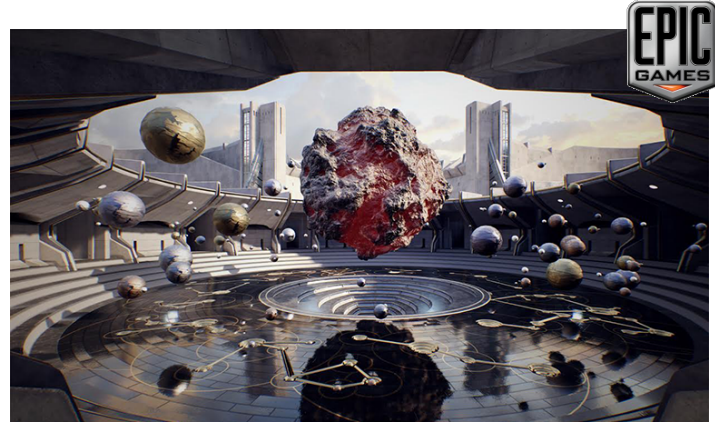# Vulkan at GDC 2017

**Game Developers Conference
San Francisco, February 2017**

Vulkan Games and Game Engines

Dota 2 on Vulkan port of Source 2

'ProtoStar' demo on Vulkan port of Unreal Engine 4

Talos Principle on Vulkan port of Serious Engine

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

DOOM on Vulkan port of id Tech 6

CRYENGINE CRYTEK

Vulkan support coming

XENKO Silicon Studio

Vulkan support in V1.8

unity

Developer Preview

Vulkan Momentum Continues to Build

DIGITAL LEGENDS ENTERTAINMENT®

DEEP SILVER

FISH LABS

COATSINK

SUPER EVIL MEGACORP

netmarble Games

FIRST TOUCH GAMES

NEXON

Games Studios publicly confirming that work is ongoing on Vulkan Titles

In first 12months :
#Vulkan Games on PC = 11
In first 18 months
#DX12 Games on PC = 19
https://en.wikipedia.org/wiki/List_of_games_with_Vulkan_support

All Major GPU Companies shipping Vulkan Drivers – for Desktop and Mobile Platforms

AMD

ARM

Imagination

intel

NVIDIA

QUALCOMM

VeriSilicon

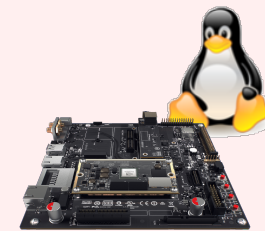**Mobile, Embedded and Console Platforms Supporting Vulkan**

Android Nougat

Nintendo Switch

Android TV

Embedded Linux

New Vulkan Functionality at GDC 2017

- **Vulkan 1.0.42 released together with new extension sets for VR and multi-GPU**
  - https://www.khronos.org/registry/vulkan/#apispecs
  - The most requested functionality by developers
  - Building Block approach provides explicit level of control

- **Enables developers with key functionality today**
  - AND gathers experience and feedback for future Vulkan core spec releases

- **First use of KHX extensions**
  - Developed by the working group – and ratified - like traditional KHR extensions
  - But will have TEMPORARY lifetime - should NOT be built into production code
  - Enables developer feedback without polluting long-term extension space

- **New LunarG SDK for Vulkan Header 1.0.42.0 released today!**
  - Includes support for all newly Released Functionality!

- **NVIDIA has published their new Vulkan beta drivers on day of spec release**
  - With full support for all the new v1.0.42 extensions
  - Plus building block Vulkan extensions for VRWorks on Maxwell and Pascal

Vulkan Extension Sets

- **Multiview extension set**
  - Render geometry to multiple surfaces, each with its own viewing parameters
  - Can efficiently render stereo pairs or environment maps

- **Sharing extension set**
  - Share memory and synchronization primitives across process and instance boundaries
  - Useful for implementing real-time rendering system such as VR runtimes

- **Explicit Multi-GPU extension set**
  - Treat multiple GPUs as a single logical device
  - Application can implement Alternate Frame Rendering, Split Frame Rendering or VR SLI

- **Descriptor Update extension set**
  - Alternate ways to update resource references between draw or compute dispatch calls
  - More efficient when a fixed set of resources must be updated repeatedly
  - More convenient for legacy applications

Vulkan Multi-GPU and Virtual Reality Support

- **Native multi-GPU support for NVIDIA SLI and AMD Crossfire platforms**
  - WDDM must be in "linked display adapter" mode
  - The most common use case – does NOT support dGPU/iGPU

- **Explicit control of how GPUs cooperate to enable a variety of operating modes**
  - AFR (alternate frame), SFR (Sequential frame) and VR SLI Stereo view rendering

- **A "device group" is a set of physical devices that support multi-GPU rendering**
  - Acts as single logical device - makes adding device group support as easy as possible
  - Only access each physical GPU in a device group when need explicit control:
  - Memory allocation and binding resources
  - Command Buffer Recording/Submission
  - Synchronization