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JCTVC-00271:
SHVC: On direct_dependency_flag

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Agenda

- ◆ Introduction/Problem Statement
- ◆ Proposal
- ◆ Conclusion

Introduction/Problem Statement

- ◆ **Layer sets can be defined by the syntax element “layer_id_included_flag[i][j]” in VPS.**
- ◆ **Direct dependencies between layers can be defined by “direct_dependency_flag[i][j]” in VPS_extension()**
 - Indirect dependencies between layers can be inferred from the values of this syntax element.
- ◆ **If there exists direct or indirect dependency between layerId A and B ($A > B$), it means that layer A cannot be decoded unless layer B is decoded.**
 - Then if a certain layer set contains layer A, it should also contain layer B.
 - However there is no constraint in the semantics of direct_dependency_flag[i][j].

■ video_parameter_set_rbsp() {	Descriptor
■ ...	
■ vps_max_layer_id	u(6)
■ vps_num_layer_sets_minus1	ue(v)
■ for(i = 1; i <= vps_num_layer_sets_minus1; i++)	
■ for(j = 0; j <= vps_max_layer_id; j++)	
■ layer_id_included_flag[i][j]	u(1)
■ ...	
■ }	

■ <u>vps_extension()</u> {	Descriptor
■ ...	
■ for(i = 1; i <= vps_max_layers_minus1; i++)	
■ for(j = 0; j < i; j++)	
■ direct_dependency_flag[i][j]	u(1)
■ ...	
■ }	

- ◆ To solve the problem stated above, it is proposed to add constraint in the semantics of `direct_dependency_flag[i][j]` as follows:
- ◆ It is a requirement of bitstream conformance that if the value of `dependency[CurrLayerId][RefLayerId]` is equal to 1 and a layer set defined by `layer_id_included_flag[i][j]` contains the current layer with `CurrLayerId`, it shall also contain the ref layer with `RefLayerId` inferred by the syntax element `direct_dependency_flag[i][i]`.

Conclusion

- ◆ If direct or indirect dependency is specified by `direct_dependency_flag[i][j]` between layerId A and B ($A > B$), it means that layer A cannot be decoded unless layer B is decoded. Then if a certain layer set contains layer A, it should also contain layer B.
- ◆ It is proposed by this contribution to add constraint on the semantics of `direct_dependency_flag[i][j]` associated with layer sets defined by `layer_id_included_flag[i][j]`.
- ◆ It is recommended that the suggested modification be adopted into SHVC WD.

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