

LiveSwitch



**LiveSwitch provides critical video
infrastructure
that powers the most engaging real-time
communications and entertainment
experiences on the web.**

How WebRTC Can Better Enable the Metaverse

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Who Am I?

- Been developing interactive experiences since 2008
- Been developing XR experiences since 2013
- Led multiple teams from project launch to 8 and 9-figure exits
- Published a dozen different articles
- Metaverse “expert” according to VentureBeat



What Is WebRTC?

- A technology, NOT a solution
- Ubiquitous
 - Support from all major browser vendors
- Growing
 - In 2021, the value of global WebRTC market stood at US\$ 4.30 Bn. The web real-time communication market statistics forecast the market to progress at a CAGR of 35.30% during the forecast period, from 2022 to 2031. The global WebRTC market size is anticipated to touch value of US\$ 87.84 Bn by 2031 - TRANSPARENCY MARKET RESEARCH

What Is the Metaverse?

- The next generation of the internet that is (1) **always real-time**, (2) **mostly 3D**, (3) **mostly interactive**, (4) **mostly social** and (5) **mostly persistent**
- How does this differ from the current internet?
 - Request/response
 - 2D
 - Occasionally interactive
 - Rarely social
 - Rarely persistent

Always Real Time

- Could be in VR, AR, or 3D in a browser
- AR: when you see data enhancing the world around you, you need constantly changing information
- VR: when I interact with the world, it's reflected instantly
- Instant rendering and instant access to information is critical

BUT

- Devices can't hold all the information
- Devices won't have the distributed changing information
- Rendering could possibly happen off-device

Always Real Time - WebRTC

- A connection to a server can be used to analyze the world and feed information from other systems to the user
- A connection to a server can be used to synchronize individual users to each other
- How will systems and users all be connected? What protocol?
 - Could write your own
 - Ouch
 - Could use something that exists
 - Lots of interesting protocols for syncing data (Unreal)
 - Lots of protocols for sending audio (Discord uses Websockets)
 - Fewer options for video
 - Even fewer that do all three well

Mostly 3D

- 3D is how things are going in the future - browsers, mobile, headsets, they're all moving to 3D scenes
- Good news! WebRTC can do 3D. Let's talk about what that can be.
 - Capture a 3D scene and send raw data (over the shoulder with 6 degrees of freedom for viewer)
 - Capture a 3D scene and send a 2D image (this is GREAT for adoption)
 - Capture point data and render into a 3D scene
 - Capture multiple 2D scenes and reconstruct into 3D
- All these can be done, either via pure video or sometimes using data channels!

Mostly Interactive

- Mostly
- VR in particular is VERY isolating
 - Interactivity is key
- The world has moved from creating sites and applications to creating EXPERIENCES
 - A huge part of experiences is sharing it with other people

Mostly Social

- Mostly
- VR in particular is VERY isolating
 - Interactivity is key
- The world has moved from creating sites and applications to creating EXPERIENCES
 - A huge part of experiences is sharing it with other people
- How do you create a shared experience?
 - It must be available (HTC Vive \$)
 - It must be simple (Oculus vs browser vs native apps progression)
 - It must be engaging (quality/network)

Mostly Persistent

- WebRTC is NOT persistent by default
- What can we do to improve this? In general, some key challenges:
 - Resuming state for new users
 - Chat of course, but also location in 3D
 - Searching historical records of past sessions
 - Timelines of events and changes in quality, network, etc.
 - Ability to purchase, and maintain those purchases across environments
- Can WebRTC solve some/any of these problems?

Further questions? Contact me:

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