

XR Device Interoperability Exploratory Group Proposal

1. Proposers

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2. Exploratory Group Scope

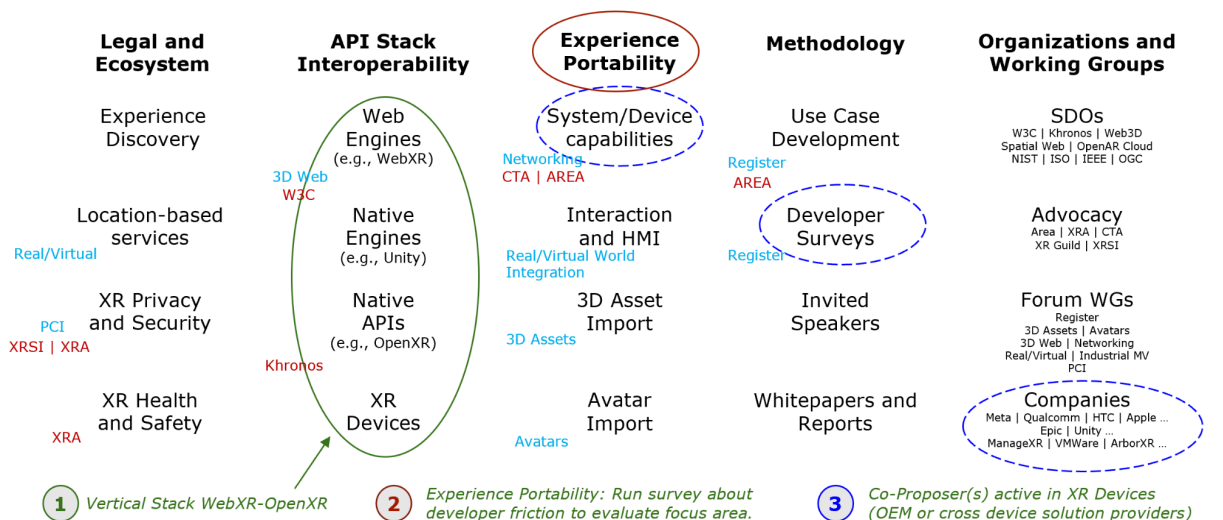
Build consensus and draft a proposed charter for an XR Device Interoperability Working Group.

3. Proposed Working Group Goals and Focus

Facilitating discussion between ecosystem stakeholders for the purpose of identifying challenges and recommending solutions for XR device and experience interoperability to help accelerate the time-to-market, performance, and useability.

Based on discussions in the Plenary and Oversight meeting during March-April this proposed Domain Group will focus on the **Vertical Stack Interoperability** (Web Engines, Native Engines, Native APIs, XR Devices) and **Experience Portability** from a developer perspective.

In short, how can we support developers to create portable experiences and what requirements will this put on vertical stack interoperability?



Proposed focus areas in Plenary #11 and Oversight #28 meetings

4. Background and Methodology

Looking at the evolution of the XR Ecosystem over the last few years, it is clear that there are friction points that slow the general adaptation both from users, app/content developers, and device manufacturers. This Working Group will analyze interoperability issues and opportunities in XR Vertical Stack Integration and Experience Portability and seek additional developer input related to these areas. Below are initial topics for exploration, to be further refined through further discussion with relevant Forum Working Groups and SDOs.

Vertical Stack - API Stack Interoperability:

- We experience that engines, frameworks, and development platforms (web based or native) in some cases limit interoperability, with developers being “locked in” with difficulties in converting to other engines and platforms.
- WebXR addresses some of these issues already but face other limitations related to for example which browser is used and their related support for standards and underlying differences in hardware.
- Despite the growing industry adaptation of OpenXR, we still see issues when it comes to making XR experiences work consistently and meet user expectations across different XR devices. This adds friction for the development of user experiences and for bringing XR experiences from one device to another as part of

an upgrade/replacement. For sure, with the OpenXR 1.1 that includes five critical capabilities which originally started as extensions/vendor specific, the situation should improve, but there is much more to do.

- In this working group we will address the issues related to API Stack Interoperability. With the web as one of the stacks being addressed we will discuss potential overlaps or synergies with the 3D Web Interoperability working group..
- There are also relatively new device capabilities such as Pass-Through - aka Visual See Through (VST) - which currently are not standardized - forcing developers to add specific vendor implementations.

Experience Portability - System/Device capabilities:

- The OpenXR support in XR devices does not mean that you'll be able to buy apps on one device manufacturer's app store and run them on a device from another manufacturer... but it does mean that developers should have a much easier time porting their apps to run on additional XR devices, if the device maker chooses to offer their apps on that XR device's app store.
- Issues today exist on the XR devices level when trying to port experiences (different chipsets, OSs, screen resolutions, etc.). This could also hinder the user adoption of XR devices where the manufacturers do not have the resources to create their own content platform. Time to market of a new device, showing off new and differentiated capabilities, often has a higher priority than conforming to standards.
- Newer XR devices are integrating alternative interaction methods, including the use of different solutions for eye and hand tracking, and voice. This complicates experience portability. Furthermore, creating the most immersive XR experiences requires more than just the best visuals or spatial audio technologies embedded in the XR device. To respond to user actions in real-time, XR devices need to be able to access and track information as worked on in the Real/Virtual World Integration WG.
- In this working group, we will address the "System/Device capabilities" as it relates to Experience Portability, and we will also discuss potential overlaps or synergies with the Networking working group.
- Other aspects of Experience Portability are "Interaction and HMI", "3D Asset Import", and "Avatar Import", which are already addressed in different Forum working groups and we should identify any potential overlaps or synergies.

Methodology:

To get more insights into both API Stack Interoperability and Experience Portability we will do developer surveys to get some of the answers and to further understand developer pain points.

We will carry out Developer Surveys using established community forums/discussions groups such as:

- WebXR Discord server (Server link: <https://discord.gg/webxr>)
- Khronos Discord Server (and in particular the OpenXR channel, <https://discord.com/channels/1044671358782681128/1044672025752514640>)
- Wonderland Engine Discord Server: <https://discord.wonderlandengine.com/>
- Wolvic XR Browser Discord Server: <https://discord.gg/vHCMQhCEUu>
- Open Metaverse Foundation Discord Server: <https://discord.gg/6xZ4YBKtwf>
- Metaverse Standards Forum Discord Server: <https://discord.gg/HgyaJZT4ku>
- Web We Want Community <https://webwewant.fyi/> on Twitter

This Working Group will also contribute to any surveys initiated by the Standards Register Working Group.

5. Deliverables

To address this need of coordination and ensure a healthy ecosystem development, the deliverables of this proposed group will be the following:

- Identification and capture (documentation) of "requirements" for XR Device interoperability.
 - Vertical Stack (Interoperability) - Web Engines (e.g WebXR), Native Engines (e.g Unity), Native APIs (e.g OpenXR), XR Devices.
 - Experience portability from a developer/content provider perspective - System/Device capabilities.
- Collect use cases and functional requirements for XR devices including interaction (gestures, voice, eyes). Including reference/reuse information collected by AREA (<https://thearea.org/area-ason-online-tool-form/>) AREA LEADER: <https://www.linkedin.com/in/sagemark/>
- Coordinate with other Forum Domain Groups on technical aspects to ensure expectations for End-to-End XR Ecosystem are met.

6. Coordination

The Group shall coordinate with the Standards Register Working group to identify and reach out to relevant organizations such as AREA, W3C, Khronos Group, CTE, XRA, XRSI. Also see the mind map diagram on page 1.

7. Risk Factors

- Lack of interest from device OEMs or other stakeholders to adopt recommendations from this Working Group. Business interests of closed vs open ecosystems can have a higher priority.
- Time to market can have higher priority than the availability and maturity of standards.
- Developers cannot see a viable return on investment on portable experiences.

8. Target timeline to create proposed Working Group charter

2nd quarter 2024.

9. Additional Contributors (Participants Main Contact to be added)

So far we have received the thumbs up from the following individuals:

Neil Trevett, Khronos, Vertical Stack

Ben Erwin, Powersimple, Use Cases and Experience Portability

10. References

Please see the [Forum Topic Brainstorm Sheet](#), and the XR and UI section including existing upvotes.

Please listen to recordings from Oversight Meeting #27 & #28 and Plenary Meeting #10 & #11.

For feedback, please also use our [Discord Channel](#)