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

1,104 repository results

Examples and demos for the new Vulkan API

RenderDoc is a stand-alone graphics debugging tool. https://renderdoc.org
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

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

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

ARM ‘Lofoten’ demo – “15% reduction in total system power…”
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