



Capture



Encode



Network



Decode & Deliver



User Interface



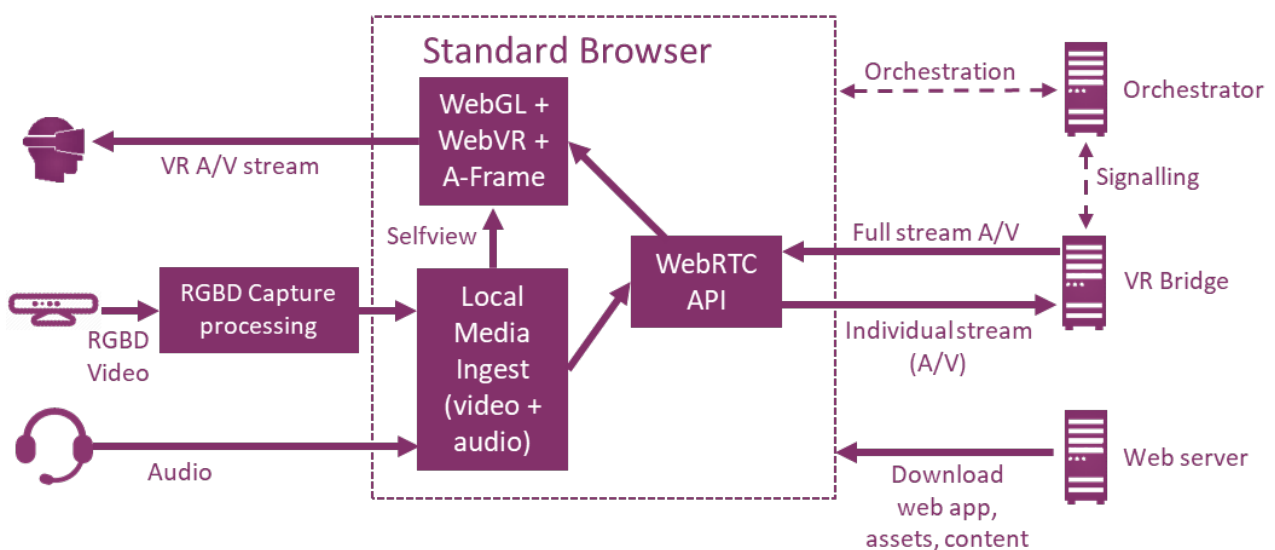
# Web-based social VR platform

developed by **TNO** innovation for life

A fully end-to-end lightweight platform for capture, distribution and consumption of social VR, based on web standards and common components.

## Simplified Technology Pipeline

- Use of Web-based components:
  - WebRTC, WebXR, WebGL for communication
  - AngularJS, Node.js and A-Frame for UI frontend
- Built based on video pipeline on top of dash.js, the reference player for Moving Picture Experts Group (MPEG) Dynamic Adaptive Streaming over HTTP (DASH).
- Using common of the shelf and consumer grade equipment for capture and display



## Web-based social VR platform

### Fully orchestrated

- Session management, with per session setup options
- Multi-person capture and rendering management
- Synchronisation of live and virtual environments

### Real-time live capture

- 1 consumer grade RGB-plus-depth camera per participant (eg. Intel RealSense, MS Kinect4Azure)
- Foreground and background removal keeping only the image of the participant

### Peer-to-peer or bridged communication

- Communication service through WebRTC
- Peer-to-peer or client-server topology through a VR bridge, combining all individual participant's streams in 1 stream

### Easy integration of virtual environment

- Support for 360 video capture of real environment and virtual, constructed environments
- Multiple concurrent sources possible, eg. live streaming video in a virtual environment







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



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 761974.