

- [VR Standard Trend]

- [Sangkwon Peter Jeong / JoyFun Inc.,]



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## VR Standard Trend

**Date:** 2017-04-23

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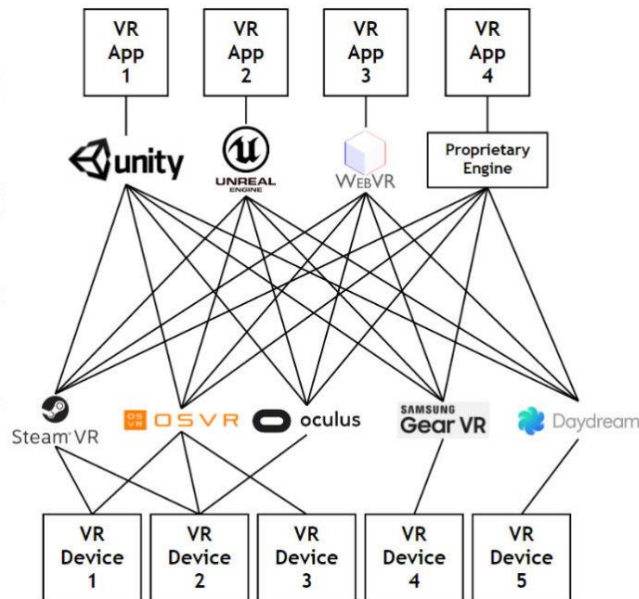
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# **Khronos Group**

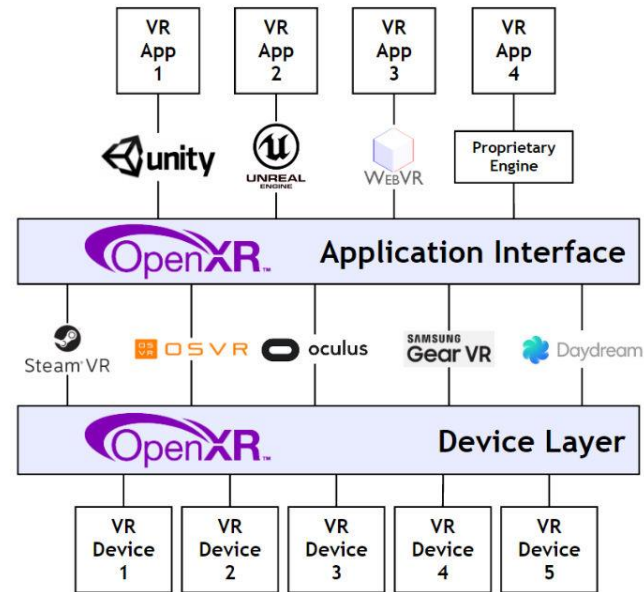


## OpenXR - Cross-Platform, Portable, Virtual Reality

The OpenXR™ working group – previously known as the Khronos VR Initiative - is creating an open and royalty-free standard for VR and AR applications and devices.

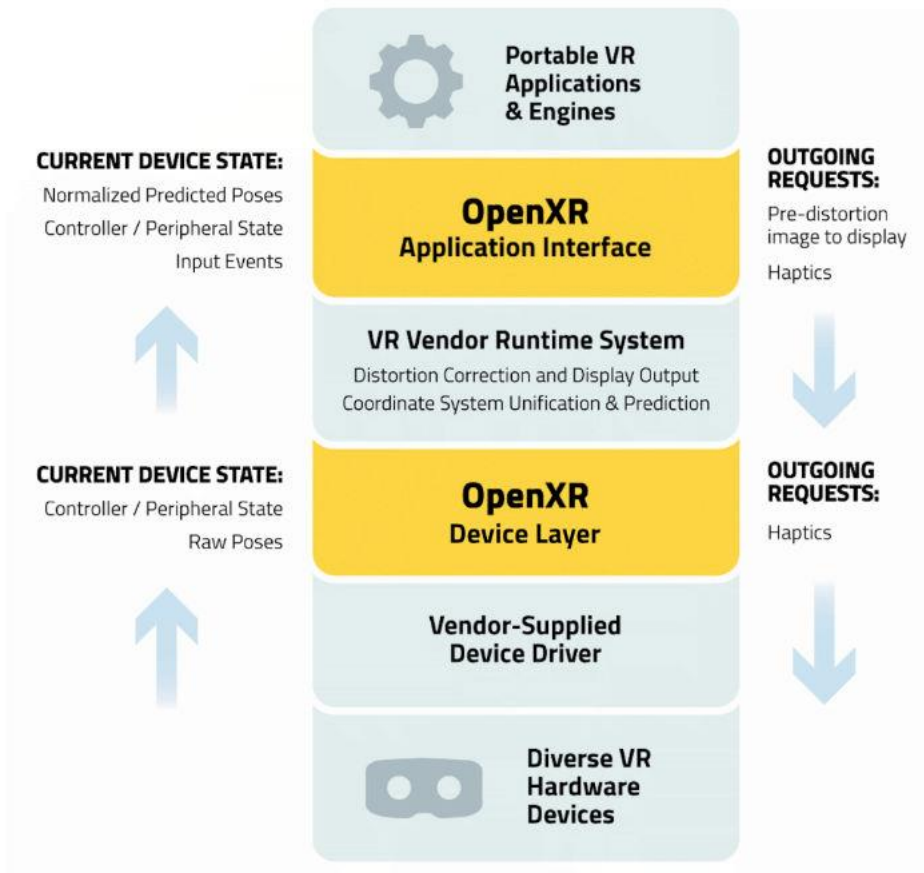


**The Problem**



**The Solution**

# OpenXR Architecture



OpenXR defines two levels of API interfaces that a VR platform's runtime can use to access the OpenXR ecosystem.

Apps and engines use standardized interfaces to interrogate and drive devices. Devices can self-integrate to a standardized driver interface. Standardized hardware/software interfaces reduce fragmentation while leaving implementation details open to encourage industry innovation.

**W3C**



## W3C Groups Taxonomy

- **Community** Group (CG): open to all, limited IPR protection & commitment, pre-standardization
- **Interest** Group (IG): open to W3C Members, set roadmap for a technology space (e.g. TV/Video, Payments, Publishing)
- **Working** Group (WG): open to W3C Members, define W3C standards under strong RF policies





## Review of VR needs in W3C

- Work already under standardization
- Work under incubation or with reasonably well-understood proposal
- Work where standardization sounds reasonable, but lots to figure out first
- Work where standardization need is unclear at this stage



## Existing Relevant W3C Standardization (1)

- **Spatialized audio** in Web Audio WG
- **Gamepad API**, **Web Worker** in Web Platform WG
- Media **Streaming** handling in HTML Media Extension WG
- **Low-latency** data & AV transfer, **identity** hook in WebRTC WG
- **Depth camera**, dedicated **video worker** support in Device & Sensors

Working Group



## Existing Relevant W3C Standardization (2)

- **Color space** management in CSS WG
- **Performance metrics** in Web Perf WG
- **UI Security** in Web App Security WG
- (Payments in Web Payments WG)



## New Standardization Efforts soon?

- Bring WebVR from CG to WG
  - Gamepad API extensions
  - 360° media integration in HTML  
(or @IETF?)
  - VR mode in CSS Media Query
- Skybox API / manifest
- Speech Recognition API
- Media Synchronization
- Web Assembly
- Media Capabilities



## Longer-term standardization targets?

- Immersive/Spherical DOM
  - 3D Object Model & eventing
  - Declarative 3D in markup
  - 360° media streaming
  - Navigation Transitions
  - Link traversal metadata
  - Unified User Input for VR
- Gesture Recognition Framework
  - Handling Fonts for 3D context
  - Finegrained scheduling
  - ARIA for VR
  - Annotations for VR entities
  - Identity / Avatar management

# **IEEE 2048 WG**

# IEEE 2048

## Standard for Virtual Reality and Augmented Reality

PAR Number	Project Type	Committee	Title	Scope	Approval Date	PAR Expiration	Status
<a href="#">P2048.1</a>	New	CES/SC/VRAR	Standard for Virtual Reality and Augmented Reality: Device Taxonomy and Definitions	This standard specifies the taxonomy and definitions for Virtual Reality (VR) and Augmented Reality (AR) devices.	7-Dec-2016	31-Dec-2020	WG Draft Development
<a href="#">P2048.2</a>	New	CES/SC/VRAR	Standard for Virtual Reality and Augmented Reality: Immersive Video Taxonomy and Quality Metrics	This standard specifies the taxonomy and quality metrics for immersive video.	7-Dec-2016	31-Dec-2020	WG Draft Development
<a href="#">P2048.3</a>	New	CES/SC/VRAR	Standard for Virtual Reality and Augmented Reality: Immersive Video File and Stream Formats	This standard specifies the formats of immersive video files and streams, and the functions and interactions enabled by the formats.	7-Dec-2016	31-Dec-2020	WG Draft Development
<a href="#">P2048.4</a>	New	CES/SC/VRAR	Standard for Virtual Reality and Augmented Reality: Person Identity	The standard specifies the requirements and methods for verifying a person's identity in virtual reality.	7-Dec-2016	31-Dec-2020	WG Draft Development
<a href="#">P2048.5</a>	New	CES/SC/VRAR	Standard for Virtual Reality and Augmented Reality: Environment Safety	This standard specifies recommendations for workstation and content consumption environment for Virtual Reality (VR), Augmented Reality (AR), Mixed Reality (MR) and all related devices where a digitalmore...	7-Dec-2016	31-Dec-2020	WG Draft Development
<a href="#">P2048.6</a>	New	CES/SC/VRAR	Standard for Virtual Reality and Augmented Reality: Immersive User Interface	This standard specifies the requirements and methods for enabling the immersive user interface in Virtual Reality (VR) applications, and the functions and interactions provided by the immersive user interface.	23-Mar-2017	31-Dec-2021	WG Draft Development
<a href="#">P2048.7</a>	New	CES/SC/VRAR	Standard for Virtual Reality and Augmented Reality: Map for Virtual Objects in the Real World	This standard specifies the requirements, systems, methods, testing and verification for Augmented Reality (AR) and Mixed Reality (MR) applications to create and use a map for virtual objects in the real world.	23-Mar-2017	31-Dec-2021	WG Draft Development
<a href="#">P2048.8</a>	New	CES/SC/VRAR	Standard for Virtual Reality and Augmented Reality: Interoperability between Virtual Objects and the Real World	This standard specifies the requirements, systems, methods, testing and verification for the interoperability between virtual objects and the real world in Augmented Reality (AR) and Mixed Reality (MR) applications.	23-Mar-2017	31-Dec-2021	WG Draft Development



# IEEE 2048 Structure

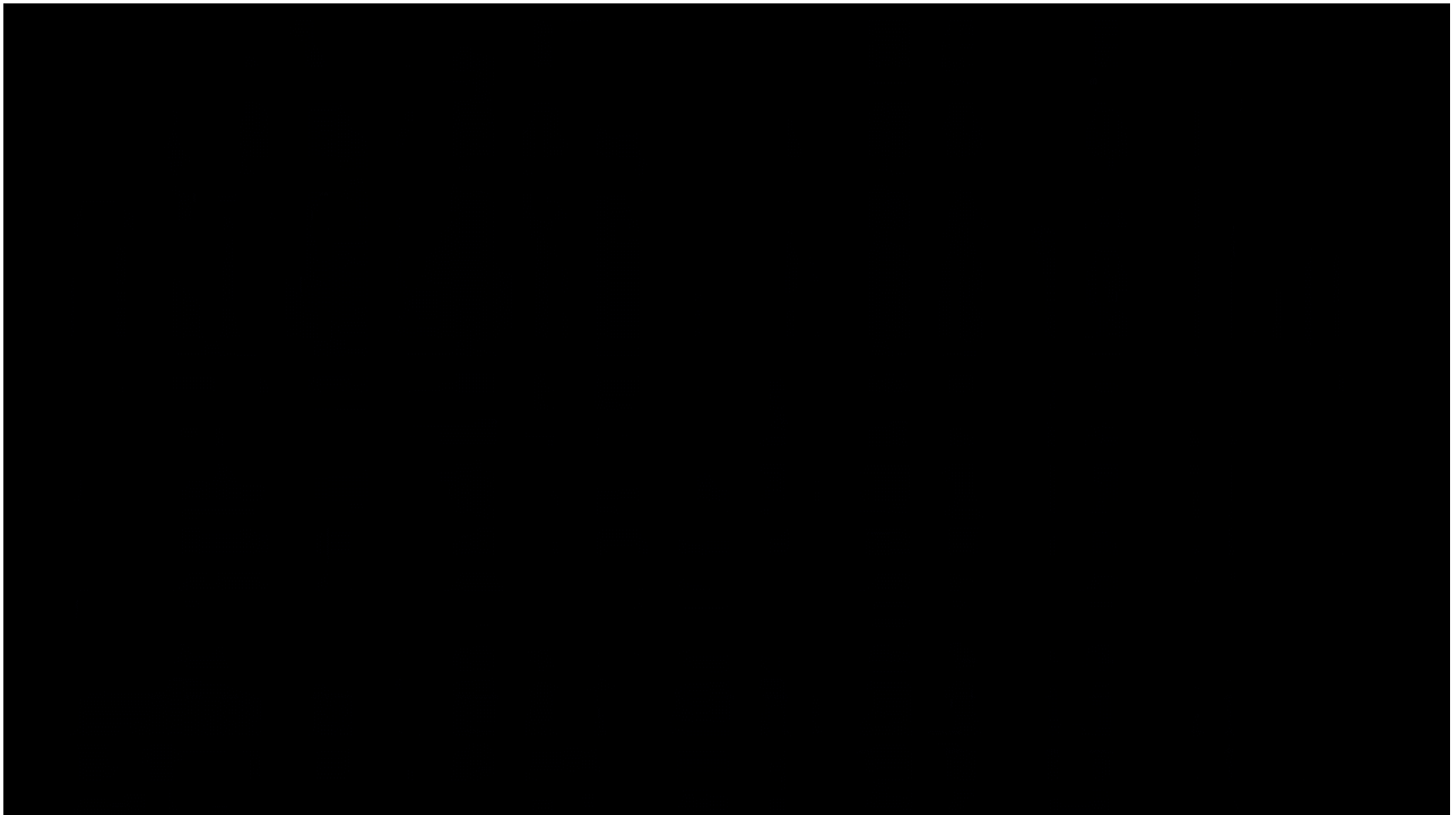
## Standard for Virtual Reality and Augmented Reality

- [2048.1](#) - Device Taxonomy and Definitions
- [2048.2](#) - Immersive Video Taxonomy and Quality Metrics
- [2048.3](#) - Immersive Video File and Stream Formats
- [2048.4](#) - Person Identity
- [2048.5](#) - Environment Safety
- [2048.6](#) - Immersive User Interface (Upcoming, not yet Active)
- [2048.7](#) - Map for Virtual Objects in the Real World (Upcoming, not yet Active)
- [2048.8](#) - Interoperability between Virtual Objects and the Real World (Upcoming, not yet Active)



# VR Motion Sickness

# Motion Sickness in VR



The background is a solid blue color with several white, curved, overlapping lines that create a sense of motion and depth. The lines are most prominent in the upper left and lower right areas, curving towards the center.

**Thank You**