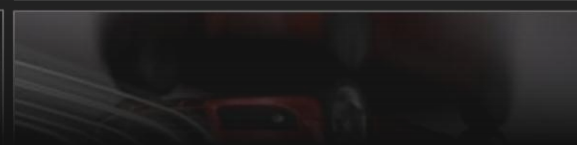
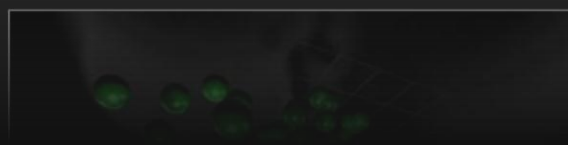
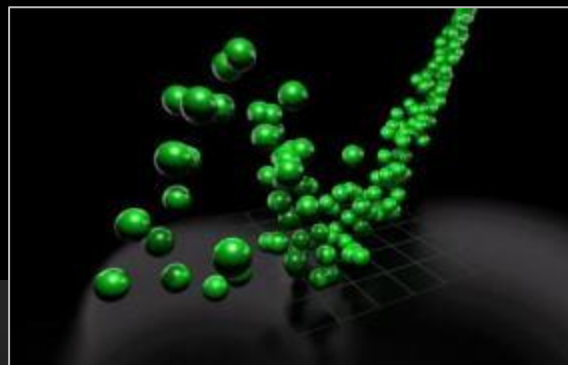
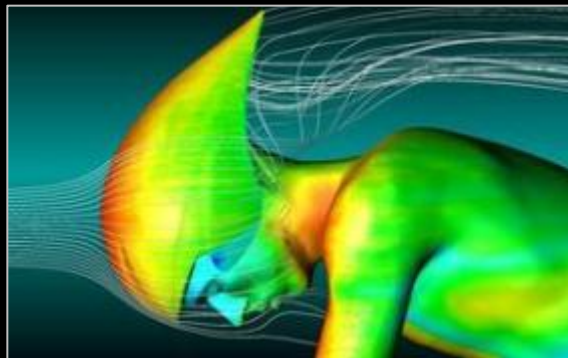


Embargoed until GTC Asia (detail on slide 22). Please do not distribute



TESLA

GPU Computing

GTC Asia 2011 Update

Supercomputing (SC11) Recap

GPU Computing Gets Easier

OpenACC
Open Standard for
GPU Directives

2x in 4 Weeks

GPUs Accelerate Science

H1N1 Breakthrough
In China

Russian Academy
of Sciences doubles up

GPU Supercomputers in US
TITAN at Oak Ridge Blue Waters at NCSA

Path to Exascale

GPU Supercomputers
in Top500 Triples
From 10 to 35

ARM + CUDA GPU
Supercomputer
& DevKit

GTC Asia 2011

Beijing, China, December 14-15, 2011

Academic & Industry Work
Accelerated by GPU Computing

Jen-Hsun Huang keynote streamed live

Dec. 13, 5:30 pm PT (12/14, 9:30 am CST)

<http://www.gputechconf.cn/page/home-en.html>

Sessions archived for viewing

<http://www.gputechconf.com/page/gtc-on-demand.html>



China National Convention Center

<http://www.cnccchina.com/en/>

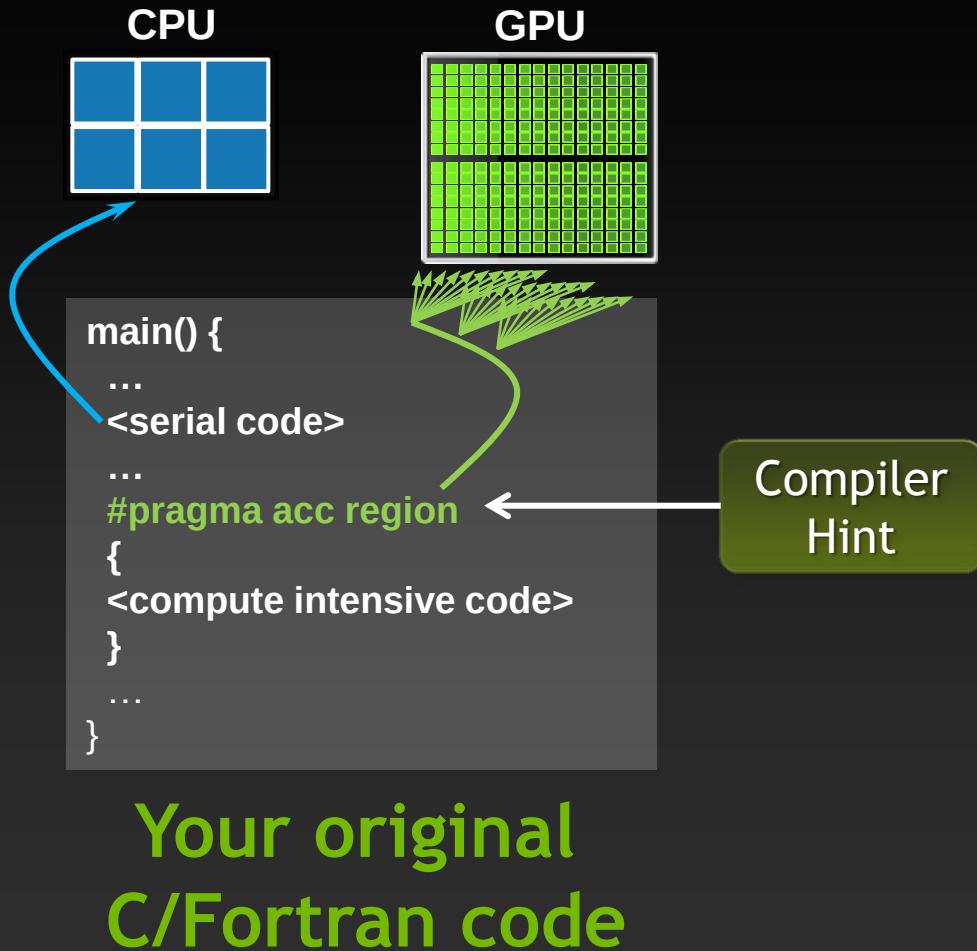
GTC Asia News

GPU Computing Gets Easier

GPUs Accelerate Science

Path to Exascale

Directives: Simple Hints for the Compiler



Compiler hints

Compiler Parallelizes code

Works on multicore CPUs & many core GPUs

Open Standard: OpenACC

Directives Program Hugely Successful

Real-Time Object Detection

Global Manufacturer of Navigation Systems



5x in 1 Week

Valuation of Stock Portfolios using Monte Carlo

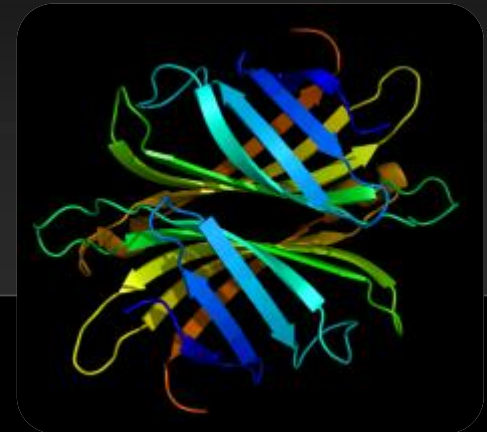
Global Technology Consulting Company



2x in 4 Hours

Interaction of Solvents and Biomolecules

University of Texas at San Antonio



5x in 1 Day

“Optimizing code with directives is quite easy, especially compared to CPU threads or writing CUDA kernels. The most important thing is avoiding restructuring of existing code for production applications.”

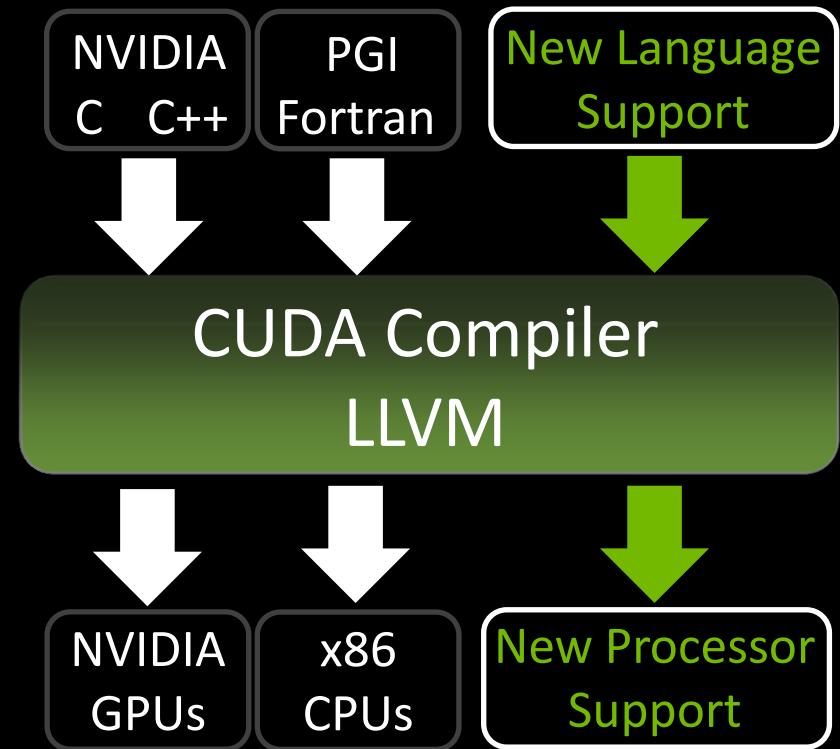
NVIDIA Opens Up CUDA Platform

CUDA Compiler Source for
Researchers & Tools Vendors

Enables

New Language Support

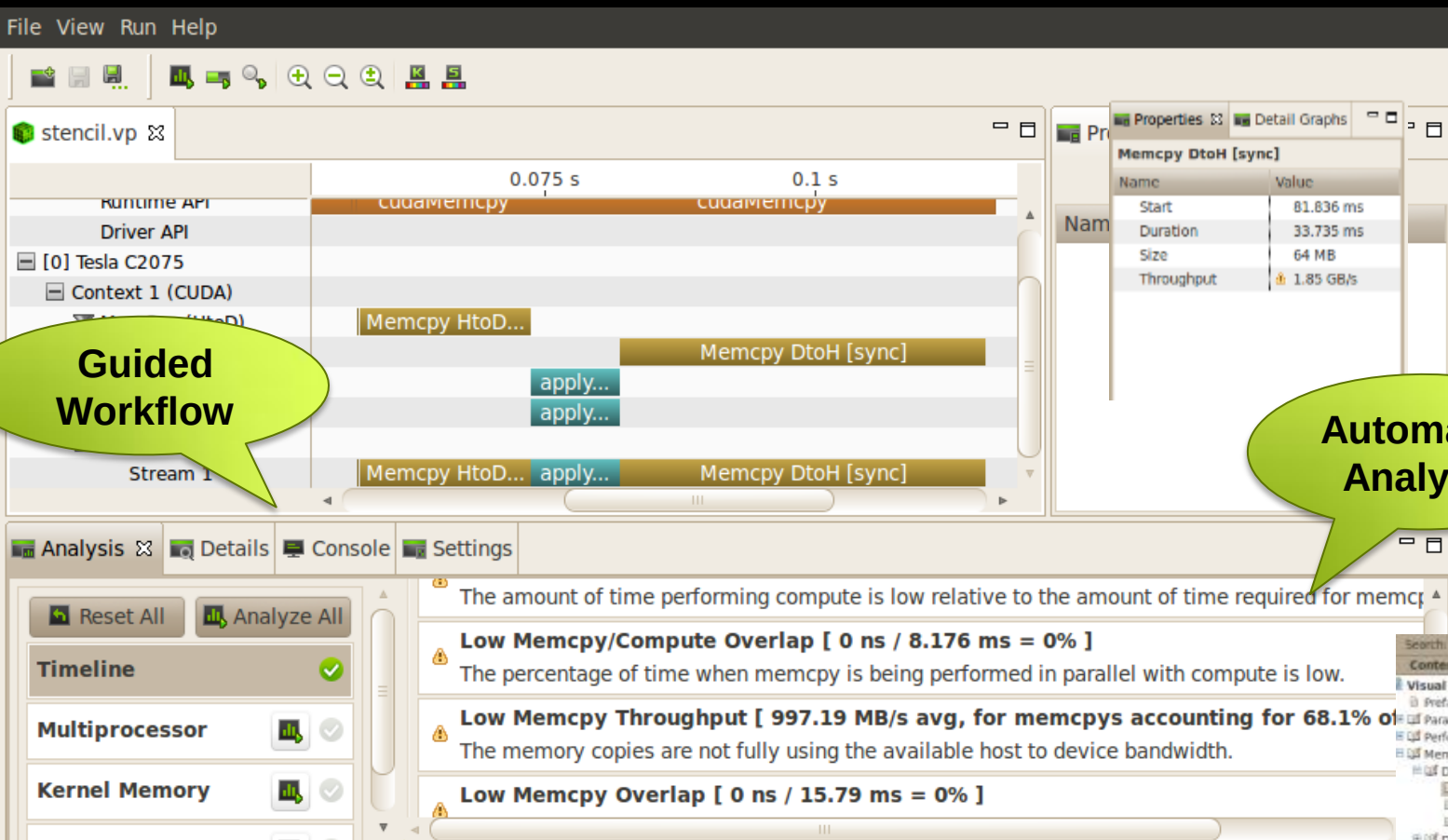
New Processor Support



Apply for early access at
<http://developer.nvidia.com/cuda-source>



Breakthrough Expert System for GPU Code Optimization

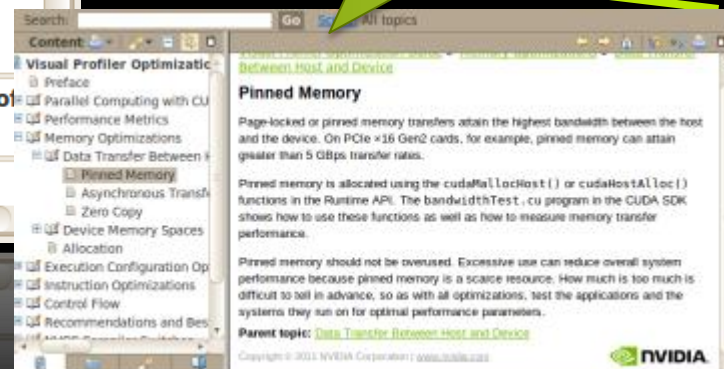


Guided
Workflow

Automated
Analysis

Drill Down to
Expert Guidance

New CUDA 4.1
Release



CUDA Programming Coming to 200 Universities in China



“The CUDA parallel programming model enables us to teach tomorrow’s engineers and researchers on how to deliver a new wave of innovations by unleashing the power of modern parallel processors.”



Prof Steve Deng
Tsinghua University

Shanghai Jiao Tong University

CUDA Center of Excellence



Genomics / Sequencing

Medical Imaging

Synthetic Aperture Radar (SAR)

Geographical Imaging (GIS)

Computational Fluid Dynamics

Analog Circuit Design

GTC Asia News

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CUDA Standard Course in China
Shanghai Jian Tong: CUDA Center

GPUs Accelerate Science

Path to Exascale

Recent Scientific Breakthroughs using GPUs

First H1N1 Whole
Virus Simulation



Furthers understanding of
drug interactions

1700 GPUs at Chinese
Academy of Sciences

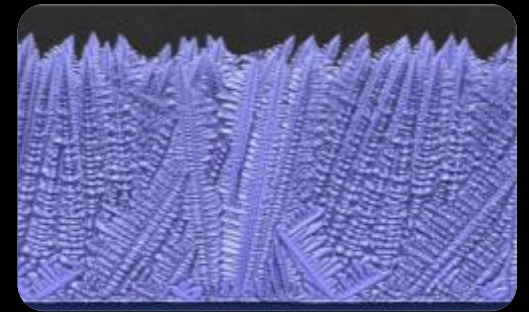
Fastest simulation for
Silicon for Solar Cells



More efficient & cost-
effective solar cells

1.87 Petaflop / sec perf on
7168 GPUs on Tianhe-1A,

Gordon Bell Prize
Stronger, Lighter Metals



Lighter, Stronger Metals for
More Fuel-Efficient Cars

4224 GPUs at Tokyo Tech,
Japan

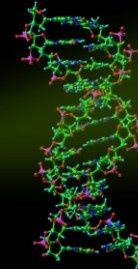
BGI Tackles Genomics Data Deluge with GPUs

Petabytes of data

Equal 15,000 human genomes / year

Understand disease treatments

**Study how individuals respond to
bacteria, virus, drugs**



Personalized Medicine

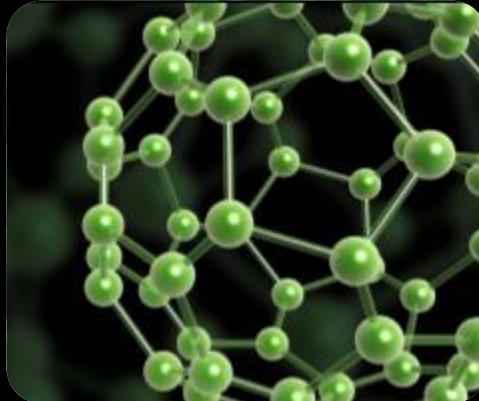
GPUs Accelerate Life Sciences Pipeline



Gene
Sequencing



Sequence
Analysis

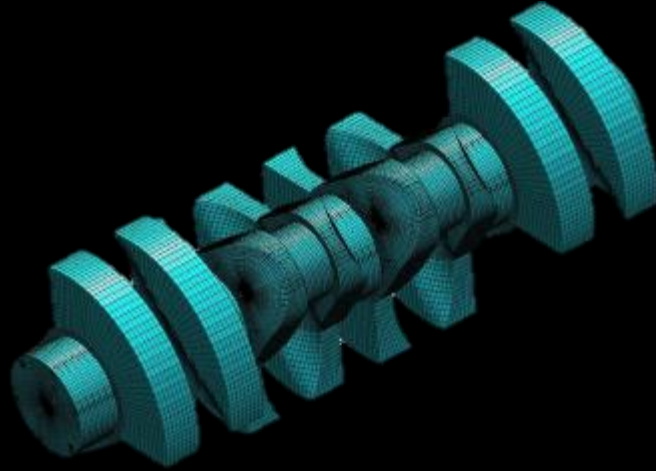


Molecular
Modeling



Diagnostic
Imaging

GPUs + MSC Nastran = Higher Quality



Engine Crankshaft: Runs Millions of Times

MSC Nastran used to study fatigue and durability

Speedup = Higher Quality & Reliability

Lower Field Failures / Recalls

GTC Asia News

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GPUs Accelerate Science

Scientific Breakthroughs using GPUs
BGI Tackles Data Deluge
MSC Nastran

Path to Exascale

Exascale with CPUs Today



2 Gigawatts
Hoover Dam

ARM Enables Energy Efficient Computing

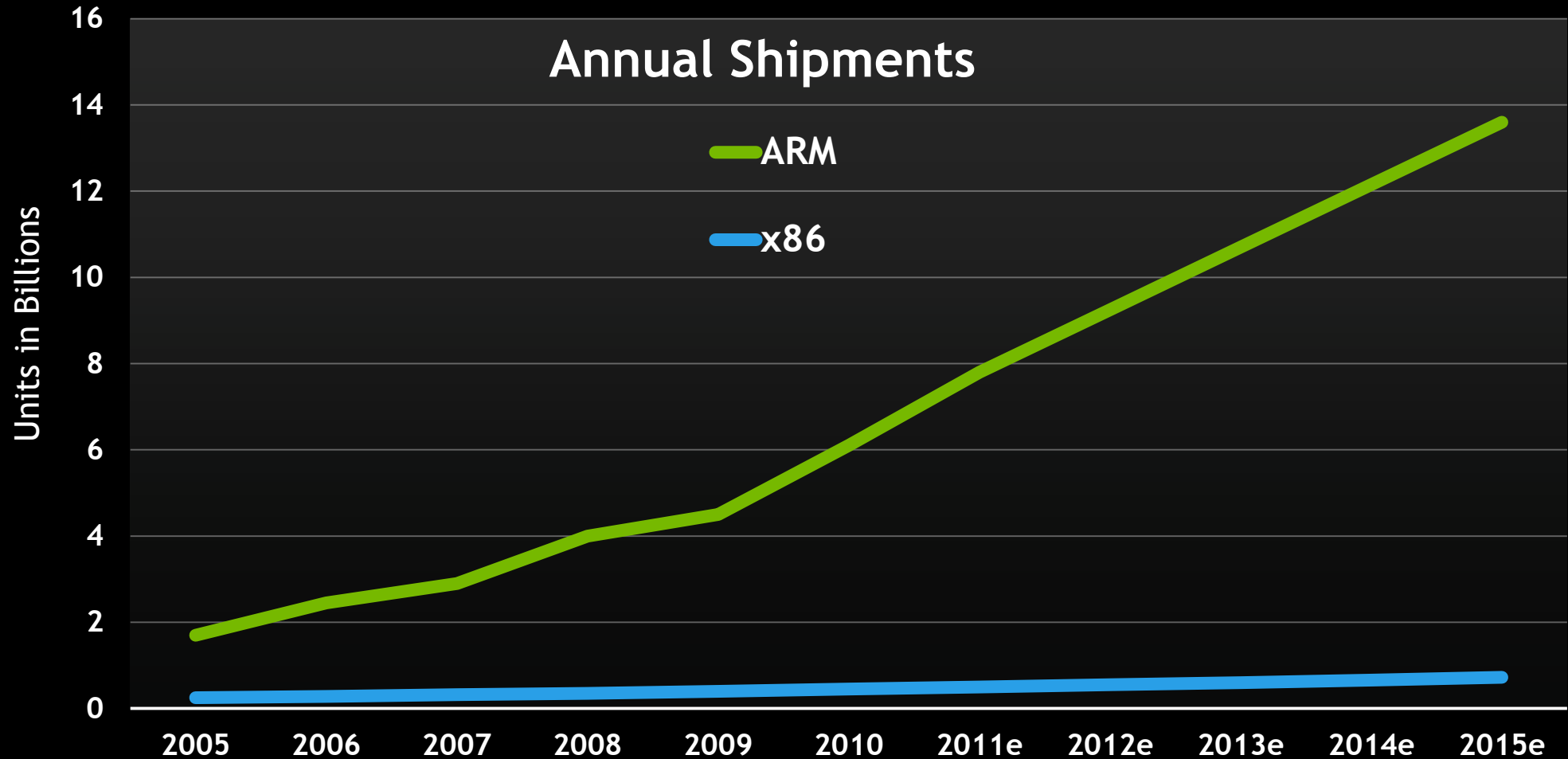
Personal Computing



ARM Servers



ARM is Pervasive and Open



Source: ARM, Mercury Research, NVIDIA

CUDA for ARM Development Kit

CUDA GPU

Tegra ARM CPU



Tegra 3 Quad-core ARM A9
Quadro 1000M (96 CUDA cores)
Ubuntu

Gigabit Ethernet
SATA Connector
HDMI, DisplayPort, USB

Summary of GTC Asia News

GPU Computing Gets Easier

Directives Make GPUs Easier
NVIDIA Opens Up CUDA Platform
CUDA Standard Course in China
Shanghai Jian Tong: CUDA Center

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Scientific Breakthroughs using GPUs
BGI Tackles Data Deluge
MSC Nastran

Path to Exascale

ARM Pervasive CPU in PCs & Servers
ARM + CUDA Developer Kit

EMBARGO DATES

Dec. 12 - 5pm US PST

Dec. 13 - 9am China time

- 1) New CUDA Center of Excellence - Shanghai Jiao Tong University

Dec. 13 - 5pm US PST

Dec. 14 - 9am China time

- 1) BGI Tackles Genomics Data Deluge with GPUs
- 2) NVIDIA Opens Up CUDA Platform + CUDA 4.1 Release
- 3) CUDA Course Coming to 200 Chinese Universities

Dec. 14 - 5pm US PST

Dec. 15 - 9am China time

- 1) CUDA for ARM Development Kit Specs
- 2) MSC Nastran 2012 Adds GPU Acceleration