mismatch duration. |
|  |  | t | Real-Time | Specifies the measurement time of the viewpoint mismatch duration in wall-clock time. |
|  |  | DeltaViewpoint | ViewpointMismatchType | Delta of the viewpoint between the user position and the viewpoint used for content generation |
|  |  | duration | Integer | Specifies the duration in milliseconds for which the user shows content with a mismatch of the real viewpoint corresponding to the shown content and the viewpoint used for rendering. |

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| --- | --- | --- | --- |
| **Key** | | **Type** | **Description** |
| ViewpointMismatchType | | Object | Viewpoint Mismatch. |
|  | vp\_diff\_x | Float | Indicates the difference in x coordinate of the position of the viewpoint in centimetres in the global reference coordinate system, as defined in clause 9.2.2.2 of ISO/IEC 23090-10 compared to the center viewpoint of the corresponding viewport\_id. The values shall be expressed in 32-bit binary floating-point format with the 4 bytes in big-endian order and with the parsing process as specified in IEEE 754. |
|  | vp\_diff\_y | Float | Indicates the difference in y coordinate of the position of the viewpoint in centimetres in the global reference coordinate system, as defined in clause 9.2.2.2 of ISO/IEC 23090-10 compared to the center viewpoint of the corresponding viewport\_id. The values shall be expressed in 32-bit binary floating-point format with the 4 bytes in big-endian order and with the parsing process as specified in IEEE 754. |
|  | vp\_diff\_z | Float | Indicates the difference in z coordinate of the position of the viewpoint in centimetres in the global reference coordinate system, as defined in clause 9.2.2.2 of ISO/IEC 23090-10 compared to the center viewpoint of the corresponding viewport\_id. The values shall be expressed in 32-bit binary floating-point format with the 4 bytes in big-endian order and with the parsing process as specified in IEEE 754. |

# Definition of V3CViewpointSwitchingLatency and ViewpointSwitchingLatency

This section provides definitions of V3CViewpointSwitchingLatency and ViewpointSwitchingLatency, targeted for MPEG-I Part 6, "Immersive media metrics for V3C Data and OMAF" [1].

* 1. **Switching Latency**

Definitions of V3CViewpointSwitchingLatency and ViewpointSwitchingLatency are provided below.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Key** | | | **Type** | **Description** |
| V3CViewpointSwitchingLatency | | | List | List of V3C viewpoint switching latencies |
|  | *Entry* | | Object |  |
|  |  | originViewpoint | V3CViewportDataType | Specifies the spatial region corresponding to a viewport of the origin viewpoint (i.e., before switching). |
|  |  | targetViewpoint | V3CViewportDataType | Specifies the spatial region corresponding to a viewport of target viewpoint (i.e., after the switching). |
|  |  | t | Real-Time | Specifies the measurement time of the viewpoint switching latency in wall-clock time. |
|  |  | latency | Integer | Specifies the delay in milliseconds between the time when switching from a source viewpoint to the target viewpoint is initiated, as specified in clause 6.4, and the time when content corresponding to the target viewpoint is reflected on the display. |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Key** | | | **Type** | **Description** |
| ViewpointSwitchingLatency | | | List | List of immersive viewpoint switching latencies |
|  | *Entry* | | Object |  |
|  |  | originViewpoint | ViewportDataType | Specifies the spatial region corresponding to a viewport of the origin viewpoint (i.e., before switching). |
|  |  | targetViewpoint | ViewportDataType | Specifies the spatial region corresponding to a viewport of target viewpoint (i.e., after the switching). |
|  |  | t | Real-Time | Specifies the measurement time of the viewpoint switching latency in wall-clock time. |
|  |  | latency | Integer | Specifies the delay in milliseconds between the time when switching from a source viewpoint to the target viewpoint is initiated, as specified in clause 6.4, and the time when content corresponding to the target viewpoint is reflected on the display. |

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