JCTVC-K0362
Canon's proposal for initial software model for scalable HEVC

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Background

- Two initial software models have been proposed

    – JCTVC-K0345 (HHI, Samsung & Vidyo) includes several tools which may be in conflict with other tools proposed by several other proponents

    – JCTVC-K0348 (Nokia, Canon, Qualcomm, LGE, Mediatek, Sharp, TI, InterDigital, Sony, ETRI) includes only 1 tool (IntraBL) proposed by all proponents

What basis is needed for the initial software model ?

- Common tools proposed by the CfP proponents should be considered.

- Good combination and tuning of the different tools should be selected.

- Such good combination can be found among the best performing proposals.

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Basis of the proposal

- JCTVC-K0041 proposes a good compromise efficiency/complexity (see BoG results or JCTVC-K0352).

- Similar structure as most of the proposals:
  - multi-loop
  - HM6.1 based

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Content of the proposal

- A subset of the inter-layer tools from JCTVC-K0041, common with other proposals (see list of tools JCTVC-K0354)

  – IntraBL mode (with simple fixed upsampling filter)

  – Inter-Layer Syntax Prediction (motion and partition)

  – Generalized Residual Prediction

  – Intra Diff coding mode (no intra picture mode)

- Tools removed from JCTVC-K041:

  – Low complexity Intra coding:
    - very good compromise efficiency/complexity
    - could be studied in a CE

  – Single layer tools
    - ALF
    - IBDI

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Features comparison (based on K0354 analysis)

	Upsampling Filter		Inter-layer texture prediction		Residue prediction (SVC manner)	iff-domain			Inter-layer (IL) Filtering			IL Syntax Prediction				Single layer changes						
	Additional FIXED set	Additional Adaptive set	In ref list	Intra-BL		INTRA	INTER	Generalized Residual Prediction (superset of Diff-INTER)	IL DBF	IL SAO	IL ALF	EL Merge / AMVP	Partition	INTRA Mode	AVC-syntax	EL ALF	EL AMP	EL IBDI	modified deblocking	Add Transform	Modified scan	Modified CABAC
K0031	V		V			V	V					V	V									V
K0032				V							V					V	V					
K0033				V		V	V			V	V	V		V		V		V	V			
K0034	V		V									V				V						
K0035	V	V		V		V	-	V				V	V	V			V		V	V	V	V
K0036	V	V		V		V	-	V				V	V	V		V	V		V	V	V	V
K0037			V									V				V						
K0038				V																		
K0039				V	V						V	V	V									
K0040				V			-	V				V		V			V					
K0041				V	V	V	-	V	V			V	V	V		V		V	---			
K0042	V			V	V	V	V					V	V	V	V		V		V		V	
K0043	V			V	V	V	V					V	V	V	V	V	V		V		V	
K0044				V		V	V			V		V		V	V	V	V		V			V
K0045				V		V	V			V		V		V	V	-			V			-
K0046				V								V		V					V			
K0047				V			-	V				V		V						V		
K0049				V	V							V										
K0050				V						V	V	V		V		V		V	V			
K0052				V	V							V										
K0345				V		V	V					V	V	V	V				V	V		
K0348				V																		
K0362				V		V		V	V			V	V	V					V			

Source code

- Source code based on HM6.1

- Modified by Vidyo to create a scalable codec

- Modified by Canon
  - To add new tools
  - Tuning of the tools

- Good basis for experimentation
  - Robust
  - Many tools included:
    - Some tools from Vidyo are present and can be activated: Inter-Diff

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CONCLUSION

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Conclusion

- This contribution submits new elements for the choice of a software model

  – Either select a simple solution with minimal common denominator as JCTVC-K0348

    • Each new tool introduced should be validated by a CE

  – Or select more complete solution with several inter layer prediction tools

    • This new contribution provides
      – A selection of several inter layer prediction tools
      – an efficient combination of these tools

- Code is available upon request

- We thank Vidyo for providing initial source code based on HM6.1

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