

The background of the slide is a solid red color. Overlaid on this background are various faint, semi-transparent white and light red graphics. These include a network diagram with nodes and connecting lines on the right side, a circular target-like graphic on the left, and some abstract geometric shapes and lines scattered across the upper half. The overall aesthetic is technical and modern.

# AHG9: A More Robust Syntax for Raster Rectangular Slices

**JVET-Q0480**

**W. Wan, T. Hellman, B. Heng**

**Brussels, Belgium, January 2020 meeting**



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## Introduction

- JVET-P1004 adopted at Geneva October 2019 meeting
- Introduced a syntax for common rectangular slice configurations to be compressed more efficiently
- The current syntax requires slice height to be specified for every slice when `tile_idx_delta_present_flag=0`
- This contribution notes that there is an implicit constraint that all slices must have the same height in the same row so the slice height only need to be sent at the start of a row

## Discussion

- **tile\_idx\_delta\_present\_flag** equal to 0 specifies that **tile\_idx\_delta** values are not present in the PPS and that all rectangular slices in pictures referring to the PPS are specified in raster order according to the process defined in clause 6.5.1.

- From 6.5.1:

```
if( tile_idx_delta_present_flag )
    tileIdx += tile_idx_delta[ i ]
else {
    tileIdx += slice_width_in_tiles_minus1[ i ] + 1
    if( tileIdx % NumTileColumns == 0 )
        tileIdx += slice_height_in_tiles_minus1[ i ] * NumTileColumns
}
```

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## Discussion

- There is implicit constraint that each slice in a row must have same “slice\_height\_in\_tiles”
- This is because the way the implicit indexing is defined, it is not possible to create a legal configuration where slices in a row have different heights.
- Therefore, it is not necessary to transmit the slice height for every slice (as they must be the same) and also problematic to transmit the slice height for every slice (as the syntax suggests an encoder can use different values creating a non conformant bitstream)

## Current draft text

pic_parameter_set_rbsp() {	Descriptor
....	
tile_idx_delta_present_flag	u(1)
for( i = 0; i < num_slices_in_pic_minus1; i++ ) {	
slice_width_in_tiles_minus1[ i ]	ue(v)
slice_height_in_tiles_minus1[ i ]	ue(v)
if( slice_width_in_tiles_minus1[ i ] == 0 && slice_height_in_tiles_minus1[ i ] == 0 ) {	
num_slices_in_tile_minus1[ i ]	ue(v)
....	

# Proposal

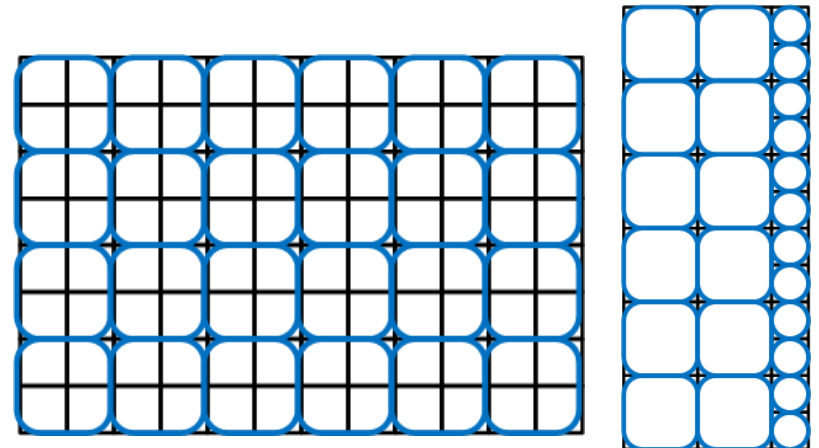
- Solution is to only transmit the slice height as the start of a row

pic_parameter_set_rbsp() {	Descriptor
....	
tile_idx_delta_present_flag	u(1)
for( i = 0; i < num_slices_in_pic_minus1; i++ ) {	
slice_width_in_tiles_minus1[ i ]	ue(v)
if (tile_idx_delta_present_flag    (tileIdx % NumTileColumns == 0))	
slice_height_in_tiles_minus1[ i ]	ue(v)
else	
slice_height_in_tiles_minus1[i] = slice_height_in_tiles_minus1[i-1]	
if( slice_width_in_tiles_minus1[ i ] == 0 && slice_height_in_tiles_minus1[ i ] == 0 ) {	
num_slices_in_tile_minus1[ i ]	ue(v)
....	

## Bit savings calculations

- The primary motivation for this proposal is to avoid potential interop issues. Bit savings calculations are provided because they were requested as part of JVET-P1004

Figure	Number of bits: JVET-P1004	Number of bits: JVET-Q0480
A	94	82 (-13%)
B	148	91 (-25%)





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