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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**  2nd Meeting: Shanghai, CN, 13–19 Oct. 2012 | Document: JCT3V-B0007 |

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| *Title:* | **JCT-3V AHG Report: 3D High level syntax (AHG7)** | | |
| *Status:* | Input Document | | |
| *Purpose:* | Report | | |
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| *Source:* | AHG | | |

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# Abstract

This document reports on the work of the JCT-3V ad hoc group (AhG) on 3D High level syntax (AHG7) between the 1st JCT-3V meeting in Stockholm (14 – 20 July, 2012) and the 2nd JCT-3V meeting in Shanghai (13 – 19 October, 2012).

# Mandates

* Study the MV-HEVC/3D-HEVC design based on the latest HEVC w.r.t. NAL unit header, parameter sets, reference picture buffering, and HRD.
* Study high level syntax design extensions of ATM for 3DV functionalities.
* Study the relations of ATM and HTM high-level syntax concepts, as well as high-level syntax design for hybrid architectures.
* Identify commonality of multi-view and scalable high-level extensions of HEVC.

# Work Status and Comments

Mandate 1: Study the MV-HEVC/3D-HEVC design based on the latest HEVC w.r.t. NAL unit header, parameter sets, reference picture buffering, and HRD.

It is observed that the MV-HEVC WD and 3D-HEVC test model text are aligned with the latest HEVC, in terms of NAL unit header, parameter sets and reference picture marking. The HRD part of MV-HEVC should be further studied carefully.

There are 4 input contributions related to this category.

Mandate 2: Study high level syntax design extensions of ATM for 3DV functionalities.

There are 11 input contributions related to MVC+D and 3D-AVC.

Mandate 3: Study the relations of ATM and HTM high-level syntax concepts, as well as high-level syntax design for hybrid architectures.

SEI message designs in ATM maybe extensible to HTM. There are 6 input documents on SEI messages. There is no input contribution for hybrid architectures for this meeting.

Mandate 4: Identify commonality of multi-view and scalable high-level extensions of HEVC.

Input documents related to parameter sets and random access pictures may be applicable to scalable extensions of HEVC.

# List of the input contributions related to this AhG

Input documents applicable to both MVC+D and 3D-AVC are listed in the MVC+D category. Input documents applicable to both MV-HEVC and 3D-HEVC are listed in the MV-HEVC category.

## MVC+D

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| [JCT3V-VC number](file:///C:\Users\cheny\Downloads\current_meeting.php%3fid_meeting=154&type_order=&sql_type=document_number) | MPEG number | [Title](file:///C:\Users\cheny\Downloads\current_meeting.php%3fid_meeting=154&type_order=&sql_type=title) | Authors |
| [JCT3V-B0040](file:///C:\Users\cheny\Downloads\current_document.php%3fid=229) | m26705 | Specification of stereoscopic texture sub-bitstreams in MVC+D | [A. Vetro (Mitsubishi)](mailto:avetro@merl.com), [Y. Chen (Qualcomm)](mailto:cheny@qti.qualcomm.com) |
| [JCT3V-B0041](file:///C:\Users\cheny\Downloads\current_document.php%3fid=230) | m26707 | MVC corrigendum on sub-bitstream extraction process (for information) | [Y.-K. Wang](mailto:yekuiw@qti.qualcomm.com), [Y. Chen (Qualcomm)](mailto:cheny@qti.qualcomm.com), [A. Vetro (Mitsubishi)](mailto:avetro@merl.com) |
| [JCT3V-B0055](file:///C:\Users\cheny\Downloads\current_document.php%3fid=244) | m26744 | AHG7: Comments on MVC+D | [Y. Chen](mailto:cheny@qti.qualcomm.com), [Y.-K. Wang (Qualcomm)](mailto:yekuiw@qti.qualcomm.com) |
| [JCT3V-B0056](file:///C:\Users\cheny\Downloads\current_document.php%3fid=245) | m26745 | Editorial input for ISO/IEC 14496-10:2012/PDAM 2 MVC extensions for inclusion of depth (MVC+D) | [Y. Chen](mailto:cheny@qti.qualcomm.com), [A. Vetro](mailto:avetro@merl.com) |
| [JCT3V-B0142](file:///C:\Users\cheny\Downloads\current_document.php%3fid=352) | m26993 | MVC+D: On the 3D reference displays information SEI message | [S. Kamp](mailto:steffen.kamp@eu.panasonic.com), M. Narroschke, T. Wedi (Panasonic) |
| [JCT3V-B0147](file:///C:\Users\cheny\Downloads\current_document.php%3fid=306) | m26870 | MVC+D: coding of unpaired MVD data | Payman Aflaki, Dmytro Rusanovskyy, Miska M. Hannuksela |
| [JCT3V-B0155](file:///C:\Users\cheny\Downloads\current_document.php%3fid=262) | m26781 | Improved nonlinear depth representation | I. Lim, J. Lee (Samsung) |
| [JCT3V-B0162](file:///C:\Users\cheny\Downloads\current_document.php%3fid=269) | m26788 | 3DV-AVC HLS on depth acquisition type | S. Lee, S. Lee, H. Wey, J. Lee (Samsung) |
| [JCT3V-B0178](file:///C:\Users\cheny\Downloads\current_document.php%3fid=376) | m27028 | MVC+D: Enhanced 3DVC reference displays information SEI message | [Yin Zhao](mailto:zhaoyin@zju.edu.cn), [Lu Yu (Zhejiang Univ.)](mailto:yul@zju.edu.cn), [Andrey Norkin (Ericsson)](mailto:andrey.norkin@ericsson.com) |
| [JCT3V-B0187](file:///C:\Users\cheny\Downloads\current_document.php%3fid=393) | m27051 | Level limits in MVC+D | [A. Vetro (Mitsubishi)](mailto:avetro@merl.com) |

## 3D-AVC

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| [JCT3V-B0033](file:///C:\Users\cheny\Downloads\current_document.php%3fid=220) | m26687 | AHG7 3D-AVC: Loss Detection of Depth Parameter Sets | [M. M. Hannuksela (Nokia)](mailto:miska.hannuksela@nokia.com) |

## MV-HEVC

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| [JCT3V-B0046](file:///C:\Users\cheny\Downloads\current_document.php%3fid=235) | m26735 | AHG5: MV-HEVC software for HTM | [L. Zhang](mailto:lizhang@qti.qualcomm.com), [Y. Chen](mailto:cheny@qti.qualcomm.com), [J. Kang (Qualcomm)](mailto:jewonk@qti.qualcomm.com) |
| [JCT3V-B0061](file:///C:\Users\cheny\Downloads\current_document.php%3fid=251) | m26761 | RAP picture definitions in 3DV | [Xiaofeng YANG](mailto:yx.yangxiaofeng@huawei.com), [Peiyu YUE](mailto:yuepeiyu@huawei.com), [Yuanyuan ZHANG](mailto:yuanyuan.zhang@huawei.com) |
| [JCT3V-B0062](file:///C:\Users\cheny\Downloads\current_document.php%3fid=252) | m26765 | VPS design for MV-HEVC | [B. Choi](mailto:b.d.choi@samsung.com), [J. Park (Samsung)](mailto:jeonghoon@samsung.com) |
| [JCT3V-B0063](file:///C:\Users\cheny\Downloads\current_document.php%3fid=253) | m26766 | View dependency change SEI message for MV-HEVC | [B. Choi](mailto:b.d.choi@samsung.com), [J. Park (Samsung)](mailto:jeonghoon@samsung.com) |

## 3D-HEVC

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| [JCT3V-B0164](file:///C:\Users\cheny\Downloads\current_document.php%3fid=362) | m27008 | 3D-HEVC HLS on depth definition | [Shinya Shimizu](mailto:shimizu.shinya@lab.ntt.co.jp), [Olgierd Stankiewicz](mailto:ostank@multimedia.edu.pl), Shiori Sugimoto, Hideaki Kimata, Krzysztof Wegner, Marek Domanski |