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| **Joint Collaborative Team on Video Coding (JCT-VC)**  **of ITU-T SG 16 WP 3 and ISO/IEC JTC 1/SC 29/WG 11**  14th Meeting: Vienna, AT, 25 July – 2 Aug. 2013 | Document: JCTVC-N0012 |

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| *Title:* | **JCT-VC AHG report: SHVC software development (AHG12)** | | |
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| *Source:* | AHG12 chairs | | |

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# Abstract

This report summarises the activities of the AHG12 on SHVC software development.

# Introduction

Mandates of the AHG12 are the following:

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| **SHVC software development (AHG12)**  ([jct-vc@lists.rwth-aachen.de](mailto:jct-vc@lists.rwth-aachen.de))   * Prepare SHM 2.0 software (based on HM 10.1) for experimentation. * Provide software to CEs within two weeks after the meeting. * Bring software into alignment with HM 11 by the next meeting. * Discuss and identify additional issues related to SHVC software. | V. Seregin (chair), T. Chuang, Y. He, D. Kwon (vice‑chairs) | N |

The current latest software version SHM2.1 contains all the items adopted last meeting by exception of the following:

* Picture marking part related to the F.8.1.2.1 section from JCTVC-L0188
* Marking of sub-layer non-reference pictures as "unused for reference" from proposal 1 of JCTVC-M0209
* When discardable\_flag is equal to 1, a picture is immediately marked as “unused for reference” after its decoding from JCTVC-M0162

The last two items are dependent on the first one, and the proponent of the first item was contacted regarding software integration help.

# Software versions

## SHM2.0

Software version SHM2.0 based on HM10.1 was released according to the schedule for CE experimentation.

The following items have been integrated in this version:

* Software is aligned with HM10.1
* IntraBL:
  + M0124 simplified pruning
  + M0075 IntraBL context
* M0133 MV scaling and resampling position calculation
* M0274 use decoded picture for inter-layer prediction
* M0259 lambda refinement (encoder only optimization)
* M0268 Signaling of profile and output layers in VPS
* M0309 signal offsets to specify the relative spatial alignment of the base and enhancement layers
* M0458 inter-layer RPS

SHM2.0 performance relative to the SHM1.0 based on CTC with the “reference index” framework is summarized below and more details can be found in the accompanying excel table.



## SHM2.0avc

This version is based on SHM2.0 where the assert lines were updated in the upsampling function. This version was released along with AVC base configuration files.

## SHM2.1

Another software version SHM2.1 based on HM11 was released on July 22, 2013 before the JCT-VC meeting start.

In this software version, almost all remained adopted items were integrated and a multilayer coding with multiple dependent reference layers was implemented to address the decision about MV-HEVC alignment made for JCTVC-M0343.

In this version, configuration files were also updated and the parameters associated with the layers were moved to a separate configuration file named layers.cfg.

SHM2.1 performance relative to the SHM2.0 based on CTC with the “reference index” framework is summarized below and more details can be found in the accompanying excel table.



# Development plan and recommendations

Continue to develop reference software based on SHM-2.1 and improve its quality.

Informative sequence downsampling tool, used to generate SHVC downsampled test sequences, might be useful to generate a reference layer for non-CTC test sequences and AHG12 plans to include it into SHM software package as a separate project with the next software release.

It is helpful if a bug tracker could be used for software development.