**INTERNATIONAL ORGANISATION FOR STANDARDISATION**

**ORGANISATION INTERNATIONALE DE NORMALISATION**

**ISO/IEC JTC1/SC29/WG11**

**CODING OF MOVING PICTURES AND AUDIO**

**ISO/IEC JTC1/SC29/WG11 MPEG/m54731v2**

**July 2020, on-line**

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| **Source** | **Interdigital** |
| **Status** | **proposal** |
| **Title** | **Group content for MIV** |
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# Context

MPEG Video group does not have so far a non 3DoF+ content and we would like to address this need, especially at the time when the MIV group starts thinking on phase 2, whatever it may include.

At meeting 128, we mentioned that we could provide a content made from former TechnicolorMuseum [1] with an arc shape set-up. One feedback we got is that it would be more interesting to have a rig in a dome-shape, like what can be found in some sport event place.

## Group content

We have re-shot our previous TechnicolorContent

* By grouping people and 2 sculptures in the scene center with the idea of generating a lot of occlusion
* By putting 21 perspective 1920x1080 cameras in a partial dome shape
  + 12 low cameras with tilt 25°
  + 6 middle cameras with tilt 45°
  + 3 high cameras with tilt 60°
* Generated 3 pose traces accordingly

Contents, this contribution and some pose traces and licence are available at:

*MPEG server MPEG-I/Interdigital/Interdigital\_Group\_Content/*

The rig and pose traces (colour traces) are illustrated below:

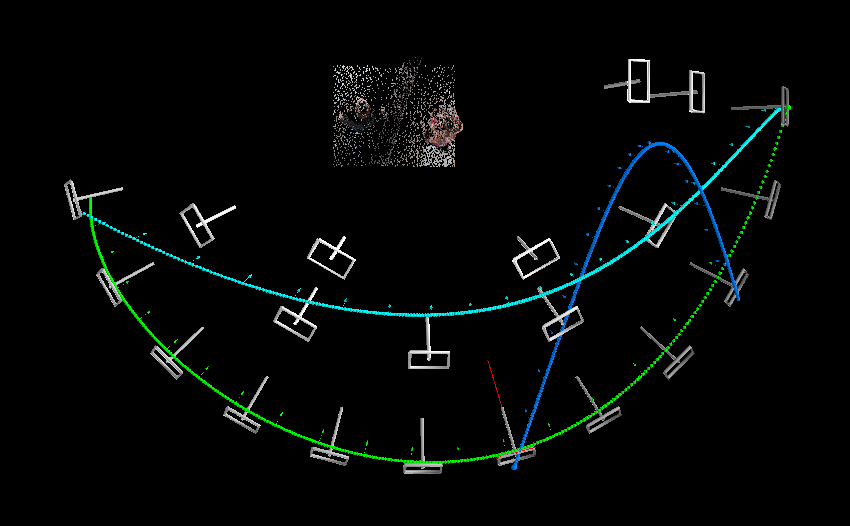
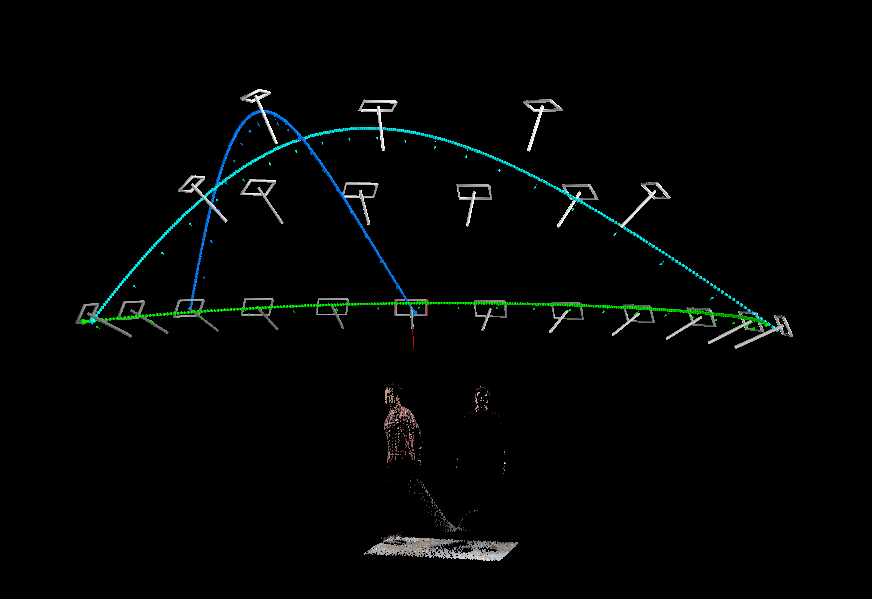


Figure 1: top view



4Figure 2: side view

This leads to the following image examples (for the texture):



Figure 3:v00 (low circle)



Figure 4: v11 (low circle)



Figure 5:v15 (middle circle)



Figure 6: v20 (high circle)

# Trial on TMIV5.1

Only a short trial has been made.

**Code** : TMIV 5.1 (commit 43b36c26) was used for this test.

**Configuration file :**

The original configuration file in “src/ctc\_config/miv\_anchor” has been used and adapted to fit this sequence needs (sequence name, number of cameras, name of cameras, number of frames). The number of groups has been set to 3. Accordingly, the max number of atlases has also been set to 3.

**Trial**

An efficient way to process this content is to cover as much as possible the rig by basic views regularly located along the expected navigation path.

We only experiment with a maximum of 3 basic views that we obtained by setting the number of groups and atlases to 3 in the configuration file of the TMIV encoder. We did not investigate any improvement in the algorithm for example to spread wisely these basic views along the rig but the current algo seems to do a good job from that point of view.

A close up of a map

Description automatically generated

A close up of a map

Description automatically generated

Figure : PSNR curves comparing 2 group and 3 group configurations

The result of this configuration is compared to the CTC configuration allocating 2 groups for large rigs.

**Discussion**

We can see a significant improvement between the two configurations, but of course with also a significant increase in terms of bitrate. We did not investigate why there is such a huge bitrate happening at QP1.

The subjective results to be seen on MPEG server are very bad and we only put QP1.

These results are not satisfactory at all but they are obtained without any effort of optimization of the TMIV itself or recoding. It is likely that the pruner for example would need to be revisited and certainly some other parts of the code.

# Conclusion

We are fully aware that this CGI content is not an excellent one since it is second-hand content from TechnicolorContent and has obvious CGI appearance and is not optimal in terms of scene lighting.

Yet, except if somebody comes with a better non 3DoF+ content, we recommend to consider this content at least optionally in the CTC or for exploratory experiment. Quick TMIV5.0 results shows that there is still work to be done to handle it correctly, if the group wants to address this.

We believe that the MIV group should have at its disposal at least 1 content of this kind (non 3DoF+) to check whether it is within MIV v1 capabilities to correctly handle it or not.

# Reference

[1] R.Doré, G. Briand, J. Fleureau**, New MIV Immersive Video content proposal,** ISO/IEC JTC1/SC29/WG11 MPEG/m50849, October 2019, Geneva.

[1] J. Jung, B. Kroon, J. Boyce, Common Test Conditions for Immersive Video, ISO/IEC JTC1/SC29/WG11 MPEG/N18563, July. 2019, Goeteborg, Switzerland.

# Annex: Copyright Group & Fan contents

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