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| --- | --- | --- | --- |
| *Title:* | **Annotated Regions SEI message for HEVC (Draft 2)** | | |
| *Status:* | Proposal to JCT-VC | | |
| *Purpose:* | Draft text for standardization | | |
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| *Source:* | Editors | | |

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# Abstract

This document contains the draft text for changes to the High Efficiency Video Coding (HEVC) standard (Rec. ITU-T H.265 | ISO/IEC 23008-2) to specify the annotated regions SEI message, along with some corrections to the existing specification text.

**Changes to the specification text:**

*Replace D.2.1 with the following:*

**D.2.1 General SEI message syntax**

|  |  |
| --- | --- |
| sei\_payload( payloadType, payloadSize ) { | **Descriptor** |
| if( nal\_unit\_type  = =  PREFIX\_SEI\_NUT ) |  |
| if( payloadType  = =  0 ) |  |
| buffering\_period( payloadSize ) |  |
| else if( payloadType  = =  1 ) |  |
| pic\_timing( payloadSize ) |  |
| else if( payloadType  = =  2 ) |  |
| pan\_scan\_rect( payloadSize ) |  |
| else if( payloadType  = =  3 ) |  |
| filler\_payload( payloadSize ) |  |
| else if( payloadType  = =  4 ) |  |
| user\_data\_registered\_itu\_t\_t35( payloadSize ) |  |
| else if( payloadType  = =  5 ) |  |
| user\_data\_unregistered( payloadSize ) |  |
| else if( payloadType  = =  6 ) |  |
| recovery\_point( payloadSize ) |  |
| else if( payloadType  = =  9 ) |  |
| scene\_info( payloadSize ) |  |
| else if( payloadType  = =  15 ) |  |
| picture\_snapshot( payloadSize ) |  |
| else if( payloadType  = =  16 ) |  |
| progressive\_refinement\_segment\_start( payloadSize ) |  |
| else if( payloadType  = =  17 ) |  |
| progressive\_refinement\_segment\_end( payloadSize ) |  |
| else if( payloadType  = =  19 ) |  |
| film\_grain\_characteristics( payloadSize ) |  |
| else if( payloadType  = =  22 ) |  |
| post\_filter\_hint( payloadSize ) |  |
| else if( payloadType  = =  23 ) |  |
| tone\_mapping\_info( payloadSize ) |  |
| else if( payloadType  = =  45 ) |  |
| frame\_packing\_arrangement( payloadSize ) |  |
| else if( payloadType  = =  47 ) |  |
| display\_orientation( payloadSize ) |  |
| else if( payloadType  = =  56 ) |  |
| green\_metadata( payloadsize ) /\* specified in ISO/IEC 23001-11 \*/ |  |
| else if( payloadType  = =  128 ) |  |
| structure\_of\_pictures\_info( payloadSize ) |  |
| else if( payloadType  = =  129 ) |  |
| active\_parameter\_sets( payloadSize ) |  |
| else if( payloadType  = =  130 ) |  |
| decoding\_unit\_info( payloadSize ) |  |
| else if( payloadType  = =  131 ) |  |
| temporal\_sub\_layer\_zero\_index( payloadSize ) |  |
| else if( payloadType  = =  133 ) |  |
| scalable\_nesting( payloadSize ) |  |
| else if( payloadType  = =  134 ) |  |
| region\_refresh\_info( payloadSize ) |  |
| else if( payloadType  = =  135 ) |  |
| no\_display( payloadSize ) |  |
| else if( payloadType  = =  136 ) |  |
| time\_code( payloadSize ) |  |
| else if( payloadType  = =  137 ) |  |
| mastering\_display\_colour\_volume( payloadSize ) |  |
| else if( payloadType  = =  138 ) |  |
| segmented\_rect\_frame\_packing\_arrangement( payloadSize ) |  |
| else if( payloadType  = =  139 ) |  |
| temporal\_motion\_constrained\_tile\_sets( payloadSize ) |  |
| else if( payloadType  = =  140 ) |  |
| chroma\_resampling\_filter\_hint( payloadSize ) |  |
| else if( payloadType  = =  141 ) |  |
| knee\_function\_info( payloadSize ) |  |
| else if( payloadType  = =  142 ) |  |
| colour\_remapping\_info( payloadSize ) |  |
| else if( payloadType  = =  143 ) |  |
| deinterlaced\_field\_identification( payloadSize ) |  |
| else if( payloadType  = =  144 ) |  |
| content\_light\_level\_info( payloadSize ) |  |
| else if( payloadType  = =  145 ) |  |
| dependent\_rap\_indication( payloadSize ) |  |
| else if( payloadType  = =  146 ) |  |
| coded\_region\_completion( payloadSize ) |  |
| else if( payloadType  = =  147 ) |  |
| alternative\_transfer\_characteristics( payloadSize ) |  |
| else if( payloadType  = =  148 ) |  |
| ambient\_viewing\_environment( payloadSize ) |  |
| else if( payloadType  = =  149 ) |  |
| content\_colour\_volume( payloadSize ) |  |
| else if( payloadType  = =  150 ) |  |
| equirectangular\_projection( payloadSize ) |  |
| else if( payloadType  = =  151 ) |  |
| cubemap\_projection( payloadSize ) |  |
| else if( payloadType  = =  152 ) |  |
| fisheye\_video\_info( payloadSize ) |  |
| else if( payloadType  = =  154 ) |  |
| sphere\_rotation( payloadSize ) |  |
| else if( payloadType  = =  155 ) |  |
| regionwise\_packing( payloadSize ) |  |
| else if( payloadType  = =  156 ) |  |
| omni\_viewport( payloadSize ) |  |
| else if( payloadType  = =  157 ) |  |
| regional\_nesting( payloadSize ) |  |
| else if( payloadType  = =  158 ) |  |
| mcts\_extraction\_info\_sets( payloadSize ) |  |
| else if( payloadType  = =  159 ) |  |
| mcts\_extraction\_info\_nesting( payloadSize ) |  |
| else if( payloadType  = =  160 ) |  |
| layers\_not\_present( payloadSize ) /\* specified in Annex F \*/ |  |
| else if( payloadType  = =  161 ) |  |
| inter\_layer\_constrained\_tile\_sets( payloadSize ) /\* specified in Annex F \*/ |  |
| else if( payloadType  = =  162 ) |  |
| bsp\_nesting( payloadSize ) /\* specified in Annex F \*/ |  |
| else if( payloadType  = =  163 ) |  |
| bsp\_initial\_arrival\_time( payloadSize ) /\* specified in Annex F \*/ |  |
| else if( payloadType  = =  164 ) |  |
| sub\_bitstream\_property( payloadSize ) /\* specified in Annex F \*/ |  |
| else if( payloadType  = =  165 ) |  |
| alpha\_channel\_info( payloadSize ) /\* specified in Annex F \*/ |  |
| else if( payloadType  = =  166 ) |  |
| overlay\_info( payloadSize ) /\* specified in Annex F \*/ |  |
| else if( payloadType  = =  167 ) |  |
| temporal\_mv\_prediction\_constraints( payloadSize ) /\* specified in Annex F \*/ |  |
| else if( payloadType  = =  168 ) |  |
| frame\_field\_info( payloadSize ) /\* specified in Annex F \*/ |  |
| else if( payloadType  = =  176 ) |  |
| three\_dimensional\_reference\_displays\_info( payloadSize ) /\* specified in Annex G \*/ |  |
| else if( payloadType  = =  177 ) |  |
| depth\_representation\_info( payloadSize ) /\* specified in Annex G \*/ |  |
| else if( payloadType  = =  178 ) |  |
| multiview\_scene\_info( payloadSize ) /\* specified in Annex G \*/ |  |
| else if( payloadType  = =  179 ) |  |
| multiview\_acquisition\_info( payloadSize ) /\* specified in Annex G \*/ |  |
| else if( payloadType  = =  180 ) |  |
| multiview\_view\_position( payloadSize ) /\* specified in Annex G \*/ |  |
| else if( payloadType  = =  181 ) |  |
| alternative\_depth\_info( payloadSize ) /\* specified in Annex I \*/ |  |
| else if( payloadType  = =  200 ) |  |
| sei\_manifest( payloadSize ) |  |
| else if( payloadType  = =  201 ) |  |
| sei\_prefix\_indication( payloadSize ) |  |
| else if( payloadType  = =  202 ) |  |
| annotated\_regions( payloadSize ) |  |
| else |  |
| reserved\_sei\_message( payloadSize ) |  |
| else /\* nal\_unit\_type  = =  SUFFIX\_SEI\_NUT \*/ |  |
| if( payloadType  = =  3 ) |  |
| filler\_payload( payloadSize ) |  |
| else if( payloadType  = =  4 ) |  |
| user\_data\_registered\_itu\_t\_t35( payloadSize ) |  |
| else if( payloadType  = =  5 ) |  |
| user\_data\_unregistered( payloadSize ) |  |
| else if( payloadType  = =  17 ) |  |
| progressive\_refinement\_segment\_end( payloadSize ) |  |
| else if( payloadType  = =  22 ) |  |
| post\_filter\_hint( payloadSize ) |  |
| else if( payloadType  = =  132 ) |  |
| decoded\_picture\_hash( payloadSize ) |  |
| else if( payloadType  = =  146 ) |  |
| coded\_region\_completion( payloadSize ) |  |
| else |  |
| reserved\_sei\_message( payloadSize ) |  |
| if( more\_data\_in\_payload( ) ) { |  |
| if( payload\_extension\_present( ) ) |  |
| **reserved\_payload\_extension\_data** | u(v) |
| **payload\_bit\_equal\_to\_one** /\* equal to 1 \*/ | f(1) |
| while( !byte\_aligned( ) ) |  |
| **payload\_bit\_equal\_to\_zero** /\* equal to 0 \*/ | f(1) |
| } |  |
| } |  |

*Renumber clause D.2.47 (Reserved SEI message syntax) as D.2.48.*

*Add clause D.2.47, as follows:*

**D.2.47 Annotated regions SEI message syntax**

|  |  |
| --- | --- |
| annotated\_regions( payloadSize ) { | **Descriptor** |
| **ar\_cancel\_flag** | u(1) |
| if (!ar\_cancel\_flag) { |  |
| **ar\_not\_optimized\_for\_viewing\_flag** | u(1) |
| **ar\_true\_motion\_flag** | u(1) |
| **ar\_occluded\_object\_flag** | u(1) |
| **ar\_partial\_object\_flag\_present\_flag** | u(1) |
| **ar\_object\_label\_present\_flag** | u(1) |
| **ar\_object\_confidence\_info\_present\_flag** | u(1) |
| if( ar\_object\_confidence\_info\_present\_flag ) |  |
| **ar\_object\_confidence\_length\_minus1** | u(4) |
| if( ar\_object\_label\_present\_flag ) { |  |
| **ar\_object\_label\_language\_present\_flag** | u(1) |
| if( ar\_object\_label\_language\_present\_flag ) { |  |
| while( !byte\_aligned( ) ) |  |
| **ar\_bit\_equal\_to\_zero** /\* equal to 0 \*/ | f(1) |
| **ar\_object\_label\_language** | st(v) |
| } |  |
| **ar\_num\_label\_updates** | ue(v) |
| for( i = 0; i < ar\_num\_ label\_updates; i++ ) { |  |
| **ar\_label\_idx**[ i ] | ue(v) |
| **ar\_label\_cancel\_flag** | u(1) |
| LabelAssigned[ ar\_label\_idx[ i] ] = !ar\_label\_cancel\_flag |  |
| if ( !ar\_label\_cancel\_flag) { |  |
| while( !byte\_aligned( ) ) |  |
| **ar\_bit\_equal\_to\_zero** /\* equal to 0 \*/ | f(1) |
| **ar\_label**[ ar\_label\_idx[ i ] ] | st(v) |
| } |  |
| } |  |
| } |  |
| **ar\_num\_object\_updates** | ue(v) |
| for( i = 0; i  <=  ar\_num\_object\_updates; i++ ) { |  |
| **ar\_object\_idx**[ i ] | ue(v) |
| **ar\_object\_cancel\_flag** | u(1) |
| ObjectTracked[ ar\_object\_idx[ i ] ] = !ar\_object\_cancel\_flag |  |
| if (!ar\_object\_cancel\_flag) { |  |
| if( ar\_object\_label\_present\_flag ) { |  |
| **ar\_object\_label\_update\_flag** | u(1) |
| if( ar\_object\_label\_update\_flag ) |  |
| **ar\_object\_label\_idx**[ ar\_object\_idx[ i ] ] | ue(v) |
| } |  |
| **ar\_bounding\_box\_update\_flag** | u(1) |
| if( ar\_bounding\_box\_update\_flag { |  |
| **ar\_bounding\_box\_top[** ar\_object\_idx[ i ] ] | u(16) |
| **ar\_bounding\_box\_left**[ ar\_object\_idx[ i ] ] | u(16) |
| **ar\_bounding\_box\_width**[ ar\_object\_idx[ i ] ] | u(16) |
| **ar\_bounding\_box\_height**[ ar\_object\_idx[ i ] ] | u(16) |
| if( ar\_partial\_object\_flag\_present\_flag ) |  |
| **ar\_partial\_object\_flag**[ ar\_object\_idx[ i ] ] | u(1) |
| if( ar\_object\_confidence\_info\_present\_flag ) |  |
| **ar\_object\_confidence**[ ar\_object\_idx[ i ] ] | u(v) |
| } |  |
| } |  |
| } |  |
| } |  |
| } |  |

*In D.3.1, replace the following paragraphs:*

The list SingleLayerSeiList is set to consist of the payloadType values 3, 6, 9, 15, 16, 17, 19, 22, 23, 45, 47, 56, 128, 129, 131, 132, 134 to 152, inclusive, 154 to 159, inclusive, and 200 to 201, inclusive.

The list VclAssociatedSeiList is set to consist of the payloadType values 2, 3, 6, 9, 15, 16, 17, 19, 22, 23, 45, 47, 56, 128, 131, 132, 134 to 152, inclusive, 154 to 159, inclusive, and 200 to 201, inclusive.

The list PicUnitRepConSeiList is set to consist of the payloadType values 0, 1, 2, 6, 9, 15, 16, 17, 19, 22, 23, 45, 47, 56, 128, 129, 131, 132, 133, 135 to 152, inclusive, 154 to 159, inclusive, and 200 to 201, inclusive.

*with the following:*

The list SingleLayerSeiList is set to consist of the payloadType values 3, 6, 9, 15, 16, 17, 19, 22, 23, 45, 47, 56, 128, 129, 131, 132, 134 to 152, inclusive, 154 to 159, inclusive, and 200 to 202, inclusive.

The list VclAssociatedSeiList is set to consist of the payloadType values 2, 3, 6, 9, 15, 16, 17, 19, 22, 23, 45, 47, 56, 128, 131, 132, 134 to 152, inclusive, 154 to 159, inclusive, and 200 to 202, inclusive.

The list PicUnitRepConSeiList is set to consist of the payloadType values 0, 1, 2, 6, 9, 15, 16, 17, 19, 22, 23, 45, 47, 56, 128, 129, 131, 132, 133, 135 to 152, inclusive, 154 to 159, inclusive, and 200 to 202, inclusive.

*In D.3.1, in Table D.1, append the following row to the end of the table:*

|  |  |
| --- | --- |
| Annotated regions | Specified by the syntax of the SEI message |

*Add clause D.3.47, as follows:*

**D.3.47 Annotated regions SEI message semantics**

The annotated regions SEI message carries parameters that identify annotated regions using bounding boxes representing the size and location of identified objects.

**ar\_cancel\_flag** equal to 1 indicates that the annotated regions SEI message cancels the persistence of any previous annotated regions SEI message that is associated with one or more layers to which the annotated regions SEI message applies. ar\_cancel\_flag equal to 0 indicates that annotated regions information follows.

When ar\_cancel\_flag equal to 1 or a new CLVS of the current layer begins, the variables LabelAssigned[ i ] and ObjectTracked[ i ] are set equal to 0 for i in 0..255.

Let picA be the current picture. Each region identified in the annotated regions SEI message persists for the current layer in output order until any of the following conditions are true:

– A new CLVS of the current layer begins.

– The bitstream ends.

– A picture picB in the current layer in an access unit containing an annotated regions SEI message that is applicable to the current layer is output for which PicOrderCnt( picB ) is greater than PicOrderCnt( picA ), where PicOrderCnt( picB ) and PicOrderCnt( picA ) are the PicOrderCntVal values of picB and picA, and the semantics of the annotated regions SEI message for PicB cancels the persistence of the region identified in the annotated regions SEI message for PicA.

**ar\_not\_optimized\_for\_viewing\_flag** equal to 1 indicates that the decoded pictures that the annotated regions SEI message applies to are not optimized for user viewing, but rather are optimized for some other purpose such as algorithmic object classification performance. ar\_not\_optimized\_for\_viewing\_flagequal to 0 indicates that the decoded pictures that the annotated regions SEI message applies to may or may not be optimized for user viewing.

**ar\_true\_motion\_flag** equal to 1 indicates that the motion information in the coded pictures that the annotated regions SEI message applies to was selected with a goal of accurately representing object motion for objects in the annotated regions. ar\_true\_motion\_flag equal to 0 indicates that the motion information in the coded pictures that the annotated regions SEI message applies to may or may not be selected with a goal of accurately representing object motion for objects in the annotated regions.

**ar\_occluded\_object\_flag** equal to 1 indicates that the ar\_bounding\_box\_top[ ar\_object\_idx[ i ] ], ar\_bounding\_box\_left[ ar\_object\_idx[ i ] ], ar\_bounding\_box\_width[ ar\_object\_idx[ i ] ], and ar\_bounding\_box\_height[ ar\_object\_idx[ i ] ] syntax elements each represent the size and location of an object or a portion of an object that may not be visible or may be only partially visible within the cropped decoded picture. ar\_occluded\_object\_flagequal to 0 indicates that the ar\_bounding\_box\_top[ ar\_object\_idx[ i ] ], ar\_bounding\_box\_left[ ar\_object\_idx[ i ] ], ar\_bounding\_box\_width[ ar\_object\_idx[ i ] ], and ar\_bounding\_box\_height[ ar\_object\_idx[ i ] ] syntax elements represent the size and location of an object that is entirely visible within the cropped decoded picture. It is a requirement of bitstream conformance that the value of ar\_occluded\_object\_flag shall be the same for all annotated\_regions( ) syntax structures within a CLVS.

**ar\_partial\_object\_flag\_present\_flag** equal to 1 indicates that ar\_partial\_object\_flag[ ar\_object\_idx[ i ] ] syntax elements are present. ar\_partial\_object\_flag\_present\_flag equal to 0 indicates that ar\_partial\_object\_flag[ ar\_object\_idx[ i ] ] syntax elements are not present. It is a requirement of bitstream conformance that the value of ar\_partial\_object\_flag\_present\_flag shall be the same for all annotated\_regions( ) syntax structures within a CLVS.

**ar\_object\_label\_present\_flag** equal to 1 indicates that label information corresponding to objects in the annotated regions is present. ar\_object\_label\_present\_flag equal to 0 indicates that label information corresponding to the objects in the annotated regions is not present.

**ar\_object\_confidence\_info\_present\_flag** equal to 1 indicates that ar\_object\_confidence[ ar\_object\_idx[ i ] ] syntax elements are present. ar\_object\_confidence\_info\_present\_flag equal to 0 indicates that ar\_object\_confidence[ ar\_object\_idx[ i ] ] syntax elements are not present. It is a requirement of bitstream conformance that the value of ar\_object\_confidence\_present\_flag shall be the same for all annotated\_regions( ) syntax structures within a CLVS.

**ar\_object\_confidence\_length\_**minus + 1 specifies the length, in bits, of the ar\_object\_confidence[ ar\_object\_idx[ i ] ] syntax elements. It is a requirement of bitstream conformance that the value of ar\_object\_confidence\_length shall be the same for all annotated\_regions( ) syntax structures within a CLVS.

**ar\_object\_label\_language\_present\_flag** equal to 1 indicates that the ar\_object\_label\_language syntax element is present. ar\_object\_label\_language\_present\_flag equal to 0 indicates that the ar\_object\_label\_language syntax element is not present.

**ar\_bit\_equal\_to\_zero** shall be equal to zero.

**ar\_object\_label\_language** contains a language tag as specified by IETF RFC 5646 followed by a null termination byte equal to 0x00. The length of the ar\_object\_label\_language syntax element shall be less than or equal to 255 bytes, not including the null termination byte. When not present, the language of the label is unspecified.

**ar\_num\_label\_updates** indicates the total number of labels associated with the annotated regions that will be signalled. The value of ar\_num\_label\_updates shall be in the range of 0 to 255, inclusive.

**ar\_label\_idx**[ i ] indicates the index of the signalled label . The value of ar\_label\_idx[ i ]shall be in the range of 0 to 255, inclusive.

**ar\_label\_cancel\_flag** equal to 1 cancels the persistence scope of the ar\_label\_idx[ i ]-th label. ar\_label\_cancel\_flag equal to 0 indicates that the ar\_label\_idx[ i ]-th label will be assigned a signalled value.

**ar\_label**[ ar\_label\_idx[ i ] ] specifies the contents of the ar\_label\_idx[ i ] –th label. The length of the ar\_label[ ar\_label\_idx[ i ] ] syntax element shall be less than or equal to 255 bytes, not including the null termination byte.

**ar\_num\_object\_updates** indicates the number of object updates to be signalled. ar\_num\_cancelled\_objects shall be in the range of 0 to 255, inclusive.

**ar\_object\_idx**[ i ] is the index of the object parameters to be signalled. ar\_object\_idx[ i ]shall be in the range of 0 to 255, inclusive.

**ar\_object\_cancel\_flag** equal to 1 cancels the persistence scope of the ar\_object\_idx[ i ]-th object. ar\_object\_cancel\_flag equal to 0 indicates that parameters associated with the ar\_object\_idx[ i ]-th object tracked object will be signalled..

**ar\_object\_label\_update\_flag** equal to 1 indicates that an object label will be signalled. ar\_object\_label\_update\_flag equal to 0 indicates that an object label will not will not be signalled.

**ar\_object\_label\_idx**[ ar\_object\_idx[ i ] ] indicates the index of the label corresponding to the ar\_object\_idx[ i ]-th object. When ar\_object\_label\_idx[ ar\_object\_idx[ i ] ] is not present, its value is inferred from a previous annotated regions SEI messages in output order in the same CLVS, if any.

**ar\_bounding\_box\_update\_flag** equal to 1 indicates that an object bounding box will be signalled. ar\_bounding\_box\_update\_flag equal to 0 indicates that an object bounding box will not be signalled.

**ar\_bounding\_box\_top**[ ar\_object\_idx[ i ] ], **ar\_bounding\_box\_left**[ ar\_object\_idx[ i ] ], **ar\_bounding\_box\_width**[ ar\_object\_idx[ i ] ] and **ar\_bounding\_box\_height**[ ar\_object\_idx[ i ] ] specify the coordinates of the top-left corner and the width and height, respectively, of the bounding box of the ar\_object\_idx[ i ]-th object in the cropped decoded picture, relative to the conformance cropping window specified by the active SPS.

Let croppedWidth and croppedHeight be the width and height, respectively, of the cropped decoded picture in units of luma samples, as specified by Equations D-28 and D-29.

The value of ar\_bounding\_box\_left[ ar\_object\_idx[ i ] ] shall be in the range of 0 to croppedWidth / SubWidthC − 1, inclusive.

The value of ar\_bounding\_box\_top[ ar\_object\_idx[ i ] ] shall be in the range of 0 to croppedHeight / SubHeightC − 1, inclusive.

The value of ar\_bounding\_box\_width[ ar\_object\_idx[ i ] ] shall be in the range of 0 to croppedWidth / SubHeightC − ar\_bounding\_box\_left[ ar\_object\_idx[ i ] ], inclusive.

The value of ar\_bounding\_box\_height[ ar\_object\_idx[ i ] ] shall be in the range of 0 to croppedHeight / SubHeightC − ar\_bounding\_box\_top[ ar\_object\_idx[ i ] ], inclusive.

The identified object rectangle contains the luma samples with horizontal picture coordinates from SubWidthC \* ( conf\_win\_left\_offset + ar\_bounding\_box\_left[ ar\_object\_idx[ i ] ] ) to SubWidthC \* ( conf\_win\_left\_offset + ar\_bounding\_box\_left[ ar\_object\_idx[ i ] ] + ar\_bounding\_box\_width[ ar\_object\_idx[ i ] ] ) − 1, inclusive, and vertical picture coordinates from SubHeightC \* ( conf\_win\_top\_offset + ar\_bounding\_box\_top[ ar\_object\_idx[ i ] ] ) to SubWidthC \* ( conf\_win\_top\_offset + ar\_bounding\_box\_top[ ar\_object\_idx[ i ] ] + ar\_bounding\_box\_height[ ar\_object\_idx[ i ] ] ) − 1, inclusive.

The values of ar\_bounding\_box\_top[ ar\_object\_idx[ i ] ], ar\_bounding\_box\_left[ ar\_object\_idx[ i ] ], ar\_bounding\_box\_width[ ar\_object\_idx[ i ] ] and ar\_bounding\_box\_height[ ar\_object\_idx[ i ] ] persist in output order within the CLVS for each value of ar\_object\_idx[ i ]. When not present, the values of ar\_bounding\_box\_top[ ar\_object\_idx[ i ] ], ar\_bounding\_box\_left[ ar\_object\_idx[ i ] ], ar\_bounding\_box\_width[ ar\_object\_idx[ i ] ] or ar\_bounding\_box\_height[ ar\_object\_idx[ i ] ] are

**ar\_partial\_object\_flag**[ ar\_object\_idx[ i ] ] equal to 1 indicates that the ar\_bounding\_box\_top[ ar\_object\_idx[ i ] ], ar\_bounding\_box\_left[ ar\_object\_idx[ i ] ], ar\_bounding\_box\_width[ ar\_object\_idx[ i ] ] and ar\_bounding\_box\_height[ ar\_object\_idx[ i ] ] syntax elements represent the size and location of an object that is only partially visible within the cropped decoded picture. ar\_partial\_object\_flag[ ar\_object\_idx[ i ] ] equal to 0 indicates that the ar\_bounding\_box\_top[ ar\_object\_idx[ i ] ], ar\_bounding\_box\_left[ ar\_object\_idx[ i ] ], ar\_bounding\_box\_width[ ar\_object\_idx[ i ] ] and ar\_bounding\_box\_height[ ar\_object\_idx[ i ] ] syntax elements represent the size and location of an object that may or may not be only partially visible within the cropped decoded picture. When not present, the value of ar\_partial\_object\_flag[ ar\_object\_idx[ i ] ] is inferred from a previous annotated regions SEI message in output order in the CLVS, if any.

**ar\_object\_confidence**[ ar\_object\_idx[ i ] ] indicates the degree of confidence associated with the ar\_object\_idx[ i ]-th object, in units of 2−( ar\_object\_confidence\_length\_minus1 + 1 ), such that a higher value of **ar\_object\_confidence**[ ar\_object\_idx[ i ] ] indicates a higher degree of confidence. The length of the ar\_object\_confidence[ ar\_object\_idx[ i ] ] syntax element is ar\_object\_confidence\_length\_minus1 + 1 bits. When not present, the value of\_object\_confidence[ ar\_object\_idx[ i ] ] is inferred from a previous annotated regions SEI message in output order in the CLVS, if any.

*In F.14.3.1 (General SEI payload semantics), replace the following paragraphs:*

The list VclAssociatedSeiList is set to consist of the payloadType values 2, 3, 6, 9, 15, 16, 17, 19, 22, 23, 45, 47, 56, 128, 131, 132, 134 to 152, inclusive, 154 to 159, inclusive, 161, 165, 167, 168, and 200 to 201, inclusive.

The list PicUnitRepConSeiList is set to consist of the payloadType values 0, 1, 2, 6, 9, 15, 16, 17, 19, 22, 23, 45, 47, 56, 128, 129, 131, 132, 133, 135 to 152, inclusive, 154 to 168, inclusive, and 200 to 201, inclusive.

*with the following:*

The list VclAssociatedSeiList is set to consist of the payloadType values 2, 3, 6, 9, 15, 16, 17, 19, 22, 23, 45, 47, 56, 128, 131, 132, 134 to 152, inclusive, 154 to 159, inclusive, 161, 165, 167, 168, and 200 to 202, inclusive.

The list PicUnitRepConSeiList is set to consist of the payloadType values 0, 1, 2, 6, 9, 15, 16, 17, 19, 22, 23, 45, 47, 56, 128, 129, 131, 132, 133, 135 to 152, inclusive, 154 to 168, inclusive, and 200 to 202, inclusive.

*In G.14.3.1 (General SEI payload semantics), replace the following paragraphs:*

The list VclAssociatedSeiList is set to consist of payloadType values 2, 3, 6, 9, 15, 16, 17, 19, 22, 23, 45, 47, 56, 128, 131, 132, 134 to 152, inclusive, 154 to 159, inclusive, 161, 165, 167, 168, 177, 178, 179, and 200 to 201, inclusive.

The list PicUnitRepConSeiList is set to consist of payloadType values 0, 1, 2, 6, 9, 15, 16, 17, 19, 22, 23, 45, 47, 56, 128, 129, 131, 132, 133, 135 to 152, inclusive, 154 to 168, inclusive, 176 to 180, inclusive, and 200 to 201, inclusive.

*with the following:*

The list VclAssociatedSeiList is set to consist of payloadType values 2, 3, 6, 9, 15, 16, 17, 19, 22, 23, 45, 47, 56, 128, 131, 132, 134 to 152, inclusive, 154 to 159, inclusive, 161, 165, 167, 168, 177, 178, 179, and 200 to 202, inclusive.

The list PicUnitRepConSeiList is set to consist of payloadType values 0, 1, 2, 6, 9, 15, 16, 17, 19, 22, 23, 45, 47, 56, 128, 129, 131, 132, 133, 135 to 152, inclusive, 154 to 168, inclusive, 176 to 180, inclusive, and 200 to 202, inclusive.

*In I.14.3.1 (General SEI payload semantics), replace the following paragraphs:*

The list VclAssociatedSeiList is set to consist of payloadType values 2, 3, 6, 9, 15, 16, 17, 19, 22, 23, 45, 47, 56, 128, 131, 132, 134 to 152, inclusive, 154 to 159, inclusive, 161, 165, 167, 168, 177, 178, 179, and 200 to 201, inclusive.

The list PicUnitRepConSeiList is set to consist of payloadType values 0, 1, 2, 6, 9, 15, 16, 17, 19, 22, 23, 45, 47, 56, 128, 129, 131, 132, 133, 135 to 152, inclusive, 154 to 168, inclusive, 176 to 181, inclusive, and 200 to 201, inclusive.

*with the following:*

The list VclAssociatedSeiList is set to consist of payloadType values 2, 3, 6, 9, 15, 16, 17, 19, 22, 23, 45, 47, 56, 128, 131, 132, 134 to 152, inclusive, 154 to 159, inclusive, 161, 165, 167, 168, 177, 178, 179, and 200 to 202, inclusive.

The list PicUnitRepConSeiList is set to consist of payloadType values 0, 1, 2, 6, 9, 15, 16, 17, 19, 22, 23, 45, 47, 56, 128, 129, 131, 132, 133, 135 to 152, inclusive, 154 to 168, inclusive, 176 to 181, inclusive, and 200 to 202, inclusive.

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