



MEDIA TEK

JVET-Q0177

AHG9: On picture identification and PH repetition

Authors: Lulin Chen, Ching-Yeh Chen, Chen-Yen Lai, Yu-Wen Huang, Shaw-Min Lei

Presenter: Lulin Chen

Overview

■ JVET-Q0177 AHG9: On picture identification and PH repetition

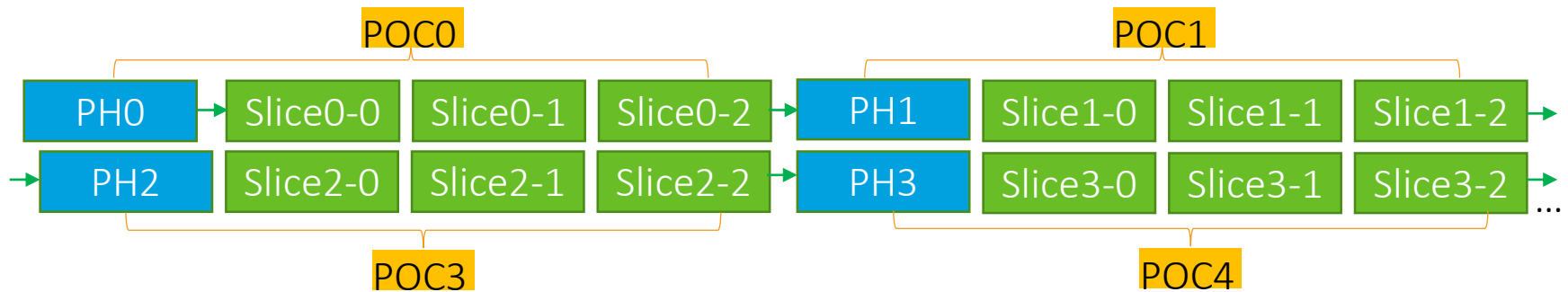
Proposed to specify the picture order count in the PH for the picture associated to the PH.

- An identification of a PH indicating start of a picture that may work together with the SH as a simple loss detection mechanism.
- As a general mechanism of *marking* a PH and the associated pictures in temporal domain. The info in SH shall be consistent.
- When PH repetition is allowed in VVC, the identifier can be used for *differentiating* the PH from the PH repetition.

Aspect 1: The identifier for marking the picture in temporal domain

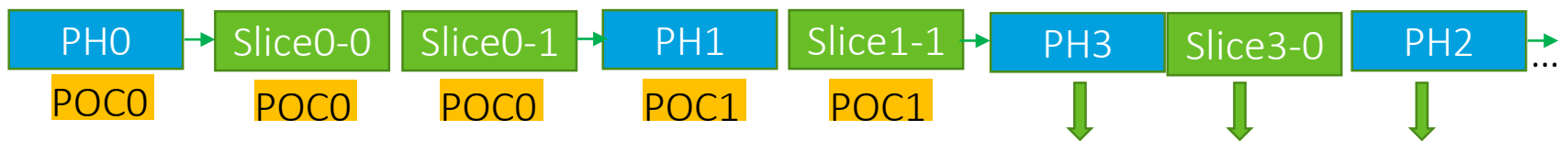
■ Encoded bitstream:

- Slice headers and data follow the associated PHs.



■ Transmitted bitstream:

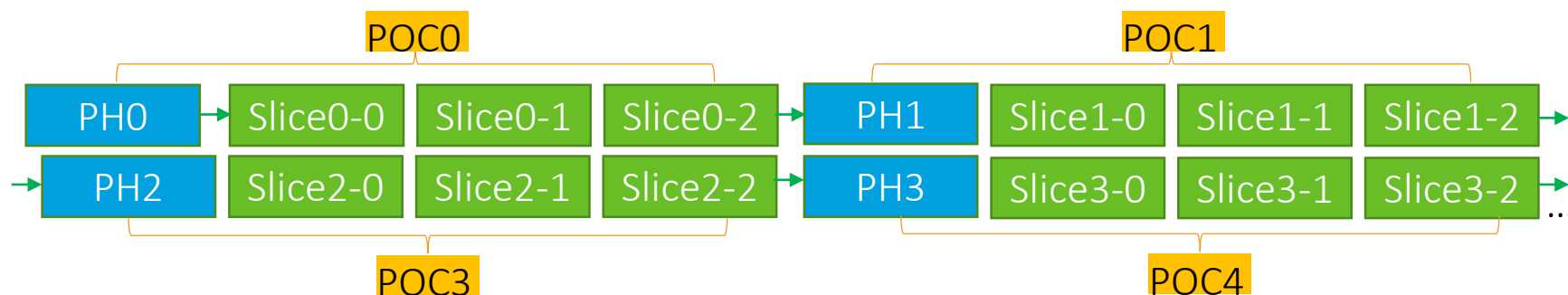
- If packets arrival order changes in the transmission.



Need the corresponding POC of each PH as a picture identifier in temporal domain

Aspect 2: The identifier for differentiating the PH from the PH repetition

- Encoded bitstream:
 - Slice headers and data follow the associated PHs.



- Transmitted bitstream:
 - If packets arrival order changes in the transmission and PH repetition occurs.



Need the corresponding POC of each PH as a picture identifier when PH repetition is enabled

Aspect 1: The identifier for marking the picture in temporal domain

- Add *ph_pic_order_cnt_lsb* as the first syntax element in the PH.

picture_header_rbsp() {	Descriptor
ph_pic_order_cnt_lsb	u(v)
non_reference_picture_flag	u(1)
gdr_pic_flag	u(1)
no_output_of_prior_pics_flag	u(1)
if(gdr_pic_flag)	
recovery_poc_cnt	ue(v)
ph_pic_parameter_set_id	ue(v)
...	
if(picture_header_extension_present_flag) {	
ph_extension_length	ue(v)
for(i = 0; i < ph_extension_length; i++)	
ph_extension_data_byte[i]	u(8)
}	
rbp_trailing_bits()	
}	

ph_pic_order_cnt_lsb specifies the picture order count modulo MaxPicOrderCntLsb for the current picture. The length of the ph_pic_order_cnt_lsb syntax element is $\log_2\text{max_pic_order_cnt_lsb_minus4} + 4$ bits. The value of the ph_pic_order_cnt_lsb shall be in the range of 0 to MaxPicOrderCntLsb – 1, inclusive.

NOTE – **ph_pic_order_cnt_lsb may be used as the identifier when the PH repetition occurs. The value of ph_pic_order_cnt_lsb shall be the same in all repetitive picture headers.** The first slice with slice_pic_order_cnt_lsb equal to ph_pic_order_cnt_lsb of the first PH is the first slice of the picture associated with the PH.

Aspect 1: The identifier for marking the picture in temporal domain

- Add a bitstream conformance requirement to slice_pic_order_cnt_lsb in the SH:
 - slice_pic_order_cnt_lsb shall be equal to ph_pic_order_cnt_lsb for the slices associated with the PH.

slice_header() {	Descriptor
slice_pic_order_cnt_lsb	u(v)
if(subpics_present_flag)	
slice_subpic_id	u(v)
if(rect_slice_flag NumTilesInPic > 1)	
slice_address	u(v)
if(!rect_slice_flag && NumTilesInPic > 1)	
num_tiles_in_slice_minus1	ue(v)
slice_type	ue(v)
...	
byte_alignment()	
}	

Aspect 2: The identifier for differentiating the PH from the PH repetition

■ Add flags

- sps_ph_repetition_enabled_flag, no_ph_repetition_constraint_flag
- ph_repetition_present_flag

■ Conditionally signal ph_pic_order_cnt_lsb in the PH.

picture_header_rbsp() {	Descriptor
if(sps_ph_repetition_enabled_flag)	
ph_repetition_present_flag	u(1)
if(ph_repetition_present_flag)	↓
ph_pic_order_cnt_lsb	u(v)
non_reference_picture_flag	u(1)
gdr_pic_flag	u(1)
no_output_of_prior_pics_flag	u(1)
if(gdr_pic_flag)	

ph_repetition_present_flag equal to 1 specifies that ph_pic_order_cnt_lsb is present for the coded picture associated with the PH. The picture header repetition may or may not occur for the coded picture associated with the PH. ph_repetition_flag equal to 0 specifies that ph_pic_order_cnt_lsb is not present.

Conclusion

- Proposed to specify the picture order count in the PH as the *picture identifier* for the picture associated with the PH.
 - Mark the pictures in temporal domain.
 - Differentiate the PHs from the PH repetition.

