



JCTVC-N0051/JCT3V-E0038:
MV-HEVC/SHVC HLS:
View Id and view position index

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Discussion regarding JCT3V-D0220

- Prior to JCT3V-D0220 adoption, design philosophy of the VPS extension's `dimension_id[i][j]` syntax elements
 - Mapped to `DependencyId`, `ViewId`, etc.
 - Required to be equal to 0 in the base layer
 - Monotonically increasing with coding dependency order
 - Easily used for sub-bitstream extraction
 - When `splitting_flag` equal to 1, `DependencyId`, `ViewId`, etc. could be directly mapped to bit fields
- JCT3V-D0220 adoption
 - Allows non-zero values of `ViewId` for base layer
 - Signal `dimension_id[i][j]` for layer 0, only for MV-HEVC
 - `ViewId` represents camera position order rather than coding dependency order

Proposal

- Revert ViewId to earlier definition
- Add new syntax element to represent camera position
 - view_position_idc
 - $u(v)$ coded



Proposed VPS extension syntax

vps_extension() {	Descriptor
while(!byte_aligned())	
vps_extension_byte_alignment_reserved_one_bit	u(1)
avc_base_layer_flag	u(1)
splitting_flag	u(1)
for(i = 0, NumScalabilityTypes = 0; i < 16; i++) {	
scalability_mask[i]	u(1)
NumScalabilityTypes += scalability_mask[i]	
}	
for(j = 0; j < (NumScalabilityTypes - splitting_flag); j++)	
dimension_id_len_minus1[j]	u(3)
vps_nuh_layer_id_present_flag	u(1)
for(i = 01; i <= vps_max_layers_minus1; i++) {	
if(vps_nuh_layer_id_present_flag && i > 0) [Ed. (JB): syntax is not compatible with SHVC, or use of splitting_flag.]	
layer_id_in_nuh[i]	u(6)
if(!splitting_flag)	
for(j = 0; j < NumScalabilityTypes; j++)	
dimension_id[i][j]	u(v)
}	
for(i = 0; i < NumViews; i++)	
view_position_idx[i]	u(v)
...	

Proposed semantics

dimension_id[i][j] ...

```

for ( i = 0; i <= vps_max_layers_minus1; i++) {
    lId = layer_id_in_nuh[ i ]
    for( smIdx= 0, j =0; smIdx < 16; smIdx ++ )
        if( scalability_mask[ smIdx ] )
            ScalabilityId[ i ][ smIdx ] = dimension_id[ i ][ j++ ]
    ViewId[ lId ] = ScalabilityId[ i ][ 0 ]
    ViewScalExtLayerFlag[ lId ] = ( ViewId[ lId ] != ViewId[ 0 ] )
}

```

NumViews = ViewId[lId] + 1

~~[Ed. (JB): Syntax and semantics not compatible with SHVC, or with use of splitting_flag.]~~

view_position_idx[i] specifies the view position index of the i-th view. view_position_idx[i]. The length of the view_position_idx[i] syntax element is $\text{Ceil}(\text{Log2}(\text{NumViews}))$ bits. The value of view_position_idx[i] shall be in the range of 0 to NumViews - 1, inclusive.

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