



July 1<sup>st</sup> 2009



**Tesla: Fastest Processor Adoption in HPC History**

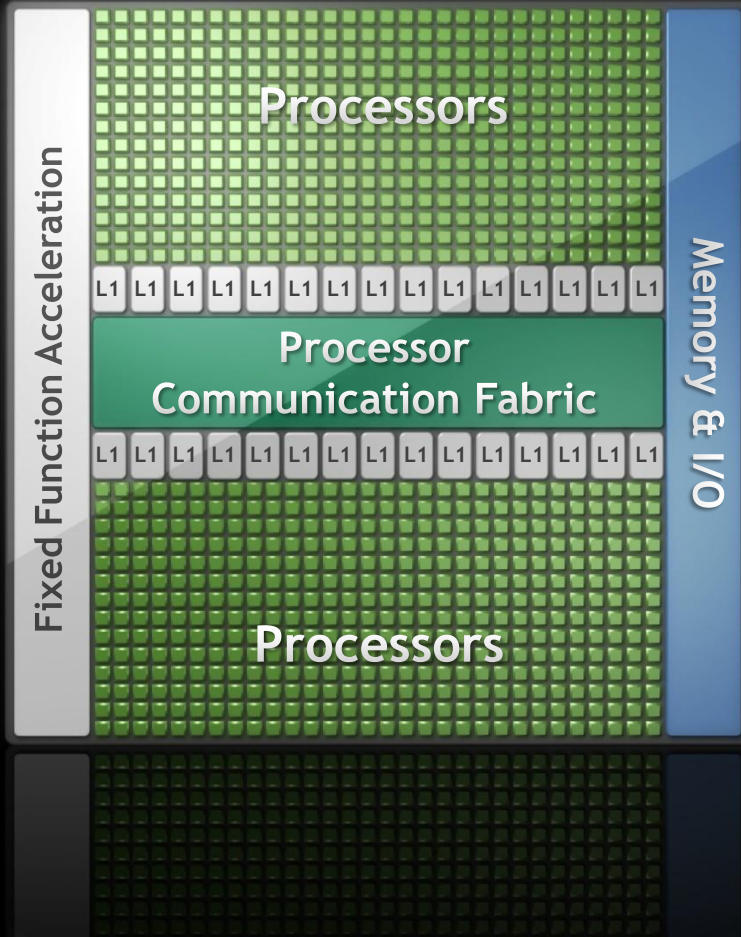
# 2008

350 Million triangles/second  
1.4 Billion transistors GPU

# 1995

5,000 triangles/second  
800,000 transistors GPU





## GPU for Computing

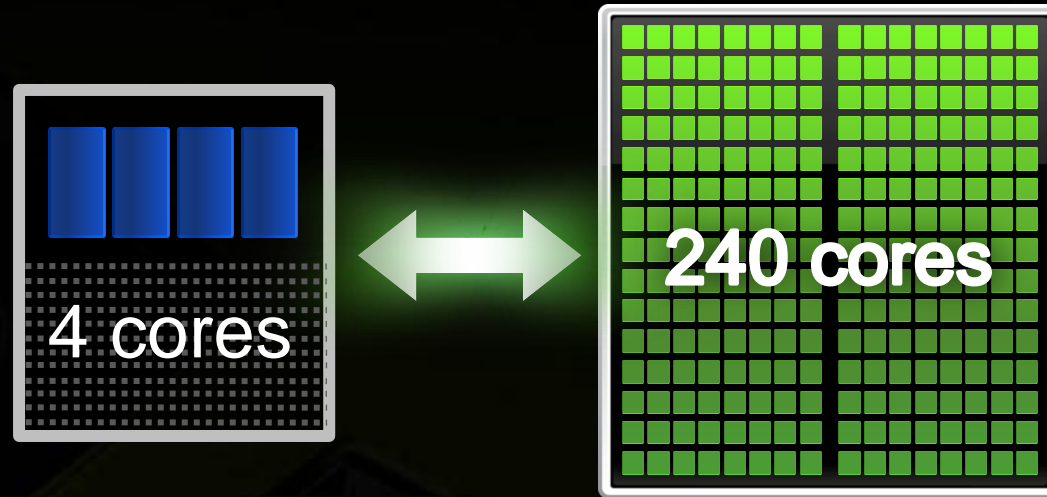
Massively parallel, throughput architecture

240 Processor Cores

1 Teraflops - 1,000 times Cray X-MP

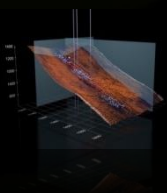
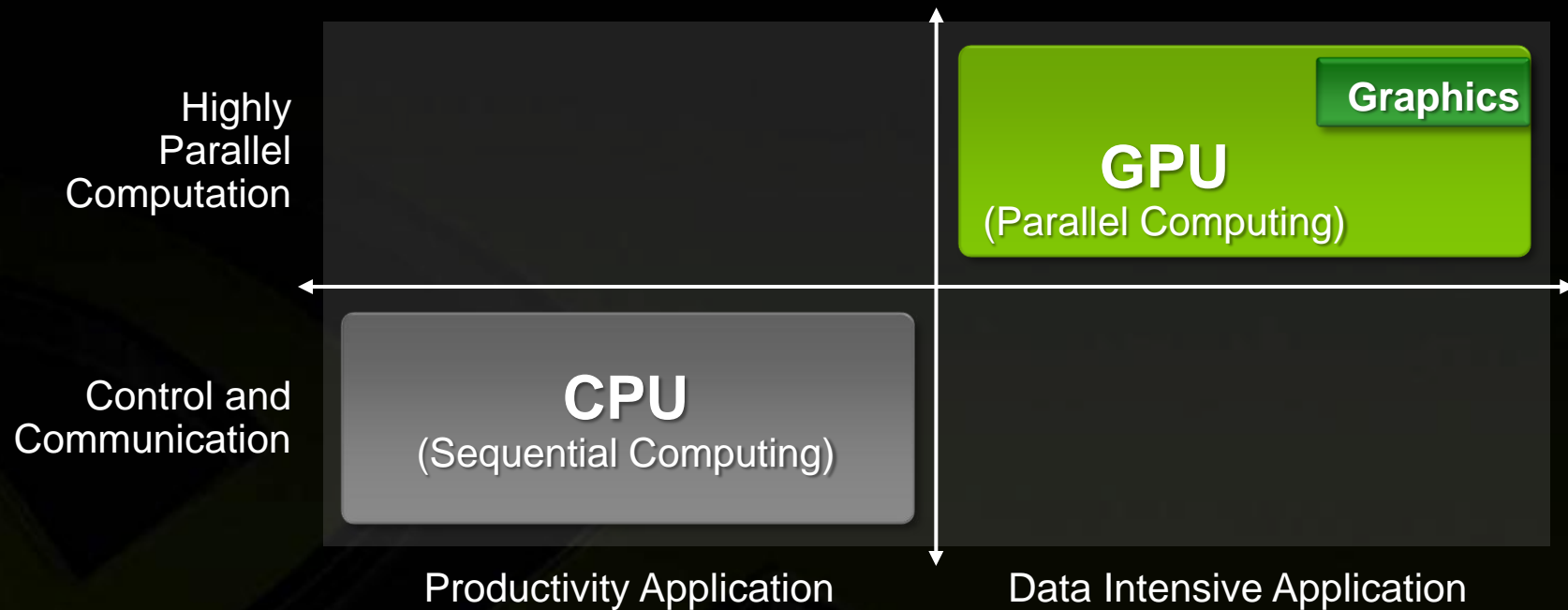
IEEE Compliant Double Precision Floating Point

# GPU Computing

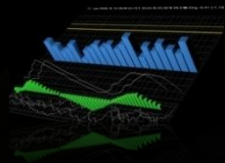


CPU + GPU Co-Processing  
*Heterogeneous Computing*

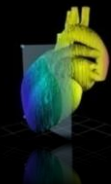
# Heterogeneous Computing Domains



Oil & Gas



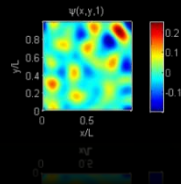
Finance



Medical



Biophysics



Numerics



Audio



Video



Imaging

# Tesla GPU Computing Products



Tesla S1070 System



Tesla C1060 Processor



Tesla M1060 Processor

**GPUs**

**4 Tesla GPUs**

**1 Tesla GPU**

**1 Tesla GPU**

Single Precision Perf

4.14 TFlops

933 GFlops

933 GFlops

Double Precision Perf

346 GFlops

78 GFlops

78 GFlops

Memory

4 GB / GPU

4 GB

4 GB

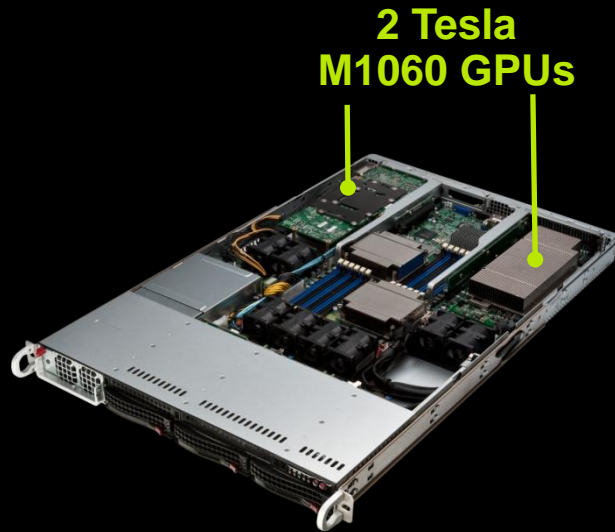
Form Factor

1U Chassis, cables to a Host

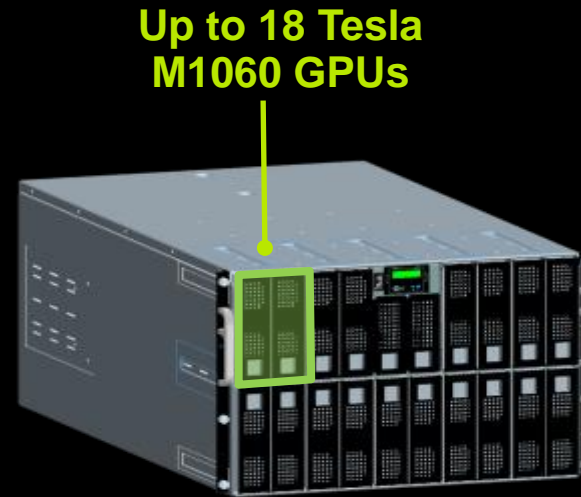
Standard PCIe board

Custom Module

# New Class of Co-Processing Supercomputers



SuperMicro 1U  
GPU Server

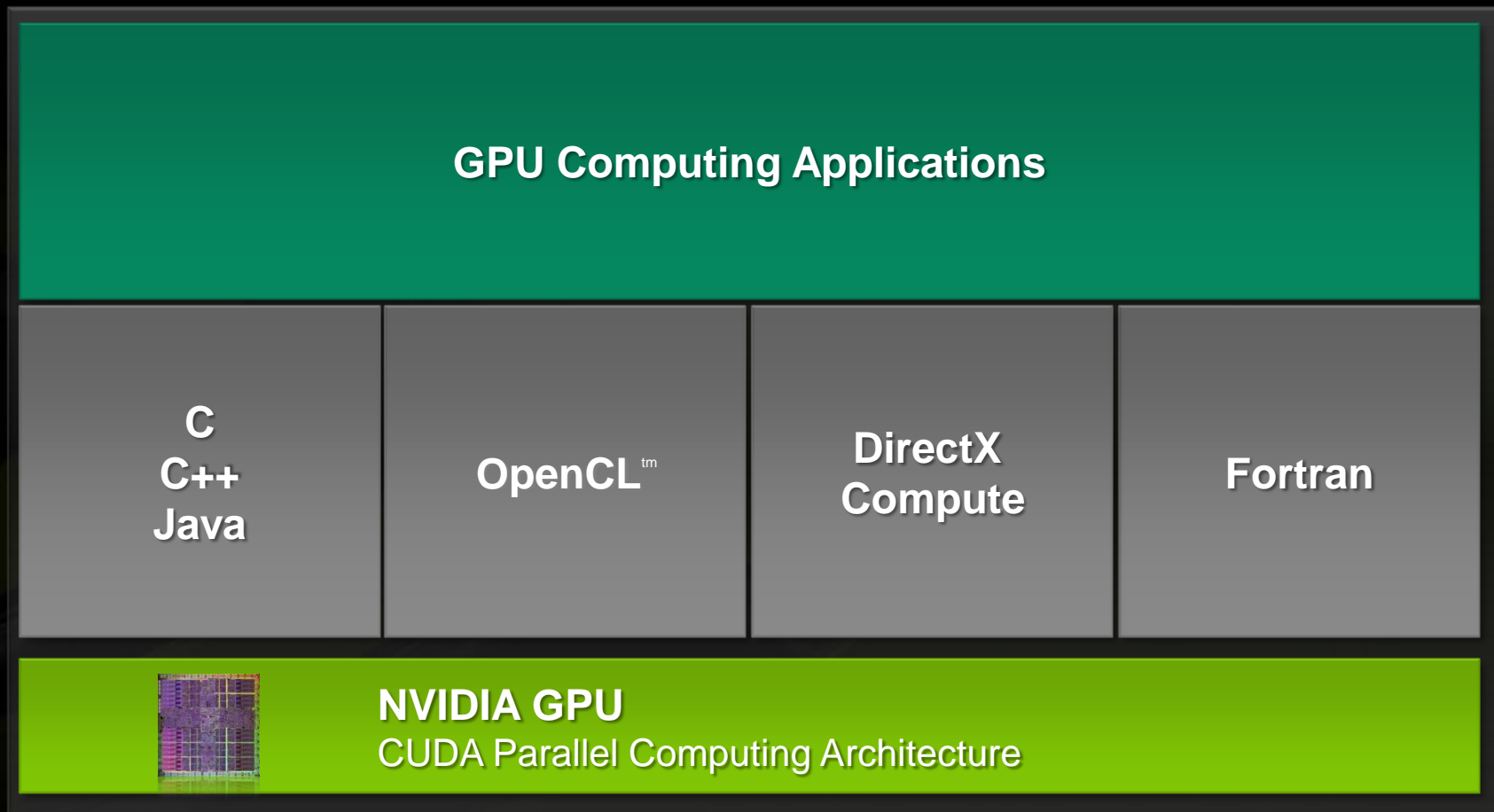


Up to 18 Tesla  
M1060 GPUs

Bull Bullx  
Blade Enclosure

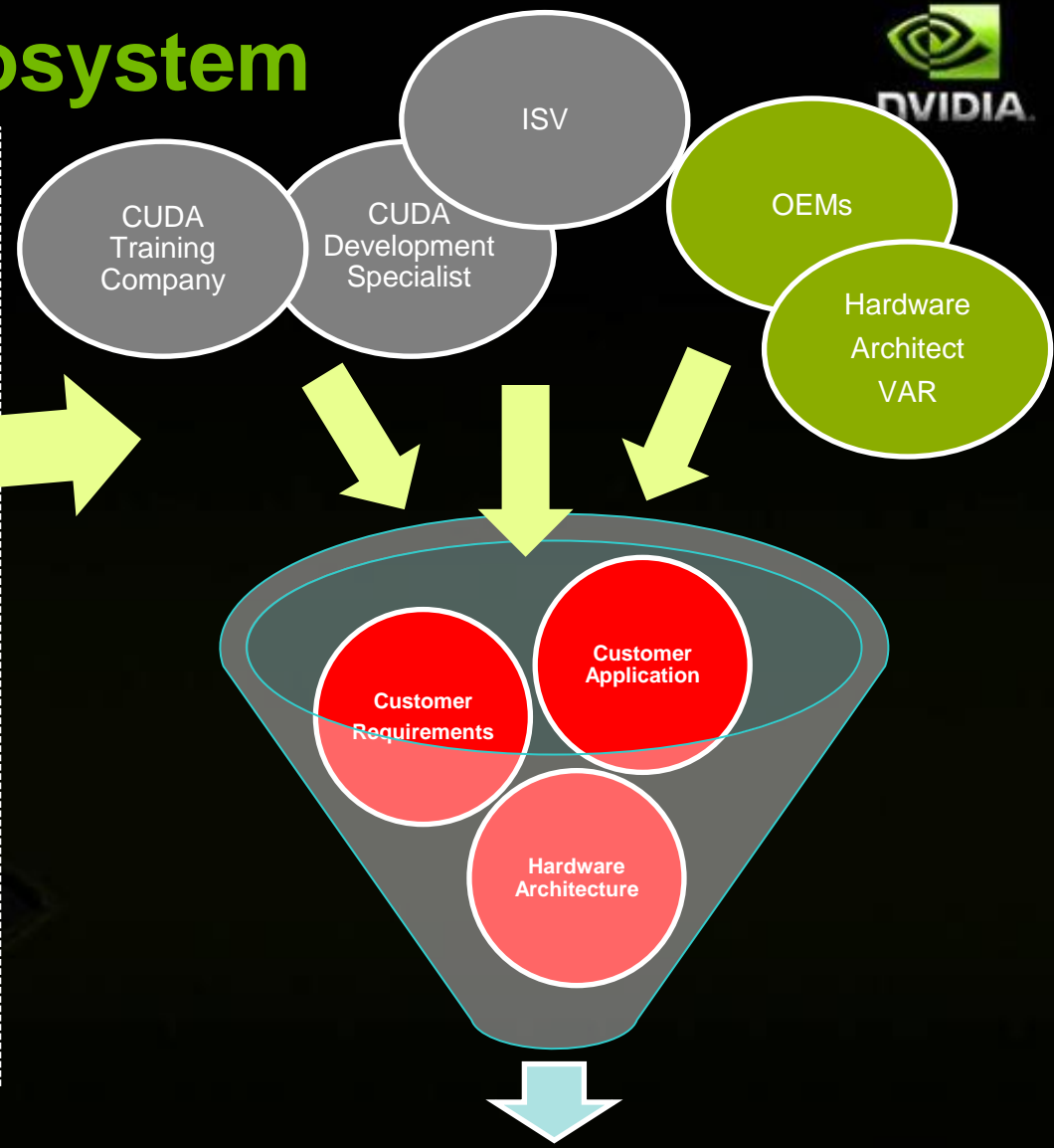
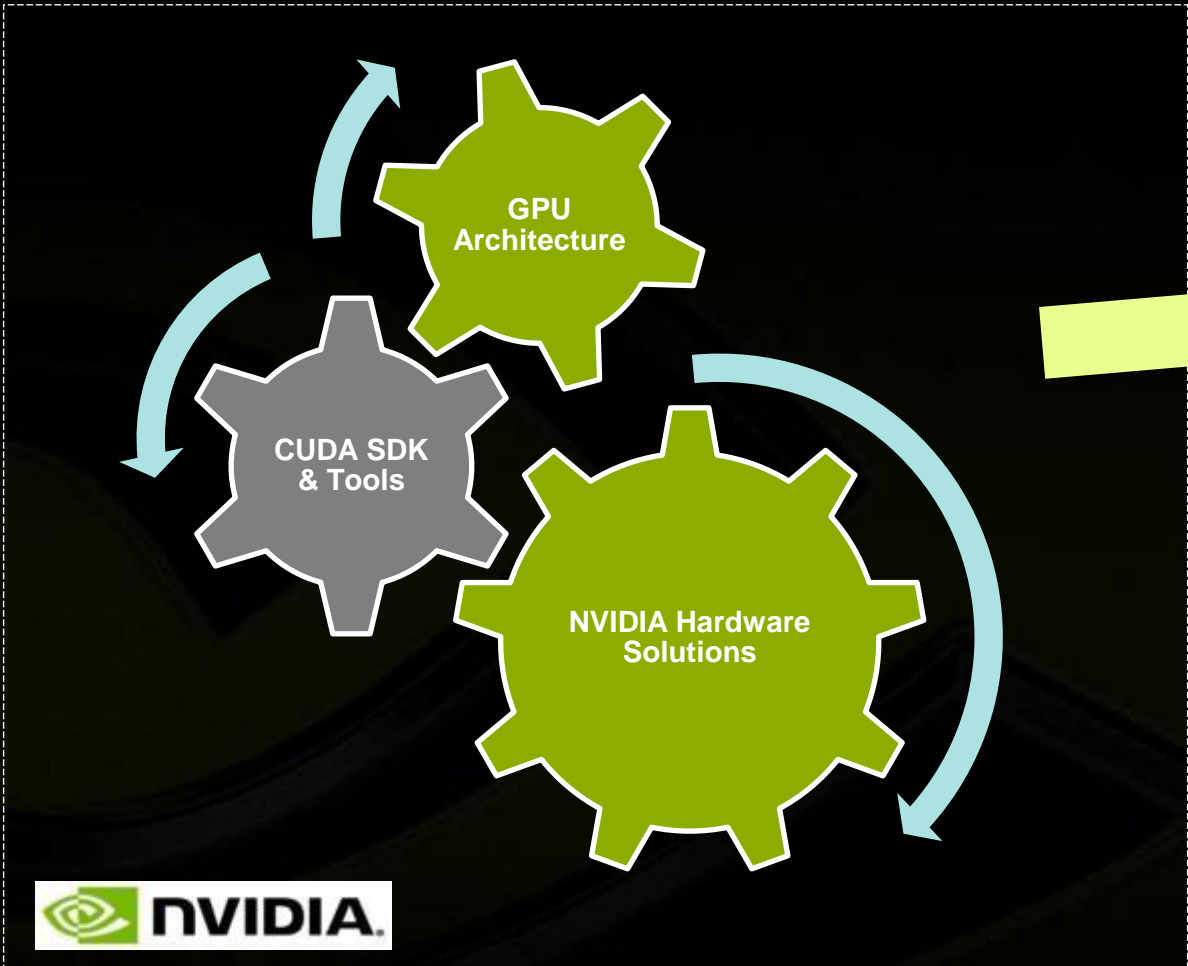
Tesla M1060 it is only available in OEM systems

# CUDA GPU Computing Architecture





# NVIDIA GPU Computing Ecosystem



**Deployment**

# CUDA Ecosystem



## Over 200 Universities Teaching CUDA



UIUC  
MIT  
Harvard  
Berkeley  
Cambridge  
Oxford  
...

IIT Delhi  
Dortmundt  
ETH Zurich  
Uni. Perpignan  
Ecole Centrale  
Paris 6 Jussieu  
...

## Languages

C, C++  
DirectX  
Fortran  
Java  
OpenCL  
Python


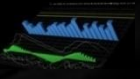






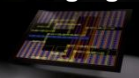
## Compilers

PGI Fortran  
CAPS HMPP  
MCUDA  
MPI  
NOAA Fortran2C  
OpenMP

## Debuggers

Alinea  
TotalView





## Applications

 Oil & Gas	 Finance	 CFD
 Medical	 Biophysics	 Imaging
 Numerics	 DSP	 EDA

## Libraries

FFT  
BLAS  
LAPACK  
Image processing  
Video processing  
Signal processing  
Vision

## Consultants

## OEMs

# GPU Revolutionizing Computing

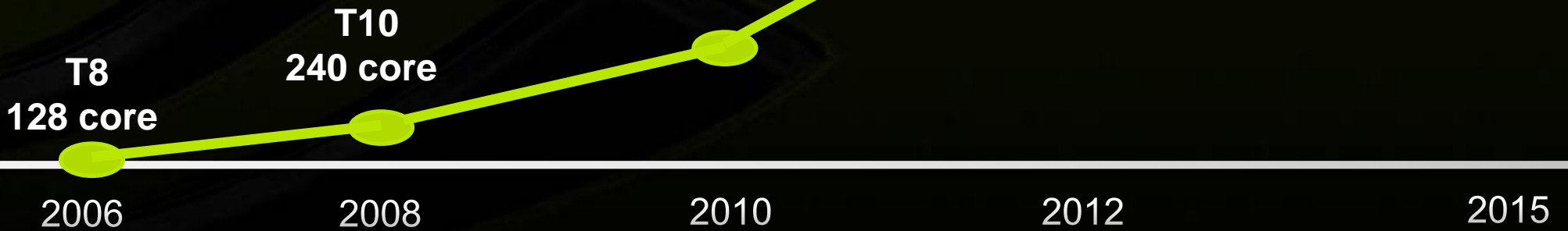


GFlops

## A 2015 GPU \*

- ~20x the performance of today's GPU
- ~5,000 cores at ~3GHz (50mW each)
- ~20 TFLOPS
- ~1.2TB/s of memory bandwidth

GPU



\* This is a sketch of a what a GPU in 2015 might look like, it does not reflect any actual product plans

# We bring Solutions to your Questions



USA - United States

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### LATEST UPDATES

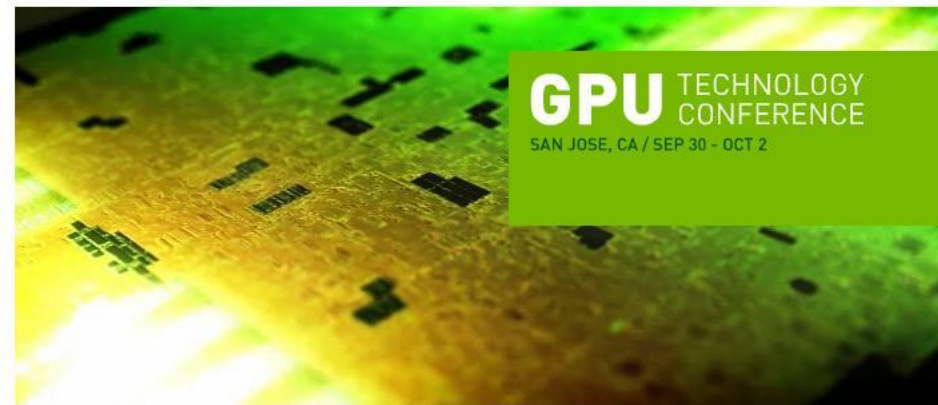
Call for Submissions Extended  
- 6/17/09

Keynote, General Sessions and Pre-Conference Tutorials Announced  
- 5/26/09

Pre-Event Webinars  
- 5/26/09

NVIDIA Submits OpenCL 1.0 Driver to Khronos for Conformance Certification for Windows and Linux  
- 5/12/09

NVIDIA CUDA Toolkit 2.2 Released  
- 5/1/09



### EMERGING COMPANIES SUMMIT



For Entrepreneurs and Venture Capitalists

### GPU DEVELOPERS SUMMIT



For Developers and Programmers

### NVIDIA RESEARCH SUMMIT



For Researchers and Academics

The GPU Technology Conference is the most significant event in 2009 dedicated to application development on the GPU. Encompassing three simultaneous summits, this event will focus on the latest breakthroughs developers, engineers, and researchers are achieving through the use of the graphics processing unit (GPU) to solve the world's most important computing challenges.

## GPU Technology Conference

Sept 30 – Oct 2, 2009

San Jose, CA

[www.nvidia.com/gtc](http://www.nvidia.com/gtc)



# NVIDIA GPU Computing Links

[NVIDIA CUDA Zone](#)

[NVIDIA High Performance Computing Solutions](#)

[NVIDIA Tesla S1070 – Product Description](#)

[NVIDIA Tesla C1060 – Product Description](#)

[Tesla Personal Supercomputer](#)

[Tesla Personal Supercomputer – Where to Buy?](#)

[YouTube – Tesla videos](#)

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