

# Greenfield

An update

Erik De Rijcke

[erik.de.rijcke@udev.be](mailto:erik.de.rijcke@udev.be)

[@friedchicken@mastodon.social](https://mastodon.social/@friedchicken)

[greenfield.app](https://greenfield.app)

[wayouttheresoftware.blogspot.com](https://wayouttheresoftware.blogspot.com)

[github.com/udevbe/greenfield](https://github.com/udevbe/greenfield)

# What is Greenfield?

- A Wayland compositor running entirely in your browser.
- Controls remote (X)Wayland applications from different servers.
  - Fast enough for games!
- Runs Wayland applications compiled to WebAssembly directly in your browser.
  - Also JavaScript applications.

# Why is Greenfield?

- Wouldn't it be cool if we had...
  - A true ubiquitous personal computer.
  - A single interface for all your applications and data.
  - No attachment to a single piece of physical hardware.
  - No attachment to a single provider/SaaS.



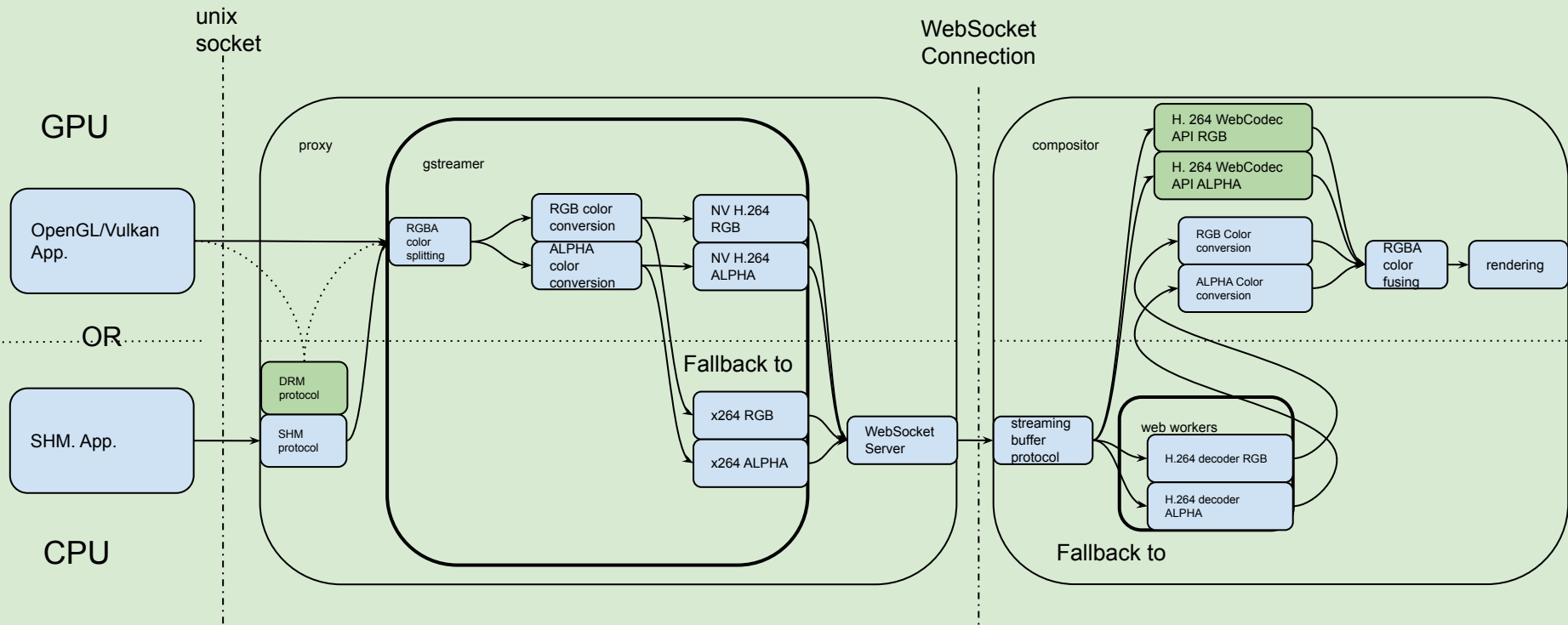
# How is Greenfield?

- Browser: TypeScript, C (WebAssembly) and WebGL.
- Server: TypeScript (I'm so sorry) and C.
  - I promise to rewrite it in Rust okay?
  - Also has a specialized implementation for k8s.
- Blood, sweat & tears.



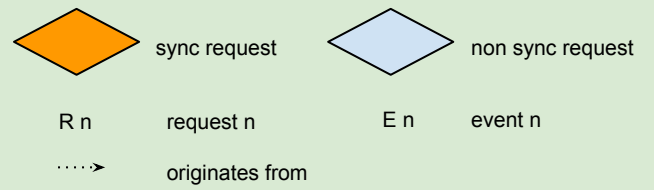
# A complicated picture about remote rendering

text too small for people in the back.

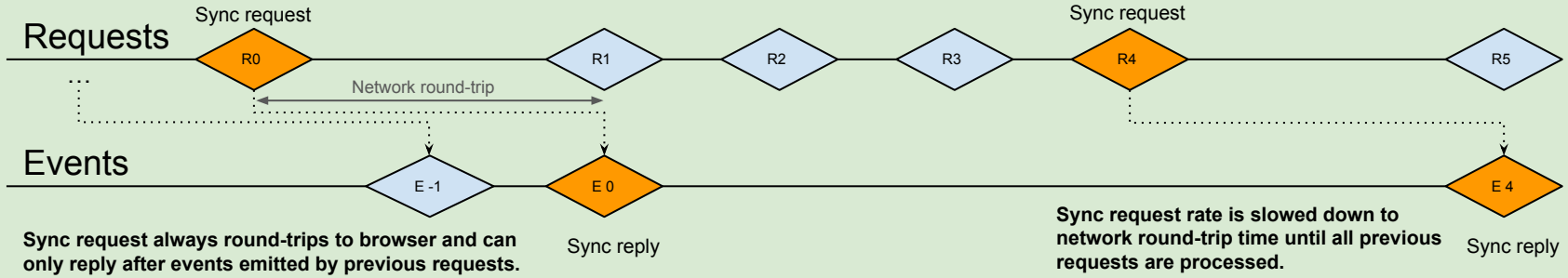


## The roundtrip latency problem

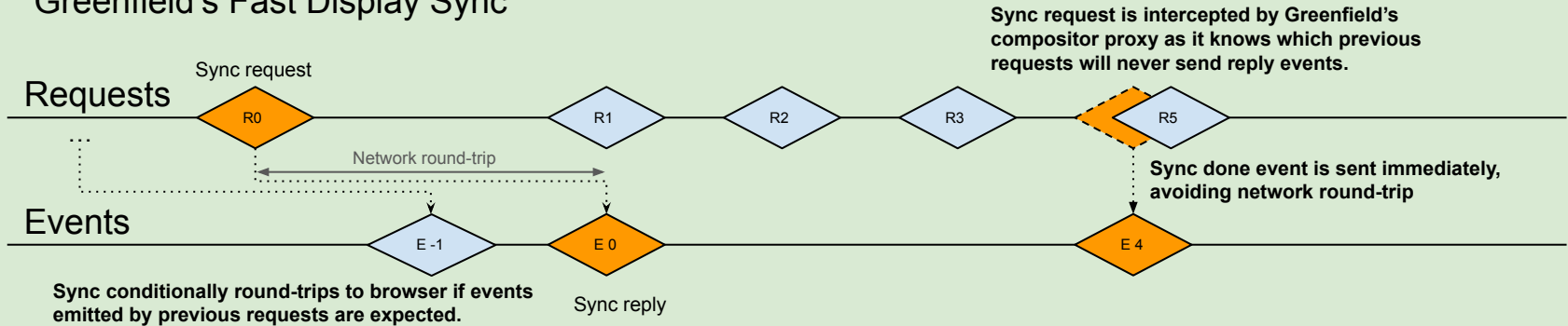
- Need for a truly async protocol.
- Predictive frame callbacks.
- Fast sync.
- Good enough for gaming.



## “Classic” Wayland Display Sync



## Greenfield’s Fast Display Sync

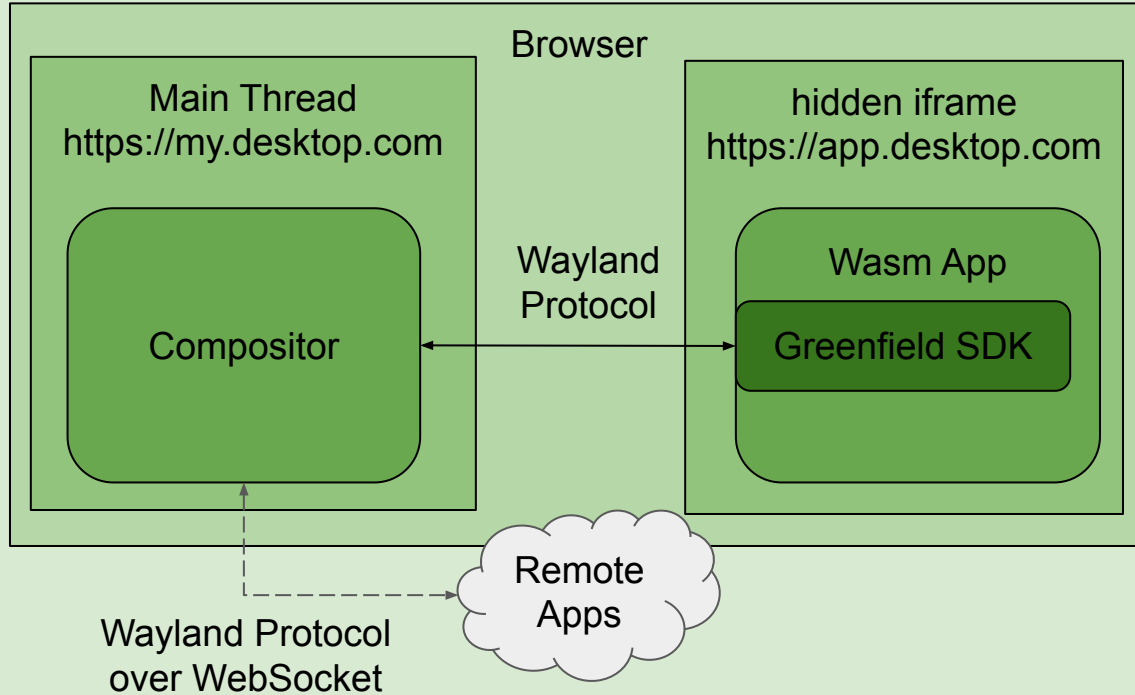


# WebAssembly Applications in a bullet list

- Greenfield SDK.
  - Based on Emscripten.
  - Somewhat POSIX compatible.
    - Need a Linux WASM port.
- Core Wayland Protocol + XDG Protocol.
- SHM buffers.
- WebGL through mesa (WIP).



# WebAssembly Applications in a green diagram

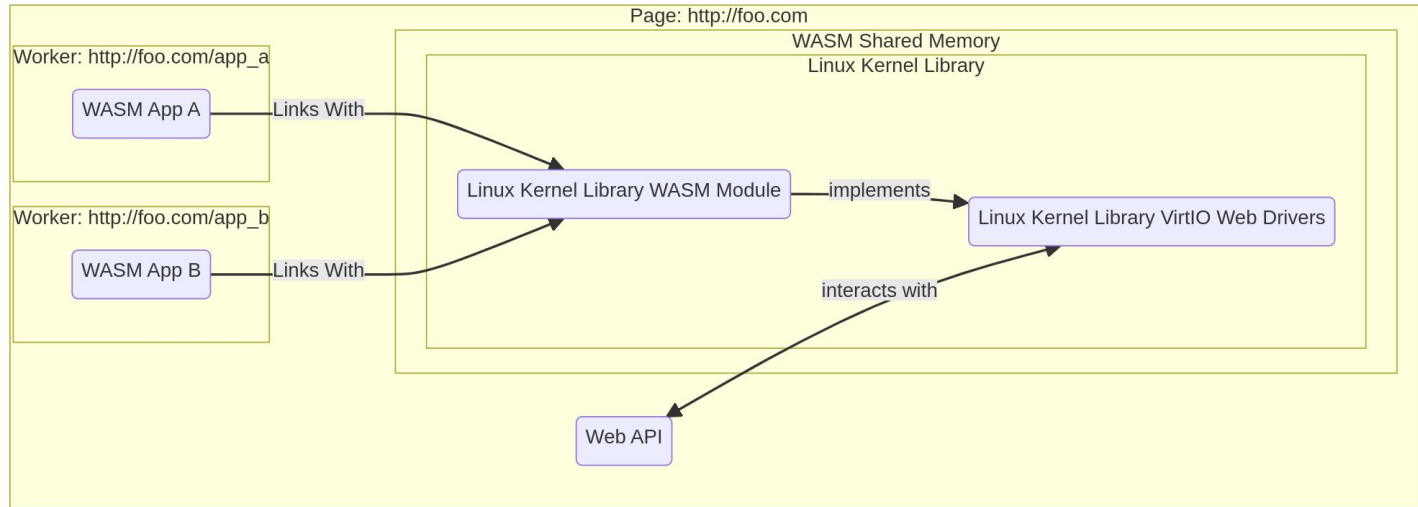


# Future

- Sound.
- Implement more Wayland protocols.
- Unified remote/browser/local filesystem.
- WASM32 port of Mesa to WebGL.
  - WebGL Wayland protocol already exists.
- Linux kernel port to WASM32.
  - ASM.js POC already exists.
  - This sh\*t is hard yo!
  - But think of the possibilities!



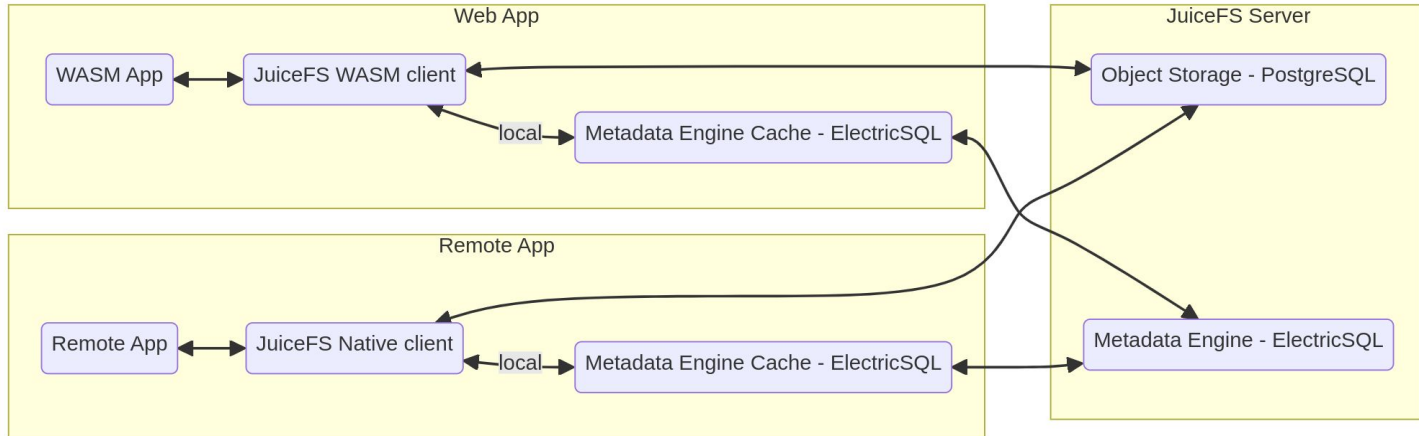
# A yellow diagram of a possible Linux WASM32 port



+



# Another yellow diagram but of a possible single user remote file system



~~Hammer~~ Demo Time!

STOP....



# You have questions?

# I have answers!

Erik De Rijcke

[erik.de.rijcke@udev.be](mailto:erik.de.rijcke@udev.be)

[@friedchicken@mastodon.social](https://mastodon.social/@friedchicken)

[greenfield.app](https://greenfield.app)

[wayouttheresoftware.blogspot.com](https://wayouttheresoftware.blogspot.com)

[github.com/udevbe/greenfield](https://github.com/udevbe/greenfield)