

# Does your GPU work with free graphics drivers?

Alyssa Rosenzweig

Software Engineer

[alyssa.rosenzweig@collabora.com](mailto:alyssa.rosenzweig@collabora.com)

# Status

- Intel ✓
- AMD ✓
- VideoCore ✓
- Mali ✓
- Adreno ✓
- Vivante ✓
- NVIDIA ✓

# Status

- Intel ✓
- AMD ✓
- VideoCore ✓
- Mali ✓
- Adreno ✓
- Vivante ✓
- NVIDIA ✓
- Imagination ✗

# The Past

- Downstream kernels
- Proprietary userspace
- No documentation
- Devices EOL after 5 years
- A distant memory...

# The Present

- Upstream-first
- Free kernel, free userspace
- Machine-readable architecture docs (XML)
- Long-term maintenance
- Cross-vendor collaboration


# The Present

We aren't disrupting the status quo...

# The Present

We aren't disrupting the status quo...

...we are the status quo.



**Case  
Study**

**VideoCore**




# Before

- Blob, coprocessor in charge
- Reverse-engineering + pressure = change
- Eric Anholt, Graphics Ninja, enter Stage Left

# After

- OpenGL ES 3.1, OpenGL 2.1, Vulkan 1.0
- v3d, v3dv **shipping in production**  
(Raspberry Pi 4)
- XML architecture description
- Conformant!



**Case  
Study**


**Freedreno**

# Before

- Blob
- Rob Clark, Diviner of Hardware, to the rescue
- Red Hat?

# After

- OpenGL ES 3.2[\*], OpenGL 3.3, Vulkan 1.0
- Google picks up the tab?
- Valve?
- **Freedreno shipping in Chromebooks**
- We don't need Qualcomm blobs!



**Case  
Study**

**Panfrost**

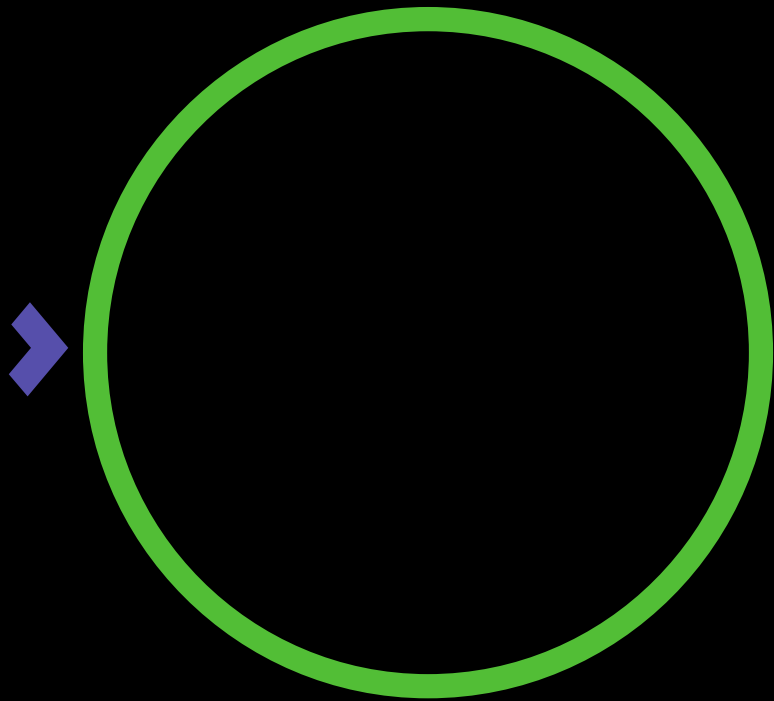
# Before

- Blob
- Connor Abbott, Wizard Of Mesa
- Me, High School Witch
- Familiar story..

# After

- OpenGL ES 3.0, OpenGL 3.1, and counting
- Q3'20: “**Arm** are now working together with Collabora to provide us with...  
**documentation**”
- We don't need reverse-engineering!
- Mali T760+, G71+
- Pinebook Pro!





# Challenges

# Firmware

- Lot of work!
- As an activists, do we care?
- (Yes, with caveats)

# Vulkan

- Lot of work!
- As an activists, do we care?
- (Yes, with caveats)

# OpenCL

- Lot of work!
- As an activists, do we care?
- (Yes, with caveats)

# Thank you

```
Message {  
  config {  
    priority: "high"  
    body: "Collabora is hiring" // Many open  
positions  
    recipient: "you" // Please  
join us  
    calltoaction: "http://col.la/join"  
  }  
}
```