DirectX 11 Debugging with Parallel Nsight™ 2.1 Update

March 2012

NVIDIA Parallel Nsight™

Visual Studio integrated development for GPU and CPU

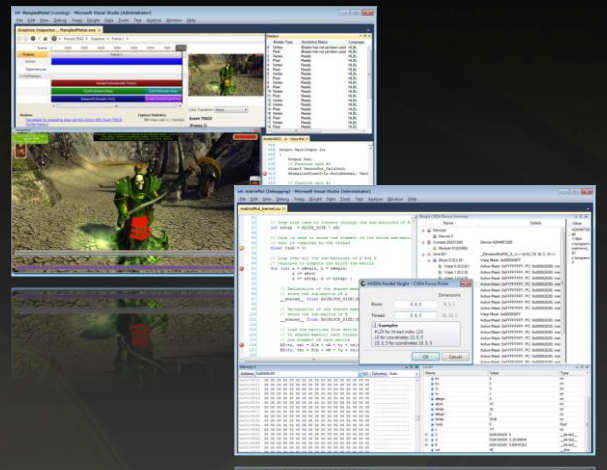
Build **Debug** **Profile**

Microsoft® Visual Studio® PARTNER

NVIDIA Parallel Nsight™

Microsoft® Visual Studio®

NVIDIA

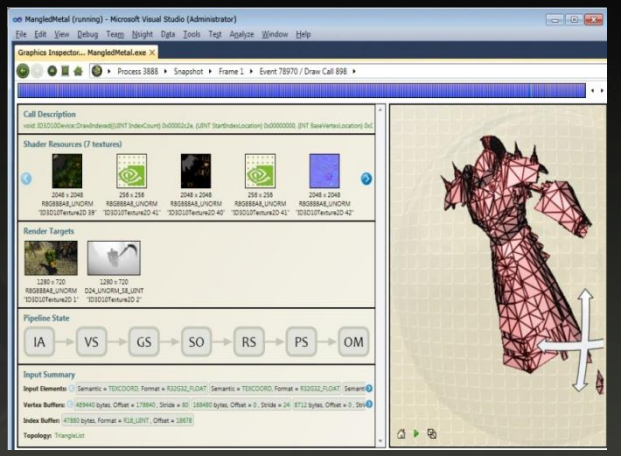


GPU Debugger

GPU native Compute and Graphics debugging

GPU breakpoints including complex conditionals

GPU memory views and exception reporting



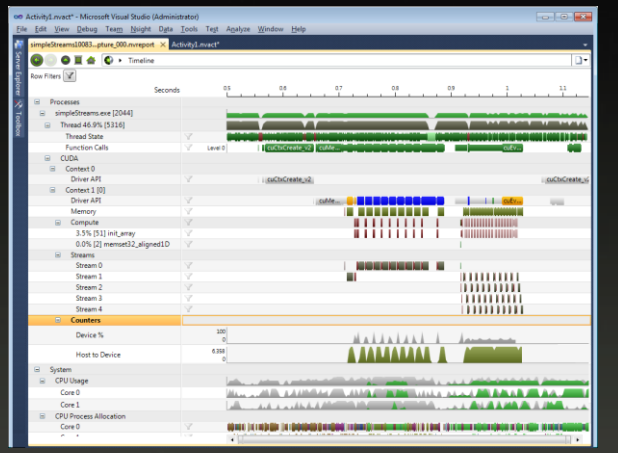
Graphics Inspector

Real-time inspection of Direct3D API calls

Investigate GPU pipeline states

See contributing fragments with Pixel History

Profile frames to find GPU bottlenecks



System Analysis

View CPU & GPU events on a single timeline

Examine workload dependencies, memory transfers

CPU/OS, Compute, Direct3D and OpenGL Trace

Free License!

One computer, one NVIDIA GPU

Host + Target (32/64 bit)

- ✓ Frame Debugger
- ✓ Frame Profiler
- ✓ Frame Timings
- ✓ System Analysis

- Install appropriate NVIDIA driver
- Install Parallel Nsight Host and Monitor

Two computers, one with NVIDIA GPUs

Host (32/64-bit)

Network

Target (32/64-bit)

- ✓ Frame Debugger
- ✓ Frame Profiler
- ✓ Frame Timings
- ✓ System Analysis
- ✓ Shader Debugger
- ✓ Pixel History

- Install appropriate NVIDIA driver on the Target System
- Install Parallel Nsight Monitor on the Target System
- Install Parallel Nsight Host on the Development System

One computer, two NVIDIA GPUs

Host + Target (32/64-bit)

- ✓ Frame Debugger
- ✓ Frame Profiler
- ✓ Frame Timings
- ✓ System Analysis
- ✓ Shader Debugger
- ✓ Pixel History

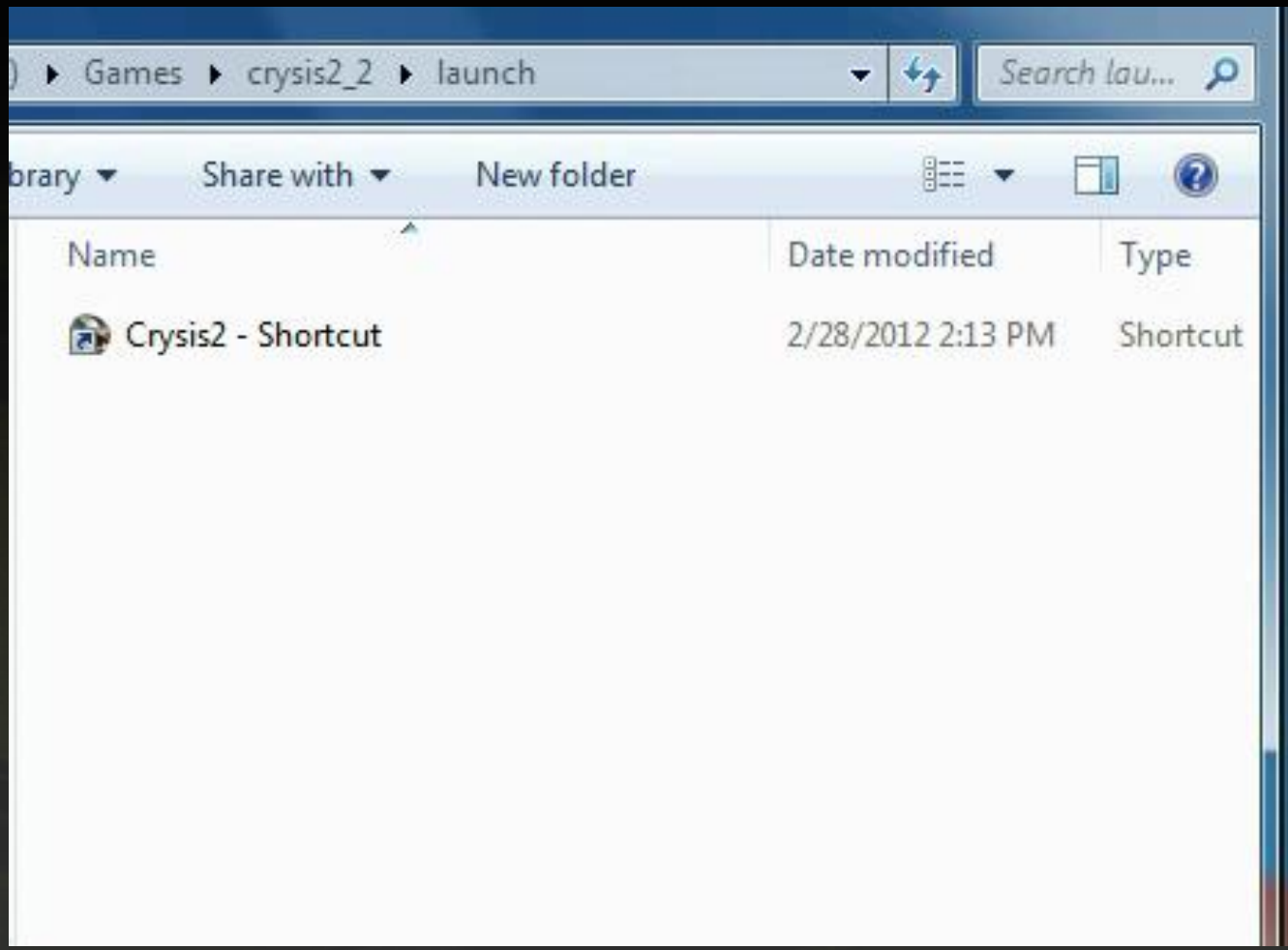
- Install appropriate NVIDIA driver
- Install Parallel Nsight Host and Monitor
- Configure Local Headless Debugging (see User's Manual)

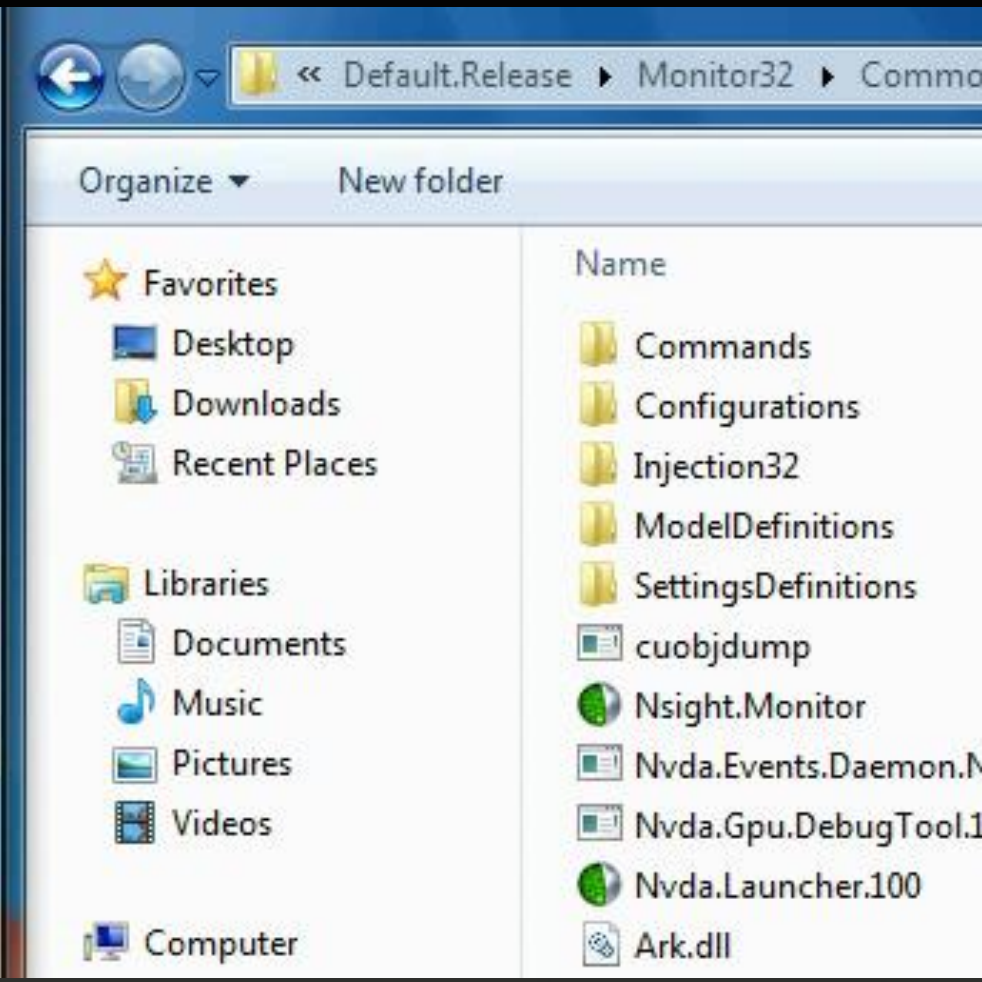
Parallels™ Optimized Computing

New in Parallel Nsight 2.1

- Dynamic shader editing
- Show constant buffer with HLSL variable names
- Frame timings page
- Save and load profiler sessions
- Call stack trace capture
- Trace workload correlation
- 5X trace overhead improvement
- New system information page

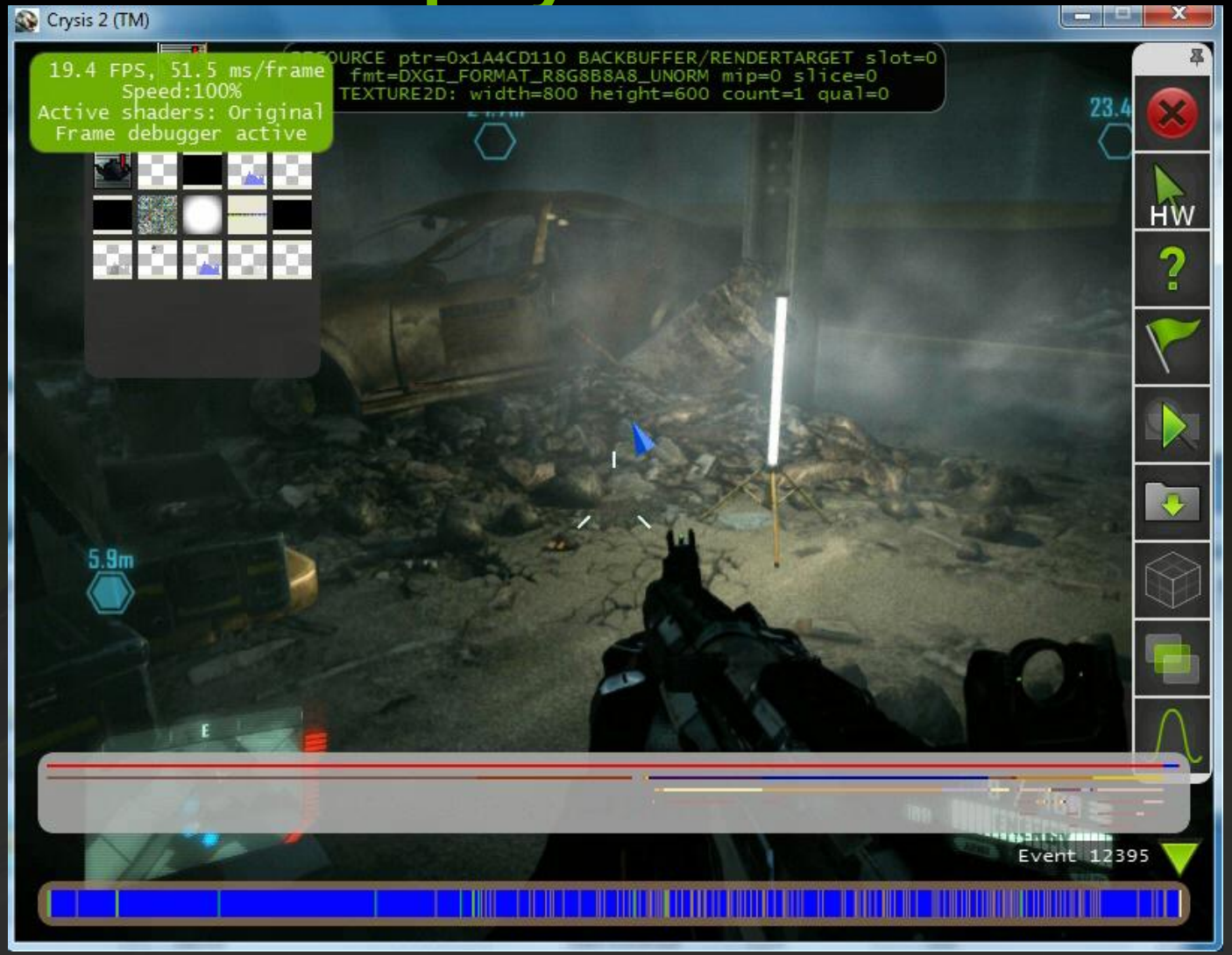
Target side HUD: Launch and running mode



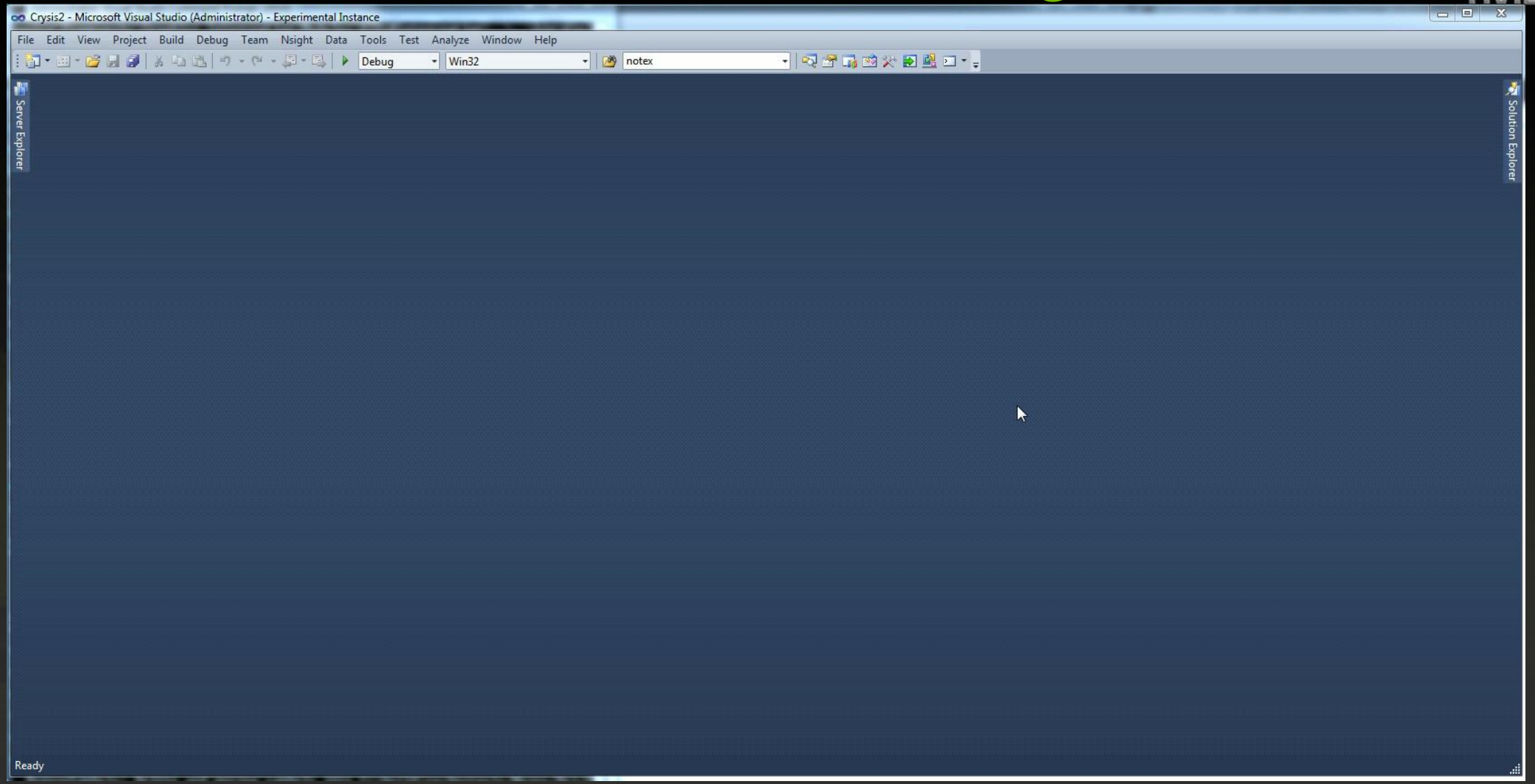


Target side HUD: Frame Debugger

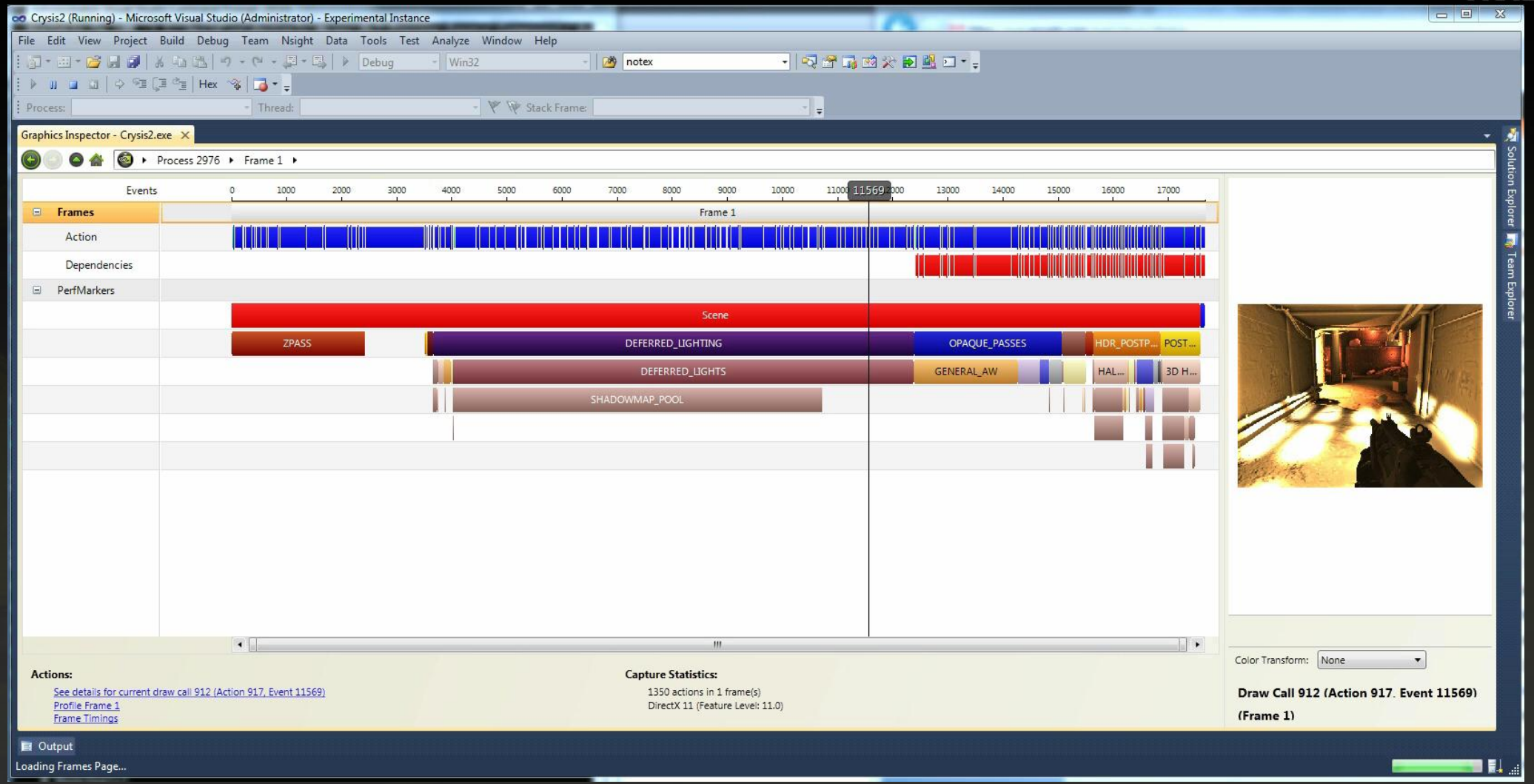
Serialization and replay



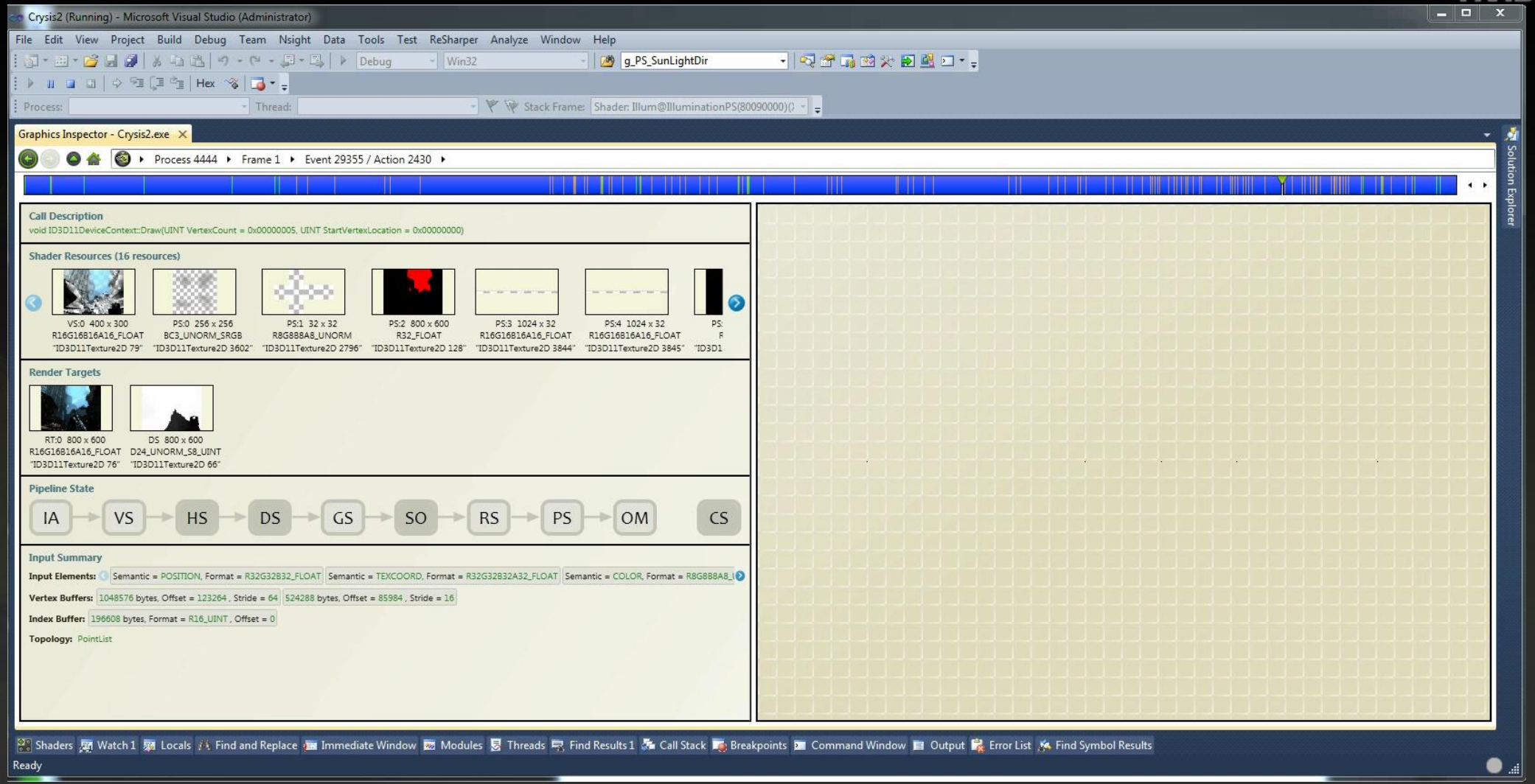
Host side: Launch and Frames Page



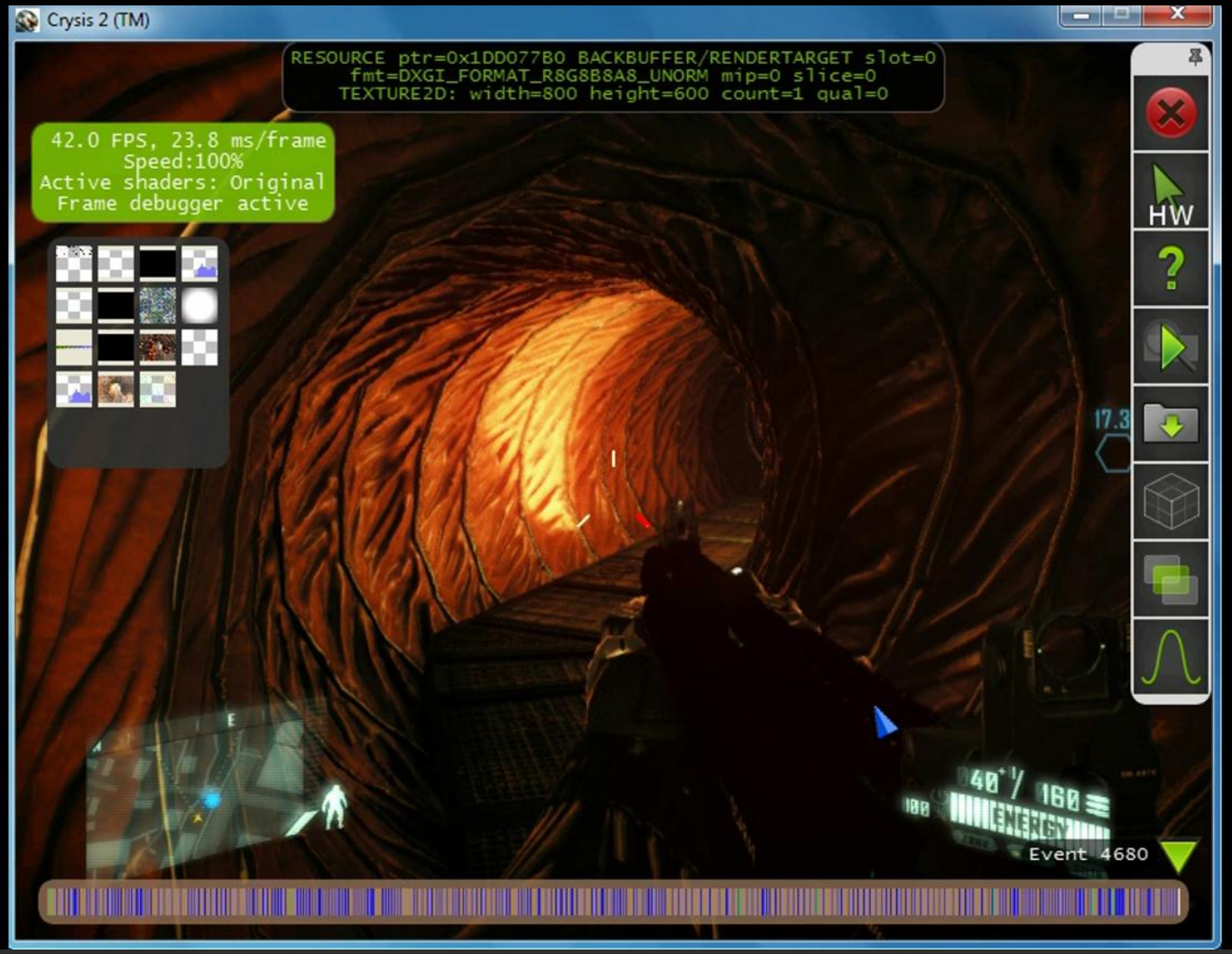
Draw call page



Pixel History and Shader Debugger



Shader edit and continue – New in 2.1!



Wrap up

- See Jeff Kiel’s live demo of all Nsight features Thursday, 10-11
- My other talk: DirectX 11 Profiling with Parallel Nsight, Friday 1-2
- Questions?