Non 4:4:4 Palette Mode -- AhG Way

QUALCOMM®

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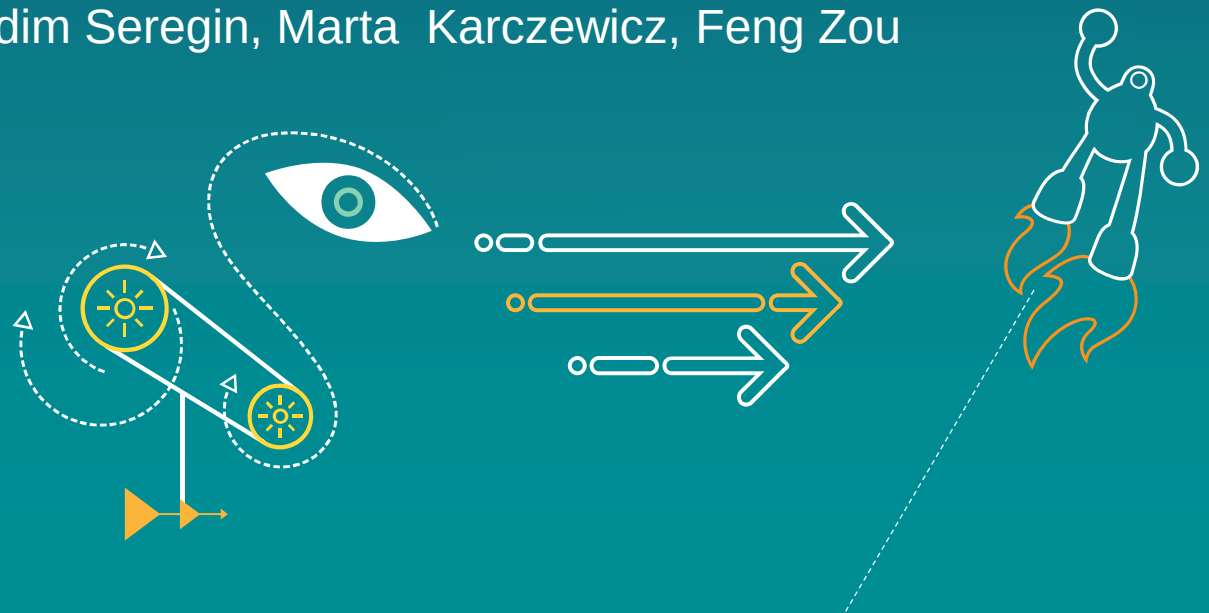


Review: Palette Mode In Screen Content Coding

- Prior to SCC, RExt stage

1. An AdHoc group on palette was established in Jan. 2014
2. AhG released a software with both 4:4:4 and non4:4:4 palette support
3. Palette mode in SCC is evolved from AdHoc software

- Current SCC Palette Mode Status
- The screen content coding common test condition (before this meeting) does not include non4:4:4. Palette mode for non4:4:4 is undefined in spec.

- This proposal repairs non4:4:4 palette mode by following **AhG way**
- Note: Alternative approaches are reported, which mimic non4:4:4 to 4:4:4 [T0053, T0072, T0109, T0120]

AhG non4:4:4 Implementation Review

- Method: Luma and chroma maintains independent palettes

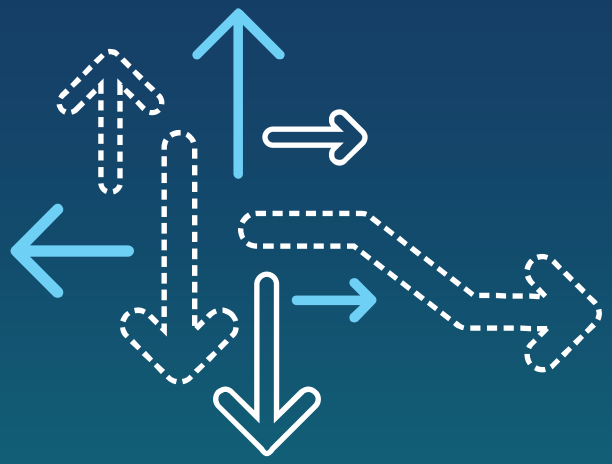
Pros:

A. Luma channel and chroma channel decoding can be de-correlated
   - ❑ CCP and ACT are 4:4:4 only tools
   - ❑ AhG way of palette mode makes NO new coding tool coupling luma and chroma channels for SCC

B. Higher coding efficiency
   - ❑ 6.1% for 720p
   - ❑ 8.3% for 768p

C. Uniform solution for 4:2:0, 4:2:2, 4:0:0

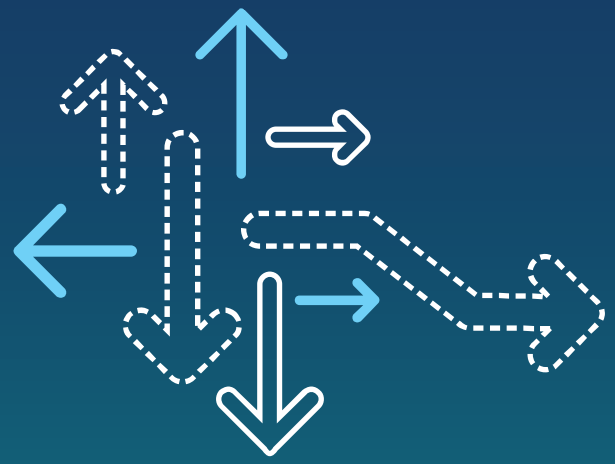
Results



Proposed Method v.s. SCM3.0 Anchor on Class F

	All Intra		
	G/Y	B/U	R/V
Text & graphics with motion, 720p	-6.1%	-3.9%	-5.6%
Mixed content, 480p	-1.6%	-3.1%	-3.5%
Animation, 768p	-8.3%	-16.2%	-12.5%
Average of all sequences	-5.5%	-6.8%	-6.8%
Enc Time[%]	108%		
Dec Time[%]	98%		

	Random Access		
	G/Y	B/U	R/V
Text & graphics with motion, 720p	-5.3%	-3.1%	-4.1%
Mixed content, 480p	-0.3%	-1.3%	-1.6%
Animation, 768p	-3.9%	-16.2%	-9.7%
Average of all sequences	-3.7%	-5.9%	-4.9%
Enc Time[%]	107%		
Dec Time[%]	109%		

	Low delay B		
	G/Y	B/U	R/V
Text & graphics with motion, 720p	-3.5%	-2.1%	-5.0%
Mixed content, 480p	0.2%	0.1%	-0.5%
Animation, 768p	-2.0%	-13.1%	-7.0%
Average of all sequences	-2.2%	-4.3%	-4.4%
Enc Time[%]	108%		
Dec Time[%]	104%		

Thank you!