

**nVIDIA®**

## **Developer Tools Showcase**

**Randy Fernando**  
**Developer Tools Product Manager**

**NVISION 2008**

# The NVIDIA Developer Toolkit

## Content Creation

FX Composer

mental mill  
Artist Edition

NVIDIA  
Shader Library

Photoshop Plug-ins

Texture Tools

Melody

PhysX Plug-Ins

## Software Development

Shader  
Debugger

Direct3D SDK

OpenGL SDK

CUDA SDK

Cg Toolkit

NVSG

PhysX SDK

PhysX VRD

## Performance

PerfKit

PerfHUD

PerfSDK

GLExpert

NV PIX Plug-in

gDEDebugger

ShaderPerf

PhysX Tools

## Education

Conference Presentations

Whitepapers

GPU Programming Guide

Videos

Books

*GPU Gems 3*

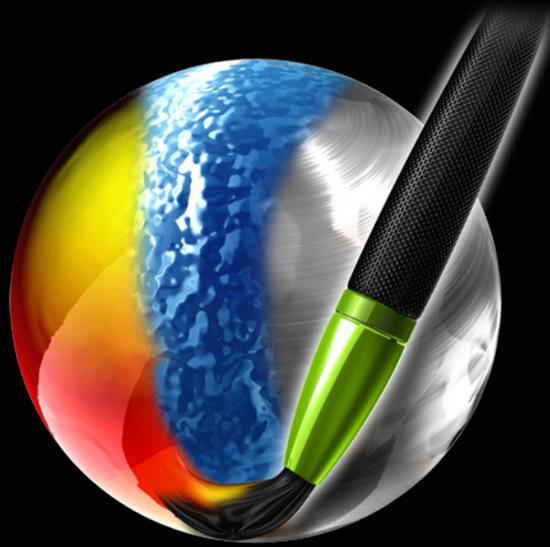
*GPU Gems 2*

*GPU Gems*

*The Cg Tutorial*



# FX Composer 2.5



[www.fxcomposer.com](http://www.fxcomposer.com)

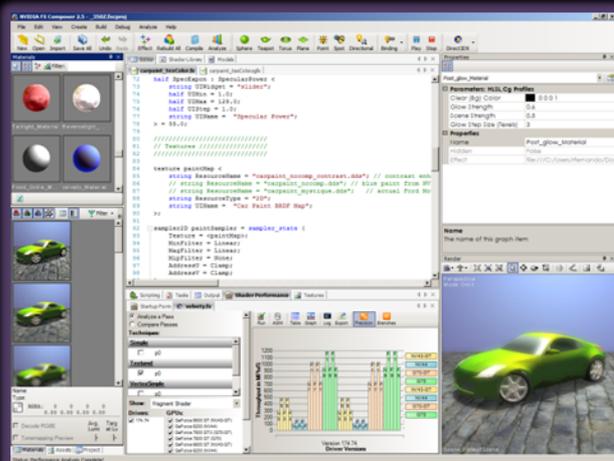
# NVIDIA FX Composer 2.5

The World's Most Advanced Shader Authoring Environment

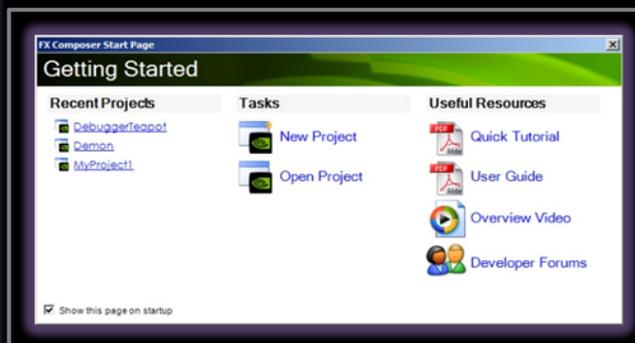
- DirectX 10 Support
- NVIDIA Shader Debugger Support
- ShaderPerf 2.0 Integration
- Visual Models & Styles
- Particle Systems
- Improved User Interface



Particle Systems



350Z Sample Project



All-New Start Page

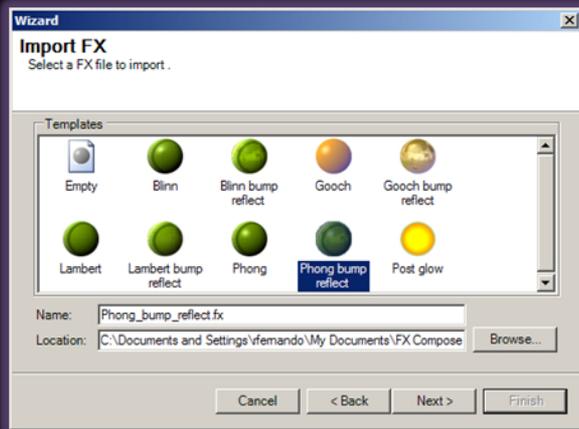


Visual Models & Styles

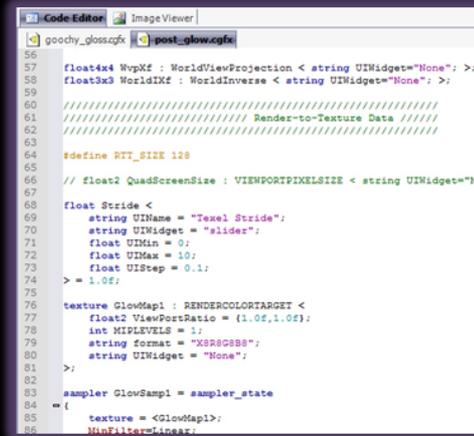
# Other Major Features



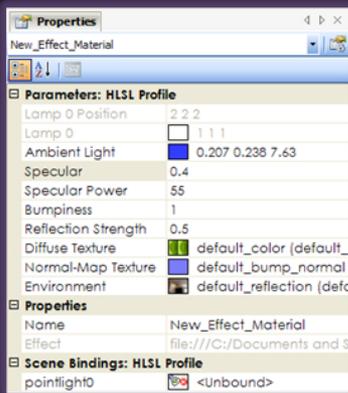
**Shader Library**  
Hundreds of samples



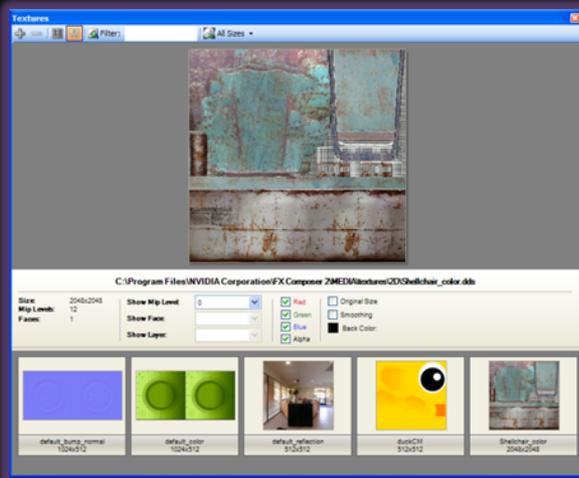
**Shader Creation Wizard**  
Quickly create common shaders



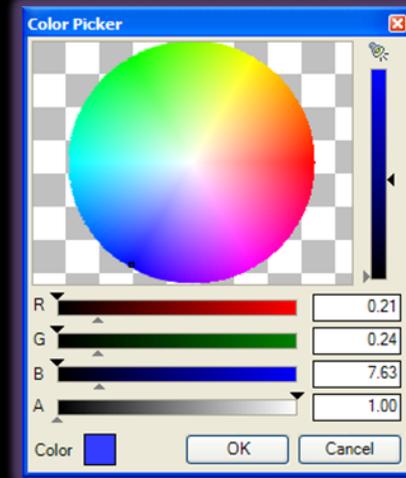
**Code Editor**  
Full editor with assisted code generation



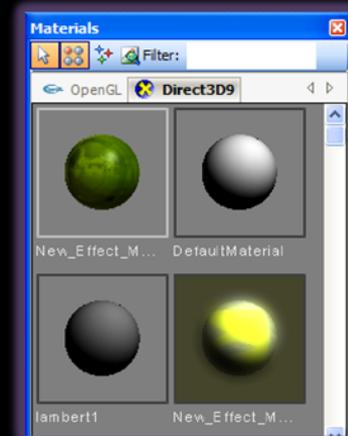
**Properties Panel**



**Texture Viewer**  
View, organize, and apply textures



**HDR Color Picker**



**Materials Panel**

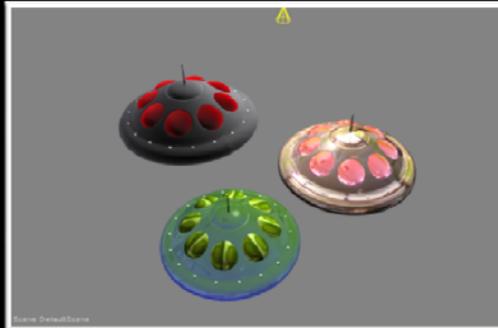
# Even More Features

- **Automatic Light Binding**
- **Complete Scripting Support**
- **Support for DirectX 10  
(Geometry Shaders, Stream Out, Texture Arrays)**
- **Support for COLLADA, .FBX, .OBJ, .3DS, .X**
- **Extensible Plug-in Architecture with SDK**
- **Customizable Layouts**
- **Semantic and Annotation Remapping**
- **Vertex Attribute Packing**
- **Remote Control Capability**

# New Sample Projects



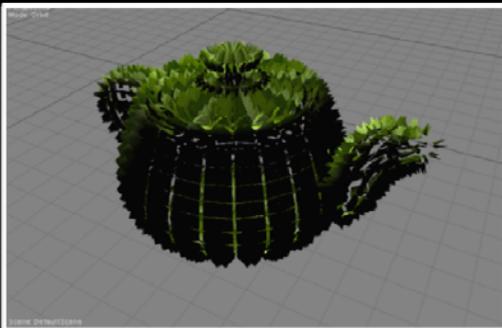
350Z



Visual Styles



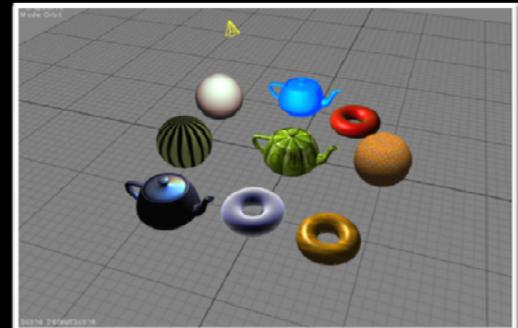
Atmospheric Scattering



DirectX 10



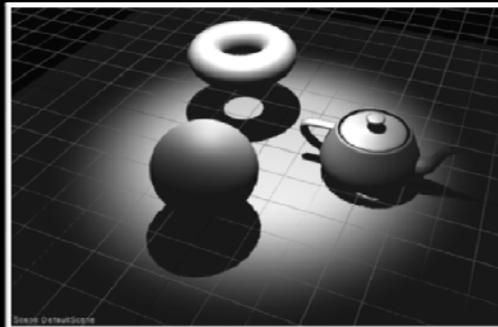
PCSS Soft Shadows



Materials



Post-Processing



Simple Shadows

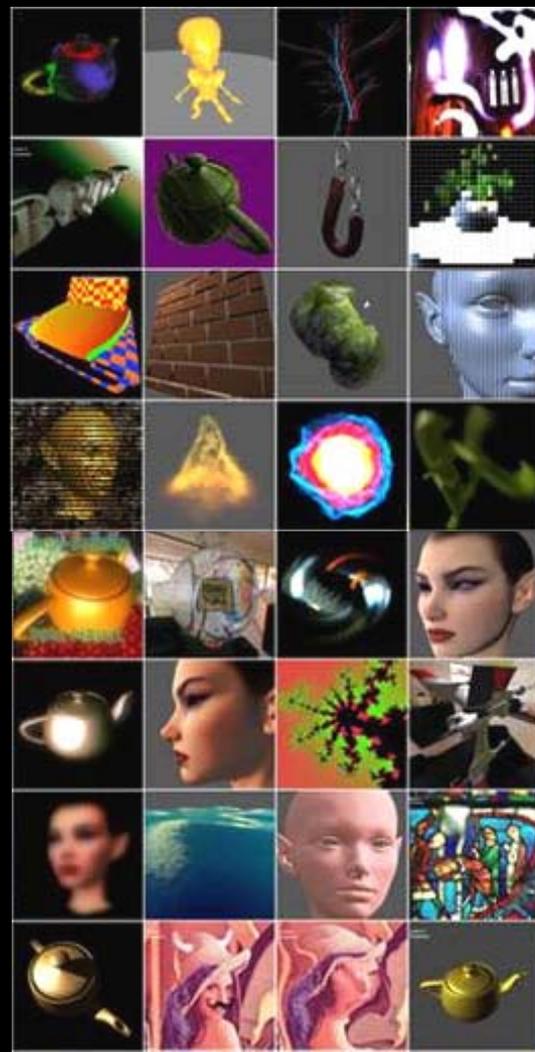
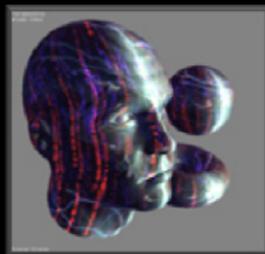
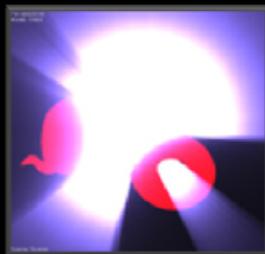
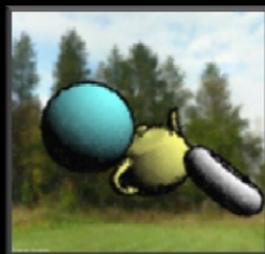
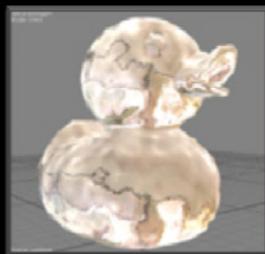
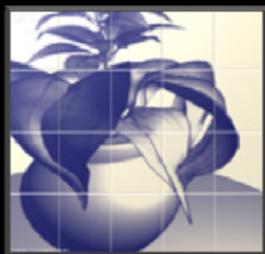


Ninja

# NVIDIA Shader Library

The world's largest shader collection

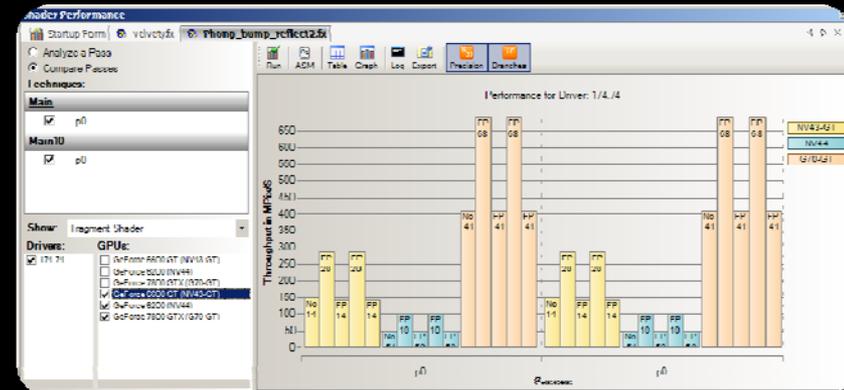
- Over 150 different HLSL & CgFX shaders
- Integrated into FX Composer
- External submissions allowed



# ShaderPerf 2.0

## Making shader performance tuning easy

- **New!** GeForce 8 Series support
- **New!** API for programmatic access
- **New!** Fragment program differencing
- Vertex and pixel shader analysis  
(No OGL vertex shader analysis on GPUs older than GeForce 8 Series)
- Many supported shader formats
- Compare different techniques
- See shader throughput, register usage, instruction counts, and branching performance
- Integrated in FX Composer 2.5
- Also available as standalone command-line tool

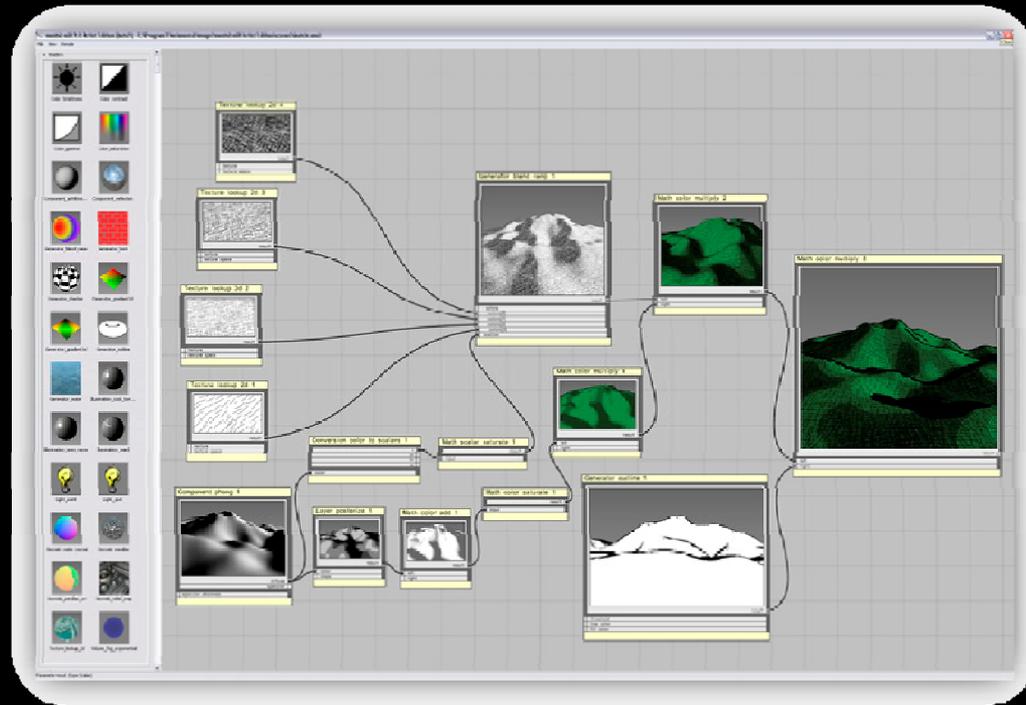


Performance for Driver: 1/4 /4

Main:sp0	Regs			Dyadic			MFPS		
	Normal	FP16	FP32	Normal	FP16	FP32	Normal	FP16	FP32
NV43-GT (GeForce 6600 GT)	4	3	4	27	14	26	140	200	142
NV44 (GeForce 8200)	4	3	4	27	14	26	h1	100	50
G70-GT (GeForce 7800 GTX)	4	3	4	25	15	25	412	500	412
Main:sp0									
NV43-GT (GeForce 6600 GT)	4	3	4	27	14	26	140	200	142
NV44 (GeForce 8200)	4	3	4	27	14	26	h1	100	50
G70-GT (GeForce 7800 GTX)	4	3	4	25	16	26	417	500	412

# mental mill™ Artist Edition

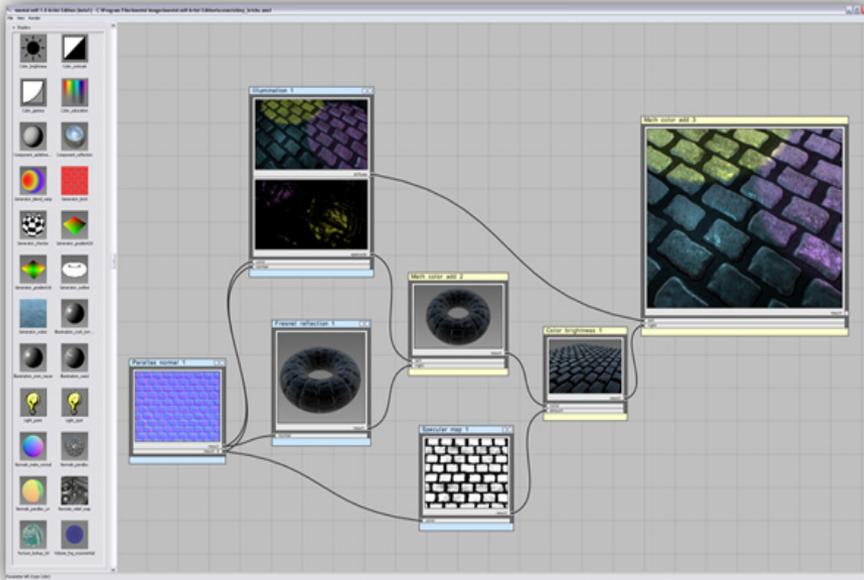
- Enables artists to quickly and easily develop and prototype new looks within a fast, flexible GUI.



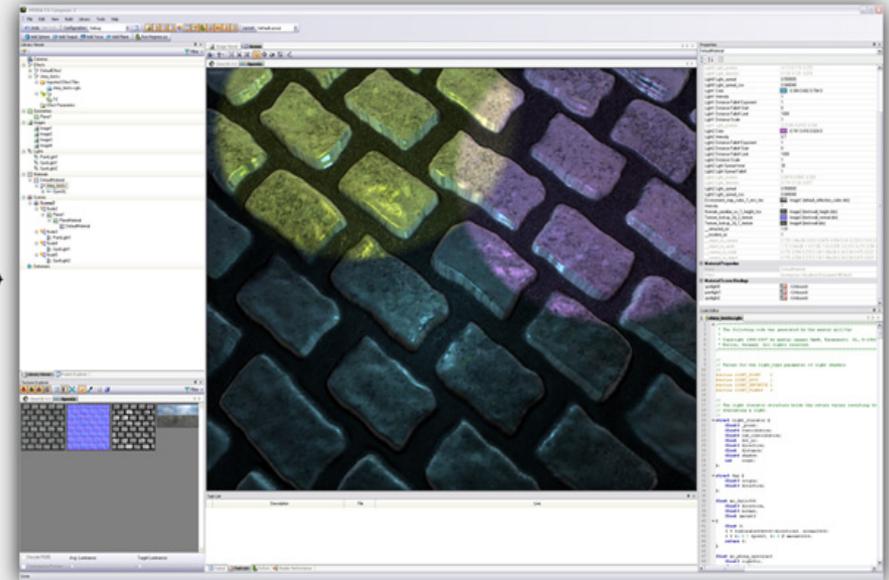
# mental mill Artist Edition and FX Composer

- **The best of both worlds.** More power for artists plus optimization abilities for programmers and shader specialists.
- **Smooth interoperability with FX Composer.** A shader exported from mental mill can be seamlessly imported into FX Composer.
- **Better collaboration.** Dramatically reduced iteration time.

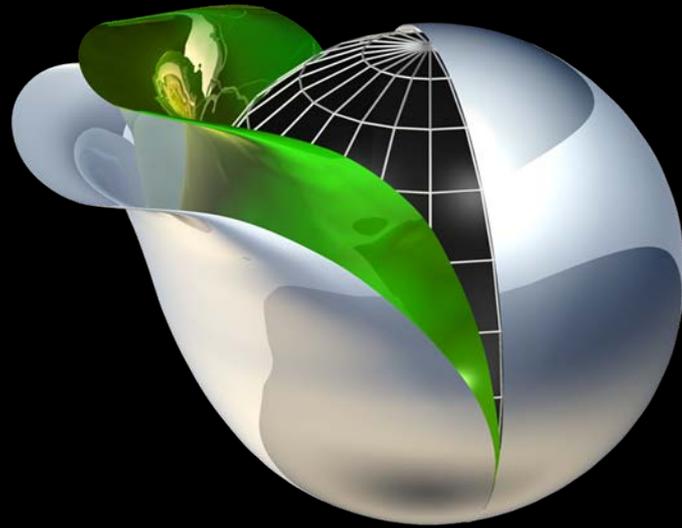
mental mill Artist Edition



FX Composer 2



# The NVIDIA Shader Debugger



[www.shaderdebugger.com](http://www.shaderdebugger.com)



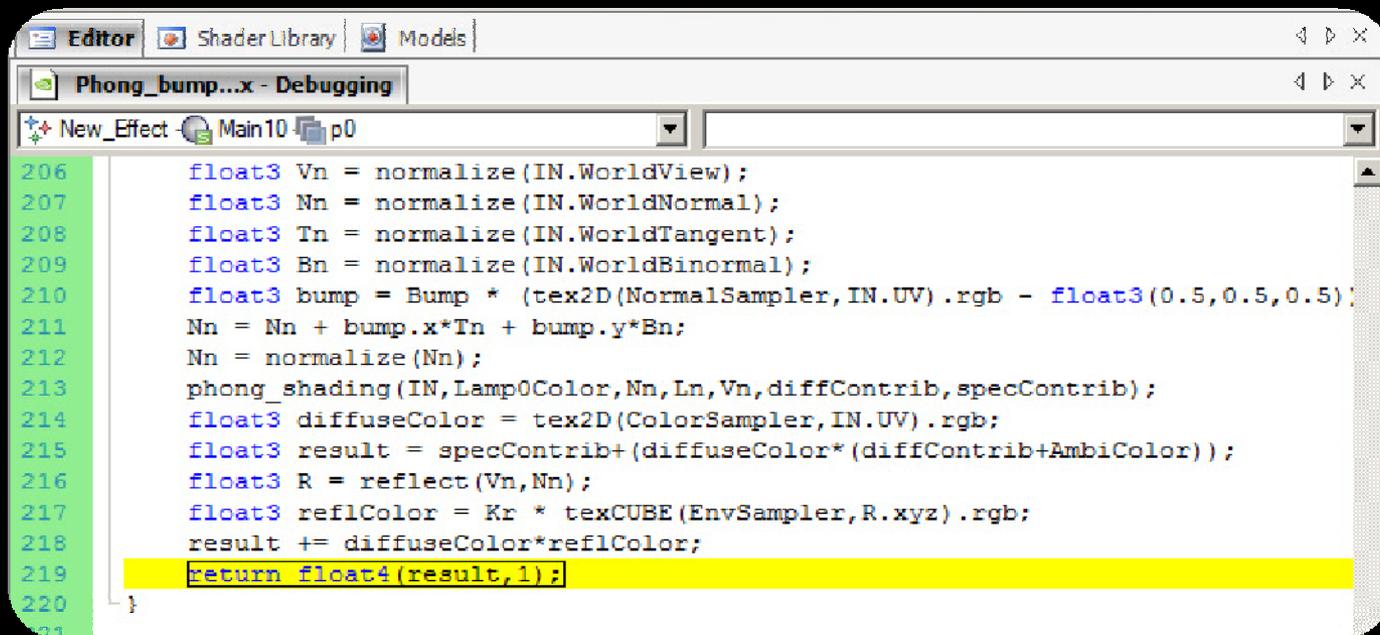
# Run Control

Full control of shader execution

Next/Previous Statement

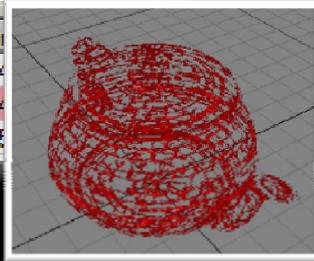
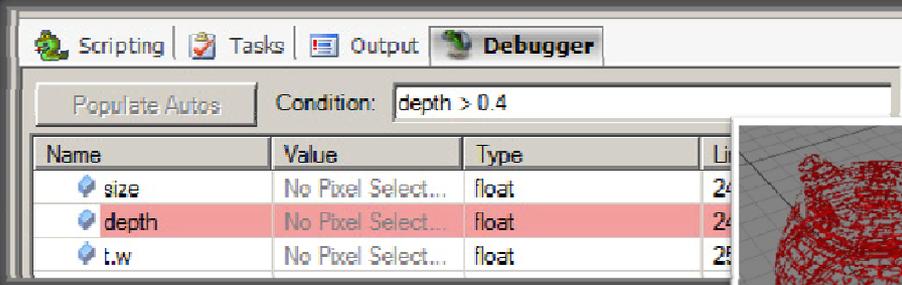
Run to Cursor

Run to Bookmark

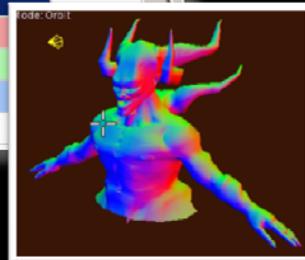
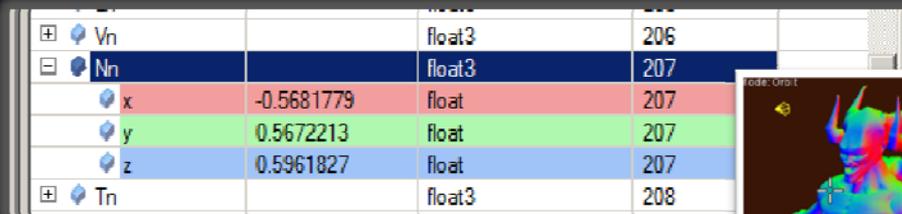


```
Editor | Shader Library | Models |
Phong_bump...x - Debugging
New_Effect - Main10 - p0
206 float3 Vn = normalize(IN.WorldView);
207 float3 Nn = normalize(IN.WorldNormal);
208 float3 Tn = normalize(IN.WorldTangent);
209 float3 Bn = normalize(IN.WorldBinormal);
210 float3 bump = Bump * (tex2D(NormalSampler, IN.UV).rgb - float3(0.5, 0.5, 0.5));
211 Nn = Nn + bump.x*Tn + bump.y*Bn;
212 Nn = normalize(Nn);
213 phong_shading(IN, Lamp0Color, Nn, Ln, Vn, diffContrib, specContrib);
214 float3 diffuseColor = tex2D(ColorSampler, IN.UV).rgb;
215 float3 result = specContrib + (diffuseColor * (diffContrib + AmbiColor));
216 float3 R = reflect(Vn, Nn);
217 float3 reflColor = Kr * texCUBE(EnvSampler, R.xyz).rgb;
218 result += diffuseColor * reflColor;
219 return float4(result, 1);
220 }
```

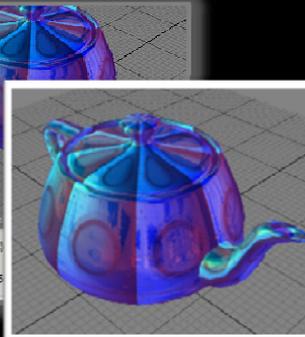
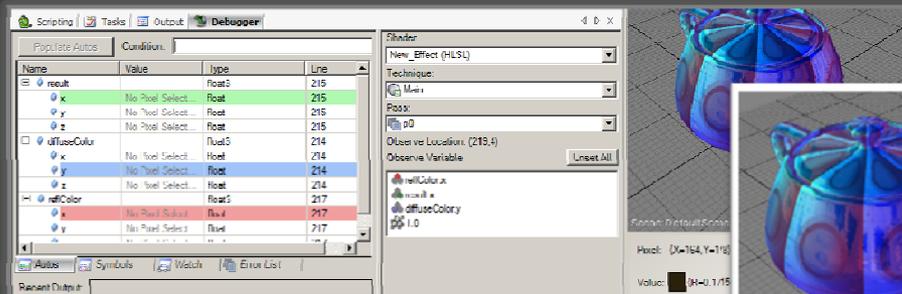
# More Shader Debugger Features



Conditionally Kill Fragments



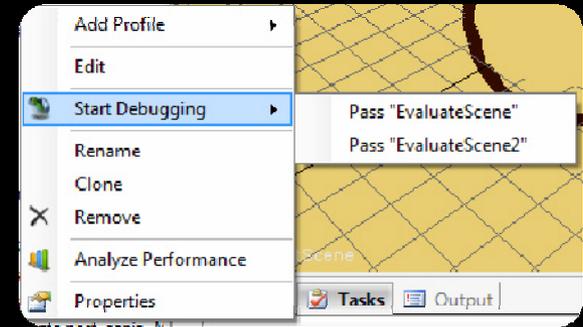
Visualize Any Variable



Create Custom Output Mappings

# More Shader Debugger Features

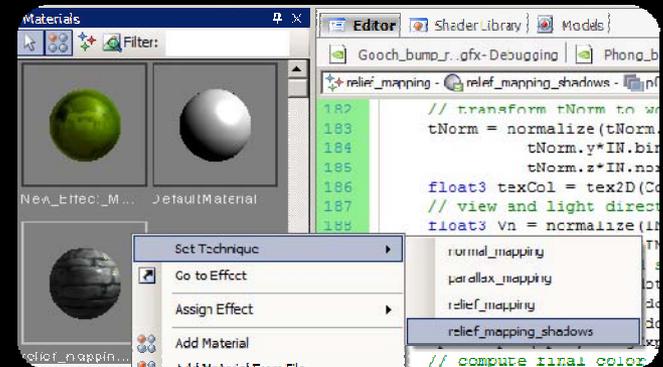
Debug multi-pass/full scene effects.



Vn		float3	206	
Nn		float3	207	
x	-0.5681779	float	207	
y	0.5672213	float	207	
z	0.5961827	float	207	
Tn		float3	208	

Examine pixels individually or in parallel.

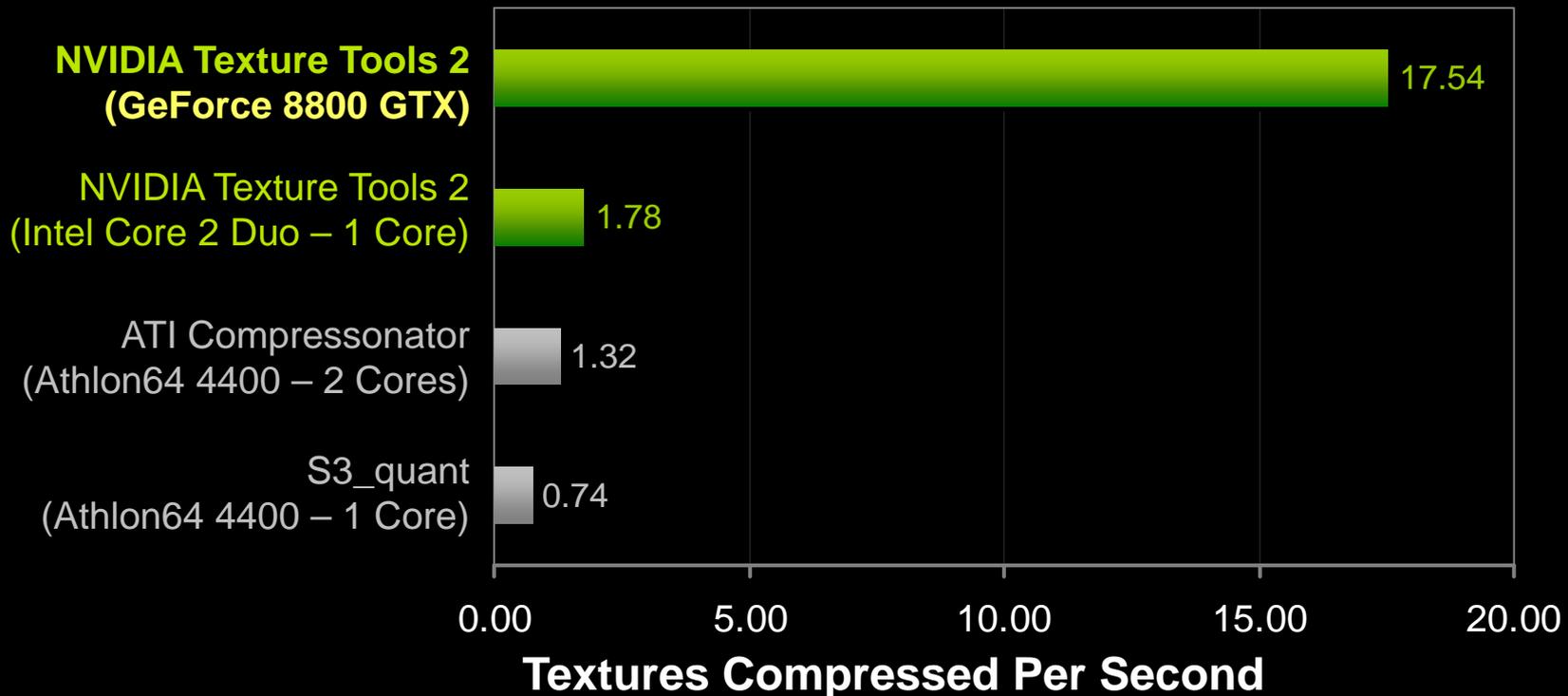
Pick any technique in your shader to debug.



# GPU-Accelerated Texture Tools

## 10x faster, high-quality texture compression

- GPU-accelerated via CUDA
- Support for DirectX 10 texture formats
- Includes complete source code
- Amazing performance without sacrificing quality



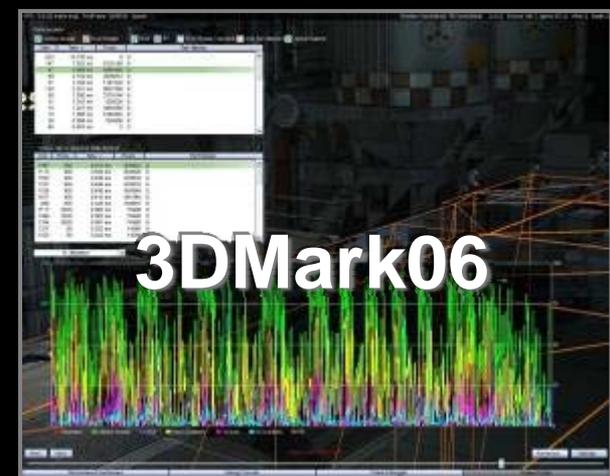


**NVIDIA PerfKit 6**

# NVIDIA PerfHUD 6.1

More convenient and powerful than ever

- G8X & GT200 support
- Comprehensive SLI support
- No More “Instrumented Driver”
- Frame Capture (coming soon)
- Advanced texture and render target debugging & analysis
- API Data Mining & Analysis
- Debug Break capability
- Many other convenient features...



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# Top Game Developers Use PerfHUD (Games shown with PerfHUD running on them)



Over 300 surveyed PerfHUD 5 users reported an **average speedup of 37%**, and as much as **400%**!

# NVIDIA PerfKit 6: The World's Most Advanced GPU Performance Suite

## PerfHUD 6

**New!** GeForce 8800GT, 9600GT, 9800GX2, GTX 280 support

**New!** Use stock NVIDIA drivers with PerfHUD (on Windows Vista)

**New!** Multi-GPU Support

**New!** More real-time signals, including SLI signals

**New!** API Call List

**New!** Draw Call Dependency Analysis

**New!** Advanced Texture Visualization

**New!** Texture Overrides

Real-time performance analysis and debugging

Automated bottleneck determination

## PerfSDK

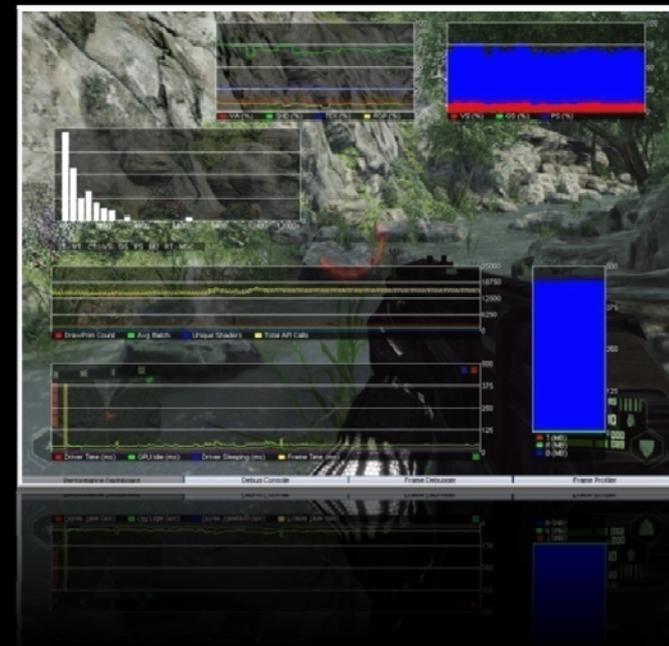
**New!** GeForce 8800GT, 9600GT, 9800GX2, GTX 280 support

API for accessing GPU and driver counters

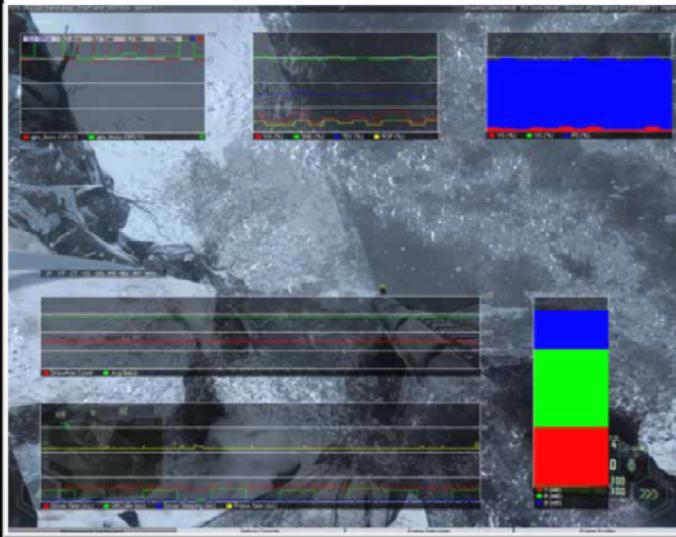
Supports DirectX 9 & 10, as well as OpenGL

NVIDIA Plug-in for Microsoft PIX for Windows

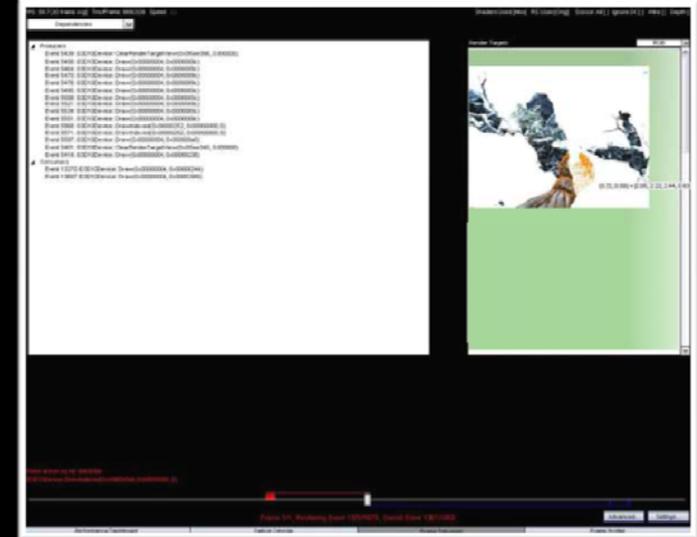
GLExpert



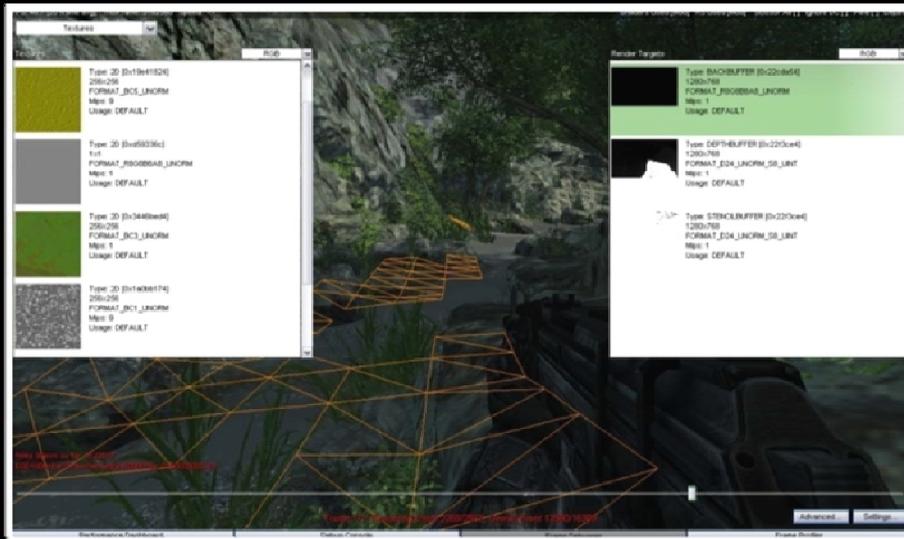
# PerfHUD 6



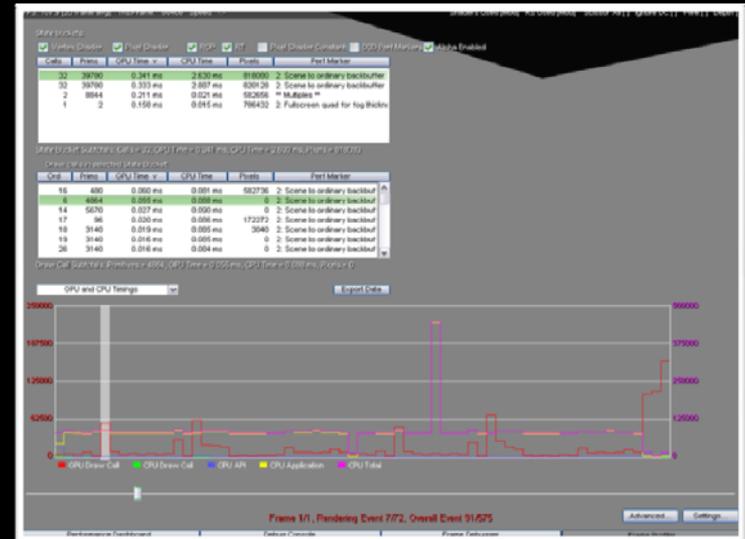
Multi-GPU Support



Advanced Data Mining



Powerful Texture Visualization



Combined CPU/GPU Timing Graph

# Tons of other improvements!

## Multiple, named Performance Dashboard Layouts

- Save separate layouts for each of your monitoring scenarios.

## Sampler State Editing

- Edit and override any property of a sampler in your application

## New Real-time Experiments

- Minimize Geometry (Replaces all geometry with a single primitive)

## Improved Compatibility and Stability

- Rewritten interception layer requires less cooperation from the application.
- Now compatible with applications that include frame-limiting logic.
- Now compatible with applications which send non-deterministic graphics workloads.
- Many bug fixes and performance improvements.

## Improvements to Frame Profiler

- New CPU/GPU Timings Graph lets you directly see and compare utilization in the CPU, the driver, and the GPU.

## User Interface Improvements

- Navigation hotkeys for every major tool

## Compatibility, stability, and reliability improvements

- Extensive testing on a wide range of applications
- Minor bug fixes



# How to Think of PerfHUD's Main Modes

- **Performance Dashboard**  
Real-time Holistic Analysis
- **Frame Debugger**  
Rendering Debugging
- **Advanced Screens**  
Shader and Render State Inspection and Modification
- **Frame Profiler**  
Automated Bottleneck Detection  
Per-Draw Call Performance Graphs

# New! Advanced Texture Overrides

- **Override any texture in your application with a variety of useful texture overrides**
- **2x2 Texture: Reduces texture bandwidth usage by using the smallest texture possible.**
- **Black, 25% Gray, 50% Gray, 75% Gray, White, Horizontal gradient, Vertical Gradient: Each of these can be useful as debug input to your shaders.**
- **Color Mipmap Texture: Visualize your mip levels quickly and easily**
- **Use with shader edit and continue to quickly diagnose and correct bugs.**



Texture Context Menu



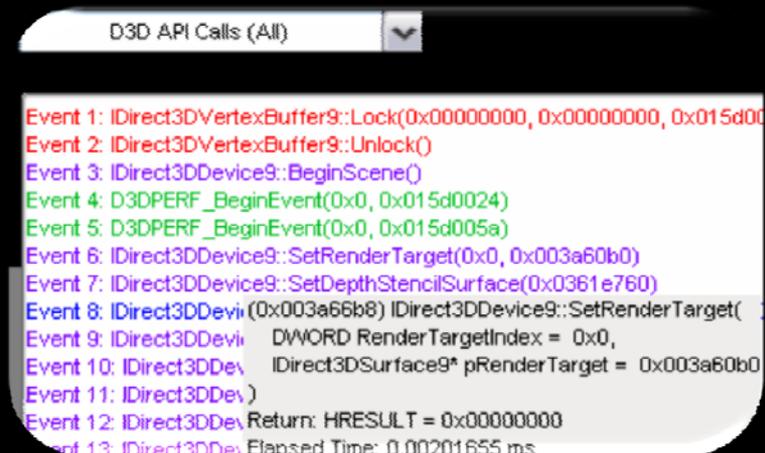
Mipmap Visualization

# New! API Call List and Perf Event View

## New! API Call List

A full list of all D3D API calls, colored by call type

One click jumps you to the corresponding draw call.



## New! Perf Event List

Navigate your scene using D3D Perf Events to annotate sections of the frame.

Use Perf Events to selectively disable state overrides for portions of the scene.

Set a debug break (`_int 3`) to occur on a Perf Event to help debug your CPU code.



# Shader Edit and Continue

## Edit & Continue for:

- DirectX 9 HLSL and .fx
- DirectX 10 HLSL and .fx
- Vertex, geometry, and pixel shaders

## Code editing

- Standard keyboard and mouse interaction
- Search bar

## Easily toggle between original and modified shaders

- Discard Current Edits
- Restore Original Shader
- Controlled via hotkey

```
{
    Sparkles_PSOut output;
    output.color = input.alpha * (texture_star.Sample(
    return output;
})

/////////////////////////////////////////////////////////////////
// TECHNIQUES TECHNIQUES TECHNIQUES TECHNIQUES TECHNIQ
/////////////////////////////////////////////////////////////////

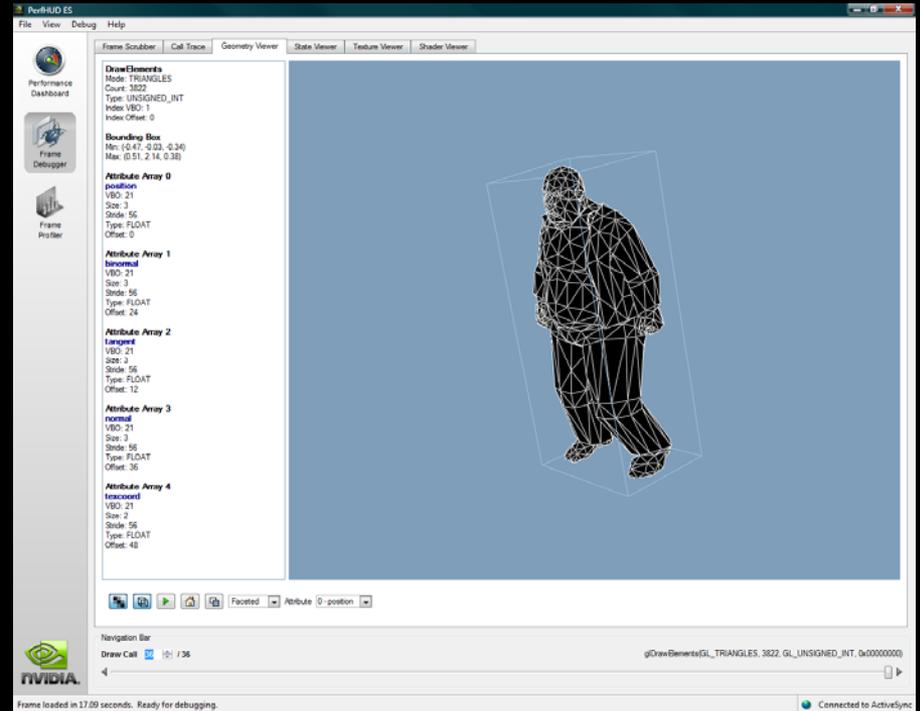
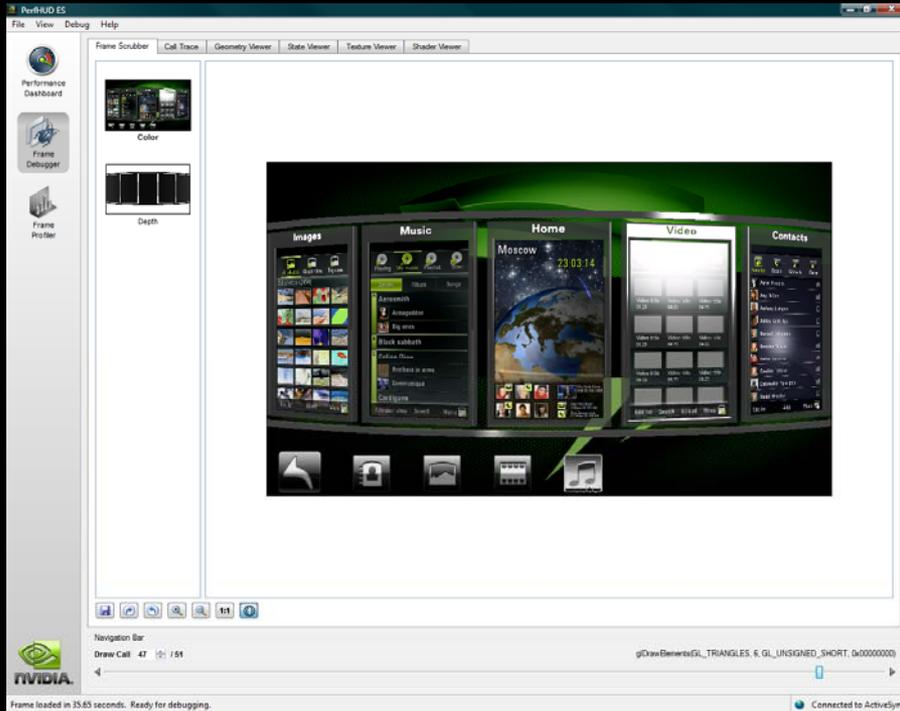
technique10 Sparkles_And_CarPaint
{
    pass ColorNDepth
    {
        SetBlendState(blendOFF, float4(1.0, 1.0, 1.0,
        SetRasterizerState( RStateMSAA );
        SetDepthStencilState( depthEnabled, 0 );
        SetVertexShader( CompileShader( vs_4_0, carpai
        SetGeometryShader(NULL);
        SetPixelShader( CompileShader( ps_4_0, carpain
        paintamp,
        paintamp
```

Editing Shaders

# How is PerfHUD Different from Other Performance Tools?

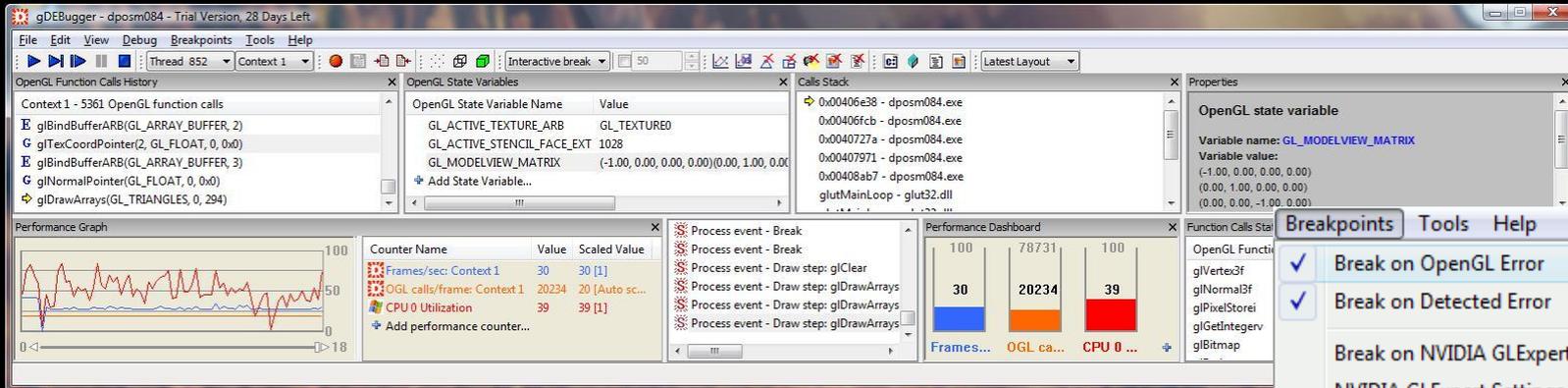
- **It works in real-time on your application.** Other tools require out of context, offline analysis. PerfHUD allows you to debug and tune your application in the most natural place: within your application!
- **One key press provides a list of draw calls (grouped by bottleneck and sorted by duration) to work on.** Running experiments and collecting data from individual pipeline units is difficult and easy to misjudge. PerfHUD automatically tells you exactly where your bottlenecks are so you can fix them quickly.
- **Real-time frame scrubbing.** Modern engines have thousands of draw calls per frame. PerfHUD lets you decompose the scene, stepping through each draw call to find any problems.
- **Edit-and-continue.** Modifying shader code and render states can be time consuming. PerfHUD allows you to make changes while your application is running – allowing you to quickly try our ideas and get immediate feedback.

# PerfHUD ES



Similar functionality to PerfHUD PC for OpenGL ES  
(For example, for Tegra development)

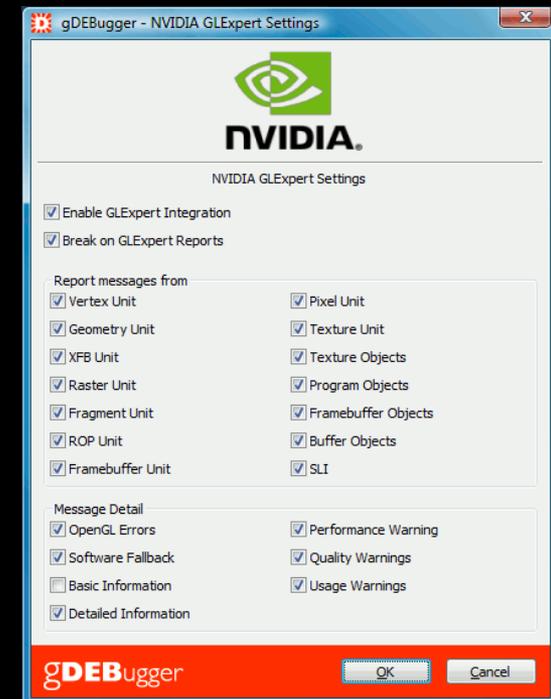
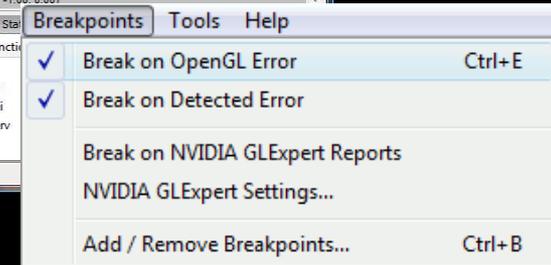
# Graphic Remedy's gDEDebugger



## OpenGL and OpenGL ES Debugger and Profiler

- NVIDIA PerfKit and GLExpert integrated
- Shorten development time
- Improve application quality
- Optimize performance
- Find redundant function calls
- Supports Windows & Linux
- Discounted academic licenses available

<http://www.gremedy.com>



# Graphic Remedy's gDEBugger

The screenshot displays the gDEBugger interface, which is used for analyzing game assets like textures and buffers. The main window is titled "gDEBugger - Textures and Buffers viewer".

**Textures List:** A list of textures is shown on the left, including "2D Tex 8 (unit 2, bound 2D)", "2D Tex 9 (unit 3, bound 2D)", "2D Tex 10 (unit 0, bound cube map) (unit 10, bound cube map)", "2D Tex 11 (unit 5, bound 2D)", "2D Tex 12", "2D Tex 13", "2D Tex 14", "2D Tex 15 (unit 7, bound 2D)", "2D Tex 16 (unit 8, bound 2D)", "2D Tex 17 (unit 9, bound 2D)", "2D Tex 18", "2D Tex 19", "2D Tex 20", "2D Tex 21", and "2D Tex 22".

**Properties of Texture #15:** The texture is identified as "2D". Its dimensions are 512x512 pixels. The format is "GL\_RGBA8". The texture parameters are set to "GL\_LINEAR\_MIPMAP\_LINEAR" for both horizontal and vertical filtering, and "GL\_REPEAT" for wrapping.

**Static Buffers:** A list of buffers is shown, including "Depth Buffer", "Stencil Buffer", "Back Buffer", and "Front Buffer".

**Image View:** The main window displays a 3D scene with a grid overlay. The grid shows the texture data for the selected texture. The grid is divided into a 10x10 grid of cells, each representing a 512x512 pixel block. The grid is labeled with "109" through "117" for columns and "109" through "117" for rows.

**Current Pixel:** The current pixel is located at position (x: 155, y: 67). Its value is [DEP: 0.54281056], Color [R: 31, G: 31, A: 255].

**Previous Pixel:** The previous pixel is located at position (x: 112, y: 82). Its value is [DEP: 0.30485824], Color [R: 0, G: 200, B: 0, A: 255].

**Adjust "Depth Channel" active range:** The active range is currently set to 0 min and 1 max.

# SDK 10.5

## The latest DirectX and OpenGL code samples

- Teaches developers how to take advantage of new DirectX 10-class GPUs
- Browser with clear code samples, detailed whitepapers, and videos



A screenshot of the NVIDIA SDK 10 Browser interface. The browser window shows the NVIDIA logo and the text "NVIDIA SDK 10" and "developer.nvidia.com". Below the search bar, there are several sample categories listed, each with a description and a "Run" button. The categories are: Clipmaps, HDRRendering, Cloth Simulation, and SolidWireframe. Each category has a small thumbnail image and a "Run" button. The "Run" button is highlighted in red. The "Clipmaps" category has a thumbnail of a planet. The "HDRRendering" category has a thumbnail of a glowing green trophy. The "Cloth Simulation" category has a thumbnail of a blue cloth. The "SolidWireframe" category has a thumbnail of a wireframe mesh.

# Selected SDK 10.5 Direct3D Samples



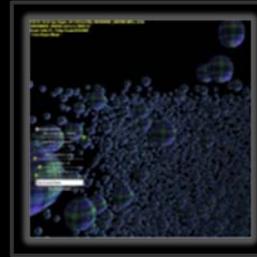
Tessellation



Screen-Space Ambient Occlusion



PCSS (Soft Shadows)



Instancing Tests



Parallax Mapping



Volume Light



Stencil-Routed K-Buffer



Advanced Skinning



Clipmaps



HQ Wireframe



Texture Arrays



MetaBalls



Smoke



Skinned Instancing



HDR Rendering



Soft Particles



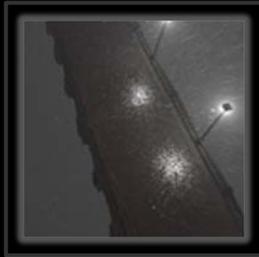
Denoising



CSAA



Lightning



Rain



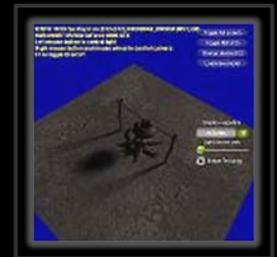
Fur



GPU Blendshapes

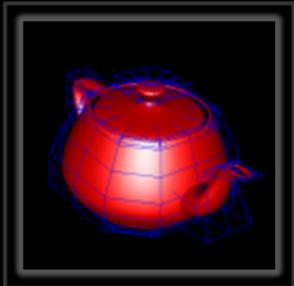


Perlin Fire



Soft Shadows

# Selected SDK 10.5 OpenGL Samples



Tessellation



Cascaded Shadow  
Maps



Dual Depth Peeling



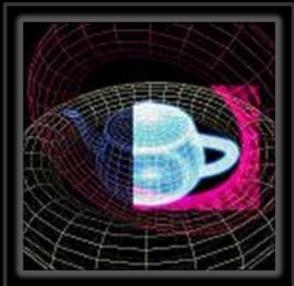
Compress  
Normal-DXT



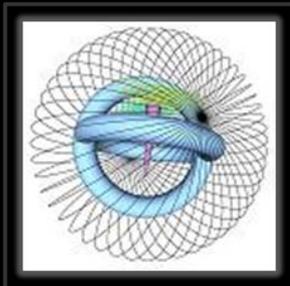
Compress YCoCg-  
DXT



Texture Buffer  
Object



Glow



HQ Antialiasing



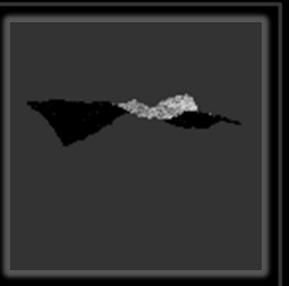
Christmas Tree



Render to 3D  
Texture



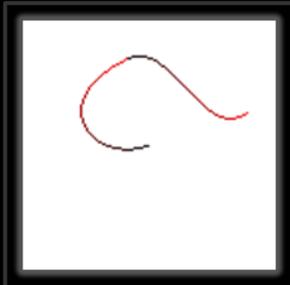
Render to 3D  
Texture



Transform-  
Feedback Fractal



Texture Array



Geometry  
Program



Framebuffer  
Object



Depth Float



HDR



Isosurface

# CUDA Toolkit & SDK

- Complete software development solution for programming CUDA-enabled GPUs

- Includes:

- Standard FFT and BLAS libraries
- C-compiler for the NVIDIA GPU
- Runtime driver

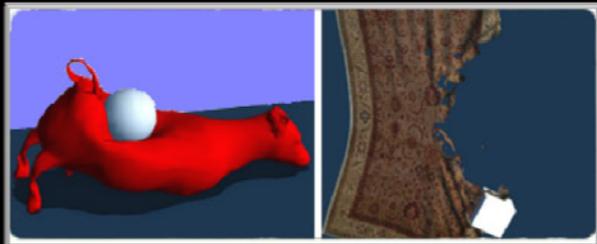
- SDK Samples:

- Parallel bitonic sort
- Matrix multiplication
- Matrix transpose
- Performance profiling using timers
- Parallel prefix sum (scan) of large arrays
- Image convolution
- 1D DWT using Haar wavelet
- OpenGL and Direct3D graphics interoperation examples

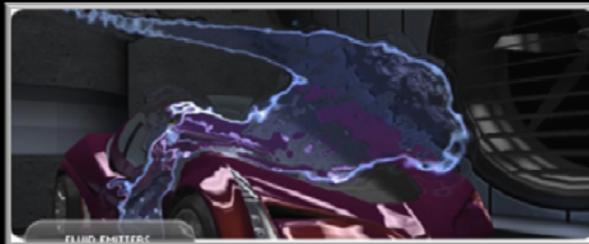


- CUDA BLAS and FFT library usage examples
- CPU-GPU C- and C++-code integration
- Binomial Option Pricing
- Black-Scholes Option Pricing
- Monte-Carlo Option Pricing
- Parallel Mersenne Twister (random number generation)
- Parallel Histogram
- Image Denoising
- Sobel Edge Detection Filter

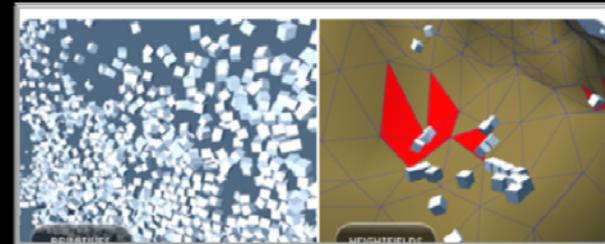
# NVIDIA PhysX SDK



Cloth



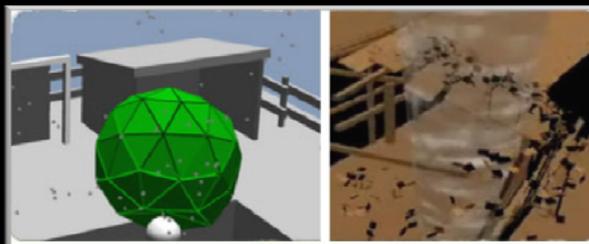
Fluid Simulation



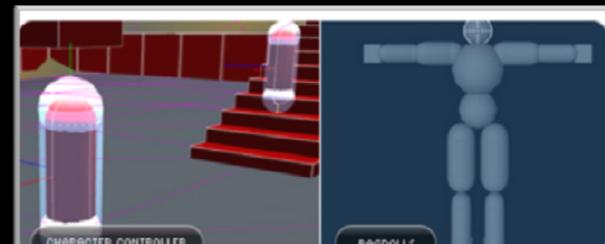
Particles



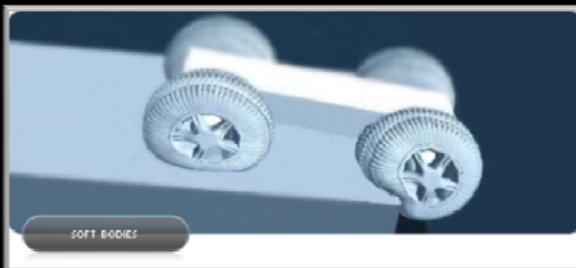
Vehicle Dynamics



Force Fields

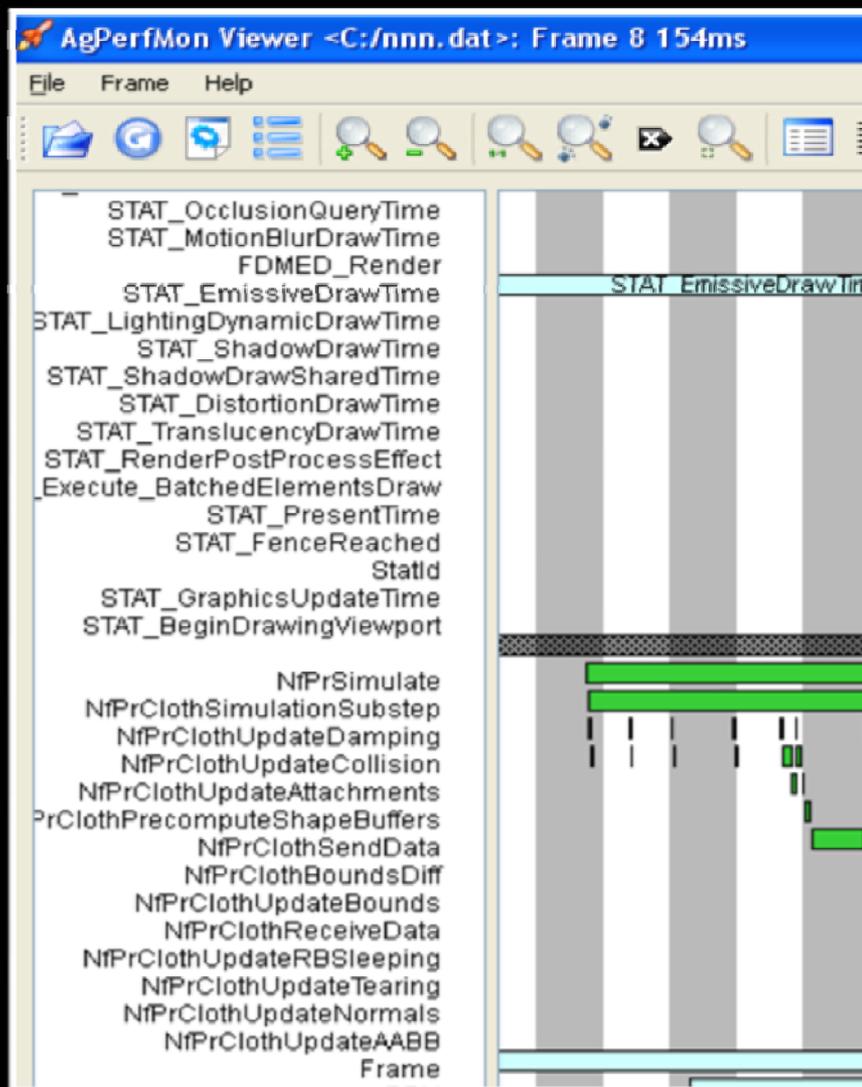


Ragdolls

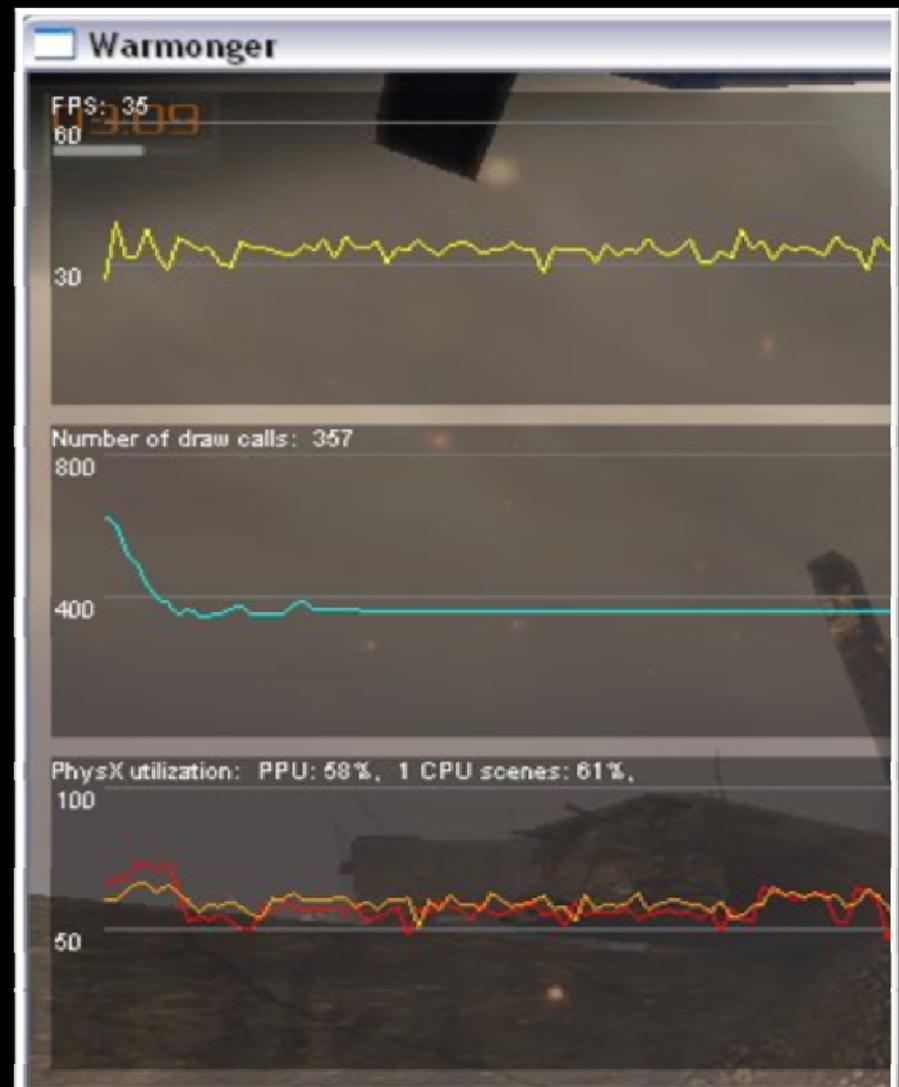


Soft Bodies

# NVIDIA Platform Analyzer Components

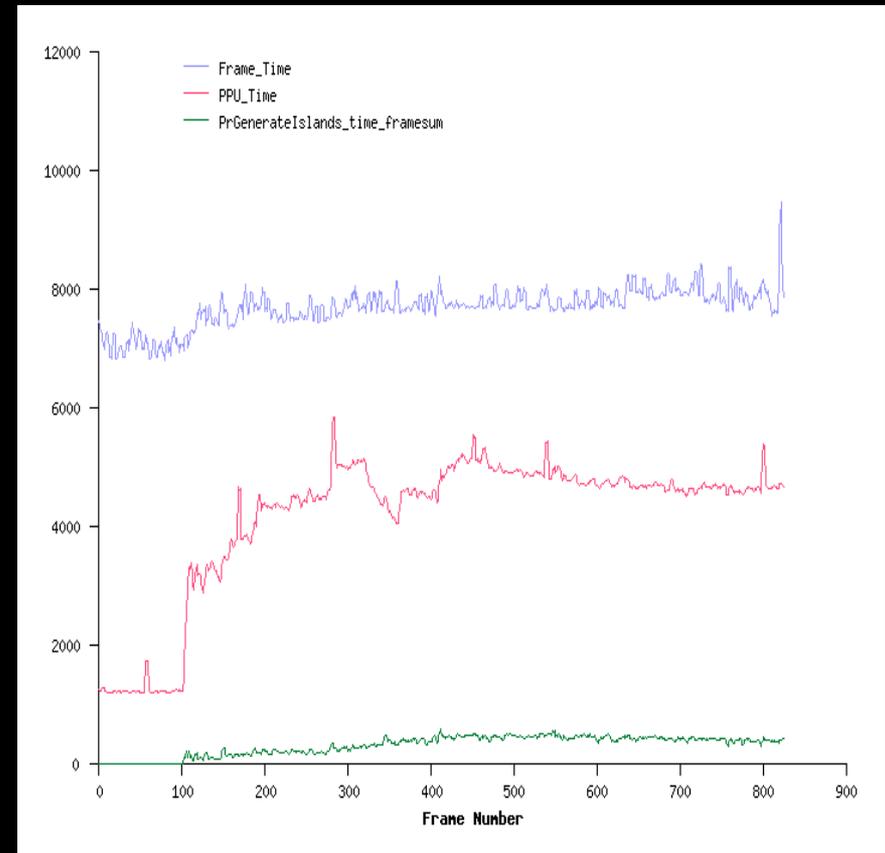
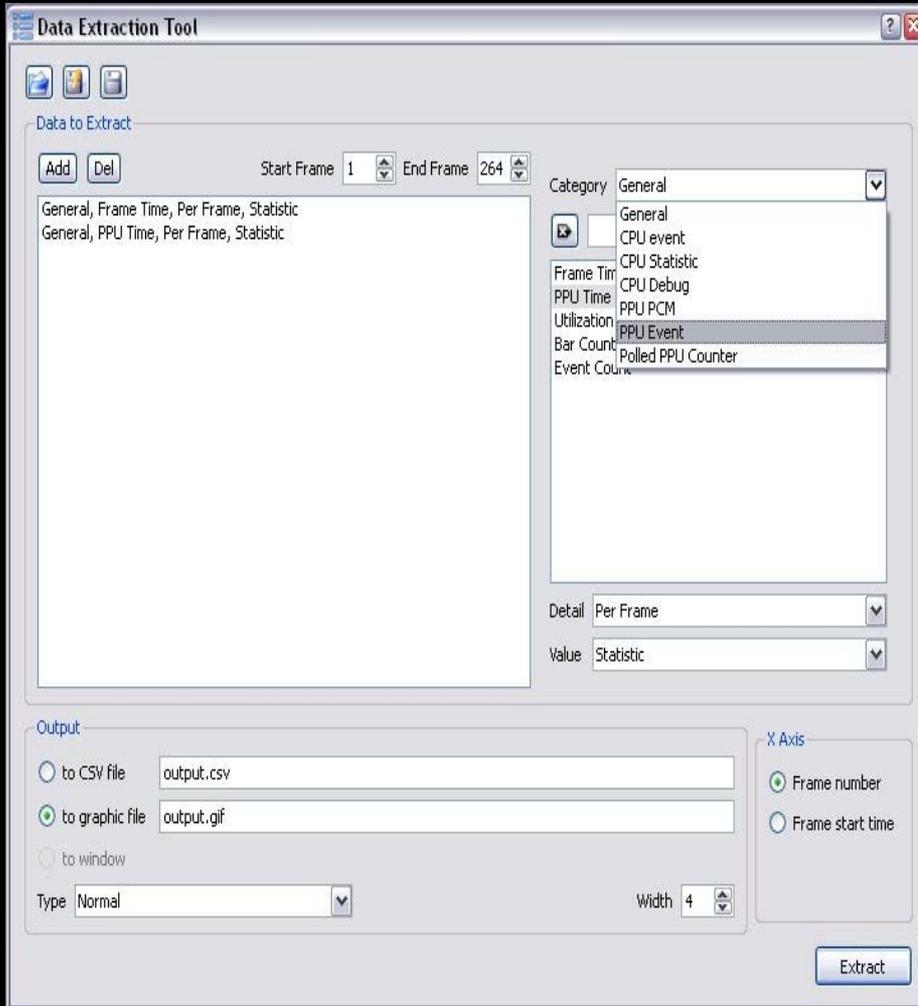


Event Viewer

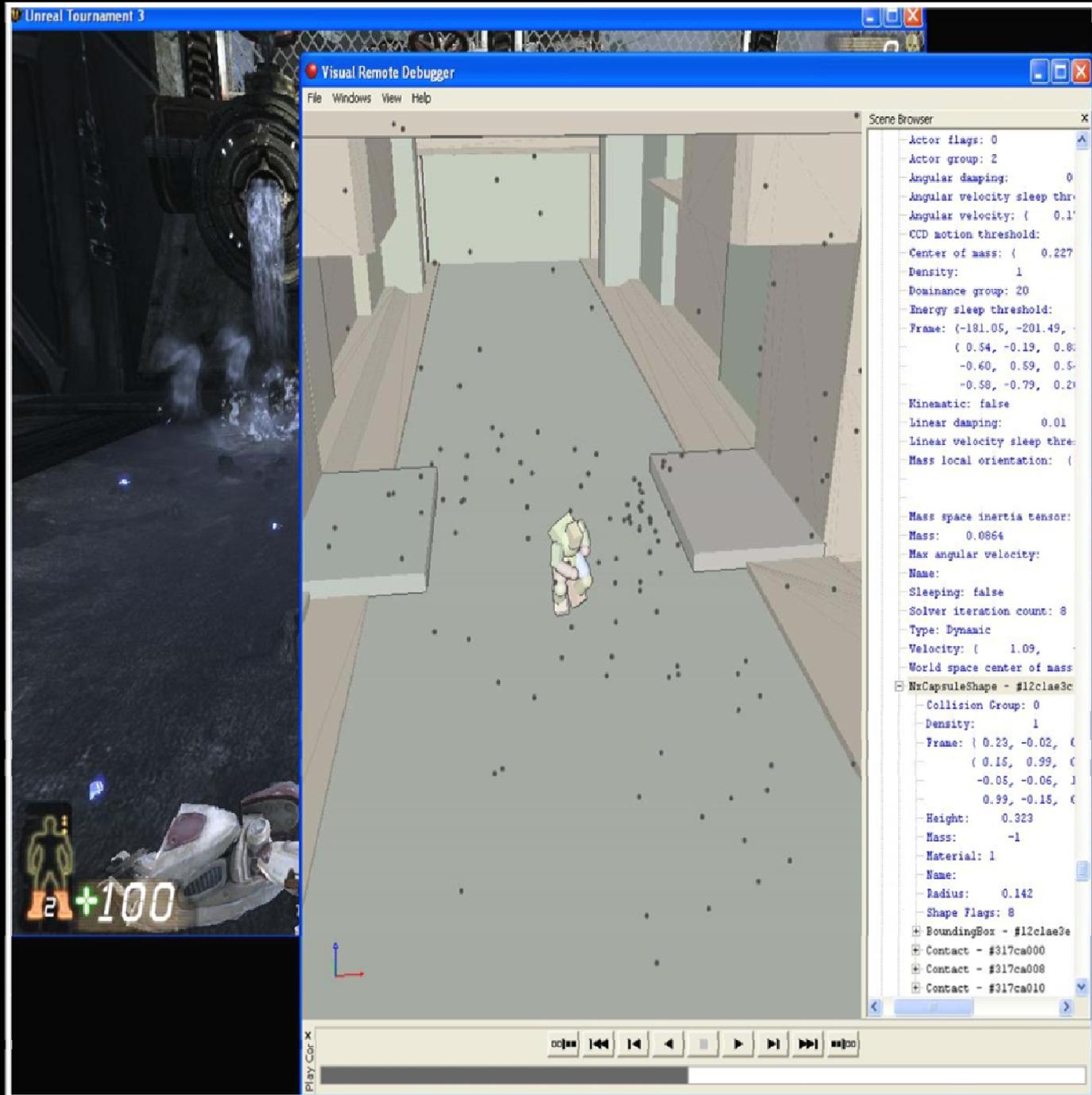


Real-Time Performance Monitoring

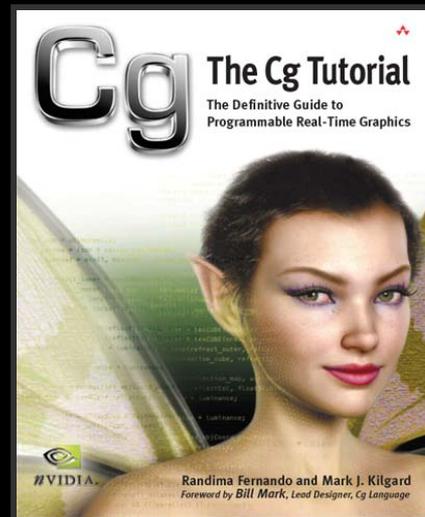
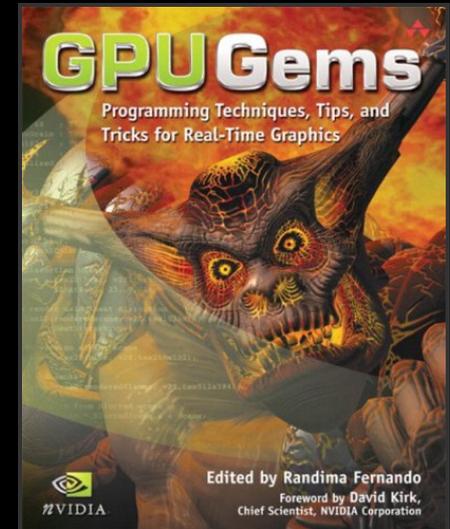
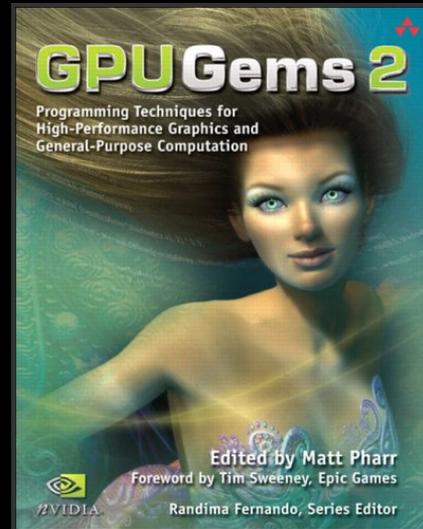
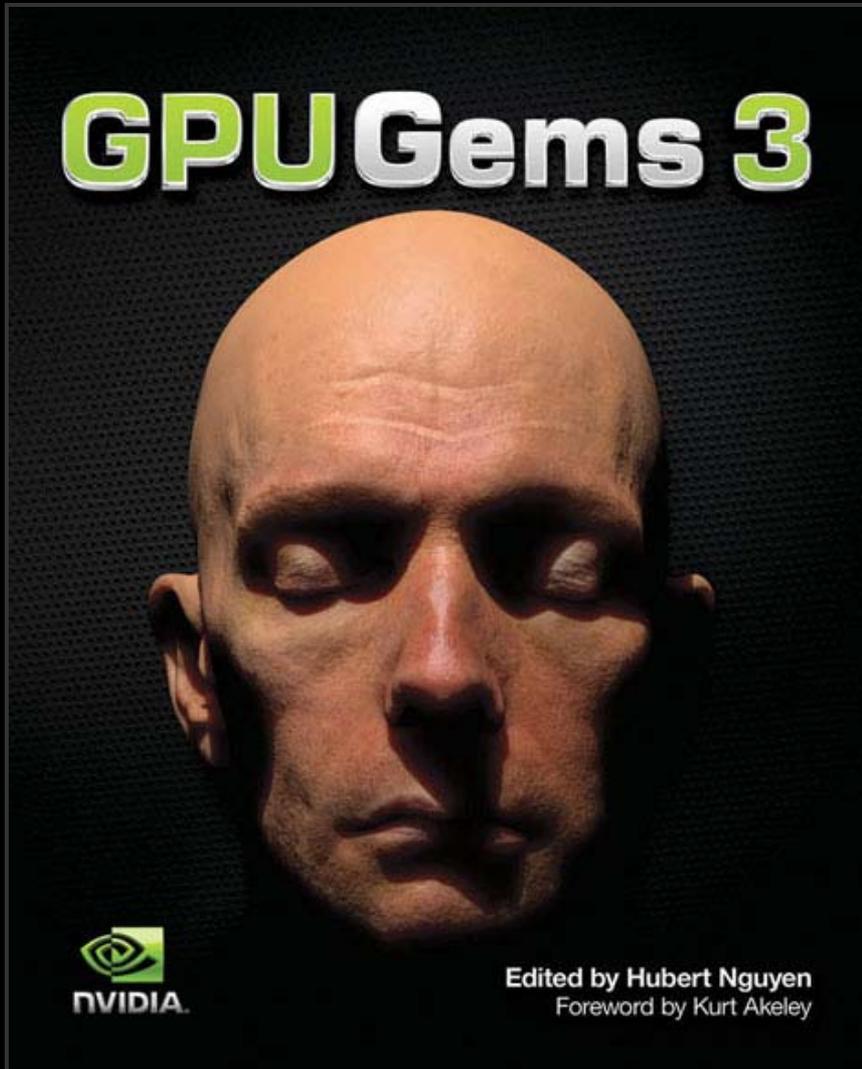
# Data Extraction Tool



# Visual Debugger



# Award-Winning Books



# Game Developer Magazine Front Line Awards

**GPU Gems 3 Wins in Books (2007)**

**PerfHUD 5 Finalist in Programming (2007)**

**Our products have won several prestigious Front Line Awards\* from Game Developer Magazine:**

<b>PerfHUD</b>	<b>2007 Finalist, 2006 Finalist – Programming</b>
<b>GPU Gems 3</b>	<b>2007 Winner – Books</b>
<b>FX Composer</b>	<b>2005 Finalist, 2004 Finalist – Art Tool</b>
<b>GPU Gems 2</b>	<b>2005 Finalist – Books</b>
<b>SDK</b>	<b>2004 Winner – Programming</b>
<b>GPU Gems</b>	<b>2004 Winner – Books</b>
<b>Cg</b>	<b>2002 Winner – Art</b>

\* The Front Line Awards recognize those software and hardware companies whose tools enable faster and more efficient game creation for advancing the state of the art. [www.frontlineawards.com](http://www.frontlineawards.com)



# The NVIDIA Software Improvement Program (SIP)

- **Goal: Better meet developer needs**
  - Simplify common usage patterns
  - Expand on popular features
  - Highlight powerful but underutilized features
  - Remove unwanted features
- **Instant Feedback allows user to press F4 and directly send a comment to NVIDIA**
- **Developer opts in to the SIP to participate – we encourage you to do so**
- **Only information about product features used is gathered, as well as GPU and driver version.**
- **No personally identifiable data, shaders, textures, scripts, geometry, or information about other applications is ever collected.**

# NVIDIA Developer Zone

Developer Forums  
[developer.nvidia.com/forums](http://developer.nvidia.com/forums)

RSS feed at [developer.nvidia.com](http://developer.nvidia.com)

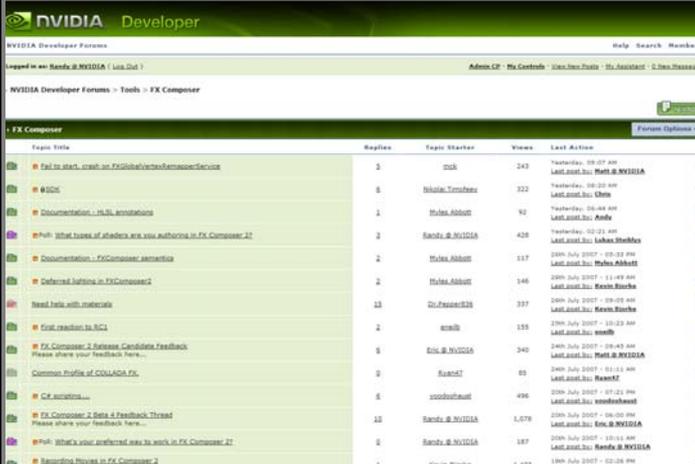
Registered Developer Program

Pre-Release Drivers

Early Access to Developer Tools

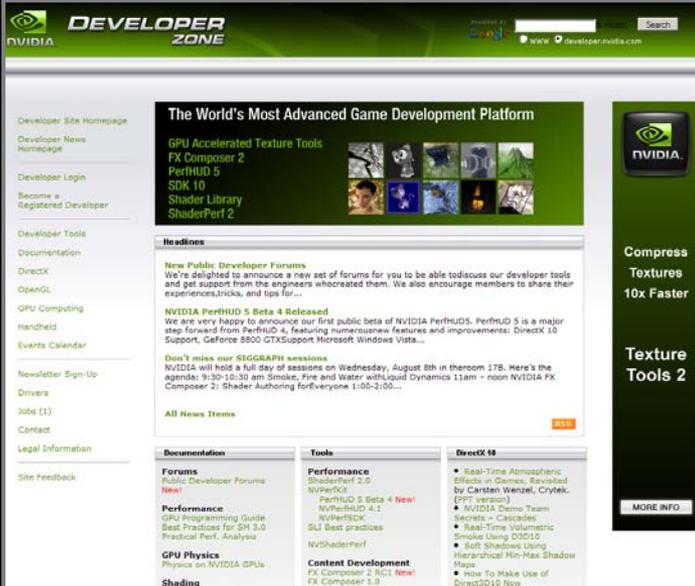
Secure Online Forums & Bug Submission

Apply from [developer.nvidia.com](http://developer.nvidia.com)



The screenshot shows the NVIDIA Developer Forums interface. At the top, there's a navigation bar with 'NVIDIA Developer' and a search bar. Below that, the page title is 'NVIDIA Developer Forums > Tools > FX Composer'. The main content area displays a list of forum threads under the heading 'FX Composer'. Each thread entry includes a title, the number of replies, the topic starter's name, the number of views, and the last action. The threads listed include topics like 'Fail to start... crash on FXGlobalVertexBufferService', 'WDC', 'Documentation... HLSL annotations', 'What types of shaders are you authoring in FX Composer 2?', 'Documentation... FXComposer parameter', 'Deferred lighting in FXComposer2', 'Need help with materials', 'Crash resolution in RCI', 'FX Composer 2 Release Candidate Feedback Please share your feedback here...', 'Common Profile of COLLADA FX', 'CF scenarios...', 'FX Composer 2 Beta 4 Feedback Thread Please share your feedback here...', 'What's your workflow now to work in FX Composer 2?', and 'Recording Movies in FX Composer 2 Using Python and WebBrowser'. The table has columns for 'Topic Title', 'Replies', 'Topic Starter', 'Views', and 'Last Action'.

Topic Title	Replies	Topic Starter	Views	Last Action
Fail to start... crash on FXGlobalVertexBufferService	5	msk	243	Yesterday, 09:07 AM LAST POST BY: <a href="#">Perf &amp; NVIDIA</a>
WDC	1	Nicola_Tomazini	322	Yesterday, 06:03 PM LAST POST BY: <a href="#">Chris</a>
Documentation... HLSL annotations	1	Mark Abbott	92	Yesterday, 06:44 AM LAST POST BY: <a href="#">Andy</a>
What types of shaders are you authoring in FX Composer 2?	2	<a href="#">Sandy @ NVIDIA</a>	428	Yesterday, 10:00 AM LAST POST BY: <a href="#">Lukas Heffler</a>
Documentation... FXComposer parameter	2	Mark Abbott	117	28th July 2007 - 09:23 AM LAST POST BY: <a href="#">Markus Buche</a>
Deferred lighting in FXComposer2	2	Mark Abbott	146	28th July 2007 - 11:49 AM LAST POST BY: <a href="#">Markus Buche</a>
Need help with materials	13	<a href="#">Dr.Fessan530</a>	337	28th July 2007 - 09:02 AM LAST POST BY: <a href="#">Markus Buche</a>
Crash resolution in RCI	2	msk	155	28th July 2007 - 10:23 AM LAST POST BY: <a href="#">msk</a>
FX Composer 2 Release Candidate Feedback Please share your feedback here...	6	<a href="#">Eric @ NVIDIA</a>	340	28th July 2007 - 09:43 AM LAST POST BY: <a href="#">Perf &amp; NVIDIA</a>
Common Profile of COLLADA FX	0	ReedT	83	28th July 2007 - 01:11 AM LAST POST BY: <a href="#">msk</a>
CF scenarios...	0	woodcraft	496	28th July 2007 - 07:22 AM LAST POST BY: <a href="#">msk</a>
FX Composer 2 Beta 4 Feedback Thread Please share your feedback here...	10	<a href="#">Sandy @ NVIDIA</a>	1,078	28th July 2007 - 06:00 AM LAST POST BY: <a href="#">Perf &amp; NVIDIA</a>
What's your workflow now to work in FX Composer 2?	0	<a href="#">Sandy @ NVIDIA</a>	187	28th July 2007 - 10:11 AM LAST POST BY: <a href="#">Perf &amp; NVIDIA</a>
Recording Movies in FX Composer 2 Using Python and WebBrowser	1	Markus Buche	1,423	28th July 2007 - 02:28 PM LAST POST BY: <a href="#">Sandy</a>



The screenshot shows the NVIDIA Developer Zone homepage. At the top, there's a navigation bar with 'NVIDIA DEVELOPER ZONE' and a search bar. Below that, the main content area features a large banner titled 'The World's Most Advanced Game Development Platform' with sub-headings 'GPU Accelerated Texture Tools', 'FX Composer 2', 'PerfHUD 5', 'SDK 10', 'Shader Library', and 'ShaderPerf 2'. To the right of the banner is a grid of images showing various game development scenes. Below the banner, there's a 'Headlines' section with several news items, including 'New Public Developer Forums', 'NVIDIA PerfHUD 5 Beta 4 Released', and 'Don't miss our STGGGRAPH sessions'. On the left side, there's a sidebar with navigation links for 'Developer Site Homepage', 'Developer News Homepage', 'Developer Login', 'Become a Registered Developer', 'Developer Tools', 'Documentation', 'DirectX', 'OpenGL', 'GPU Computing', 'Handheld', 'Events Calendar', 'Newsletter Sign-Up', 'Drivers', 'Site (1)', 'Contact', 'Legal Information', and 'Site Feedback'. On the right side, there's a 'Compress Textures 10x Faster' advertisement and a 'Texture Tools 2' advertisement. At the bottom, there's a 'MORE INFO' button.

# Useful Links

- [Developer Web Site](#)
- [Developer Tools Forums](#)
  
- [SDK 10](#)
  
- [PerfHUD](#)
- [PerfHUD Overview Video](#)
  
- [FX Composer](#)
- [FX Composer Overview Video](#)
  
- [PhysX](#)
  
- [CUDA Zone](#)