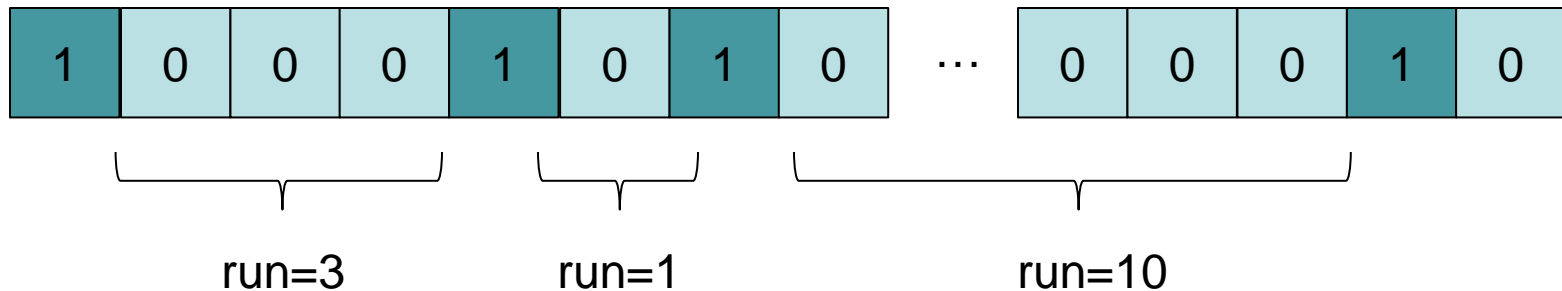# JCTVC-G833 - Non-CE1: Adaptive initialization for CABAC with fixed probability contexts

Proposal

- The context update stage is disabled and the pre-defined initial states are used for entire slice/frame.
- The initial state *state_hm* is set using the parameters *m* and *n:*

$$iInitState = Clip(1,126, (m*QP>>4) + n)$$

- Binary map is sent which indicates, whether the context is initialized using the *(m, n)* parameters or the transmitted value of the state *state_adap.*

run=3   run=1   run=10

- The binary map is encoded using run-length coding.
- The absolute value of *state_offset:*

$$state\_offset = state\_adap - state\_hm$$

is quantized, *level = (abs_state_offset)/2*. The combo of (*level-1, sign*) is encoded using Exp-Golomb.

Context is initialized using the *(m,n)* parameters in HM 4.0.

	All Intra HE			Random Access HE			Low delay B HE			Low delay P HE		
	Y	U	V	Y	U	V	Y	U	V	Y	U	V
Class A	3.5%	4.1%	-0.9%	7.8%	8.6%	7.3%						
Class B	3.7%	1.6%	0.4%	7.3%	9.4%	7.2%	7.4%	13.1%	10.6%	6.8%	8.2%	5.3%
Class C	2.2%	3.1%	2.3%	5.7%	9.2%	9.3%	5.2%	11.3%	11.3%	4.5%	7.4%	6.8%
Class D	1.4%	1.9%	2.3%	5.4%	7.9%	8.2%	5.6%	10.4%	11.9%	4.6%	6.1%	6.7%
Class E	5.2%	-4.5%	-4.0%	0.0%	0.0%	0.0%	7.3%	1.8%	0.9%	7.7%	0.1%	-2.2%
Overall	**3.1%**	**1.5%**	**0.2%**	**6.6%**	**8.8%**	**8.0%**	**6.4%**	**9.8%**	**9.3%**	**5.8%**	**6.0%**	**4.6%**

Context is initialized using new *(m,n)* parameters.

	All Intra HE			Random Access HE			Low delay B HE			Low delay P HE		
	Y	U	V	Y	U	V	Y	U	V	Y	U	V
Class A	2.2%	0.6%	-0.3%	3.7%	5.7%	4.9%						
Class B	2.5%	2.3%	0.9%	3.1%	4.8%	3.1%	3.7%	5.9%	3.3%	3.5%	6.9%	4.1%
Class C	1.6%	2.6%	2.6%	2.2%	5.0%	4.9%	2.0%	5.5%	5.0%	2.0%	6.7%	6.2%
Class D	1.3%	1.6%	1.8%	2.5%	3.8%	3.8%	2.6%	3.9%	3.4%	2.3%	4.8%	4.8%
Class E	2.9%	-3.2%	-2.9%	0.0%	0.0%	0.0%	3.0%	-1.6%	-0.8%	2.8%	-1.4%	-1.8%
Overall	**2.1%**	**1.1%**	**0.6%**	**2.9%**	**4.8%**	**4.1%**	**2.9%**	**3.9%**	**3.0%**	**2.7%**	**4.8%**	**3.7%**

Context is initialized using new *(m,n)* parameters & transmitted states.

	All Intra HE			Random Access HE			Low delay B HE			Low delay P HE		
	Y	U	V	Y	U	V	Y	U	V	Y	U	V
Class A	-0.3%	-0.6%	-0.3%	0.3%	4.0%	3.2%						
Class B	0.5%	-0.1%	0.1%	1.3%	1.1%	1.2%	1.2%	0.9%	1.0%	1.2%	1.5%	1.7%
Class C	0.3%	-0.1%	0.0%	1.0%	1.2%	1.2%	0.8%	1.6%	1.3%	0.9%	3.5%	1.7%
Class D	0.0%	-1.3%	-1.1%	1.4%	1.5%	1.4%	1.2%	2.8%	2.1%	1.3%	3.7%	3.3%
Class E	0.2%	-0.9%	-1.1%	0.0%	0.0%	0.0%	2.1%	-0.7%	-0.4%	1.8%	-1.3%	-1.8%
Overall	**0.1%**	**-0.6%**	**-0.4%**	**1.0%**	**1.9%**	**1.7%**	**1.3%**	**1.3%**	**1.1%**	**1.3%**	**2.0%**	**1.5%**