

Non-CE9: Simplification on AMVP list construction

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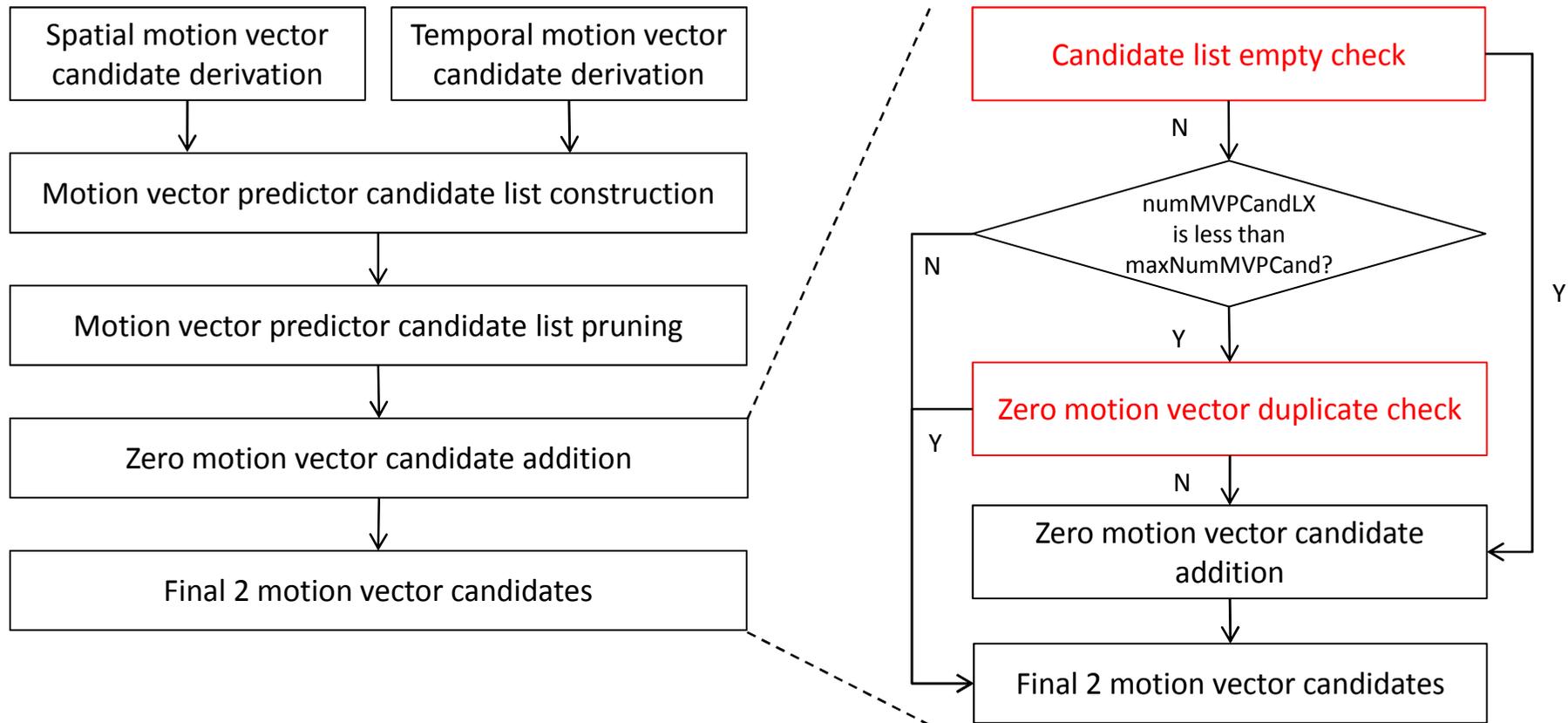
Introduction

- ❑ **In the last meeting, merge candidate duplicate check for combined merge candidates, non-scaled merge candidates, and zero merge candidates in merge mode is adopted into HM5.0 in order to reduce the computational complexity.**
 - ❖ JCTVC-G397, Non-CE9/Non-CE13: Simplification of adding new merge candidates, USTC and Microsoft
 - ❖ JCTVC-G542 simplification 3, Non-CE9/Non-CE13: Simplification on AMVP/Merge, Panasonic

- ❑ **AMVP in HM5.0,**
 - ❖ Motion vector candidate list empty check required to add a zero motion vector in the motion vector candidate list.
 - ❖ Duplicate check of zero motion vector is performed to add a zero motion vector when the number of motion vector candidate in the motion vector candidate list is less than the maximum number of motion vector candidate.

HM5.0

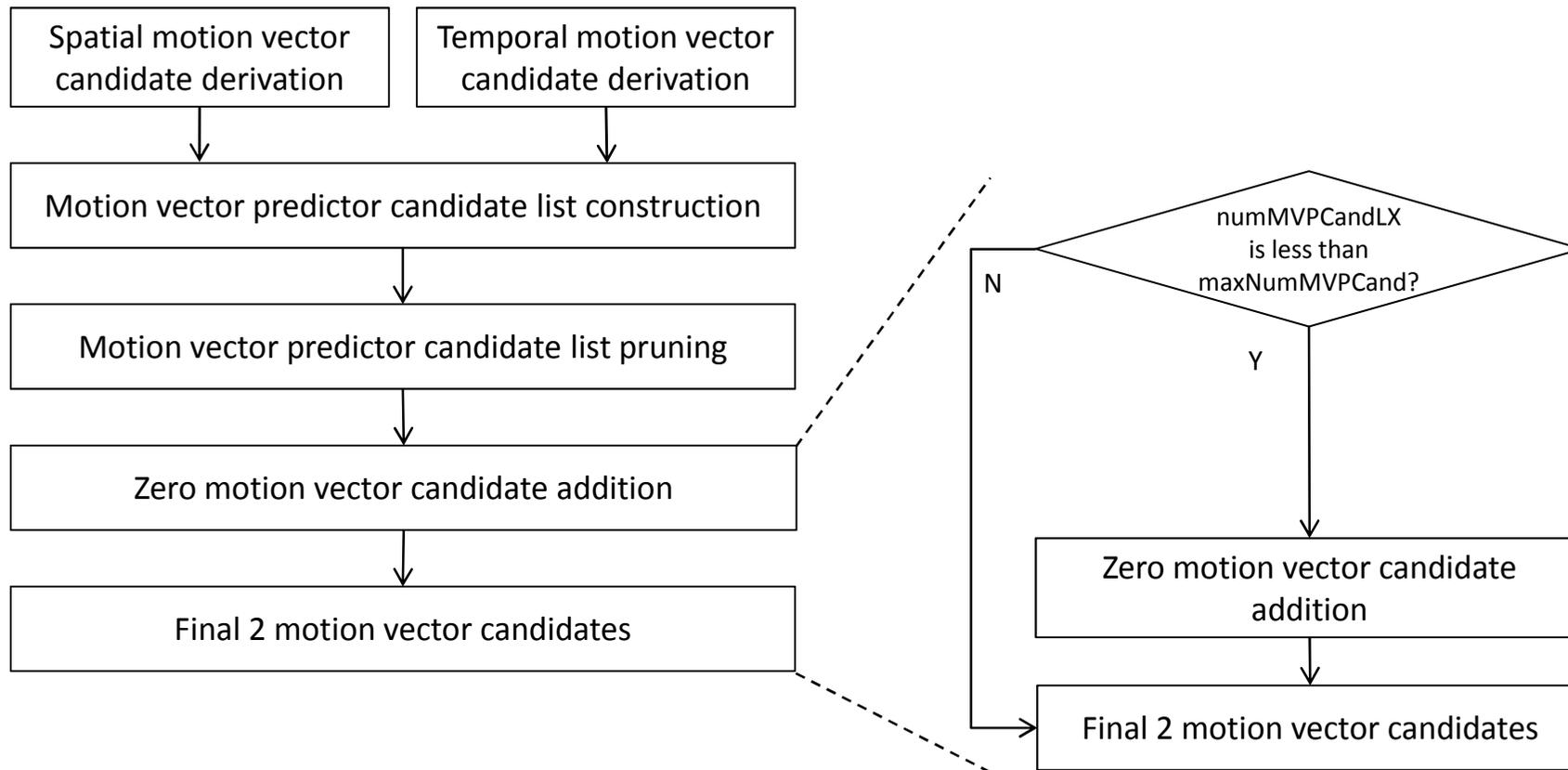
❑ Motion vector derivation process for AMVP in HM5.0



- ❖ Exist the candidate list empty check and the zero motion vector duplicate check.
- ❖ Add zero motion vector when $\text{numMVPcandLX} < \text{maxNumMVPcand}$ and no zero motion vector is in motion vector candidate list.
- ❖ Only one zero motion vector is existed in the motion vector candidate list.

Proposal

❑ Proposed motion vector derivation process for AMVP



- ❖ Remove the candidate list empty check and the zero motion vector duplicate check.
- ❖ Always add zero motion vector when $\text{numMVPcandLX} < \text{maxNumMVPcand}$.
- ❖ Maximum two zero motion vectors are existed in the motion vector candidate list.

Experimental results

	Random Access HE			Random Access LC			Random Access HE-10		
	Y	U	V	Y	U	V	Y	U	V
Class A (8bit)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Class B	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Class C	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%			
Class D	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%			
Class E									
Overall	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Class F	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%			
Enc Time[%]		100%			100%			100%	
Dec Time[%]		100%			100%			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%	0.0%	0.0%	0.0%	0.0%			
Class C	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%			
Class D	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%			
Class E	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%			
Overall	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%			
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%			
Class F	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%			
Enc Time[%]		101%			101%				
Dec Time[%]		99%			100%				

- Same coding efficiency as HM5.0
- Cross-checked by Panasonic (JCTVC-H0634)

Conclusions

Proposal

- ❖ Remove the candidate list empty check and the zero motion vector duplicate check.

Benefits

- ❖ Simplification of motion vector derivation process for AMVP

Similar with second element of JCTVC-H0316

The proposed changes for decoding process are provided in the document.

We suggest the proposal to be included in HM.