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| **Joint Collaborative Team on Video Coding (JCT-VC)**  **of ITU-T SG16 WP3 and ISO/IEC JTC1/SC29/WG11**  12th Meeting: Geneva, CH, 14–23 Jan. 2013 | Document: JCTVC-L0026 |

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| *Title:* | **TE6: Summary report of tool experiment on inter-layer syntax prediction using AVC base layer** | | |
| *Status:* | Input Document to JCT-VC | | |
| *Purpose:* | Report | | |
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| *Source:* | TE coordinators | | |

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# Abstract

The results of TE6 experiments are summarized, for inter-layer syntax prediction using an AVC base layer, for AMVP and Merge. Experimental results are compared for the same techniques using HEVC base layer. The gains for an AVC base layer were higher than those for a HEVC base layer.

# Introduction

This contribution summarizes the activities and test results performed in TE6 on inter-layer syntax prediction using AVC base layer. The tools in TE6 were classified into two categories:

* TE6.1 Inter-layer motion prediction for AMVP
* TE6.2 Inter-layer motion prediction for Merge

The TE6 contributions were tested using the SMuC software, which was modified to support an AVC base layer. There were a number of software issues which delayed the TE6 schedule. One of the issues involved mismatch related to different cropping padding in encoder vs decoder when output cropping of the base layer was used.

# Input Contributions

The two contributions listed below both addressed both 6.1 and 6.2. Both contributions also had related contributions in TE5 for an HEVC base layer.

[JCTVC-L0377](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=7164) TE6: Inter-layer motion-vector prediction by the base-layer MV up-scaling and refinement from AVC base layer [K. Kawamura, T. Yoshino, S. Naito (KDDI)]

A generated motion-vector is inserted as the third candidate for both merge mode and AMVP mode in the HEVC architecture. The number of motion vector candidates also increases to 6 and 3 for merge mode and AMVP mode, respectively.

[JCTVC-L0385](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=7172) TE6 [W. Jang, J. Boyce, A. Abbas (Vidyo), E. Alshina, C. Kim (Samsung)]

The proposed algorithm has two parts. One modifies the merge list construction of the enhancement layer such that the upsampled motion vector from the co-located block in the base layer is added as the last candidate in the list while increasing the maximum number of merge candidate from 5 to 6. Another part adds the upsampled base motion vector to the AMVP candidate list while increasing the maximum number of AMVP candidate from 2 to 3.

# Experimental results

Experimental results are summarized in the table below. More details can be found in the Excel spreadsheet.

In the below table, the EL results of the same techniques between the AVC base layer and HEVC base layer are compared. EL only results are considered a more appropriate comparison in this case vs. EL+BL, because the base layers are different.

The gains for the proposed techniques for AVC base layers are consistently higher than for HEVC base layers.

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|  | L0377, L0376 | | | | L0385, L0185 | | | |
| **Overall (EL)** | **RA Hybrid 2x** | **RA Hybrid 1.5x** | **LD-P Hybrid 2x** | **LD-P Hybrid 1.5x** | **RA Hybrid 2x** | **RA Hybrid 1.5x** | **LD-P Hybrid 2x** | **LD-P Hybrid 1.5x** |
| **AVC AMVP** | -1.9% | -2.5% | -1.1% | -1.0% | -3.9% | -2.5% | -0.6% | -0.6% |
| **HEVC AMVP** | -1.4% | -2.6% | -0.5% | -1.0% | -1.2% | -2.4% | -0.3% | -0.6% |
| **Diff** | -0.5% | 0.1% | -0.5% | 0.1% | -2.7% | -0.1% | -0.3% | 0.0% |
|  |  |  |  |  |  |  |  |  |
| **Overall (EL)** | **RA Hybrid 2x** | **RA Hybrid 1.5x** | **LD-P Hybrid 2x** | **LD-P Hybrid1.5x** | **RA Hybrid 2x** | **RA Hybrid 1.5x** | **LD-P Hybrid 2x** | **LD-P Hybrid1.5x** |
| **AVC Merge** | -4.0% | -4.8% | -2.5% | -2.7% | -3.6% | -4.8% | -2.0% | -2.3% |
| **HEVC Merge** | -2.6% | -4.5% | -1.3% | -2.3% | -2.3% | -4.4% | -1.1% | -2.0% |
| **Diff** | -1.4% | -0.4% | -1.2% | -0.4% | -1.3% | -0.4% | -0.9% | -0.4% |