

A woman with blonde hair is wearing a white and black VR headset. She is smiling and gesturing with her hands, which have red nail polish. The background is a solid dark blue.

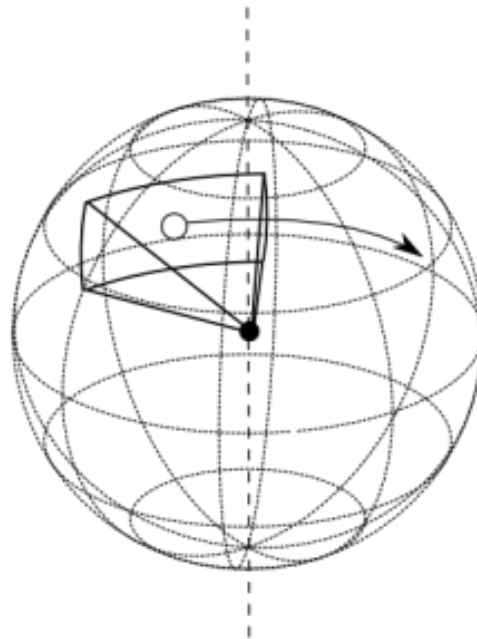
ON COMPARISON CRITERIA FOR VIRTUAL REALITY VIDEO CODING SCHEMES

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OMNIDIRECTIONAL VIDEO

- › The content is captured on a sphere.
- › Conceptually, the viewer is only viewing a small fraction of this sphere.

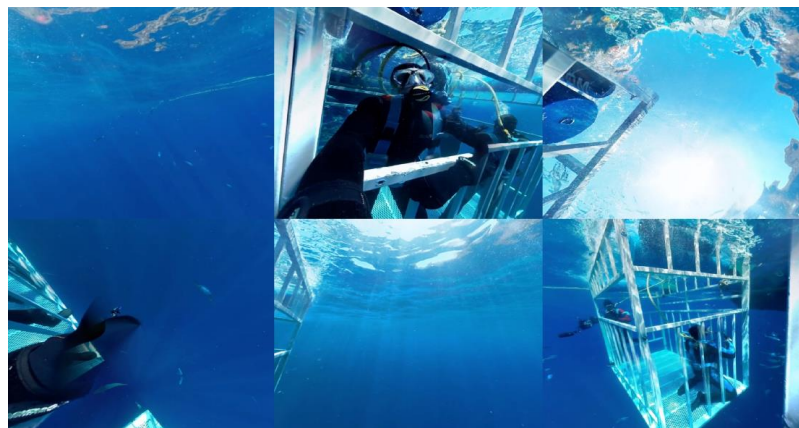
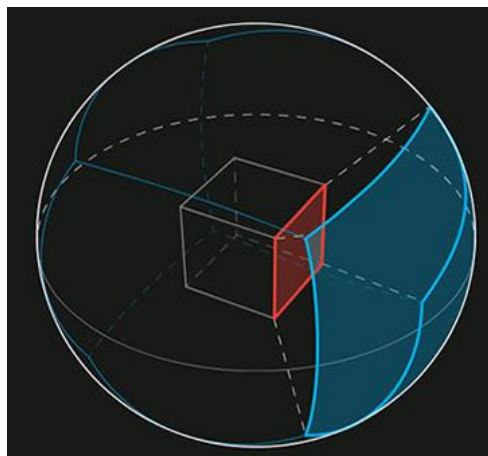


STREAMING OF OMNIDIRECTIONAL CONTENT

- › **Streaming the entire sphere is not reasonable**
 - › Viewer's viewpoint is roughly 1/12 of the sphere
 - › Providing even Full HD resolution would mean to encode the sphere with a bitrate giving sufficient quality for a 12x Full HD video

- › **Streaming sub parts of the sphere is more efficient**
 - › The vast majority of experts investigate this approach (e.g. see DVB VR workshop, MPEG System)

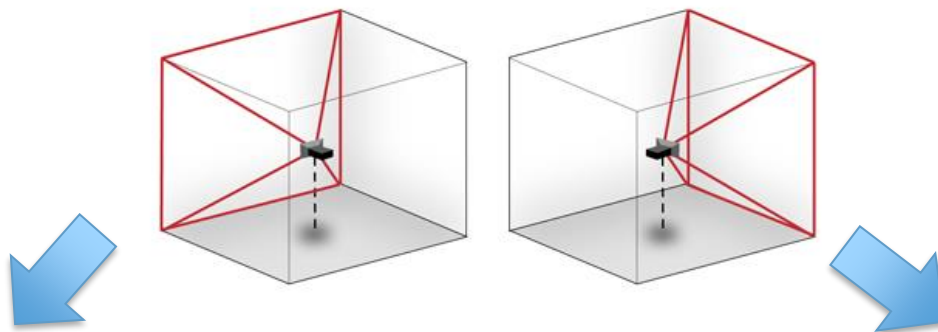
CUBIC REPRESENTATION



1)

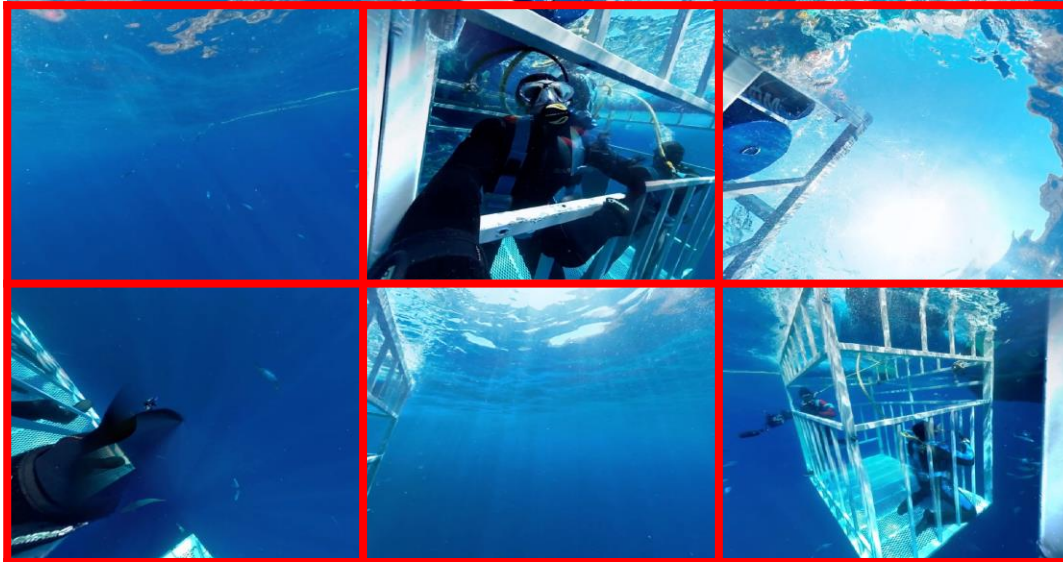
1) JVET-C0021, “GoPro test sequences for Virtual Reality video coding”, Adeel Abbas, Geneva, CH, 26–31 May 2016

STREAMING CUBIC REPRESENTATION

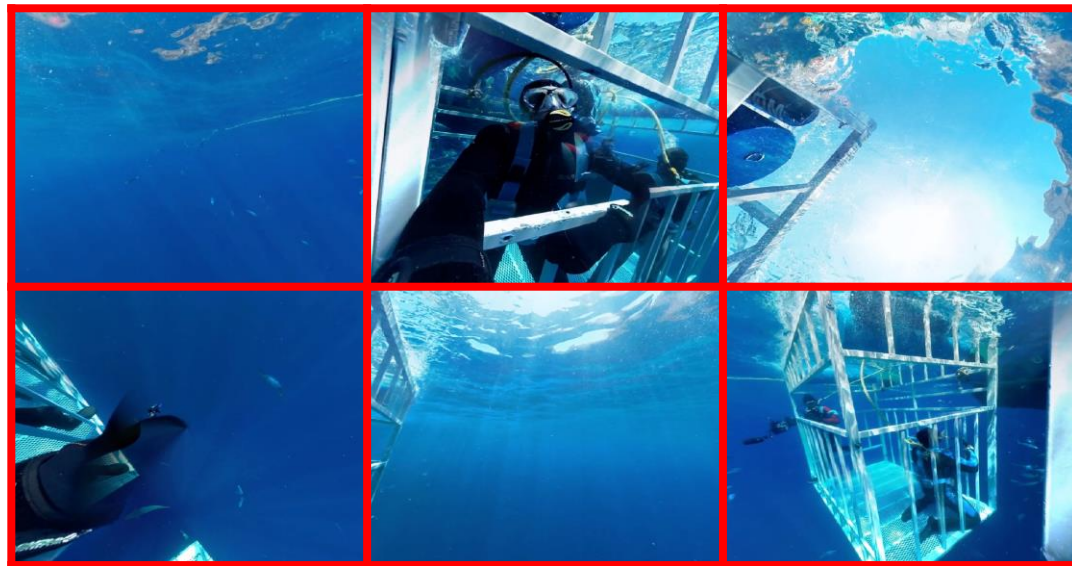


USING THE TILE CONCEPT TO ENABLE SPATIAL RANDOM ACCESS WITHIN FRAMES

- › Constraining motion vector and other parameters



BITRATE AND QUALITY AT TILE LEVEL



- › Considering compression efficiency of the whole video is less relevant in the context of streaming cubic representation.
- › It is more relevant to compare sphere to polygon mapping with tiles enabled and comparing performance at tile level too.