

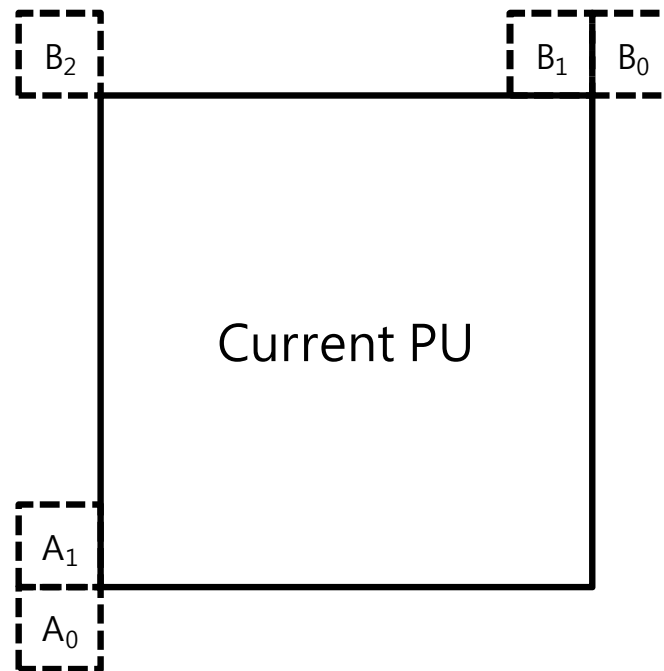
Simplification of spatial motion vector scaling process (JCTVC- H0243)

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Introduction

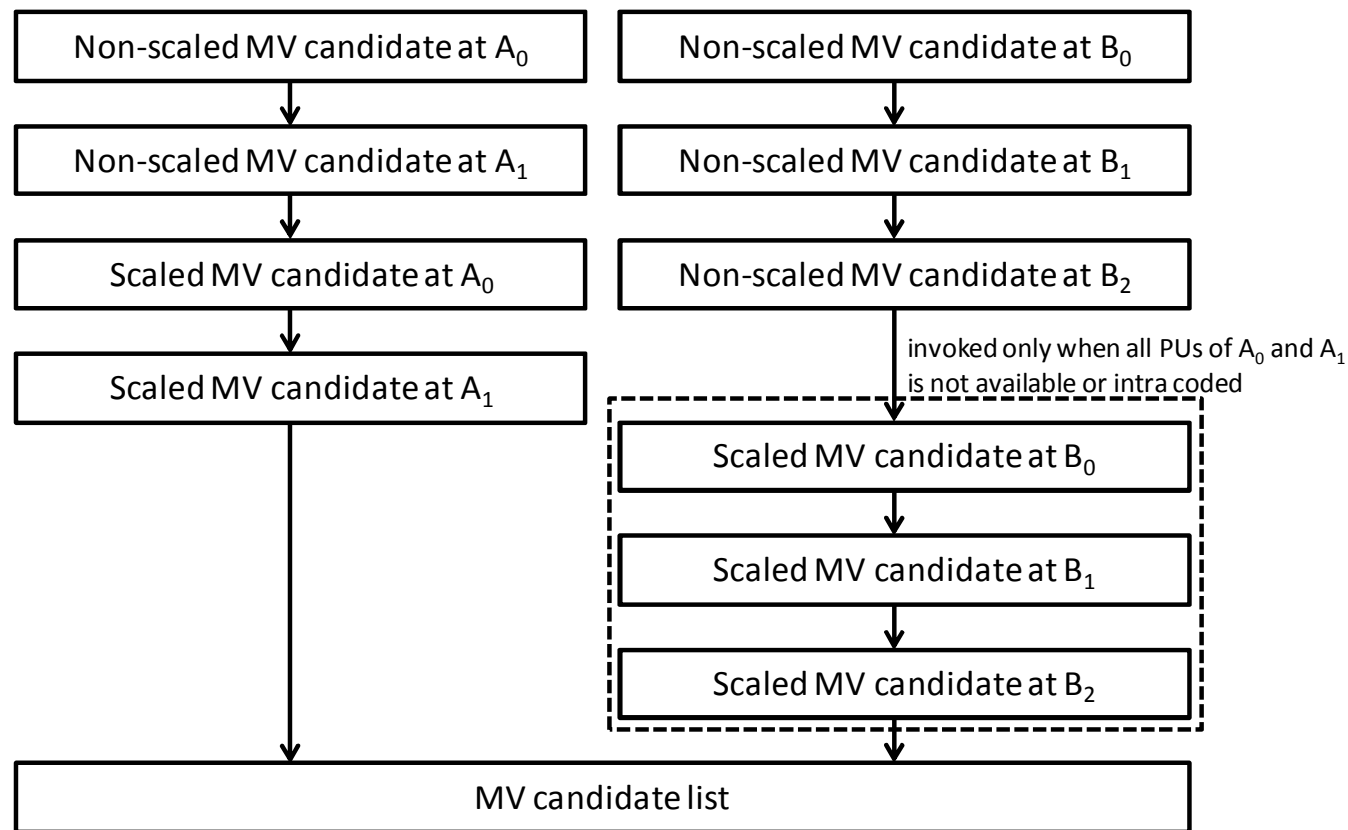
❖ Derivation of spatial motion vector candidates

- $A_0 \rightarrow A_1 \rightarrow \text{scaled } A_0 \rightarrow \text{scaled } A_1$
- $B_0 \rightarrow B_1 \rightarrow B_2 \rightarrow \text{scaled } B_0 \rightarrow \text{scaled } B_1 \rightarrow \text{scaled } B_2$
- Scaled A_n and B_n are considered when POC is different between reference picture of neighboring PU and that of current PU regardless of reference picture list



Spatial motion vector scaling

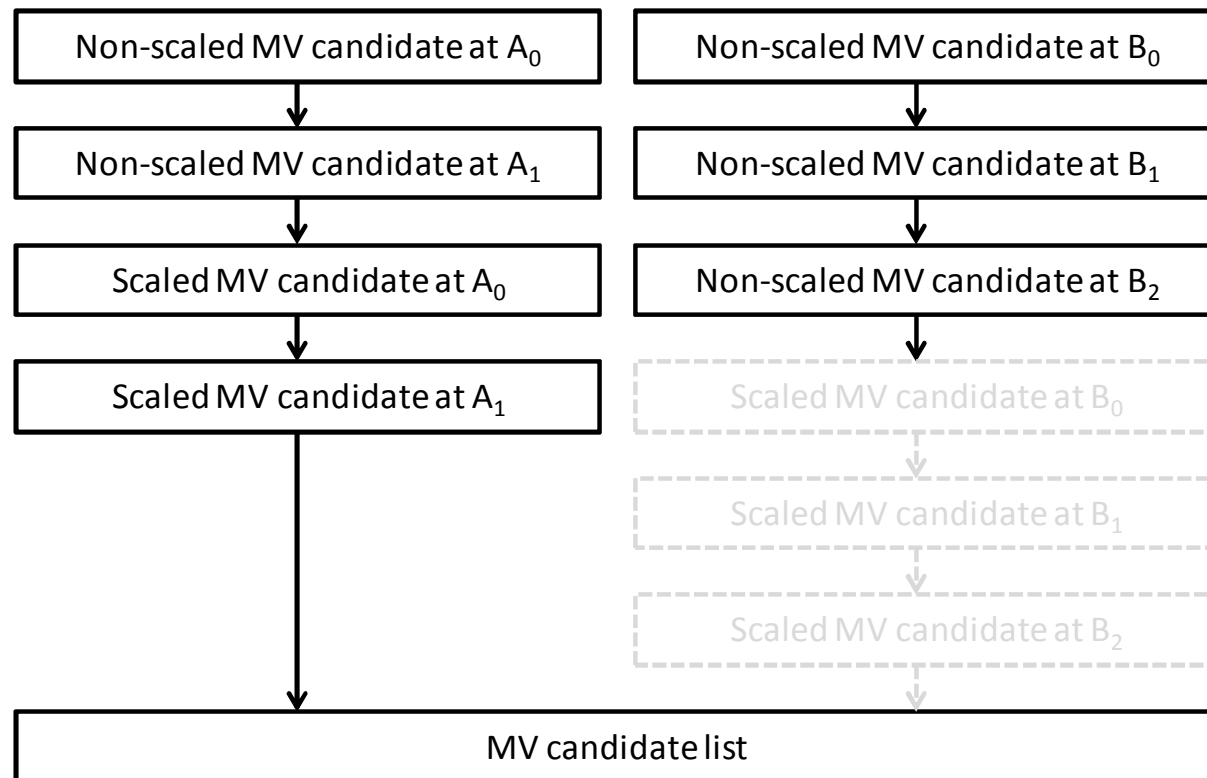
- ❖ A restriction on the above (upper) candidates
 - Spatial scaling is allowed only when all PUs of left candidates is not available or intra coded



Spatial motion vector scaling

❖ Proposed simplification

- Spatial scaling process is completely removed from the derivation process of above motion vector candidate and only applied to left motion vector candidates



Test Results

- ❖ Test results under common test condition (JCTVC-G1200)
 - Anchor software: HM-5.0
 - No loss (average 0.0%) without encoding and decoding time change
 - No loss for Class F sequences

	Random Access HE			Random Access LC			Random Access HE-10		
	Y	U	V	Y	U	V	Y	U	V
Class A (8bit)	0.0%	0.1%	0.0%	0.1%	0.1%	0.1%	0.1%	0.0%	0.1%
Class B	0.0%	0.1%	0.0%	0.1%	0.1%	0.0%	0.0%	0.0%	0.1%
Class C	0.1%	0.1%	0.1%	0.1%	0.1%	0.2%			
Class D	0.0%	0.0%	-0.1%	0.1%	0.1%	0.0%			
Class E									
Overall	0.0%	0.1%	0.0%	0.1%	0.1%	0.1%	0.1%	0.0%	0.1%
	0.0%	0.1%	0.0%	0.1%	0.1%	0.1%	0.1%	0.0%	0.1%
Class F	0.0%	0.0%	0.0%	0.1%	0.0%	0.1%			
Enc Time[%]		100%			100%			100%	
Dec Time[%]		99%			99%			100%	

	Low delay B HE			Low delay B LC			Low delay B HE-10		
	Y	U	V	Y	U	V	Y	U	V
Class A									
Class B	0.0%	0.0%	0.1%	0.0%	-0.2%	0.3%			
Class C	0.1%	-0.1%	0.1%	0.0%	0.2%	0.1%			
Class D	0.1%	-0.3%	0.0%	0.0%	-0.2%	0.1%			
Class E	0.0%	-0.6%	-0.1%	0.1%	-0.5%	0.2%			
Overall	0.0%	-0.2%	0.0%	0.0%	-0.1%	0.2%			
	0.0%	-0.2%	0.0%	0.0%	-0.1%	0.2%			
Class F	0.0%	0.1%	-0.2%	-0.1%	0.0%	-0.5%			
Enc Time[%]		100%			100%				
Dec Time[%]		100%			99%				

Conclusions

- ❖ A simplification of spatial motion vector scaling process in motion vector prediction is proposed.
- ❖ Spatial scaling process is completely removed from the derivation process of above motion vector candidate and only applied to left motion vector candidates.
- ❖ No loss under common test condition
- ❖ Exactly same simplification is proposed in JCTVC-H0078.
- ❖ It is recommended to adopt this simplification in next HM.