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| **Joint Collaborative Team on 3D Video Coding Extensions**  **of ITU-T SG 16 WP 3 and ISO/IEC JTC 1/SC 29/WG 11**  8th Meeting: Valencia, ES, 29 March – 4 April 2014 | Document: JCT3V-H0010 |

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| *Title:* | **JCT3V AHG report: Conformance testing development (AHG10)** | | |
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| *Source:* | AHG on conformance testing development | | |

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# Introduction

The mandates of this AHG are:

1. Further discuss and improve the conformance drafts related to 3D-AVC (JCT3V-G1009)
2. Collect the conformance test streams

# Activities

## Reflector

The e-mail reflector is [jct-3v@lists.rwth-aachen.de].  To receive email, please subscribe to the e-mail reflector: <http://mailman.rwth-aachen.de/mailman/listinfo/jct-3v>. For e-mail exchange, it is recommended to put [AHG10] in the subject line for easy grouping.

## ftp site

The ftp site at ITU-T is used to exchange bitstreams. The ftp site for downloading bitstreams is,

<http://wftp3.itu.int/av-arch/jct3v-site/bitstream_exchange/>

The spreadsheet to summarize the status of bitstream exchange, conformance bitstream generation is available at this directory. It includes the list of bitstreams, codec features and settings, and status of verification.

## Time line

The activity should be started after this meeting as the first exercise.

* Update the software first, based on the text.
* Start to generate bitstreams.
* Then revise the bitstreams when FDAM based software.
* All bitstreams must be ready by FDAM of conformance spec.

## Software problems

A late bug-report for MVC+D HLS implementation in 3D-ATM raised concerns on bitstream preparation. The following syntax elements are missing in SPS when profile\_idc is equal to 138.

chroma\_format\_idc, bit\_depth\_luma\_minus8, bit\_depth\_chroma\_minus8, lossless\_qpprime\_y\_zero\_flag, and seq\_scaling\_matrix\_present\_flag.

The investigation of the software and MVC+D conformance bitstreams are still on-going. However, MVC+D conformance was finalized in the last meeting. If problems are found in MVC+D conformance, there could be two options.

* Replace bitstreams claiming this is mistake.
* Or issue COR to correct bitstreams.

This should be discussed during the JCT-3V Valencia meeting.

## Bitstream preparation

Since the bugs were found in 3D-AVC software, preparation of 3D-AVC conformance streams is suspended. The software should be fixed first, and then volunteers should start to generate bitstreams.

The list of candidate bitstreams, their parameters and expected proponents are given in Table 2.

Table 2. Candidate conformance bitstreams for 3D-AVC development.

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Categories | | Bitstream | | Donated by | | File Name | | Multi-view Depth High |  | Level | Frame Rate (Frame/Sec) |
| Depth Resolution | | MVDDR-1 | | Nokia | |  | | X | |  | 3 and higher | 30 | |
| MVDDR-2 | | Nokia | |  | | X | |  | 4 and higher | 25 | |
| Coding tools | | MVDCT-1 | | MERL | |  | | X | |  | 3 and higher | 30 | |
| MVDCT-2 | | Mediatek | |  | | X | |  | 4 and higher | 25 | |
| MVDCT-3 | | Samsung | |  | | X | |  | 3 and higher | 30 | |
| MVDCT-4 | | Poznan | |  | | X | |  | 4 and higher | 25 | |
| MVDCT-5 | | Qualcomm | |  | | X | |  | 4 and higher | 25 | |
| MVDCT-6 | | Qualcomm | |  | | X | |  | 3 and higher | 30 | |
| MVDCT-7 | | Qualcomm | |  | | X | |  | 4 and higher | 25 | |
| MVDCT-8 | | MERL | |  | | X | |  | 3 and higher | 30 | |
| MVDCT-9 | | Samsung | |  | | X | |  | 4 and higher | 25 | |

As for today, 7 bitstream were collected for 3D-AVC and 4 bitstreams are still missing. Note that the existing bitstreams maybe need to be updated, as the reference software was recently updated by fixing several bugs related to coding tools.

The bitstream for 3D-AVC is available at

<http://wftp3.itu.int/av-arch/jct3v-site/bitstream_exchange/under_test/3D-AVC/>

It should be noted, that AhG4 is planning to finalize 3DV-AVC reference software, which is cable of coding MVD data with bi-directional inter-view prediction.

## Procedure

In the last meeting, it was suggested to upload the bitstream, short description, trace file, decoded image, md5 checksum in a zip archive. All files inside the zip archive should have the same base name. Only the extension is changed in the following way:

.bit - bitstream

.txt - description

.trc - tace file

.md5 - MD5 sum of the complete decoded file

.yuv - decoded image

Note: Trace file is useful for debugging and it is recommend to include short trace file. Full trace is optional. Decoded image and MD5 checksum are optional. But one of the decoded YUV file, md5 checksum file must be provided.

MD5 must be provided for decoded YUV file. Hash must be the existed at the beginning of the file. (Text remarks by volunteers are included in some md5 files)

The recommended md5sum tool on UNIX is as follws.

<http://en.wikipedia.org/wiki/Md5sum>

# Recommendations

The AHG recommends

* To identify the problems in 3D-ATM software and MVC+D conformance bitstreams
* and then to fix problems
* to discuss how MVC+D conformance bitstreams should be revised
* to collect missing bitstreams
* to continue to new bitstreams with new features not listed in the table
* update candidate bitstream list, as output of AhG4 development