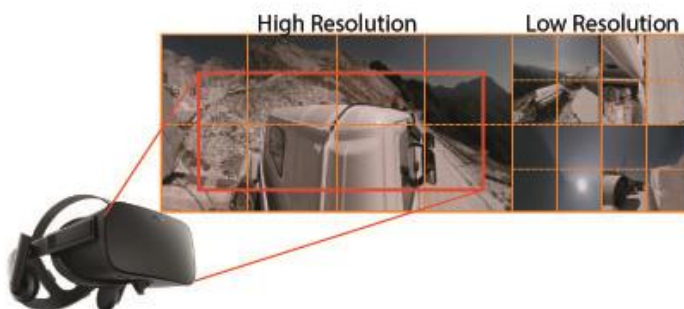


PRESS RELEASE

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Tile Based DASH Streaming for Virtual Reality with HEVC – Enabler for high quality 360 degree video from Fraunhofer HHI

Fraunhofer HHI's technique for Compressed Domain Tile Aggregation with HEVC allows VR video applications with drastically reduced video bitrates and decoder requirements. Tile Based DASH Streaming with Fraunhofer HHI's technique allows maintaining high video quality in the current viewport while streaming lower resolution outside the viewport. The approach can adapt the video bitstream to the current user viewport on-the-fly without heavy transcoding or storage of a large number of pre-rendered viewports on the server. Using Tile Based DASH Streaming, individual tiles are offered to the client which selects a configuration suitable to his viewport, throughput budget and decoder capabilities. At the CES fair 2017 in Las Vegas, Fraunhofer HHI will show this technology at Booth 20944, South Hall 1.



High and low resolution HEVC tiles are mixed on-the-fly to match viewport orientation resulting in a per-user bitstream without the need for transcoding.

Ultra-high-resolution within the user viewport is required to achieve full immersion in VR video applications. Covering the full 360 degree video would easily lead to multiple times UHD resolution. Such large amount of data poses a major challenge to the whole chain of state-of-the-art video streaming. The throughput required for streaming of 360 degree video over the public Internet cannot be provided for many users. Furthermore, most VR relevant devices such as mobile phones contain hardware video decoders that are tailored to conventional FullHD

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and 4K resolution services. Due to these limitations, a new approach for adaptivity of bitrate and resolution in VR video applications is required.

Fraunhofer HHI's technique for Compressed Domain Tile Aggregation with HEVC overcomes the challenges of ultra-high resolution content on limited decoder capabilities. In a traditional service design, per-user or per-viewport orientation streams would be offered which does not scale well and comes at significant storage and encoding cost. Using the technique of Fraunhofer HHI, a tailored bitstream for each user can be easily generated on-the-fly without intensive processing on the server or client side. Video content outside the users' current viewport is transmitted in low quality or resolution, which allows a more efficient throughput and decoder utilization. Furthermore, Fraunhofer HHI's Compressed Domain Tile Aggregation solution enables usage of a single video decoder on end devices. Complete and market ready streaming solutions can be implemented based on well-established standard families such as MPEG ISO Base Media File Format and MPEG DASH which are fully compatible to Fraunhofer HHI's Compressed Domain Tile Aggregation technique.

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The **Fraunhofer Heinrich Hertz Institute** is a world leader in the development of mobile and fixed broadband communication networks and multimedia systems. From photonic components and systems through fiber optic sensor systems to video coding and transmission, the Fraunhofer HHI works together with its international partners from research and industry. www.hhi.fraunhofer.de

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