

Models & Styles

- Models are complete files - DAE, FBX, etc.
- Styles are collections of material for a model
- Update your model without fear of losing styles
- Use models many times
 - In a scene
 - With different styles



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DirectX 10

- Geometry shaders
- Texture arrays
- Stream out

Picture includes

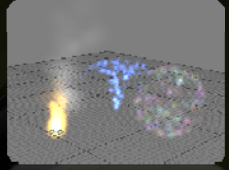
- Explosion(GS)
- Particles(GS,SO)
- Pipes(GS,TA,SO)



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Simple Particle Systems


- Simple emitters for designing effects
 - Not for complex simulation
- Predefined templates to start
 - Fire
 - Smoke
 - Fireworks
 - Water fountain
- Customizable parameters



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ShaderPerf 2.0

- GeForce 8 Series support
- Vertex and pixel shader analysis
- Many supported shader formats
- Compare different techniques
- See shader throughput, register usage, instruction counts, and branching performance



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mental mill™ Artist Edition

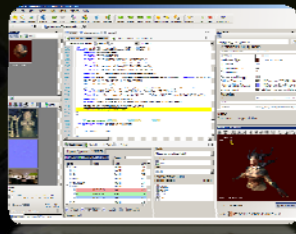
- Enables artists to quickly and easily develop and prototype new looks within a fast, flexible GUI.



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NVIDIA Shader Debugger

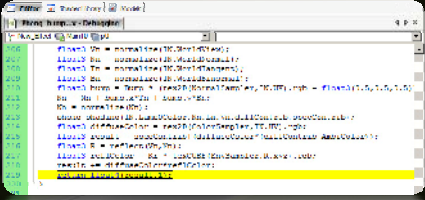
- Broad Language Support
 - HLSL10/9
 - CgFX
 - COLLADA FX Cg
- Step through shader source code
- Visualize variables across your geometry
- Plug-in for FX Composer 2.5



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Run Control
Full control of shader execution

Next/Previous Statement
Run to Cursor
Run to Bookmark



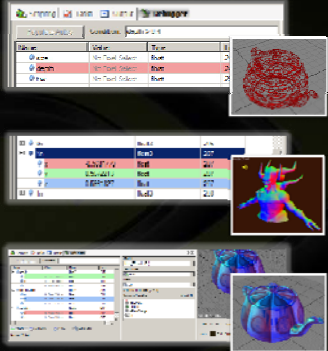
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More Shader Debugger Features

Conditionally Kill Fragments

Visualize Any Variable

Create Custom Output Mappings



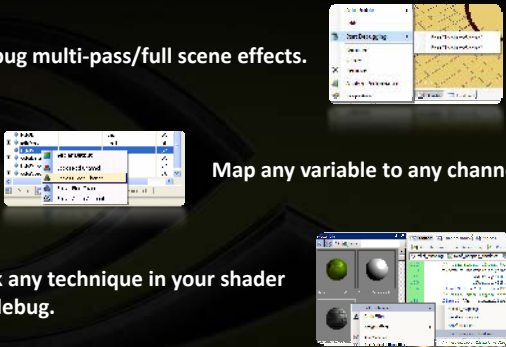
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More Shader Debugger Features

Debug multi-pass/full scene effects.

Map any variable to any channel.

Pick any technique in your shader to debug.



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demo



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Performance Tools Update

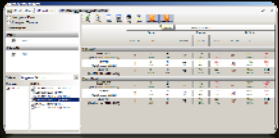
- ShaderPerf 2.0
- PhysX
- PerfKit
- PerfSDK
- gDebugger
- Sneak peek at PerfHUD 6.5!



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ShaderPerf 2.0

- Shader Analysis
 - Cg, GLSL, HLSL
 - All NVIDIA GPUs since FX Series
 - Multiple driver versions
- Multiple use cases
 - FX Composer IDE integration
 - Command line
 - Script based testing
 - Integrate into source control for regression testing
 - ShaderPerfAPI: Dream up new uses!



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PhysX SDK: Enhancing Realism

- Free binary version for Windows and Linux
- Licensed source code version for Windows and Xbox





<http://developer.nvidia.com/object/physx.html>

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PhysX Tools


- PhysX Event Viewer
 - Graph physics engine events
 - Analyze usage and utilization
 - General CPU usage and user events
- PhysX HUD
 - Real time PhysX Data
 - In application context

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PerfKit Features

- OpenGL and Direct3D, Windows and Linux
- GPU & Driver counter data
 - Supports QuadroFX, GeForce 8, 9, and 200 series
 - GPU utilization data, various primitive counts, etc.
 - Driver CPU usage, stalls, counts



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PerfKit Features

- Simplified Experiments: GPU Bottleneck and utilization
- PerfAPI: counters and experiments integrated into your application
- GLExpert
 - Debug runtime for OpenGL
 - Driver performance gotchas, software fallbacks
- NVIDIA Plug-in for Microsoft PIX for Windows

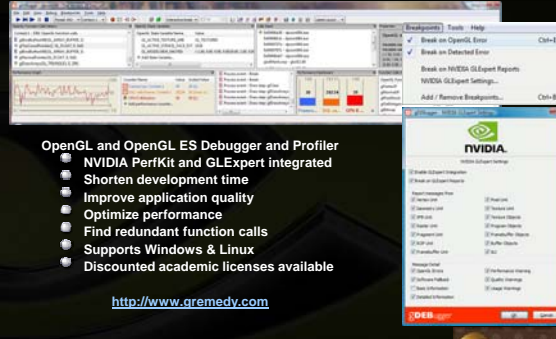
ADD SMALL PIC OF BOTTLENECK GRAPH

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Graphic Remedy's gDEDebugger

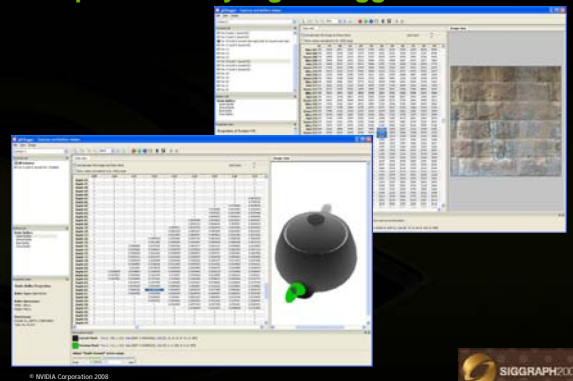
- OpenGL and OpenGL ES Debugger and Profiler
- NVIDIA PerfKit and GLExpert integrated
- Shorten development time
- Improve application quality
- Optimize performance
- Find redundant function calls
- Supports Windows & Linux
- Discounted academic licenses available

<http://www.gremedy.com>



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Graphic Remedy's gDEDebugger



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PerfHUD: Frame Debugger

API Call List

- Based on a frame capture
- See frame events, including parameters
- Tooltips for details
- Connected to scrubber

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PerfHUD: Frame Debugger

Draw Call Dependencies

- Show producers & consumers dependencies for each call
- These can hurt single GPU and SLI performance

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PerfHUD: Adv Frame Debugger

Vertex Assembly

- Geometry preview
- Vertex and index buffer setup

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PerfHUD: Adv Frame Debugger

Vertex, Geometry and Pixel Shaders

- Edit & continue shaders
- Visualize input textures
- Constants
- Sampler overrides

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PerfHUD: Adv Frame Debugger

Render Targets

- Display and modify all render state settings
- Render targets displayed

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PerfHUD: Frame Profiler

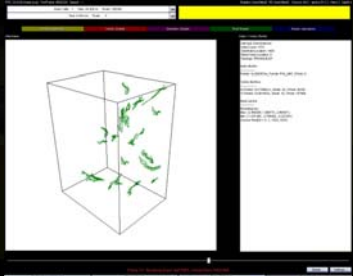
One button bottleneck determination

- All draw calls profiled
- Draw calls grouped by state buckets: multiply performance optimizations
- Multiple result graphs

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PerfHUD: Adv Frame Profiler



Same advanced features now in the profiling context

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Questions ?

- Downloads
 - <http://www.fxcomposer.com>
 - <http://www.perfhud.com>
 - <http://developer.nvidia.com/object/physx.html>
- Forums
 - <http://developer.nvidia.com/forums>
- Email
 - fxcomposer@nvidia.com
 - perfhud@nvidia.com

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The NVIDIA Developer Toolkit

Content Creation	Software Development	Performance	Documentation
FX Composer 2.5 mental mill Artist Edition	SDK 10	PerfKIT 6	Conference Presentations
Texture Tools 2	Cg Toolkit	PerfHUD 6	GPU Programming Guide
Melody	NVSG	PerfSDK	Videos
		GLExpert	Books
		NV PIX Plug-in	
		gDEBugger	
		ShaderPerf 2	



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