

The background of the slide is a vibrant red, overlaid with a complex network of white lines and dots, resembling a digital or data network. In the upper left corner, there are faint, semi-transparent icons: a code editor with a '</>' symbol, a waveform graph, and a circular target-like graphic. Faint binary code (0s and 1s) is also visible in the background.

AHG17/CE1-related: Specifying Scaling Regions for Reference Picture Resampling

JVET-P0241

T. Hellman, W. Wan, P. Chen
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Introduction

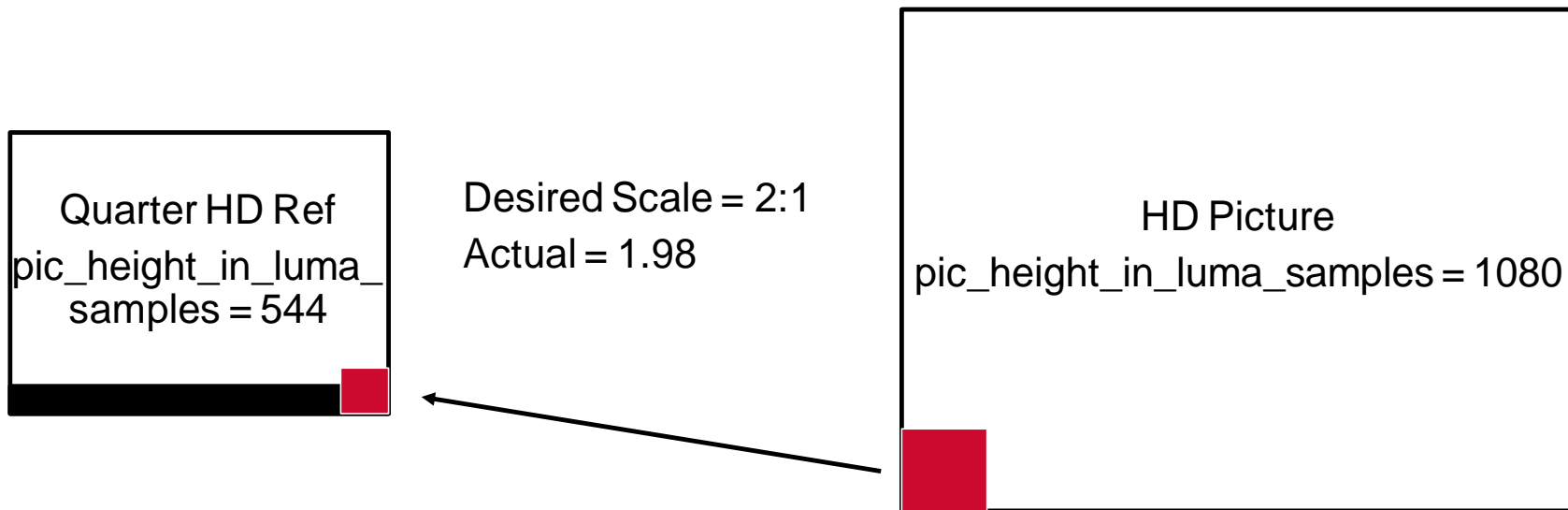
- Reference picture resampling (RPR) adopted at Gothenburg July 2019 meeting
- Potential issue identified regarding scaling ratio definition when picture sizes are NOT a multiple of 8 pixels
- Conformance cropping window approach was agreed but acknowledged may not be the right approach

Current PPS heigh/width

- **pic_width_in_luma_samples** specifies the width of each decoded picture referring to the PPS in units of luma samples.
pic_width_in_luma_samples shall not be equal to 0, **shall be an integer multiple of $\text{Max}(8, \text{MinCbSizeY})$** , and shall be less than or equal to pic_width_max_in_luma_samples.
- **pic_height_in_luma_samples** specifies the height of each decoded picture referring to the PPS in units of luma samples.
pic_height_in_luma_samples shall not be equal to 0 and **shall be an integer multiple of $\text{Max}(8, \text{MinCbSizeY})$** , and shall be less than or equal to pic_height_max_in_luma_samples.

HD to quarter HD Reference

- References pixels in the padding region
- Awkward scaling ratio



Conformance Window Approach

- Recognized during discussion at last meeting as well as during the CE1 SW implementation that use of the conformance window for scaling ratio calculation is problematic
 - Left, right, top and bottom offset values need to be accounted for.
 - Several iterations of bugs complicating CE1 SW preparation
- Window was intended to assist display process and NOT affect the decode process:

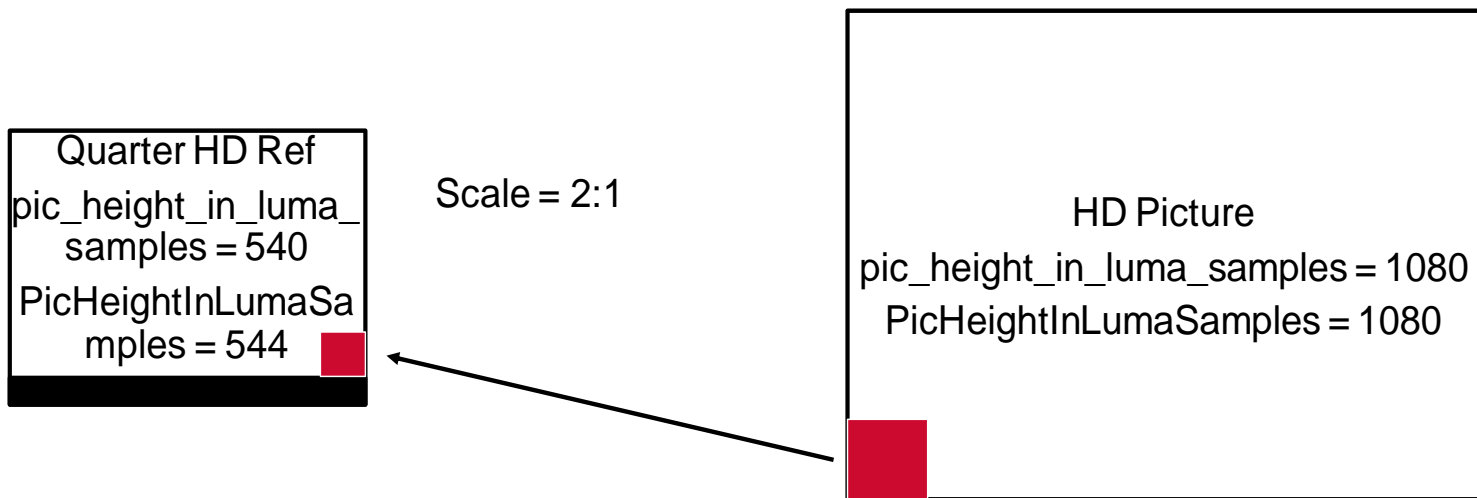
NOTE – The conformance cropping window offset parameters are only applied at the output. All internal decoding processes are applied to the uncropped picture size.

Proposal

- Redefine the semantics of the width and height transmitted in the PPS to be the “true” picture dimensions
- Derive the picture dimensions used by the decoding process by rounding
- Use the true picture dimensions for scaling ratio computation

Separation of display and decode dimensions

- **pic_height_max_in_luma_samples**: Width for display process
- **PicHeightInLumaSamples**: Width for decode process
- Scaling ratio computation uses display dimensions



Specification Changes

- Redefine height/width in SPS and PPS
- Note that the proposed text changes includes two bug fixes discovered when reviewing the text.
 - More specifically, there is one clause in both Section 8.5.1 and another in Section 8.5.6 in the current draft text using the padded dimensions.
 - The authors believe these are bugs and use of the true dimensions is the design intention.



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