Game Physics: The Next Frontier

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The Previous Frontier

Remember the mid 90's…?

.. Primitive fill rate, no texture filtering, no anti-aliasing…..

And games that looked like graphics was the next frontier….

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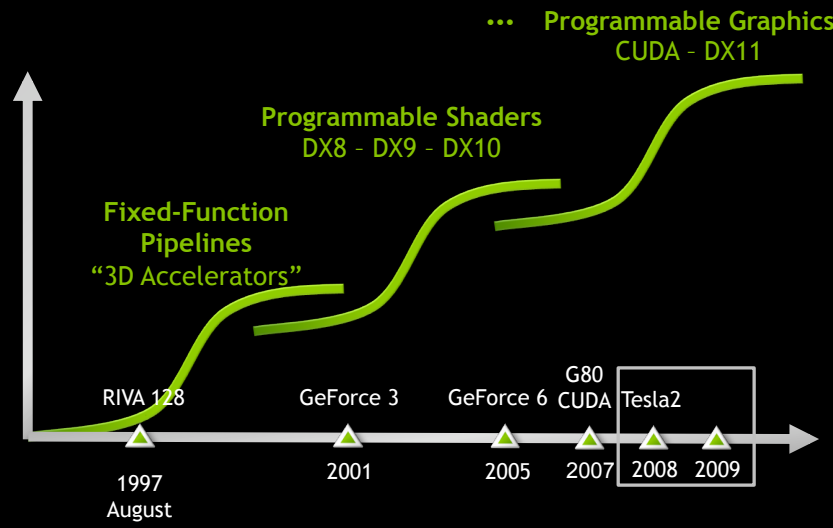
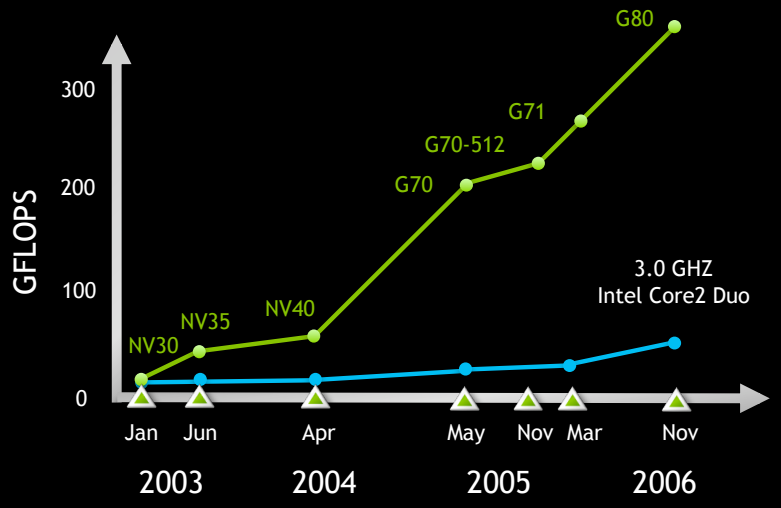
Then Visual Computing





G80 = GeForce 8800 GTX
G71 = GeForce 7900 GTX
G70 = GeForce 7800 GTX
NV40 = GeForce 6800 Ultra
NV35 = GeForce FX 5950 Ultra
NV30 = GeForce FX 5800

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And We Have…

1996 – 2006, graphics performance up by more than 1MX!

Today X Mhz core clocks, Y memory clocks, Z transistors

…fill rates

Games that look …cinematic

"Those who can (not) learn the lessons of history are blessed (doomed) to repeat it."
George Santayana

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Physics is…

3D Graphics lets you “look around”

Physics lets you additionally “feel your way” around

Physics is interaction, physics is movement…

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Faking physics

Looks unrealistic

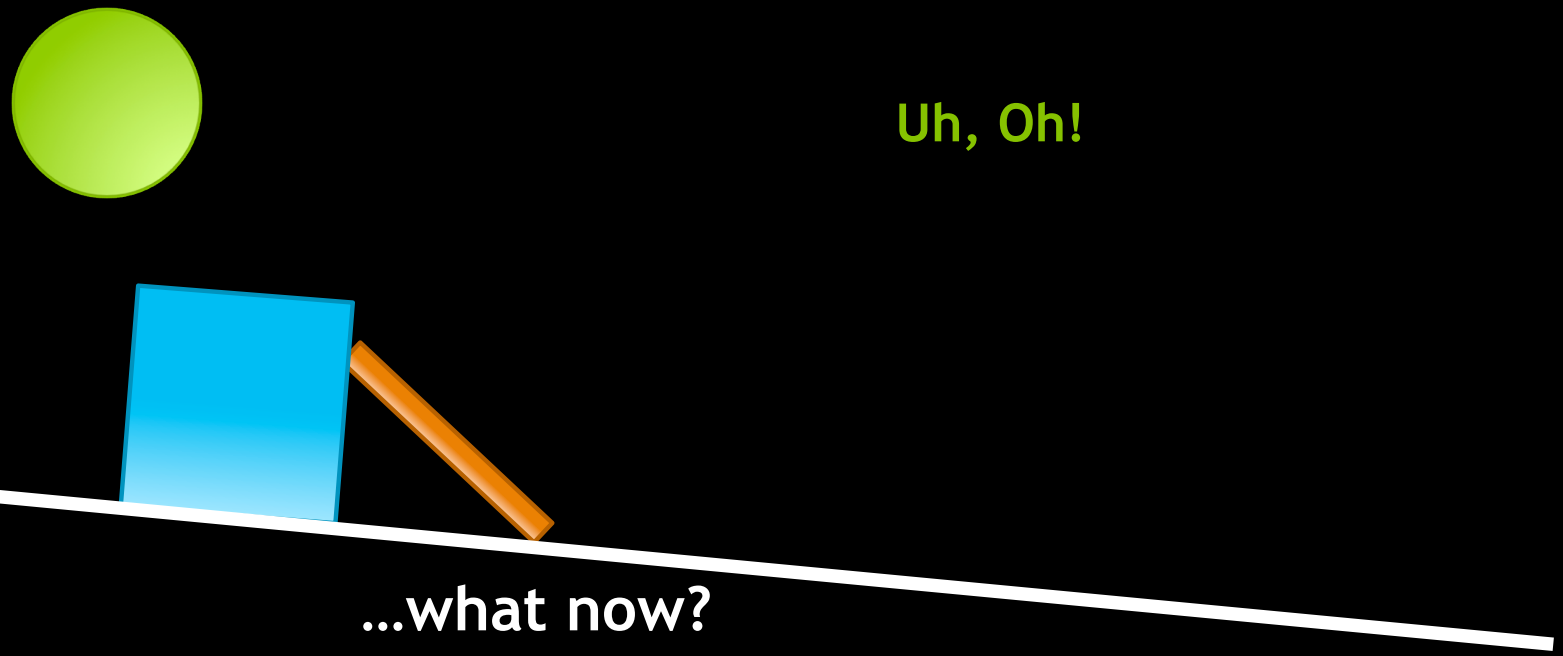
Faking physics

Better but still poor

Faking physics

Nice, isn't it? But…

Faking physics



Uh, Oh!

…what now?

Physics is Simulation

A mathematical simulation of phenomena so that interaction follows physics or physics like laws

Force, Collisions, Joints, Cloth, Fluids, Smoke, Gravity, Rigid bodies, Soft Bodies…..

And much more…

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Onto the Next Frontier

- Multi-platform tools for developers
- Features
- Performance
- Installed base
- Partners
- Motivation

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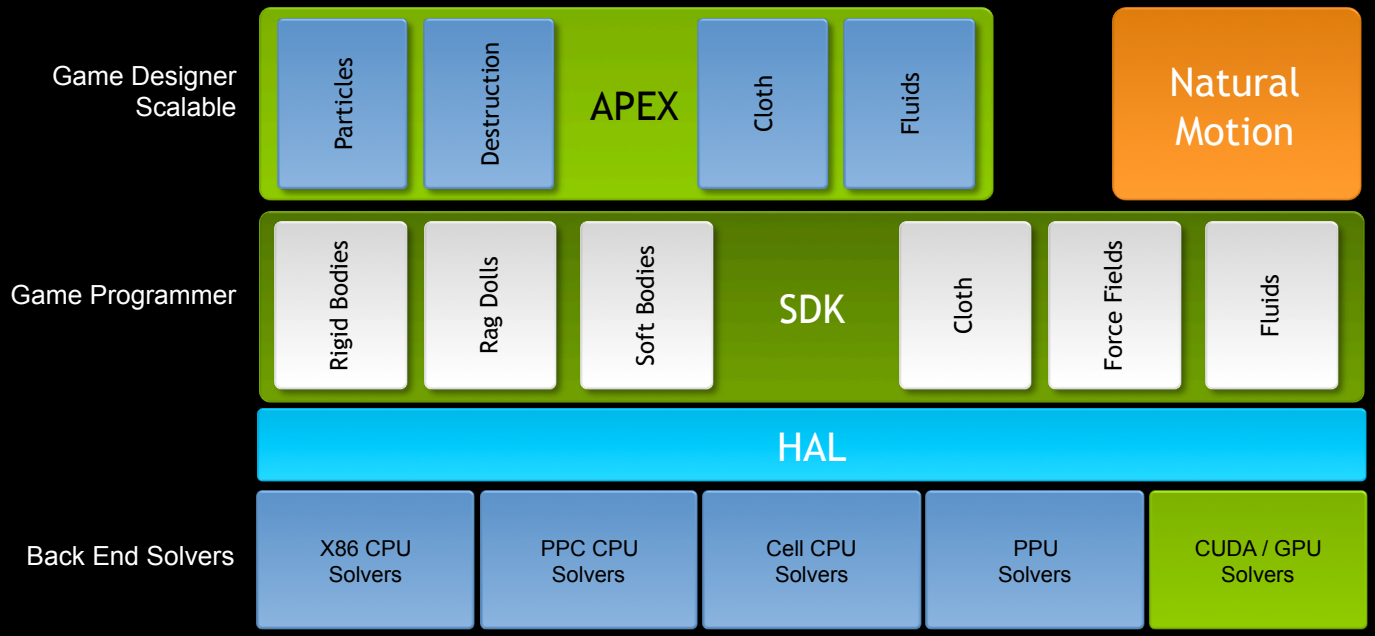
Pervasive Multi-platform SDKs



Over 400 titles in development

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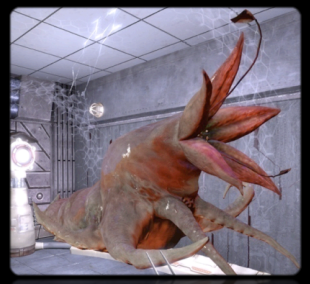
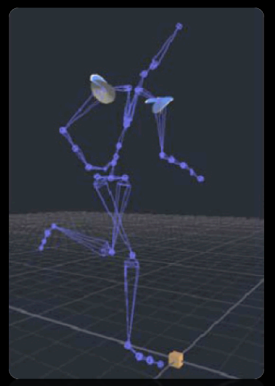
Features



- Soft Bodies
- Fluid
- Particles
- Joints
- Cloth



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Features with Performance

PhysX by NVIDIA

	Core 2 Quad (Quad Core)	GeForce GTX 280
Cores	4	240
GFLOPS	96	930
Fluids	1	15x
Soft Bodies	1	12x
Cloth	1	13x

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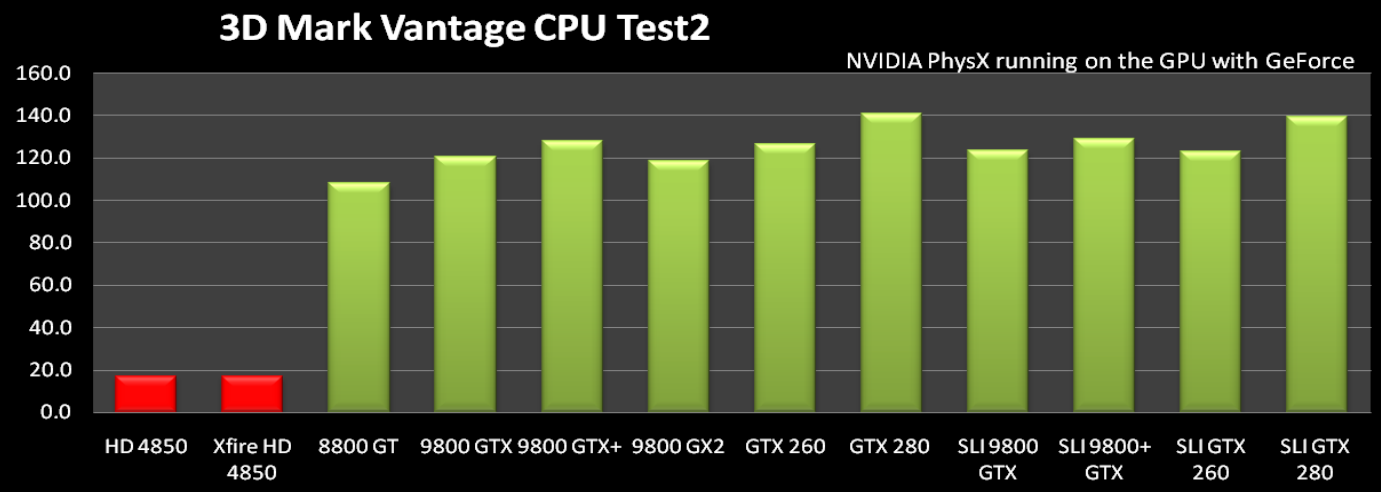
Physics Performance



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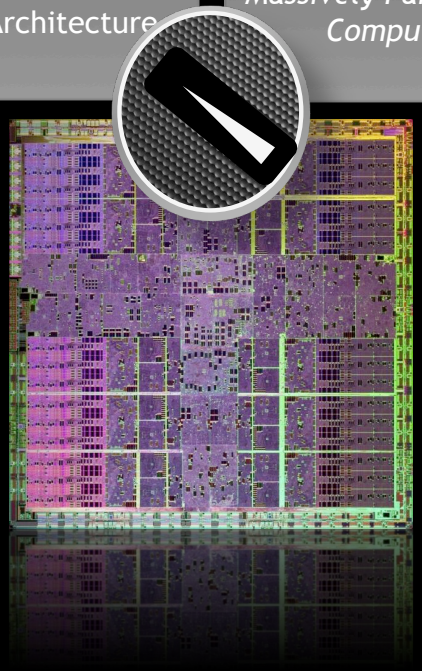
Graphics AND Physics

3D Graphics
Graphics Processing Architecture

Computation
Massively Parallel General Purpose Computing Architecture



CUDA

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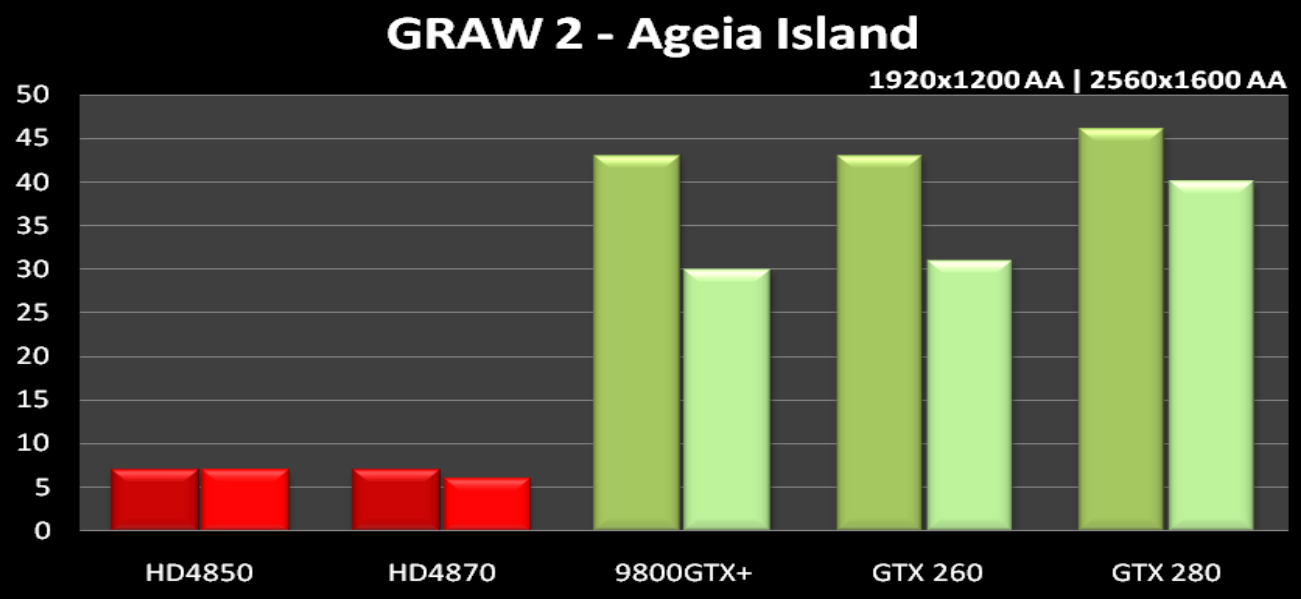
Graphics and Physics



Installed base of CUDA enabled GPUs over 90M
Free physics

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Motivation

New Titles

GPU Roadmap

Cinema envy

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