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| *Title:* | **Description of Core Experiment 4 (CE4): Residual Prediction** | | |
| *Status:* | Output Document | | |
| *Purpose:* | Core Experiment Description | | |
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# Abstract

This document defines Core Experiment (CE) 4 on residual prediction to be performed for the 4th JCT-3V meeting.

# Introduction

The goal of this CE is to investigate the methods for residual prediction proposed at the 3rd JCT-3V meeting. Tools under test will be evaluated according to their impact on compression efficiency and implementation complexity.

# Participants

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(P=proponent, C=crosss checker)

# Tools under Test

## Advanced residual prediction for multiview coding [JCT3V-C0049]

An advanced residual prediction (ARP) is proposed to further improve the coding efficiency of inter-view residual prediction. In ARP, to ensure high correlation between residues of two views, motion of the current block of picture in current view is applied to the corresponding block in a reference view picture. And bi-linear filters are used to generate residual in the reference view for inter-view residual prediction. Moreover, an adaptive weighting factor is applied to the residue signal so that the prediction error is further reduced. The proposed method is only applied to coding units with partition size equal to 2Nx2N.

# Mandates

Mandates for the CE are as follows:

1. To study coding efficiency tools for inter-view residual prediction scheme as proposed in JCT3V-C0049. The software implementations will be provided in the 3DV-HTM.
2. The complexity of proposed methods will be evaluated, such as additional computations and memory accesses. At least, the complexity increase for the worst case should be provided.

# Software, Configuration and Evaluation

## Software

Experiments in CE4 will use the 3D-HTM-6.0 software that is recommended in JCT3V-C1100. Proponents are requested to provide software that can be compiled under Windows and Linux platforms.

## Test Sequences, Bit Rates and Coding Conditions

The CE will use the test sequences, configuration and conditions that are recommended in JCT3V-C1100. Moreover, proponents and cross checkers are required to provide simulation results for the Random access configuration as specified in JCT3V-C1100.

## Evaluation of CE Results

The performance measurements are evaluated by switching on and off individual tools to identify their relative performance. The following measurements are considered to be used in this core experiment.

1. **Coding Performance Measurements:** Measure impact on bitrate/PSNR. PSNR shall be calculated for the decoded texture views, relative to original texture views and for the synthesized views relative to uncompressed synthesized views. Use 4-point BD-PSNR and BD-Rate according to common conditions. The anchors will be generated according to common test conditions.
2. **Complexity measurements:** Measure impact on encoding and decoding runtimes for all test cases relative to 3D-HTM 6.0.

# Timelines

2013/02/22 Release 3D-HTM 6.0

2013/04/06 Make source code, simulation results and draft text available for all proponents and cross-checkers.

2013/04/13 Register documents for the 4th JCT-3V meeting

2013/04/13 Upload contributions to 4th JCT-3V meeting

2013/04/20-26 The 4th JCT-3V meeting