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Linux AR/VR

How to write apps using the OpenXR API

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Talk to me about

- XR, VR & AR
- Volt Programming Language
- FPGAs & FOSS
- Amiga (FPGA), mc68k (LLVM)
- Voxel/SVO rendering
- FOSS & Society
- Joining Collabora!

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- What is AR & VR
- OpenXR
- Status
- Wrapping up

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What is Augmented Reality?

- Augment
  - verb
  - /ɔːgˈmɛnt/
  - make greater by adding to it; increase

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What is Virtual Reality?

- I reject your reality and substitute my own
  - Dungeonmaster, 1984
    - (popularized by Adam Savage)

BURGERS
AND
BYTES
ANNUAL FOOD FESTIVAL
AUGUST 5TH
7PM TO MIDNIGHT
PASSWORD:
101
EMAIL
PHOTOS
SRS
BUSINESS
INC.
ABC
WORDS
ONLINE
PAINT
How to Job
FOR DUMB HUMANS
World's
Most
Average
Worker!
GET
BACK
TO
WORK!

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Trinitron
Multiscan 17sf II
50 100% 0%
AMMO HEALTH ARMS ARMOR
BULL 50 200
SHEL 50
ROKT 50
CELL 300
SONY
IBM
Intel Pentium 100

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What is AR & VR?

- Also known as XR
- X = A | V
- Not eXtended Reality

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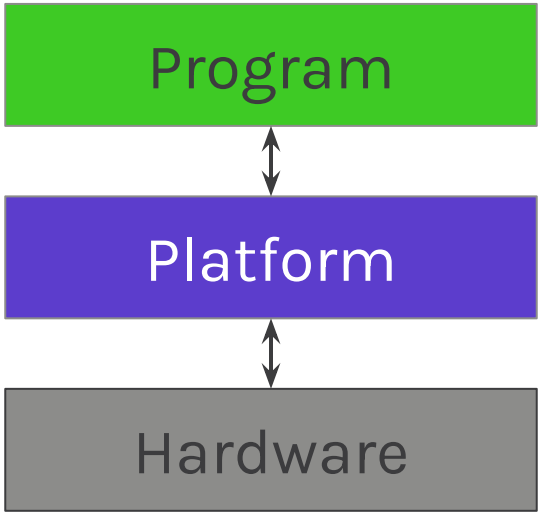
How do we XR?



How is XR formed in the past?

- OpenHMD
- OSVR

- SteamVR
- Oculus

But!

Wow

- OpenHMD
- OSVR :D

Much Freedom

No source

- SteamVR
- Oculus :(

Such Sad

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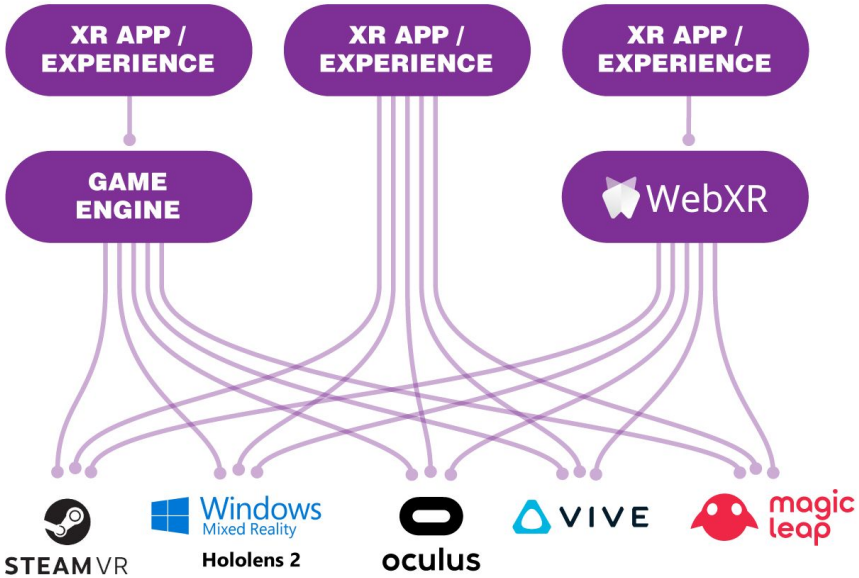

Before OpenXR: Applications and engines needed separate proprietary code for each device on the market.

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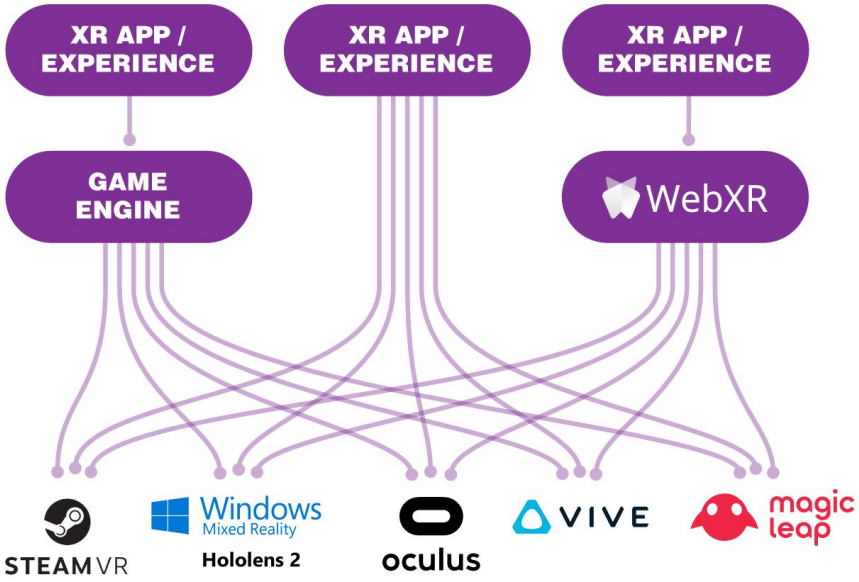

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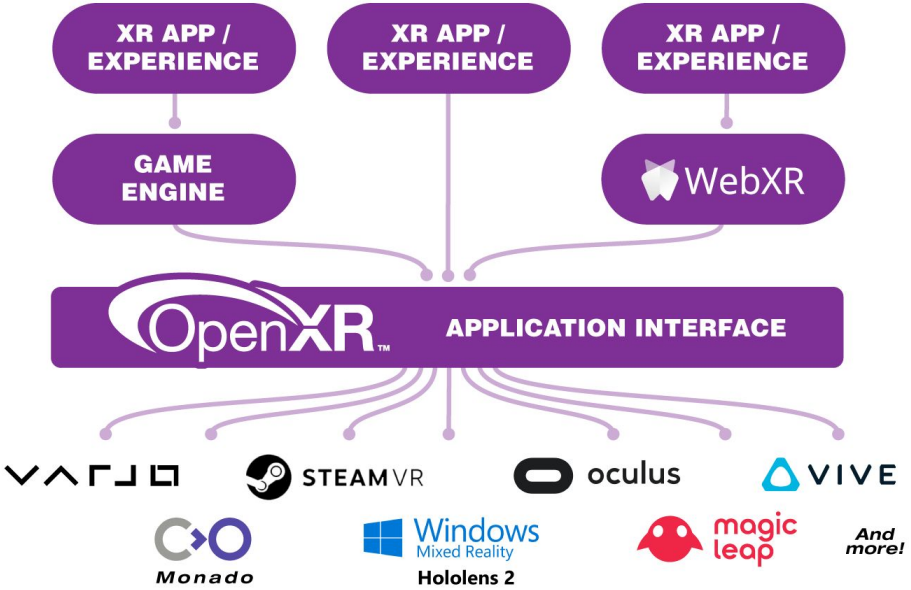

OpenXR provides a single cross-platform, high-performance API between applications and all conformant devices.

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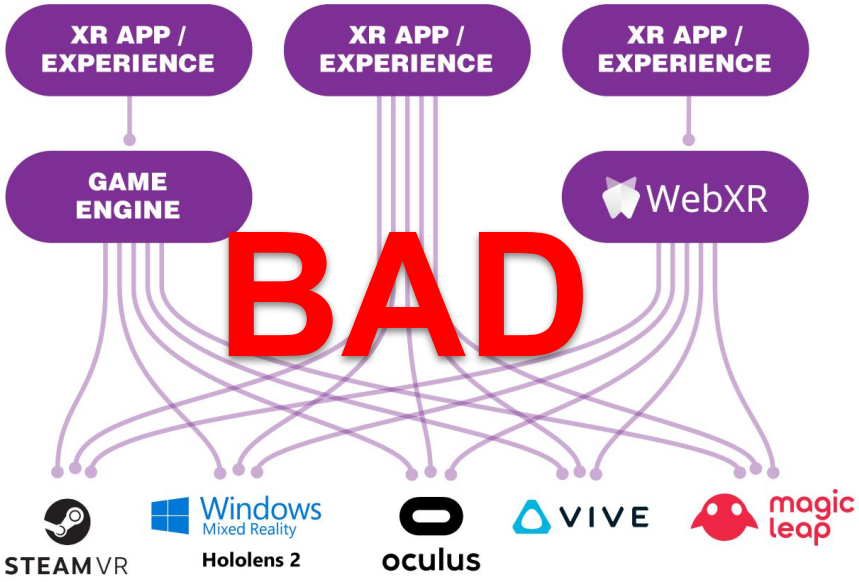

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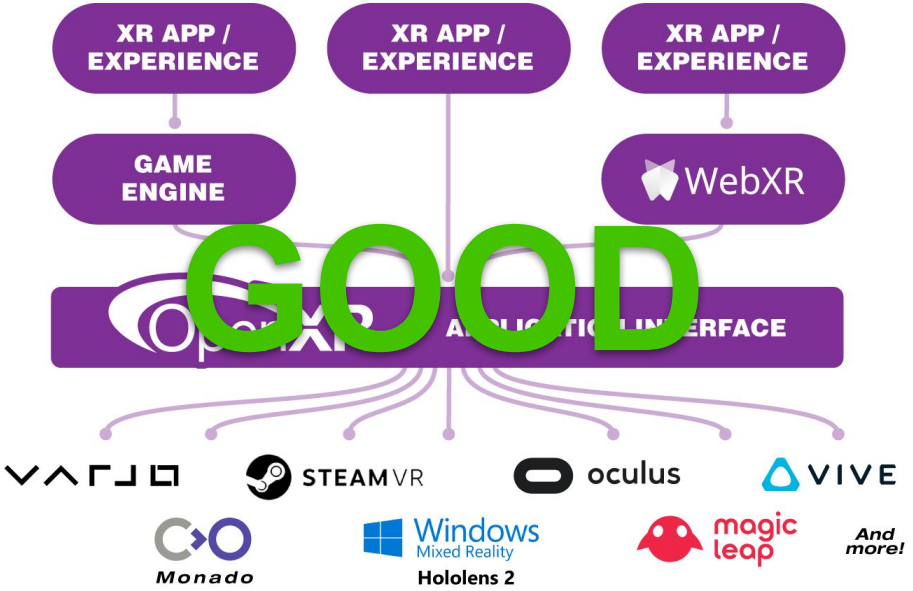

OpenXR provides a single cross-platform, high-performance API between applications and all conformant devices.

What is Khronos

- Industry group
  - OpenGL, Vulkan and ….
  - A foreign thing for most FOSS people

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OpenXR

- C API
- API feel inspired by Vulkan
- Bindings
  - Python - https://pypi.org/project/openxr/
  - Rust - https://github.com/Ralith/openxrs

Portable

- OS/Distro
- Hardware

Input

- Action based
- Not button

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More information

- Unifying Reality: Building Experiences with OpenXR
  - By Ryan Pavlik
  - https://youtu.be/F6jZCwko1Qs
- MSDN
  - https://docs.microsoft.com/en-us/windows/mixed-reality/develop/native/openxr

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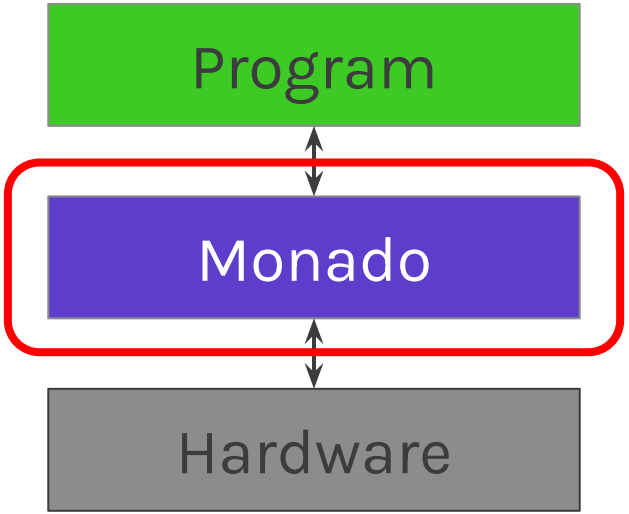
Status on Linux

- Available on Linux
- Monado
- SteamVR

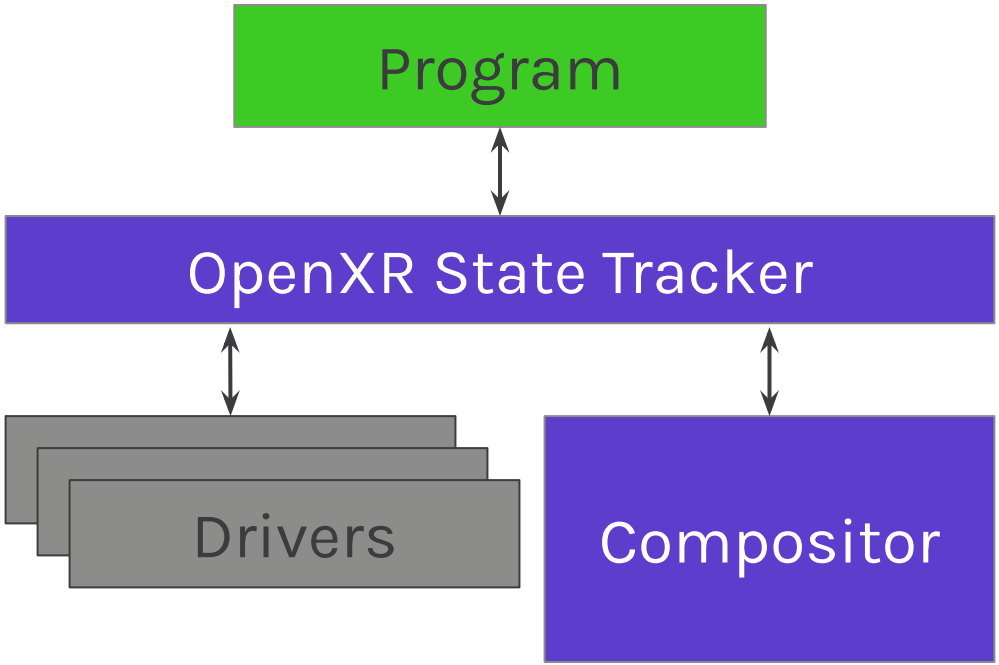
Engines

- FOSS
  - GODOT - https://godotengine.org/
  - LÖVR - https://lovr.org/
  - Blender
- Proprietary
  - Unreal (Linux supported in 4.27, out soon)

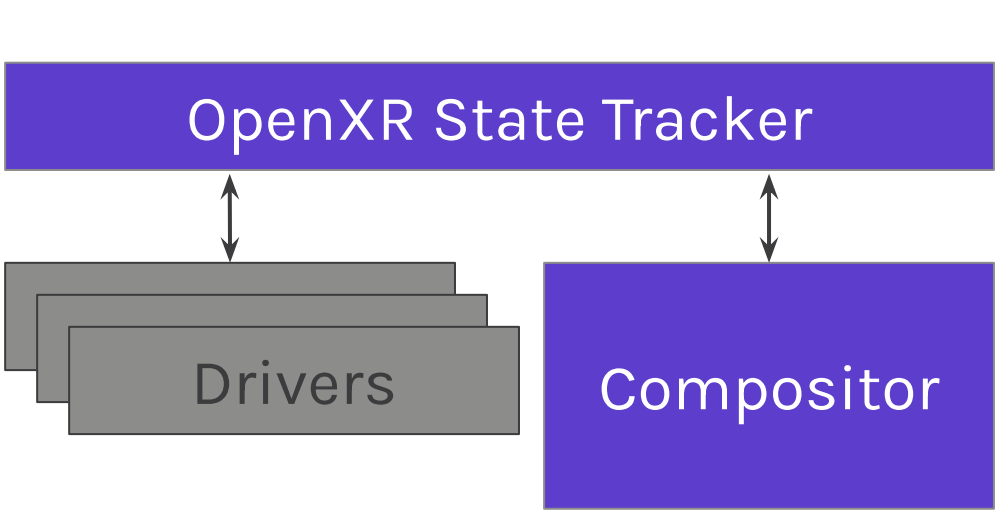
Where does Monado fit in?



Monado



Monado



utils

math

os

gui

prober

tracking

Eigen

OpenCV

imgui

Info

- Info
  - https://monado.freedesktop.org/

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XR FOSS Community

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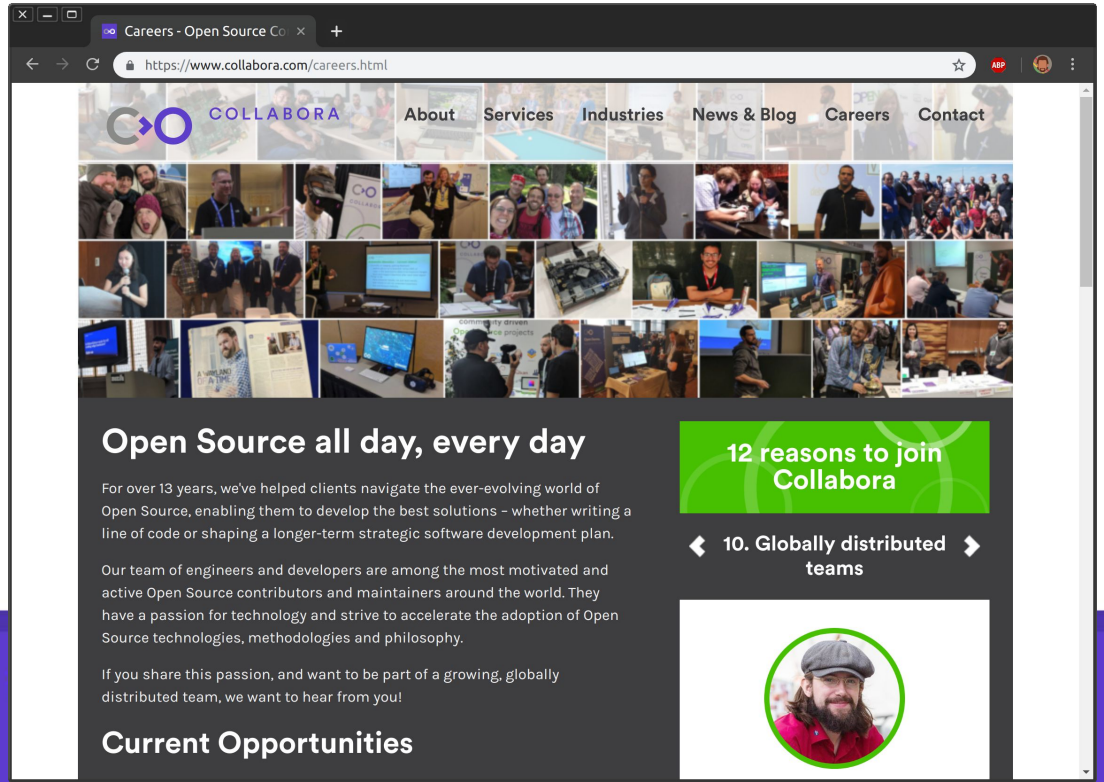
We are hiring



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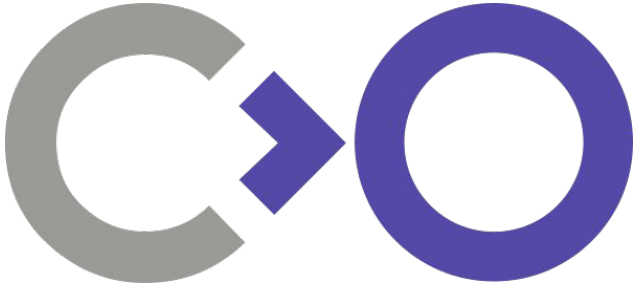
Questions?



Thank you!