SAMSUNG Research

JVET 11th Meeting

JVET-K0111 – CE1: Picture Boundary Split in JVET-J0024 (Test 2.0.12)

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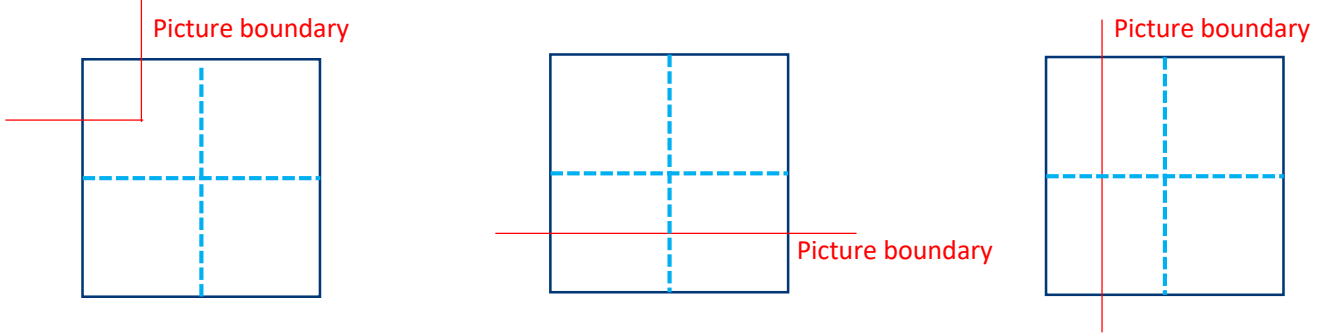
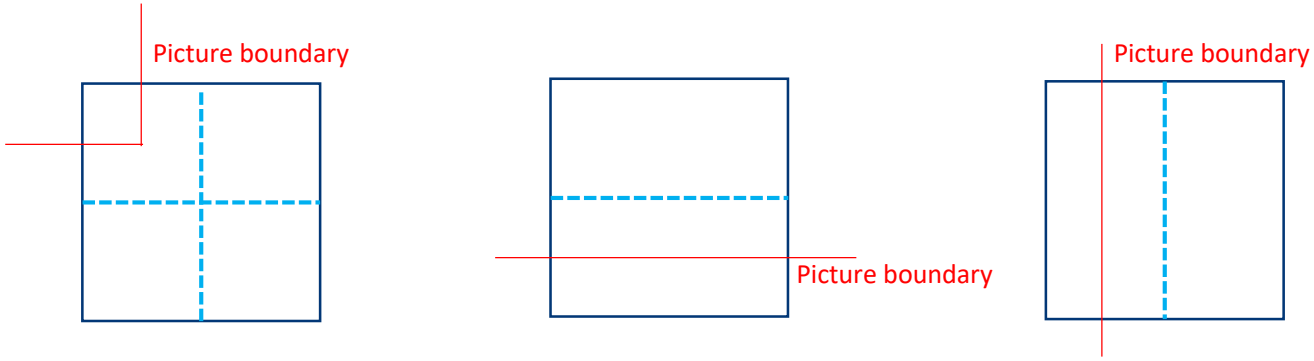
Proposed Picture Boundary Handling Method

- **SubCE2.0.12 test based on the picture boundary handling in JVET-J0024**
  - VTM
    - Use QT for all boundaries



  - Proposed Method (Basic idea)
    - Use QT for bottom-right boundary
    - Use BT for bottom or right boundaries



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Proposed Picture Boundary Handling Method

Adaptation for QT+BT+TT structure

- If implicit BT partitioning is done as Max BT/TT depth (3), further partitioning is impossible
- So, we proposed that, for bottom or right boundaries, BT is allowed only when at least one side of block can be reached to the minimum BT size of block (4) by allowed Max BT/TT depth
- If the following condition is satisfied for bottom or right boundaries, QT is used
  - Width > Max BT/TT size ||
    Height > Max BT/TT size ||
    (log2(Width) – log2(Min BT size)) > Max BT/TT depth ||
    (log2(Height) – log2(Min BT size)) > Max BT/TT depth
- Otherwise, BT is used for bottom or right boundaries

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Test Results (SubCE2.0.12)

Based on JVET CTC and BMS1.0 S/W

- RA: 0.14% and 0.17% BD-rate gain for VTM and BMS w/o complexity change
- LDB: 0.28% and 0.36% BD-rate gain for VTM and BMS w/o complexity change

	All Intra Main10									
	Over VTM-1.0					Over BMS-1.0				
	Y	U	V	EncT	DecT	Y	U	V	EncT	DecT
Class A1	0.00%	-0.09%	-0.08%	99%	98%	-0.02%	-0.18%	-0.11%	99%	100%
Class A2	-0.02%	-0.06%	-0.03%	99%	98%	-0.02%	-0.04%	-0.03%	100%	100%
Class B	-0.03%	-0.19%	-0.19%	98%	97%	-0.04%	-0.29%	-0.27%	99%	99%
Class C	0.00%	0.00%	0.00%	99%	97%	0.00%	0.00%	0.00%	100%	101%
Class E	0.00%	-0.07%	-0.08%	99%	96%	-0.02%	-0.08%	-0.11%	99%	101%
Overall	-0.01%	-0.09%	-0.09%	99%	97%	-0.02%	-0.13%	-0.12%	100%	100%

	Random Access Main 10									
	Over VTM-1.0					Over BMS-1.0				
	Y	U	V	EncT	DecT	Y	U	V	EncT	DecT
Class A1	-0.14%	-0.16%	-0.12%	98%	99%	-0.15%	-0.20%	-0.23%	100%	100%
Class A2	-0.06%	-0.12%	-0.05%	97%	97%	-0.05%	-0.05%	-0.08%	100%	101%
Class B	-0.31%	-0.45%	-0.43%	99%	98%	-0.39%	-0.63%	-0.61%	100%	99%
Class C	0.00%	0.00%	0.00%	100%	100%	0.00%	0.00%	0.00%	100%	101%
Class E										
Overall	-0.14%	-0.21%	-0.18%	99%	99%	-0.17%	-0.26%	-0.27%	100%	100%

	Low delay B Main10									
	Over VTM-1.0					Over BMS-1.0				
	Y	U	V	EncT	DecT	Y	U	V	EncT	DecT
Class A1										
Class A2										
Class B	-0.35%	-0.53%	-0.39%	100%	100%	-0.41%	-0.77%	-0.34%	102%	103%
Class C	0.00%	0.00%	0.00%	100%	100%	0.00%	0.00%	0.00%	100%	100%
Class E	-0.56%	-0.61%	-0.66%	99%	102%	-0.76%	-0.62%	-1.21%	100%	102%
Overall	-0.28%	-0.37%	-0.33%	100%	101%	-0.36%	-0.47%	-0.44%	101%	102%

GCC version: 4.8.3
SIMD: AVX

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Conclusions

- **We proposed a picture boundary handling method by using QT and BT**
  - 0.14% and 0.17% BD-rate gain for VTM and BMS w/o complexity change
- **We suggest to adopt the proposed method into next VVC WD**

Thanks Sharp for crosschecking our proposal

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Thank you



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