What is Vulkan?

• A modern graphics and compute API for programming GPUs
  - Logical successor to OpenGL / ES
  - Radically cross-platform

• What’s different about it
  - Programming model matches the hardware
  - Explicitly asynchronous & parallel

• Programmer responsibilities
  - Dependency tracking
  - Synchronization
  - Memory and object lifetime management
  - Writing correct code!
What is Vulkan for?

One thing, definitely:

There’s a reason for that:
But is Vulkan just for games?

Of course not!

**PRESENTATION**

**Vulkan Without Boundaries: Case Studies from the Real World**

**Time**

Wednesday, 11 August 2021, 1pm - 3pm PDT
Vulkan Cross-Platform Compute Case Study: Autodesk Fusion 360 Simulation
Jerran Schmidt, Autodesk

Autodesk Fusion 360 uses Vulkan for cross-platform post-processing and display of simulation results.
Portability Dev Case Study: NAP Framework
Coen Klösters, NAP Framework

NAP Framework uses Vulkan to pre-visualize interactive installations and render complex scenes for interactive experiences.
Light field rendering from ray tracing
Steve Winston, Holochip

ADE by Holochip
Collaborative Visualization

The Agnostic Display Environment (ADE™) is a set of advanced rendering and input APIs that enables users to collaboratively interact with 3D data on any display device.
The News from Planet Vulkan
Tom Olson, Arm / Vulkan Working Group chair

- Adoption!
- Wicked fast ASTC encoder!
- New API functionality!
- New website!
- New applications!

The Water Planet - NASA Goddard Spaceflight Center
Used under CC-BY 2.0
But wait! There’s more!

- Vulkan SDK enhancements
  - Vulkan Configurator (vkconfig)
  - Lots of new validation checks
  - Validation layer performance enhancements
  - Debug printf

Simplify Vulkan Development with new Ecosystem Enhancements

Time:
Monday, 9 August 2021, 11:30am - 12:30pm PDT
Still more...

- Vulkan Synchronization Validation
  - Currently handles checks within a single command buffer
  - Multi-command-buffer checks in development
  - Now covers VK_KHR_synchronization2

Ensure Correct Vulkan Synchronization by Using Synchronization Validation

Monday, 9 August 2021, 10am - 11:30am PDT
Thank You!
Next Up:
Ken Russell, Google
Backup
**Where is Vulkan?**

- Desktop OSes
- Streaming platforms
- Game platforms
- Android
- Apple platforms (subset, via shim libraries)