BRIGHTER & FASTER GRAPHICS WITH NVIDIA® NSIGHT™ VSE 4.7™

An Yan Software Engineer
AGENDA

Developer Tools: NVIDIA GameWorks™

Introducing NVIDIA® Nsight™ Visual Studio Edition 4.7™

Profiling Infiltrator from Epic Games
Developing on modern GPUs can be a cloudy business...
NVIDIA DEVELOPER TOOLS

BUILD. DEBUG. PROFILE.

IDE INTEGRATION
- Visual Studio
- eclipse

STANDALONE TOOLS
- Windows
- Linux
- macOS

HARDWARE SUPPORT
CPU AND GPU DEBUGGING & PROFILING

Microsoft DirectX, OpenGL, NVIDIA CUDA, OpenGL ES, Android, GNU C/C++
PICK A PLATFORM/API
NVIDIA® NSIGHT™ VISUAL STUDIO EDITION

Accelerating Visual Computing Development

- Supports DirectX 9/11 and OpenGL
- Debug and profile graphics workloads
- Debug HLSL and GLSL shaders
- Debug and profile CUDA kernels
- Platform level profiling with system trace
- All in Visual Studio 2010, 2012 and 2013
NEW IN VERSION 4.7

- Maxwell architecture support (minus shader debugging)
- OpenGL 4.4 (minus ARB_sparse_texture)
- OpenGL capture with source code generation
- Texture histogram and range remapping
- CUDA 7.5 support
PROFILING INFILTRATOR
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View Infiltrator at http://www.geforce.cn/whats-new/articles/infiltrator-gtx-680-powered-unreal-engine-4-tech-demo-unveiled
PROFILING INFILTRATOR - CPU BOUND

Application Settings

Trace System & DirectX

Launch!
PROFILING INFILTRATOR – CPU BOUND

Runtime/Driver Consumes CPU Time...Next Generation APIs Should Help!

Summary Screen Results
PROFILING INFILTRATOR - CPU BOUND

Rich Filtering Capabilities
PROFILING INFILTRATOR - CPU BOUND

View Utilization for All CPU Cores

Find Other Processes That Steal CPU Time
PROFILING INFILTRATOR – CPU BOUND

Gaps In GPU Workloads = CPU Bound
PROFILING INFILTRATOR - GPU BOUND

Summary Results: Lots Of GPU Work!
No More GPU Work Gaps!
PROFILING INFILTRATOR - GPU BOUND

Correlate With GPUView ETW Data
PROFILING INFILTRATOR - GPU BOUND

- Full Stack Trace
- Blocking Map
- Call On CPU
- Jump To Source
PROFILING INFILTRATOR PROFILING

Scene Scrubber With Perf Markers and Dependencies

API Inspector - View All State

Events View With Filtering
PROFILING INFILTRATOR - PROFILING

Inspect All Resources

Visualize Pre-transform Geometry
PROFILING INFILTRATOR - PROFILING

Collect Draw Calls By Shared State

Call Has 100X Overdraw!

Most Expensive Bucket & Draw Call is Bokeh Filter Rendering

Visualize Pipeline Bottleneck

This Call Is Blending Bound
NVIDIA GAMEWORKS™
Web: http://gameworks.nvidia.com
YouTube: https://www.youtube.com/user/nvidiaGameWorks
Twitter: https://twitter.com/nvidiadeveloper
Q&A

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