



Capture



Encode



Network



Decode
& Deliver



User
Interface



Volumetric Capturing System

developed by  **CERTH**
CENTRE FOR
RESEARCH & TECHNOLOGY
HELLAS

Volumetric Capturing system of CERTH enables the creation of immersive and compelling virtual reality content by creating advanced virtual humans. Aim of the volumetric capturing system is to be integrated with VR, AR, MR & VFX technologies and game engines (i.e. Unity3D) and equip professional creative studios, with a flexible and portable solution for fast production.

Key features

The Volumetric capture system enables real-like social experiences as fine details of the representations add more reality features to the experience, like facial expressions, which capture the emotional state of each user.

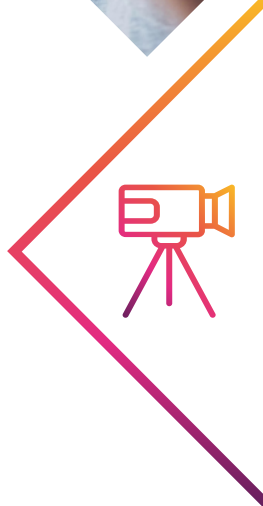
- **Portability:** The system is modular, flexible and has a light-weight sensor calibration system
- **Low-cost:** The use of consumer-grade sensors (i.e RealSense, Azure Kinect) combined with low specification hardware resources for multi-RGBD data acquisition and system openness creates an affordable HW&SW set up
- **Scalable:** Support of variant number of sensors to adjust the associated equipment cost and complexity depending on the level of geometry detail and visual quality.

**Realistic
content creation**

**Real time
capturing**

Easy to use

The Volumetric Video Production offers Real-time (online) volumetric media streaming and can support live self-view representation that increases immersion. With reduced technical background needed, users have more time to focus on the creative part of the capturing



Volumetric Capturing System

Real-time Volumetric Video Compression

Volumetric capturing system offers state-of-the-art geometry libraries integration and multi-view texture compression. The technology pipeline is simple and straightforward.

Capture > Process > Compress > Stream > Render



Multi-sensor Setup



Volumetric video production



Volumetric video compression



Volumetric video Streaming



6 DoF / XR

System openness

The publicly available software of volumetric capturing facilitates the proof-of-concept content creation in a budget friendly way. Users avoid expensive production of 3D media using 3D modeling software.



Easy Integration of Virtual Environment

The proposed multi view capturing and calibration system enables the generation of high quality realistic 3D assets meeting creators needs. It allows 4D data export in several data formats allowing for easy use in any widely used software tool. It offers:

- Game engine plug & play compatibility (e.g. Unity 3D, Unreal Engine 4)
- Support of photo-realistic 360 and 3D environments
- 6 Degrees of freedom for the user



VRTogether

About VRTogether

VRTogether is an end-to-end system for the production and delivery of **photorealistic and Social Virtual Reality (Social VR) experiences**.

VRTogether enables Social VR experiences that allow a **natural interaction between remote users** immersed in a shared virtual environment in an affordable way and with photorealistic quality. The project's key exploitable components cover the whole Social VR pipeline:



Volumetric Capturing System
Simple Point Cloud Capture System



Point Cloud Encoding & Decoding



Scalable Ultra-Low Latency
Volumetric Data Transmission

Media/Session Orchestrator



Live Presenter (MS)

Point Cloud - Multipoint Control Unit
Objective Metrics

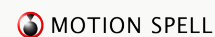


Unity Player



Web-based Social VR Platform

Consortium



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