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| **Joint Collaborative Team on 3D Video Coding Extension Development**  **of ITU-T SG 16 WP 3 and ISO/IEC JTC 1/SC 29/WG 11**  4th Meeting: Incheon, KR, 20–26 Apr. 2013 | Document: JCT3V-D0008  M28872 |

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# Abstract

This document reports on the work of the JCT-3V ad hoc group 8 on Alternative 3D Format (AHG8) between the 3rd JCT-3V meeting in Geneva (17-23 January 2013) and the 4th JCT-3V meeting in Incheon (20-26 April 2013).

1. **Mandates**

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| **Alternative 3D Formats (AHG8)**  ([jct-3v@lists.rwth-aachen.de](mailto:jct-3v@lists.rwth-aachen.de))   * Produce and finalize depth view information SEI message text in JCT3V-C1002 3D-AVC Draft Text 5. * Produce an informative description to help thorough understanding of the depth view information SEI message. * Prepare and deliver Global View and Depth software based on 3D-ATM v7.x software version and the reference configuration encodings. * Discuss and prepare draft text for a SEI message for 3D-HEVC which signals warping maps as an alternative 3D format. | M. Tanimoto, T. Senoh, N. Stefanoski (co‑chairs) | N |

1. **General**

Since the two Alternative 3D Formats, Global View and Depth format, and Warp format were agreed to be included in 3D-AVC or 3D-HEVC at the 3rd JCT-3V meeting held at Geneva in January 17-23, 2013 AHG8 has been developing SEI message descriptions to signal these formats, software to be integrated in ATM or HTM according to the above mandates.

1. **Work Status and Comments**

A total of five input documents relating to the Alternative 3D Format have been registered. The contents of these documents have been discussed through e-mail during the AHG meeting period with primary focus on the AHG mandates. A brief summary of the progress on each mandate and notes on the input documents that were contributed is given below.

Mandate 1: Produce and finalize depth view information SEI message text in JCT3V-C1002 3D-AVC Draft Text 5.

After the review of draft text on the SEI message in JCT3V-C1002, some corrections were proposed and discussed to improve the accuracy of the description. The proposal of correction was summarized in the contribution JCT3V-D0070.

AHG8 recommends to adopt this correction in the 3D-AVC Draft Text 6.

Mandate 2: Produce an informative description to help thorough understanding of the depth view information SEI message.

Production of a text which describes the usage of depth view information SEI message was proposed and discussed. The results were integrated in the contribution JCT3V-D0071.

AHG8 recommends to output this document as an output of the 4th JCT-3V meeting and 104th MPEG meeting.

Mandate 3: Prepare and deliver Global View and Depth software based on 3D-ATM v7.x software version and the reference configuration encodings.

An experimental result and a request of Global View and Depth format based on the 3D-ATM v7.0 (GVD Type-2) were reported in JCT3V-D0102. In order to reduce the unnecessary coding load of dummy base view or dummy residual view from the GVD encoder, AHG8 requests ATM software to support single-depth or two-depths with no-texture view sequences.

A Global View and Depth software based on the 3D-ATM v7.1 (GVD Type-1) is under development. When it is completed, the releasing URL will be announced through the JCT-3V reflector. Since the current 3D-ATM v.7.x is not supporting multi-view plus one depth sequence, current GVD Type-1 software needs a dummy depth. AHG8 requests ATM software to support multi-view plus one depth in order to reduce the coding load of the dummy depth.

Mandate 4: Discuss and prepare draft text for a SEI message for 3D-HEVC which signals warping maps as an alternative 3D format.

Two draft texts for Signalling Alternative 3D Format in 3D-HEVC were proposed.

JCT3V-D0103 proposes an alternative depth info SEI message for Warp Maps in 3D-HEVC, by specifying a depth\_type.

JCT3V-D0272 proposes an extension of the depth\_type to include Global View and Depth format.

Since both depth\_types have been evaluated to have a good performance in several CEs and subjective tests, AHG8 recommends to adopt the extended SEI message description for Warp and Global View and Depth signalling to 3D-HEVC.

1. **Recommendations**

The AHG8 on Alternative 3D Format recommends,

* to adopt the correction of description for depth view information SEI message proposed in JCT3V-D0070 to 3D-AVC DT6,
* to output the description for Global View and Depth format for depth view information SEI message proposed in JCT3V-D0071as an output of the 4th JCT-3V meeting and 104th MPEG meeting,
* ATM software to support N-view (N=0, 1, 2,…) plus one-depth or two-depths in order to reduce the coding load of Global View and Depth encoder as reported in JCT3V-D0102,
* to adopt the description of depth view information SEI message for Warp and Global View and Depth signaling as proposed in JCT3V-D0103 and D0272 to 3D-HEVC, and
* HTM software to support N-view (N=0, 1, 2,…) plus one-depth or two-depths in order to reduce the coding load of Global View and Depth encoder as well as ATM.

1. **AHG Reports**

[**JCT3V-D0008**](http://phenix.it-sudparis.eu/jct2/doc_end_user/current_document.php?id=7) **/ m28872 JCT-3V AHG8 Summary Report on Alternative 3D Format [M. Tanimoto (NISRI), T. Senoh (NICT), N. Stefanoski (DRZ)]**

1. **Contributions**
   1. **Mandate 1 related**

**JCT3V-D0070/** [**m28873**](http://phenix.int-evry.fr/mpeg/doc_end_user/current_document.php?id=38926&id_meeting=153) **AHG8 Revision on Depth View Information SEI message in 3D-AVC DT5 [T. Senoh, Y. Ichihashi, H. Sasaki, K. Yamamoto(NICT), M. Tanimoto, K. Suzuki(NISRI)]**

* 1. **Mandate 2 related**

**JCT3V-D0071/** [**m28874**](http://phenix.int-evry.fr/mpeg/doc_end_user/current_document.php?id=38926&id_meeting=153) **AHG8 Description of Global View and Depth format for Depth View SEI message [T. Senoh, Y. Ichihashi, H. Sasaki, K. Yamamoto(NICT), M. Tanimoto, K. Suzuki(NISRI)]**

* 1. **Mandate 3 related**

[**JCT3V-D0102**](http://phenix.int-evry.fr/jct2/doc_end_user/current_document.php?id=12)**/** [**m28933**](http://phenix.int-evry.fr/mpeg/doc_end_user/current_document.php?id=38926&id_meeting=153) **AHG8 GVD (Global View and Depth) Coding using 3D-ATM 7.0 and Request [M. Tanimoto, K. Suzuki (NISRI), T. Senoh (NICT)]**

* 1. **Mandate 4 related**

[**JCT3V-D0103**](http://phenix.int-evry.fr/jct2/doc_end_user/current_document.php?id=12)**/** [**m28934**](http://phenix.int-evry.fr/mpeg/doc_end_user/current_document.php?id=38926&id_meeting=153) **AHG8 Draft Text for Signaling Warp Maps as an Alternative 3D Format in 3D-HEVC [N. Stefanoski, A. Smolic (Disney Research Zurich)]**

[**JCT3V-D0272**](http://phenix.int-evry.fr/jct2/doc_end_user/current_document.php?id=12)**/** [**m29173**](http://phenix.int-evry.fr/mpeg/doc_end_user/current_document.php?id=38926&id_meeting=153) **AHG8:** **Draft Text for Signaling Global View and Depth as an Alternative 3D Format in 3D-HEVC [T. Senoh, Y. Ichihashi, H. Sasaki, K. Yamamoto(NICT), M. Tanimoto, K. Suzuki(NISRI)]**