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| *Title:* | **AHG8: Report on Relation of Global View and Depth Format and Current 3D Video Standardization Tracks** | | |
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# Abstract

This contribution reports on the following mandate of AHG8, which is

•Explore the relation of Global View and Depth format and current 3D video standardization tracks.

The relation between them is a compensational approaches each other. Current 3D video standardization tracks are integrating multi-view and depth tools in the macroblock level. This approach can realize generally high coding efficiency (high quality) with rather high complexity. (High Efficiency Profile). Global View and Depth format is integrating multi-view and depth tools in the frame (slice) level. This approach can realize generally fast coding/decoding process (Low Complexity Profile) with reasonable coding efficiency (subjectively good quality). Warp is also categorized in the Low Complexity Profile.

# Introduction

By the 3DV CFP (N12036, March 2011), coding methods based on AVC, MVC and HEVC were called.

The evaluation criterion for proposed methods was subjective quality of synthesized views at each rate point (QP). A reference view synthesiser (VSRS) was provided to synthesize views from the decoded multi-view and depth maps by MPEG, but also MPEG accepted proposed view synthesizers.

Some proposals including Global View and Depth approach (GVD) and Warp approach proposed their own view synthesizers suitable for their coding scheme. Through the core experiments and subjective quality evaluations, these approaches were approved as the Alternative 3D Format, since they are simple and fast comparing to the current 3DV standardization tracks.



**Figure 1** Global View and Depth format is aiming at low complexity and easy implementation

The other proposals concentrated on the coding efficiency by using a common reference view synthesizer (VSRS). These approaches realized high coding efficiency with rather high complexity and approved as the current 3D video standardization tracks (MVC+D/ATM(MVC+VSP)/HTM(HEVC+MVC+VSP).



**Figure 2** Current 3DV tracks are aiming at high coding efficiency

# Relation between GVD and 3DV standardization tracks

As seen in many MPEG standards, low complexity profile and high coding efficiency profiles are indispensable each other to suffice the variety of market requirements. These profiles are compensating each other.



**Figure 3** Relation between Global View and Depth format and current 3DV tracks

The relation between Global View and Depth format and current 3DV standardization tracks is in the same situation. Since the current 3DV standardization tracks (MVC+VSP, HEVC+MVC+VSP) are heavier than MVC+D, right weight codecs with reasonable coding efficiency are indispensable. Since coding speed of GVD format is much faster than even MVC+D, it covers the holes which current 3DV standardization tracks are difficult to cover.



**Figure 4** Global View and Depth format and current 3DV tracks are covering different market requirements each other

Warp approach is also simple and fast. Since warp tools are using 2D shift, however, some 3D display applications such as FTV(FVV), volumetric 3D displays, aerial 3D displays and holographic displays still require GVD approach based on the 3D geometrical projection by the depth map.



**Figure 5** Warp approach with 2D shift



**Figure 6** Global View and Depth approach and Warp approach are necessary for wide variety of applications having different requirements.

# Conclusion

As discussed above, the relation of Global View and Depth format and current 3DV standardization tracks are compensational each other. Both are indispensable for the coverage of wide application areas requirements of 3DV services and products.



**Figure 7** Global View and Depth approach and current 3DV tracks are necessary for wide variety of market requirements and applications.