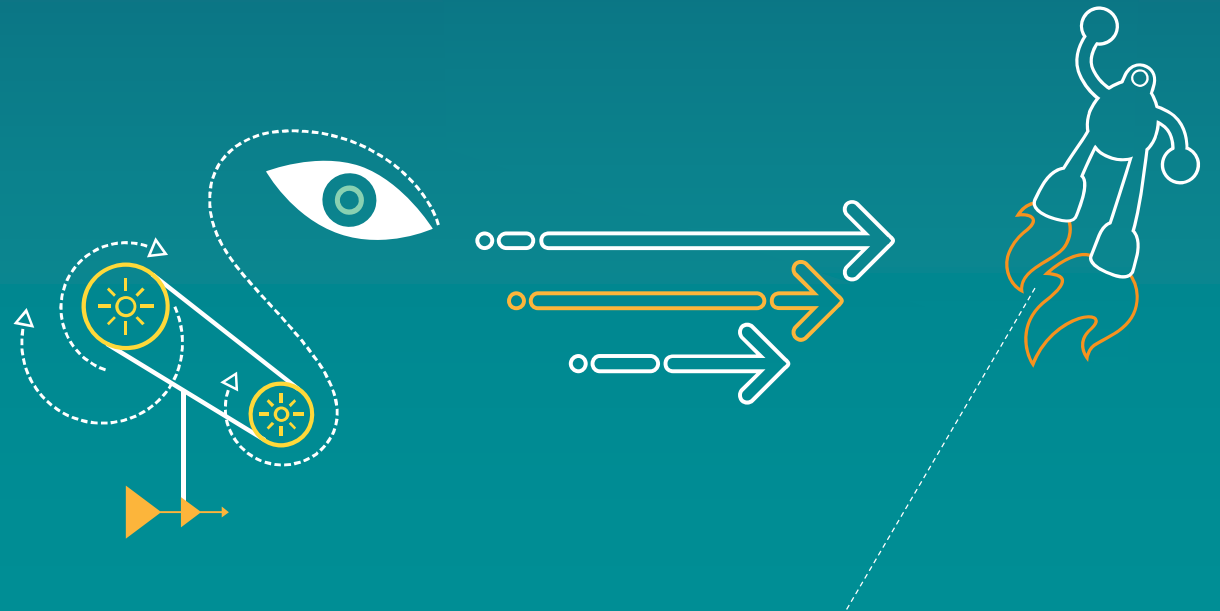


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# Adaptive motion vector resolution for non-4:4:4 formats

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# Adaptive MV resolution

- In current SCC, adaptive MV resolution is used, and MV can be signalled in the units of 1 pixel or  $\frac{1}{4}$ -pixel adaptively.
- The integer-pel MV not only saves signalling bits, but also reduces the complexity of both encoder and decoder.
  - No interpolation filter is needed in motion compensation process.
- However, interpolation filter is still needed for integer-pel MV when color format is non-4:4:4.
- **Proposed:** When integer-pel MV is used, round chroma MV to integer-pel precision as well in non-4:4:4 formats.

# Experimental results

## 4:2:0 lossy coding

	Random Access			Low delay B		
	G/Y	B/U	R/V	G/Y	B/U	R/V
Text & graphics with motion, 720p	0.0%	0.0%	0.0%	0.2%	0.4%	-0.5%
Mixed content, 480p	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Animation, 768p	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Average of all sequences	0.0%	0.0%	0.0%	0.1%	0.2%	-0.3%
Enc Time[%]	96%			95%		
Dec Time[%]	99%			94%		

## 4:2:0 lossless coding

	Random Access				Low Delay B			
	Bit-rate change (Total)	Bit-rate change (Average)	Bit-rate change (Min)	Bit-rate change (Max)	Bit-rate change (Total)	Bit-rate change (Average)	Bit-rate change (Min)	Bit-rate change (Max)
Text & graphics with motion, 720p	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%
Mixed content, 480p	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Animation, 768p	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Average of all sequences	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%
Enc Time[%]	99%				96%			
Dec Time[%]	98%				88%			

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# Conclusions

- Proposed adaptive MV resolution for non-4:4:4 format
  - When integer-pel MV is used, round chroma MV to integer-pel precision in non-4:4:4 formats.
- Recommend for adoption in SCM.