**3GPP TSG-S4 Meeting # 127 S4-240256**

**Sophia-Antipolis, FR, 29th January - 2nd February 2024**

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| *CR-Form-v12.2* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **26.119** | **CR** |  | **rev** |  | **Current version:** | **1.0.0** |  |
|  | | | | | | | | |
| *For* [***HE******LP***](http://www.3gpp.org/3G_Specs/CRs.htm#_blank)*on using this form: comprehensive instructions can be found at* [*http://www.3gpp.org/Change-Requests*](http://www.3gpp.org/Change-Requests)*.* | | | | | | | | |
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| ***Proposed change affects:*** | UICC apps |  | ME | **X** | Radio Access Network |  | Core Network | **X** |

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| ***Title:*** | CR on metadata updates for split rendering | | | | | | | | | |
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| ***Source to WG:*** | Qualcomm Inc. | | | | | | | | | |
| ***Source to TSG:*** | S4 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | MeCAR | | | | |  | ***Date:*** | | | 23rd January 2024 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | B |  | | | | | ***Release:*** | | | Rel-18 |
|  | *Use one of the following categories:* ***F*** *(correction)* ***A*** *(mirror corresponding to a change in an earlier release)* ***B*** *(addition of feature),* ***C*** *(functional modification of feature)* ***D*** *(editorial modification)*  Detailed explanations of the above categories can be found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | | | | | | | | *Use one of the following releases: Rel-8 (Release 8) Rel-9 (Release 9) Rel-10 (Release 10) Rel-11 (Release 11) … Rel-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18) Rel-19 (Release 19)* | |
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| ***Reason for change:*** | | The metadata descriptions are move out from TS26.565 and updated in TS26.119. | | | | | | | | |
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| ***Summary of change:*** | |  | | | | | | | | |
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| ***Consequences if not approved:*** | |  | | | | | | | | |
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| ***Clauses affected:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | |  |  | Other core specifications | | | | TS/TR ... CR ... | | |
| ***affected:*** | |  |  | Test specifications | | | | TS/TR ... CR ... | | |
| ***(show related CRs)*** | |  |  | O&M Specifications | | | | TS/TR ... CR ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

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| **First Change** |

### 6.2.1 General

Several applications may exchange real-time metadata information about the XR session. For instance, split rendering applications and immersive communication services may rely on pose and action information pertaining to the user’s current pose and to the user’s input (e.g. pressing a button on the XR controller). This clause defines the metadata formats for such timed metadata generated during an XR session.

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| **2nd Change** |

#### 6.2.2 Pose format

The pose format is used to transmit pose information such as when sending predicted poses over the network.

Each predicted pose shall contain the associated predicted display time and an identifier of the XR space that was used for that pose.

Depending on the view configuration of the XR session, there could be different pose information for each view.

The pose format shall follow the format defined in Table 6.2.2-1.

Table 6.2.2-1 - Pose format

|  |  |  |  |
| --- | --- | --- | --- |
| **Name** | **Type** | **Cardinality** | **Description** |
| poseInfo | Object | 1..n | An array of pose information objects, each corresponding to a target display time and XR space. |
| displayTime | number | 1..1 | The time for which the current view poses are predicted. This time is expressed in XR system time clock.  In OpenXR, this timestamp is the one used for the xrViewLocateInfo structure of the xrLocateViews call.  The SRS shall not make any assumptions on the accuracy or time sync of this displayTime. |
| xrSpace | number | 0..1 | An identifier for the XR space in which the view poses are expressed. The set of XR spaces are agreed on between the split rendering client and the split rendering server at the setup of the split rendering session.  The set of XR spaces is negotiated as part of the split rendering configuration as defined in clause 8.4.2.2. |
| viewPoses | Object | 0..n | An array that provides a list of the poses associated with every view. The number of views is determined during the split rendering session setup between the split rendering client and server, depending on the view configuration of the XR session. |
| pose | Object | 1..1 | An object that carries the pose information for a particular view. |
| orientation | Object | 1..1 | Represents the orientation of the view pose as a quaternion based on the reference XR space. |
| x | number | 1..1 | Provides the x coordinate of the quaternion. |
| y | number | 1..1 | Provides the y coordinate of the quaternion. |
| z | number | 1..1 | Provides the z coordinate of the quaternion. |
| w | number | 1..1 | Provides the w coordinate of the quaternion. |
| position | Object | 0..1 | Represents the location in 3D space of the pose based on the reference XR space.  For eye gaze poses, the position is not required. |
| x | number | 1..1 | Provides the x coordinate of the position vector. |
| y | number | 1..1 | Provides the y coordinate of the position vector. |
| z | number | 1..1 | Provides the z coordinate of the position vector. |
| confidence | number | 0..1 | This optional parameter provides a confidence score that reflects the probability for this pose prediction to be correct. For the current pose or a pose in the past, the confidence value would be 1. The confidence can take a value between 0 and 1.  If not provided by the XR runtime, this field may be estimated by the SRC or omitted. |
| estimatedAtTime (ref. T1) | number | 0..1 | The time when the pose estimation was made. The SRS may use that information to select the most recent predicted pose in the group of poses for a target display time. |
| fov | Object | 0..1 | Indicates the four sides of the field of view used for the projection of the corresponding XR view. This field is only present if these field of view values have changed from the last sent values. |
| angleLeft | number | 1..1 | The angle of the left side of the field of view. For a symmetric field of view this value is negative. |
| angleRight | number | 1..1 | The angle of the right side of the field of view. |
| angleUp | number | 1..1 | The angle of the top part of the field of view. |
| angleDown | number | 1..1 | The angle of the bottom part of the field of view. For a symmetric field of view this value is negative. |

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| **3rd Change** |

#### 6.2.3 Action format

The action format is used to represent the user’s actions and can be used to transmit this information over the network. Actions are grouped into action sets, which may be activated and deactivated during the lifetime of an XR session.

The action format shall follow the format defined in table 6.2.3-1.

Table 6.2.3-1 - Action format

|  |  |  |  |
| --- | --- | --- | --- |
| **Name** | **Type** | **Cardinality** | **Description** |
| actionSets | Object | 1..n | An array of active action sets, for which there is at least an action that has a state change. |
| actions | Object | 1..n | An array of objects that conveys information about the actions of the parent action set. |
| identifier | number | 1..1 | A unique identifier of the action that was agreed upon during split rendering session setup. |
| subactionPath | string | 1..1 | The sub-action path for which the state has changed. It abstracts a binding between an action and the hardware input associated to it by the XR runtime. |
| state | object | 1..1 | The state of the action that had a change in state. |
| lastChangeTime | number | 1..1 | The timestamp of the last change to the state of this action. |
| currentStateBool | Bool | 0..1 | The current Boolean state of the action |
| currentStateNum | number | 0..1 | The current numerical state of the action. |
| currentStateVec2 | Array | 0..1 | An array of numerical state values for the action. |