



# GPU TECHNOLOGY CONFERENCE

12 MAY 2011 | THE BIOPOLIS, SINGAPORE

WORKSHOP



The high performance computing (HPC) industry's need for computation is increasing, as large and complex computational problems become commonplace across many industry segments. Traditional CPU technology, however, is no longer capable of scaling in performance sufficiently to address this demand. The parallel processing capability of the GPU allows it to divide complex computing tasks into thousands of smaller tasks that can be run concurrently.

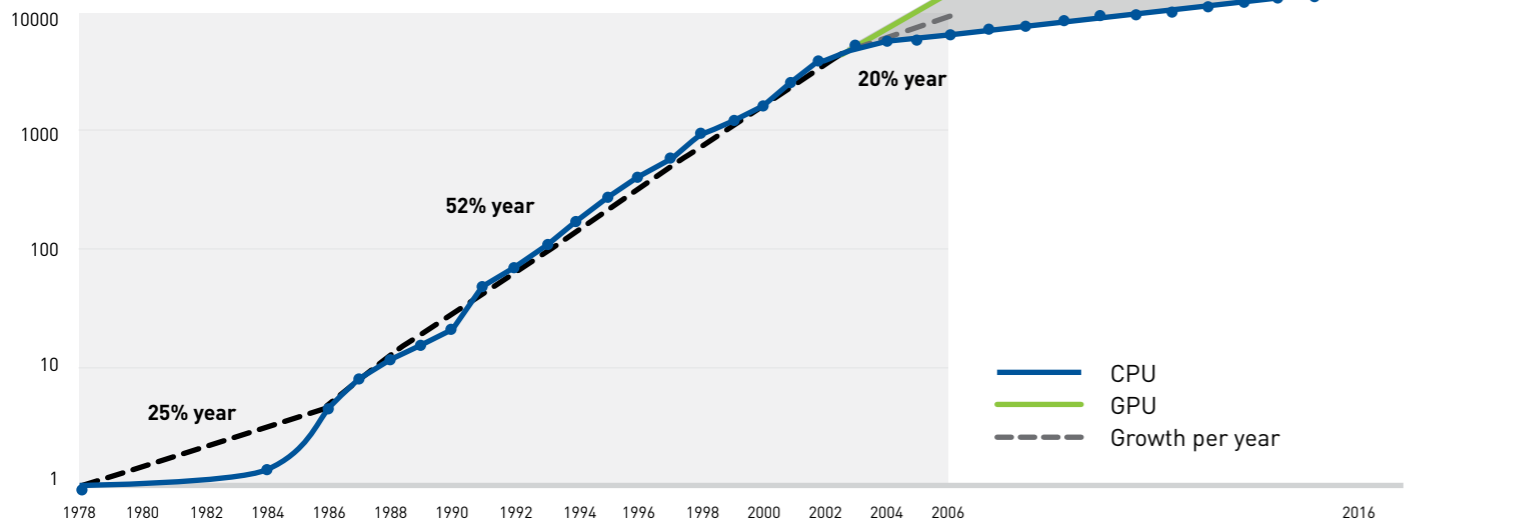
Co-processing refers to the use of an accelerator, such as a GPU, to offload the CPU to increase computational efficiency.




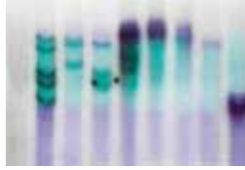
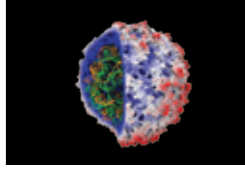

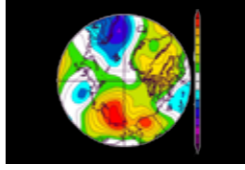


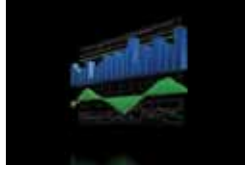
This advancement represents a dramatic shift in HPC. In addition to dramatic improvements in speed, GPUs also consume less power than conventional CPU-only clusters. GPUs deliver performance increases of 10x to 100x to solve problems in minutes instead of hours—while outpacing the performance of traditional computing with x86-based CPUs alone.

From climate modeling to advances in medical tomography, NVIDIA® Tesla™ GPUs are enabling a wide variety of segments in science and industry to progress in ways that were previously impractical, or even impossible, due to technological limitations.

Conventional CPU computing architecture can no longer support the growing HPC needs.

Source: Hennessey &Patteson, CAAQA, 4th Edition.



 5X Adobe digital content creation	 18X Video Transcoding Elemental Tech	 20X 3D Ultrasound TechniScan	 30X Gene Sequencing U of Maryland	 36X Molecular Dynamics U of Illinois, Urbana
 50X MATLAB Computing AccelerEyes	 80X Weather Modeling Tokyo Institute of Technology	 100X Astrophysics RIKEN	 146X Medical Imaging U of Utah	 149X Financial Simulation Oxford

### WHY GPU COMPUTING?

With the ever-increasing demand for more computing performance, the HPC industry is moving toward a hybrid computing model, where GPUs and CPUs work together to perform general purpose computing tasks. As parallel processors, GPUs excel at tackling large amounts of similar data because the problem can be split into hundreds or thousands of pieces and calculated simultaneously.

As sequential processors, CPUs are not designed for this type of computation, but they are adept at more serial based tasks such as running operating systems and organizing data. NVIDIA believes in applying the most relevant processor to the specific task in hand.

Tesla GPU computing is delivering transformative increases in performance for a wide range of HPC industry segments.

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## WORKSHOP

### GPU TECHNOLOGY CONFERENCE WORKSHOP

MAY 12, 2011 | THE BIOPOLIS, SINGAPORE

The GPU Technology Conference marks its entry into South East Asia with GTC Workshop 2011 Singapore.

The event, jointly brought to you by NVIDIA and NOVATTE, brings together researchers, developers, HPC professionals and GPU computing experts to share knowledge and best practices. The GTC Workshop will show how GPU Technology transforms scientific computing in Asia.

NOVATTE is the manufacturer of cluster solutions and high-end workstation systems for the high-performance, financial computing and digital media markets in Asia. NOVATTE product portfolio includes high performance computing clusters (HPCC), GPU computing systems, render farm solutions and low-latency systems. Offering a complete range of HPC services, spanning optimised system design to implementation to post-warranty maintenance, NOVATTE is uniquely positioned to be a one-stop provider of HPC solutions in APAC.

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

### ABOUT EVENT

To learn more about the GTC Workshop 2011 go to [www.gtc2011.novatte.com](http://www.gtc2011.novatte.com)

09:30 – 10:00	<b>Arrival, registration, coffee and networking</b>
10:00 – 10:10	Opening speech by <b>Yury Drozdov</b> , NOVATTE CEO
10:10 – 10:15	Keynote introduction by <b>Simon See</b> , Chief Solution Architect, NVIDIA
10:15 – 10:45	<b>Prof. Wei Ge</b> , Institute of Process Engineering, Chinese Academy of Science <i>"Applications of the Hybrid Supercomputer named Mole-8.5"</i>
10:45 – 11:15	Associate <b>Prof. Bertil Schmidt</b> , School of Computer Engineering, NTU <i>"Algorithms and Tools for Bioinformatics on GPUs"</i>
11:20 – 11:50	<b>Coffee and networking break</b>
11:50 – 12:20	<b>Dr. Victor Kostychenko</b> , Duke-NUS Graduate Medical School <i>"GPGPU applications in structural biology: processing electron microscopy data"</i>
12:20 – 12:50	<b>Dr. Huyhn Phung Huynh</b> , Institute of High Performance Computing IHPC, A*Star <i>"Mapping Framework for Streaming Applications on GPUs"</i>
12:50 – 13:15	<b>Dr. Weiguo Liu</b> , Fraunhofer Project Centre for IDM, NTU <i>"CUDA-BLASTP: Accelerating BLASTP on CUDA-enabled Graphics Hardware"</i>
13:15 – 13:25	Closing by <b>Yury Drozdov</b> , NOVATTE CEO
13:30 – 14:30	<b>Networking lunch</b>
14:30 – 17:30	<b>CUDA Tutorial</b> <b>Simon See</b> , Chief Solution Architect, NVIDIA; Adjunct professor of Shanghai Jiao Tong University and Nanyang Technological University of Singapore <b>Agenda</b> Cuda 4.0 Overview (30 mins) CUDA Basic (1.15 hrs) 1hr + 15 Q/A HMPP Basic (1.15 hrs) 1hr + 15 Q/A

### EVENT AGENDA

GTC WORKSHOP SINGAPORE  
GPUS ARE REVOLUTIONIZING  
COMPUTING

## GPU CLUSTER IN-A-BOX

**NOVATTE Tesla-based cluster is designed with research and academia industries in mind, and offers following benefits:**

**Turn-key GPGPU HPC solution**

- > Plug-and-play GPU Cluster in-a-box
- > Lead time: 2 weeks

**Admin-friendly**

- > Pre-installed OS and cluster management software
- > Porting of customers' software applications

**Peace of Mind**

- > Pre-tested certified solution

- > Includes a three-year warranty
- > HPC support and consulting

**Lower TCO**

- > Decreased (price+TCO)/performance ratio, compared to CPU-based cluster

**Academic discounts**

