



Vulkanised!

Experience from game devs pioneering with Vulkan

Khronos UK

Agenda - Morning

10:00 - Welcome and introduction

- Tom Olson, ARM

10:15 - Driving Change: Vulkanising Mad Max

- Alex Smith & Marc Di Luzio, Feral Interactive

11:00 - Vulkan Multipass case study

- Hans-Kristian Arntzen & Marius Bjørge, ARM

11:45 - How to keep your GPU fed without being bitten

- Tobias Hector, Imagination Technologies

12:30 - Lunch break



Agenda - Afternoon

13:30 - Getting Serious with Vulkan

- Dean Sekulić, Croteam

14:30 - Bringing Vainglory to Vulkan

- Fred Garnier, Samsung Electronics

15:00 - Rendering Galaxy on Fire 3: Manticore with Vulkan on Mobile Devices

- Johannes Kuhlmann, Deep Silver FISHLABS

15:45 - Panel discussion: Worst practices!

- Learning from our mistakes (and those of others!)

16:30 - Buses leave to go to the Cambridge Beer Festival

- Discussion, networking, and the Vulkan pub quiz!

Introduction: Vulkan's First Year

Tom Olson, ARM
Vulkan Working Group Chair

A New Kind of API

Vulkan design goals

- Clean, modern architecture
- Portable across desktop and mobile
- Multi-thread / multi-core friendly
- *Efficient, predictable performance*

Key principles

- Explicit control - no driver magic
- Heavyweight SW functions moved to external tools



A New Philosophy

Community-facing and responsive

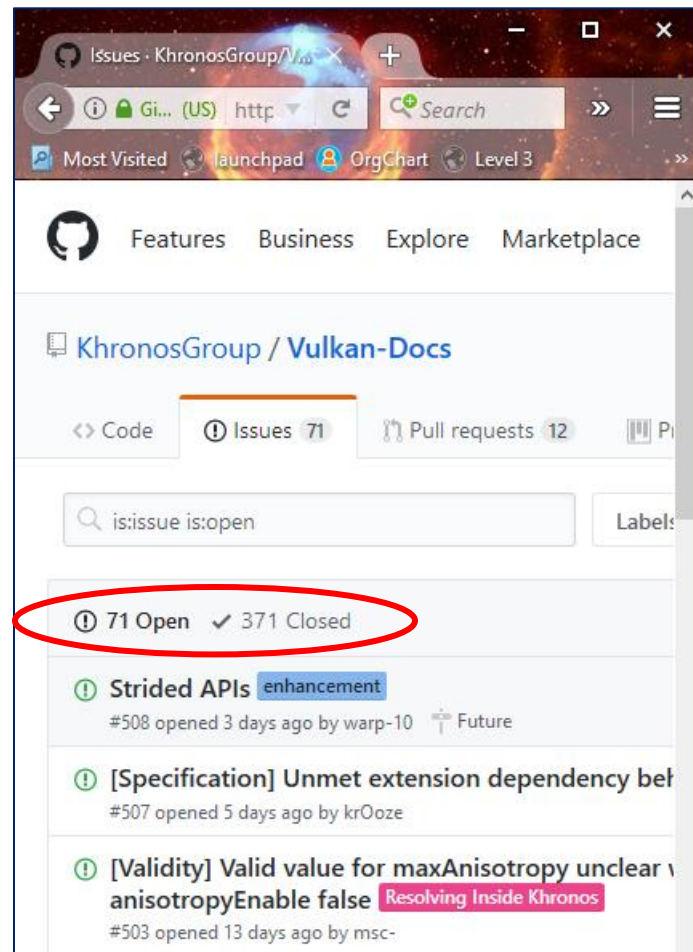
- Partner with developer community

Strong commitment to complete releases

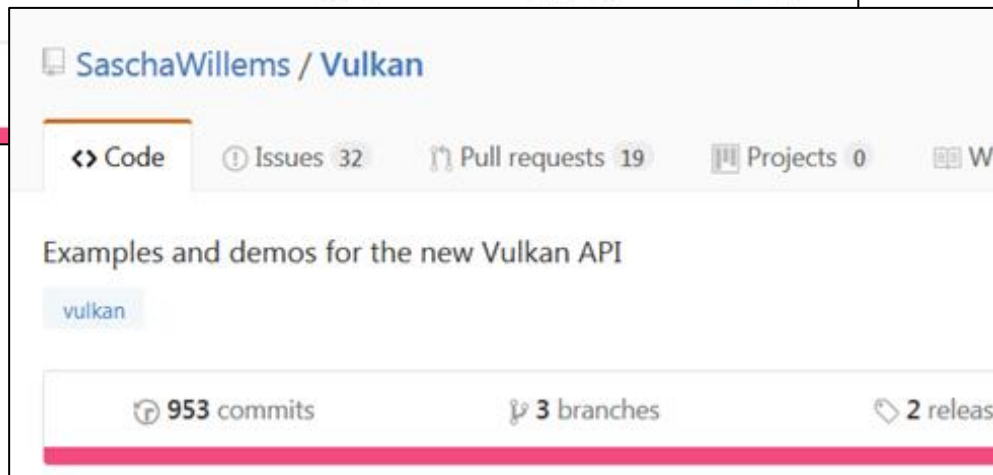
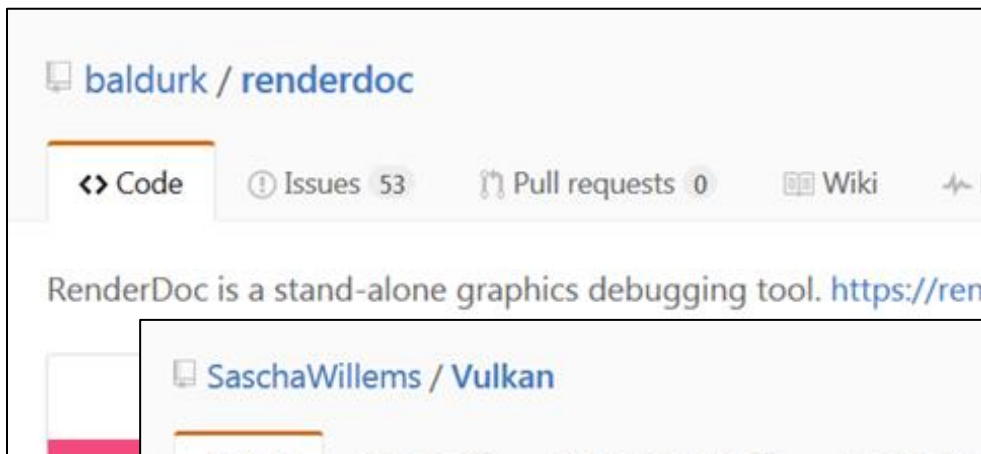
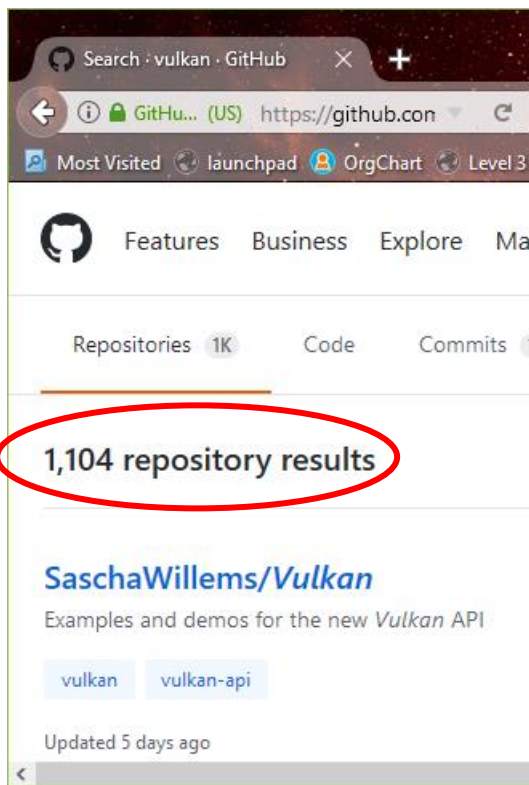
- Implementations available at release
- Compiler, loader, validation tools
- Conformance test

Strong commitment to open source

- Conformance test
- SDK (ICD loader and validation layers)
- HLL shader compiler
- Specification source



A Growing Community



Adoption - Hardware

Desktop

- Production drivers from all leading GPU vendors
- Linux and Windows



Mobile

- Galaxy S7 / S8, Mate 9, Google Pixel/Nexus devices, Nintendo Switch, NVIDIA Shield, ...
- Standard interface exposed in Android 7.0



Adoption - Games and Game Engines



Keeping the promise

Eurogamer.net

Home Articles DOOM 4 PC

Doom's Vulkan patch is a PC performance game-changer



DOOM Vulkan port –
“30-40% increase in
game performance”



ARM 'Lofoten' demo – “15%
reduction in total system power...”

Unity – “...we've seen a rendering performance improvement out-of-the-box up to 30-60%...”



Recent work

- **Conformance test improvements**
- **Bug fixes**
 - KHR_maintenance1
- **KHX - A new class of extension**
 - For experimentation and feedback
 - Not for use in production applications
- **New functionality**
 - KHX_external_* - sharing external memory and semaphores
 - KHX_device_group* - multi-GPU systems
 - KHX_multiview - for stereo and cubemap rendering

Vulkan today

- Vulkan momentum has exceeded our expectations
- Installed base is growing rapidly
 - Standard in desktop driver packages
 - Exposed in Android 7.0
 - Supported in the leading game engines
- There is an active and growing developer community
 - Khronos-supported tools and feedback at <https://github.com/KhronosGroup/>
 - ..but look at what the wider community is doing!
- Join us!
 - Use the API
 - Give us feedback on Github