



COLLABORA

FOSS Virtual & Augmented Reality

Update



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Open First



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Open First





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Talk to me about

- XR, VR & AR
- [Volt Programming Language](#)
- Voxel/SVO rendering
- FOSS & Society
- Joining Collabora!

Open First





- **OpenXR**
- **Projects**
- **Monado Status**
- **Wrapping up**



Open First



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OpenXR

OpenXR

- Open standard
- Khronos Group
 - Provides IP framework
 - Allows engineers to get down to business
- Collaboration by companies
 - Collabora, Valve, Epic, Unity, Facebook, Microsoft...





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AMD antilatency AREA arm AT L A T L AUTODESK

blender COLLABORA DisplayLink X R EPIC GAMES ERICSSON facebook Google

HAPTICS Industry Forum hp HOLOCHIP htc HUAWEI imagination intel

LG immersion MTA SZTAKI LW logitech LUNAR G magic leap

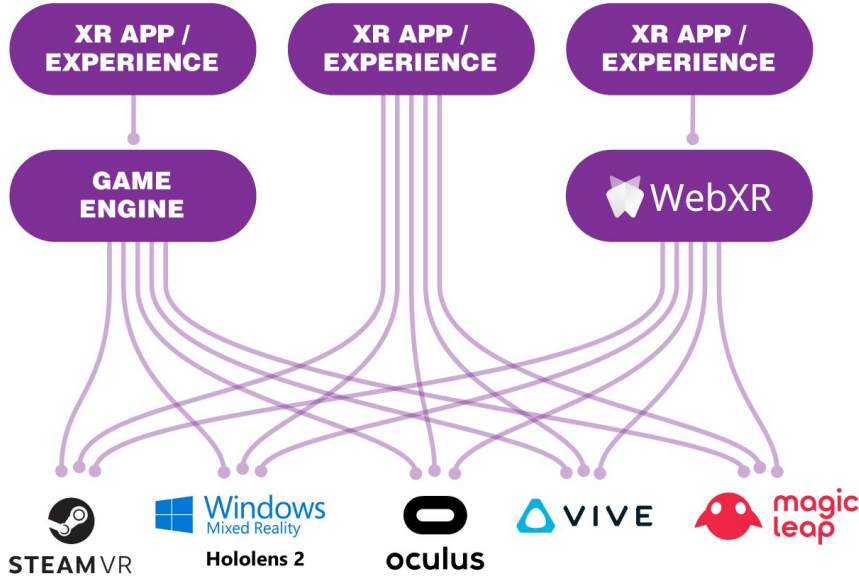
MEDIATEK Microsoft moz://a National Institute of Standards and Technology NOKIA NVIDIA

oppo Pico pluto Qualcomm RAZER SAMSUNG

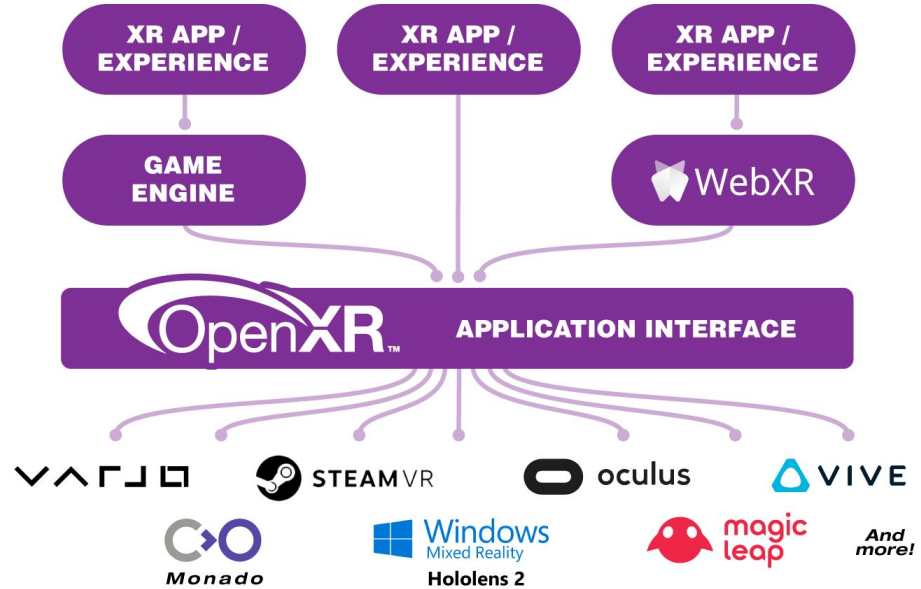
SILICONARTS SONY tobii ultraleap unity UNIVERSITY OF ILLINOIS URBANA-CHAMPAIGN

UX3D VALVE V A F J O VeriSilicon 兆芯 zSpace

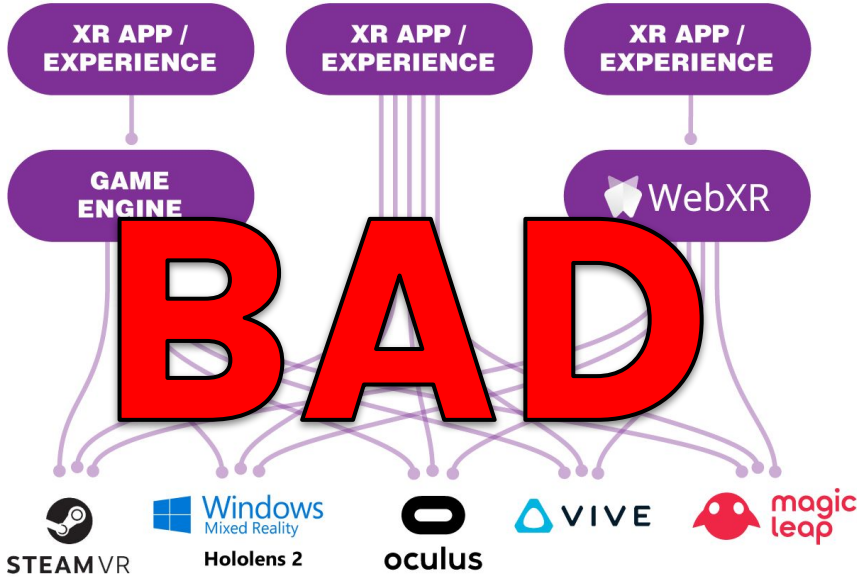
Open First



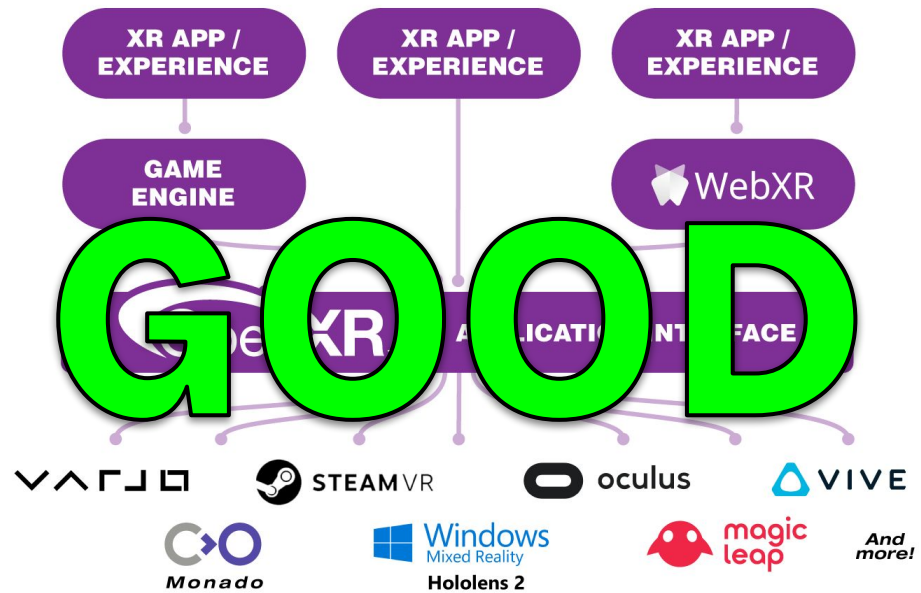
Before OpenXR: Applications and engines needed separate proprietary code for each device on the market.



OpenXR provides a single cross-platform, high-performance API between applications and all conformant devices.



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OpenXR provides a single cross-platform, high-performance API between applications and all conformant devices.

Input

- Action based
 - App says this is “teleport” action
 - Then provide suggested bindings to hardware
- Not button
 - User and Runtime know what a action does
 - Can provide alternatives
 - App can give context
 - Accessibility





Open First

What does it give us?

- Portable applications
 - Less friction moving between platforms
 - Including different input
- A way to fight wall gardens



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Projects

Hardware and drivers

- Project North Star
- SimulaVR
- OpenGloves
 - LucidVR
- Monado
- ILLIXR
- OpenHMD
- libsurvive
- Basalt



Toolkits, Apps and Misc

- LÖVR
- Godot
- StereoKit
- OpenBrush
- xrdesktop
- Stardust
- ALVR/ALXR

More

- And many more...

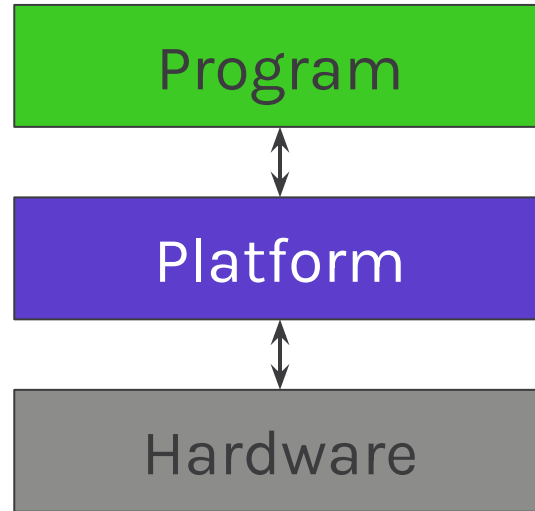
With talks

- Monado
- xrdesktop
- ILLIXR
- Project North Star
- OpenGloves
- WebXR
- Stardust
- StereoKit
- Godot
- ParaView

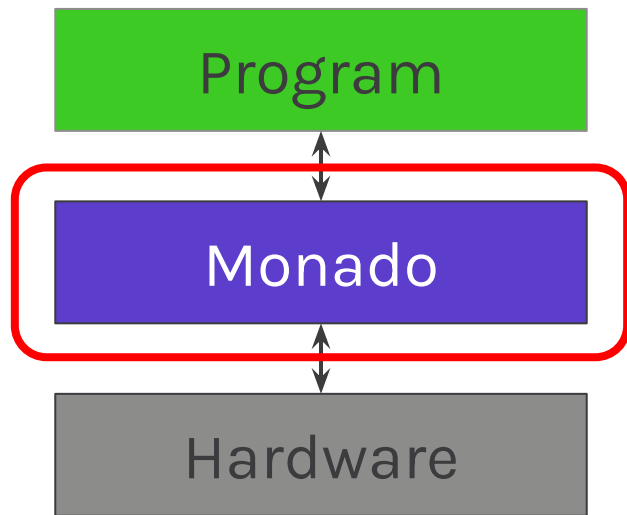


Monado Status

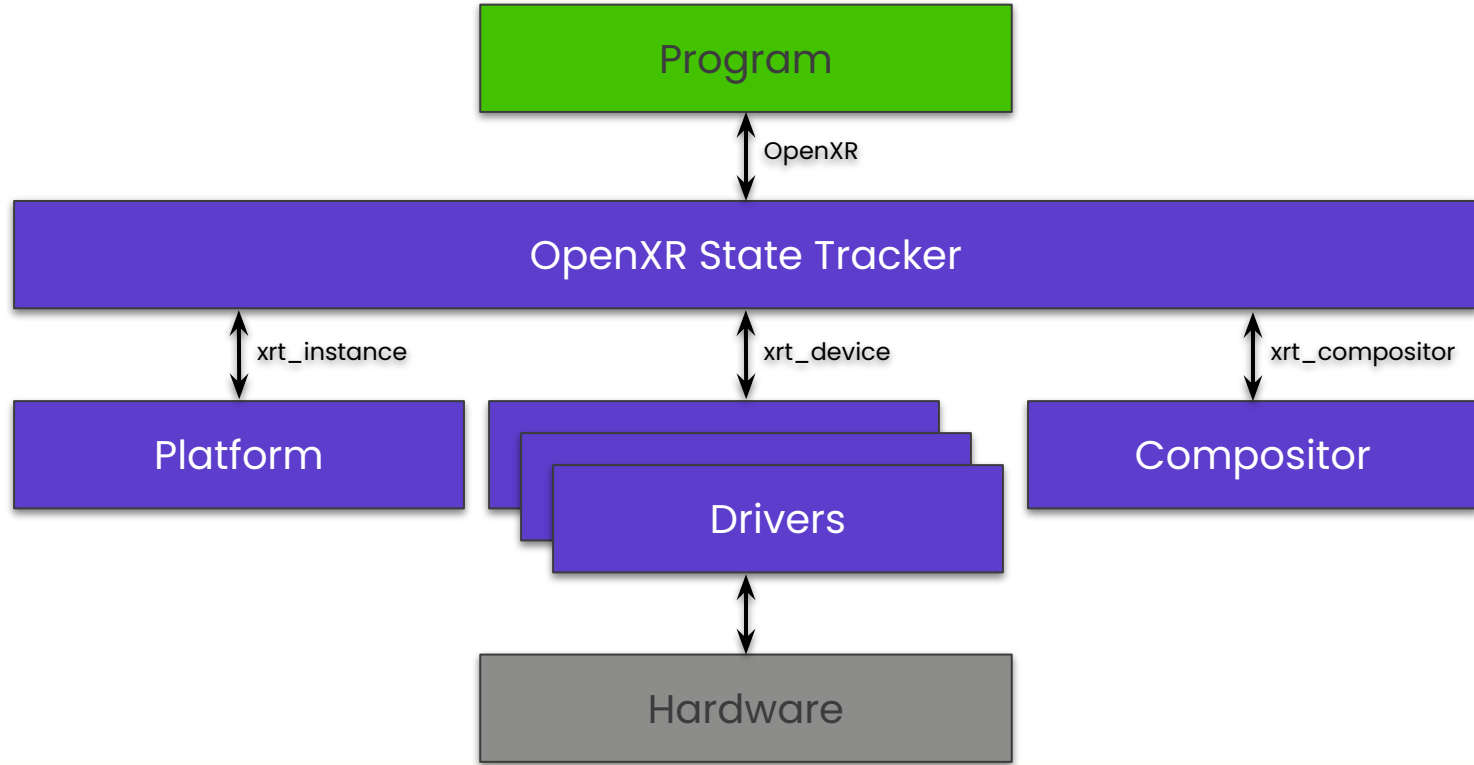
How do we XR?



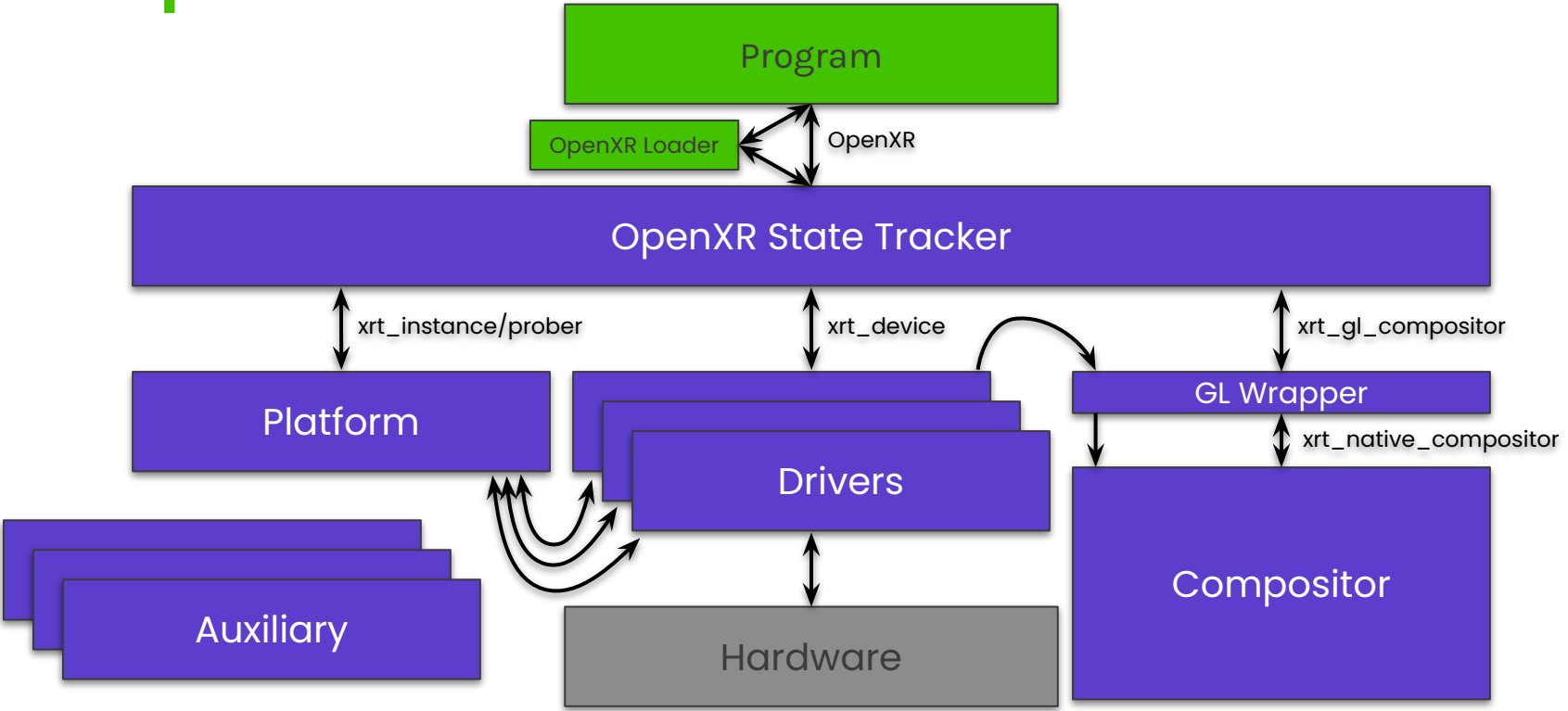
Where does Monado fit in?



Monado



Complex



Main Groups

- Platform
- Stack Trackers
 - OpenXR & SteamVR driver
- Drivers
 - NorthStar, Index, ...
- Compositor
- Auxiliary
 - Tracking, Maths and other utilities



XRT Interfaces

- Between different components
 - Auxiliary code has their own interfaces
- Purely C
- Not stable!^[1]

Monado Status

- Linux
 - Fully supported
- Android
 - Fully supported
- Windows
 - Compiles and runs
 - Features missing





- ~~30.5K~~ ~~39.5K~~ ~~86.2K~~ ~~98.8K~~ 120.6K LoC
 - Drivers: ~~6.9K~~ ~~6.8K~~ ~~22.4K~~ ~~23.1K~~ 29.0K
 - 9 12 24 26 30 drivers
 - Vive: ~~1.5K~~ ~~2.8K~~ 3.1K
 - HDK: 0.5K
 - Compositor: ~~6.6K~~ ~~5.6K~~ ~~12.5K~~ ~~13.2K~~ 18.2K
 - Auxiliary: ~~7.6K~~ ~~10.5K~~ ~~23.2K~~ ~~33.6K~~ 33.4K
 - IPC: ~~5.3K~~ ~~5.6K~~ 5.6K
 - State Trackers: ~~10.1K~~ ~~11.2K~~ ~~16.5K~~ ~~16.8K~~ 18.8K
 - Targets: ~~1.3K~~ ~~1.2K~~ ~~3.8K~~ ~~3.8K~~ 6.5K

Recent:ish developments

- Drivers
 - Rift-S driver
 - WinMR driver
- Tracking
 - SLAM
 - Hand-tracking

Recent:ish developments

- Windows
 - D3D11, D3D12, Vulkan, OpenGL
- Compute composition
 - Preemptable
 - Timewarp
- CI for all platforms
 - Linux, Android, Windows



Wrapping Up

Some thoughts

- New generation of projects

XR FOSS Community



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Open First



Open Source all day, every day

For over 13 years, we've helped clients navigate the ever-evolving world of Open Source, enabling them to develop the best solutions – whether writing a line of code or shaping a longer-term strategic software development plan.

Our team of engineers and developers are among the most motivated and active Open Source contributors and maintainers around the world. They have a passion for technology and strive to accelerate the adoption of Open Source technologies, methodologies and philosophy.

If you share this passion, and want to be part of a growing, globally distributed team, we want to hear from you!

Current Opportunities

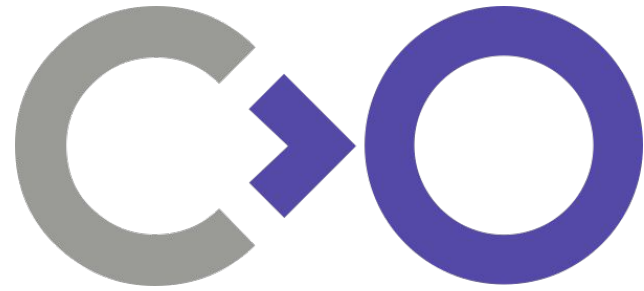
Below is a list of our current job openings. If you see a position that interests you, click on the title to learn more and apply!

More on Careers @ Collabora

- Empathy first: Driving growth through people leadership**
- Engaging in an "Open First" remote internship at Collabora**
- Why remote working can be good for people, business and environment**

Links

- <https://openxr.org>
- <https://kronos.org>
- <https://monado.freedesktop.org/>
- <https://www.collabora.com/careers.html>

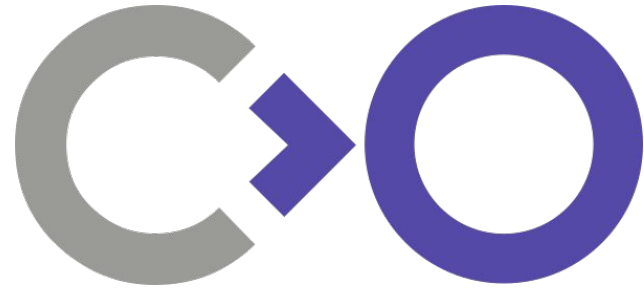


Questions?



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Thank you!



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