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**[V-PCC] Report of CE2.12 on visual quality**

# Abstract

This document provides the report for core experiment 2.12 on visual quality. In this core experiment, two methods were evaluated, a 3D geometry padding from Sony, and a patch expansion technique from ITRI. Objective and a limited subjective assessment of both proposals are presented here and show improvement over the current anchor results.

# Introduction

In Geneva meeting, Sony presented a technique for geometry padding [1], claiming that the technique improved geometry reconstruction. Similarly, ITRI presented a proposal for patch expansion [2] that improved subjective quality of reconstructed patches. Both techniques are encoder only and would not affect the current syntax. Furthermore, there is a potential to combine the techniques, which is also investigated as one of the mandates of this CE.

# Results

Please see the attached power point for a summary of the RD performance of both proposals, as well as a subjective comparison of both techniques.

# Conclusion

Compared to the anchor, ITRI’s proposal show improvement for hole filling and the impact in R&D performance is small. However, it may have issues with artificially enlarging the patch sizes.

Sony’s proposal has a larger impact in R&D performance, since geometry background pixels are using more bits, and the effect of quality is only perceived for D2 metric, and not for the color components. Nevertheless, some holes are filled, and the geometry metrics improve.

The combined techniques improve D2 metrics, but still present artificially enlarged patch size.

# References

1. “[V-PCC] New Contribution on Geometry Padding,” ISO/IEC JTC1/SC29 WG11 (MPEG) input document m47496, Geneva, CH, March 2019
2. “[V-PCC] [New proposal] Patch Expansion for Improving Visual Quality,” ISO/IEC JTC1/SC29 WG11 (MPEG) input document m47772, Geneva, CH, March 2019