

27 February 2007

By: Bogdan Solca, Hardware Editor



## [NVIDIA Develops 128-Core GPGPU](#)

*Comparable to Intel's terascale architecture*

A couple of weeks ago, Intel showcased their first programmable "terascale" supercomputer on a chip. As you may still remember, the chip features 80 cores that could be programmed to process data at rates that exceed a trillion operations per second (1 teraflop). The chip's size is comparable to a large postage stamp, but the processing power matches that of a supercomputer that, in 1996, covered about 2,000 square feet and drained about 1,000 times more power. Techniques that actually allow massively parallel CPU structures to work are currently in development stages, and, if all goes well, within five to ten years, they could be easily integrated into PCs. However, some engineers in the computing industry agree that making consumer computers with hundreds of cores won't be easy. To put it straight, scientists haven't yet figured out how these outstanding chips will be able to fit into an ever shrinking PC. Moreover, another obstacle in the way of PC terascale integration will be the complete overhaul of software instructions so that applications can take advantage of a great number of cores. This includes teaching software developers how to write code for multicore machines (parallel programming), which could prove to be a rather daunting prospect. Looking at the bright side, HPC researchers continuously develop and improve portfolios of parallel algorithms that could be useful for consumer parallel programs. Additionally, the already present massively multicore prototypes out there provide valuable information regarding the best approaches from an architectural standpoint, as well as from a programming standpoint. In this respect, the renowned graphics company NVIDIA just released a prototype chip with 128 GPU cores, designed to render complex 3D graphics for video games applications. NVIDIA goes for a general-purpose approach, meaning that the 128 cores can be programmed to do many different graphics-oriented tasks, as well as processing tasks that are performed by conventional CPUs. Thus, general purpose GPUs from NVIDIA and ATI may be seen integrated in PCs sooner than Intel's terascale architecture.