

CUDA

Directions

C for CUDA



- **First Native C Environment for GPUs**

- 5+ calendar years in development
- Shipping for over 2 years

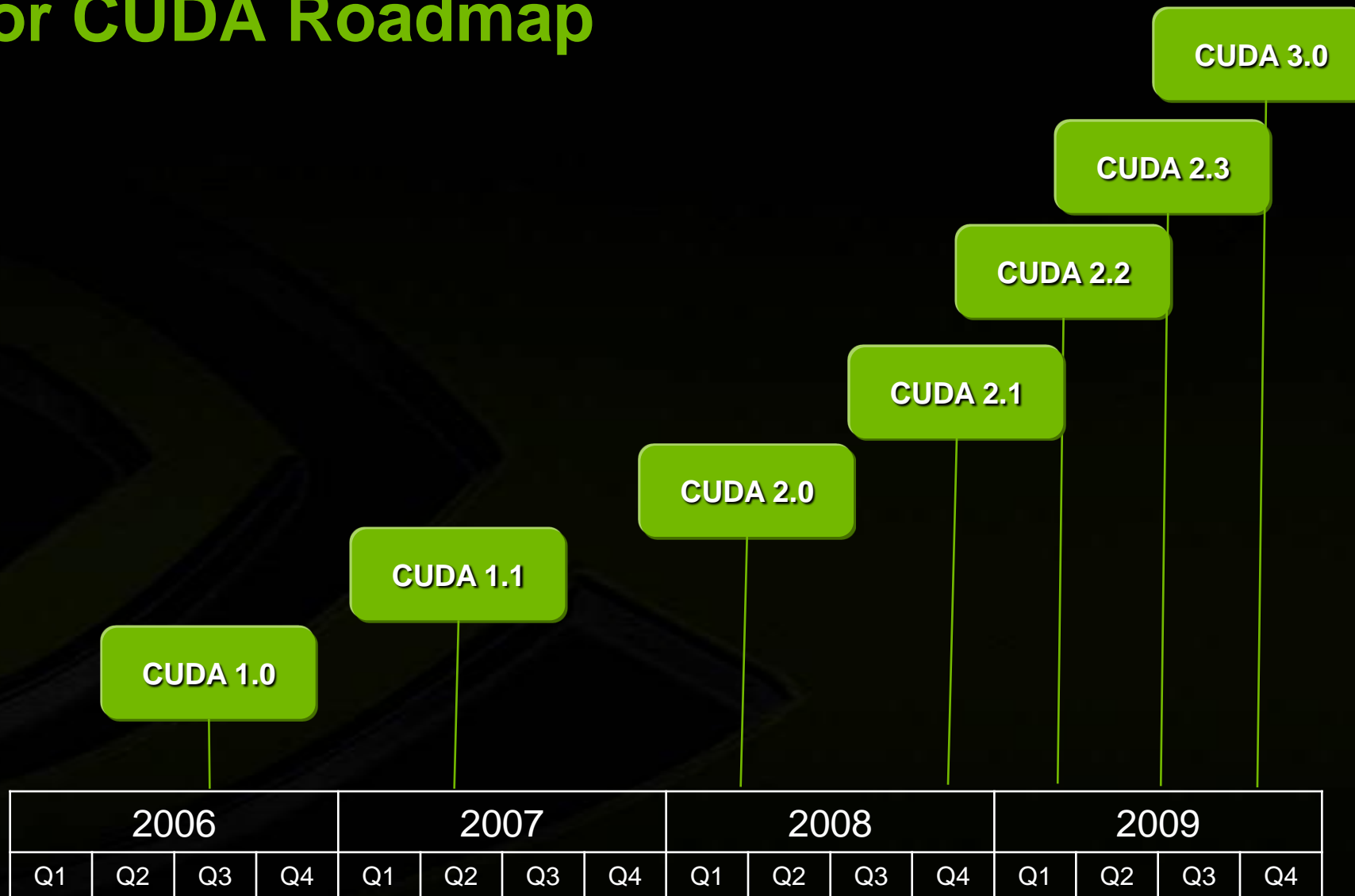
- **Massive Adoption**

- 25,000+ active developers
- 100+ applications
- 30+ NVIDIA GPU clusters using CUDA tool chain

- **Feature Rich**

- Available on Windows, Linux, Mac OS (Solaris coming soon)
- FFT, BLAS, Sparse Matrix, Data Parallel Primitives, LAPACK
- Matlab, Mathematica, LabView supported by C for CUDA

C for CUDA Roadmap



CUDA 2.1 (out now!)



- **Support for using a GPU that is not driving a display on Vista**
- **DirectX 10 interoperability (textures, buffers, etc.)**
- **Visual Studio 2008 Support**
- **Just-in-time (JIT) PTX compilation**
 - For applications that dynamically generate PTX CUDA kernels
- **CUDA Debugger beta for 32-bit Linux**
- **C++ templates are now supported in CUDA kernels**
 - This has worked for a while, but now officially supported
- **Recent Linux distro support**
 - Including Fedora9, OpenSUSE 11 and Ubuntu 8.04

CUDA 2.2 (beta to registered developers now!)



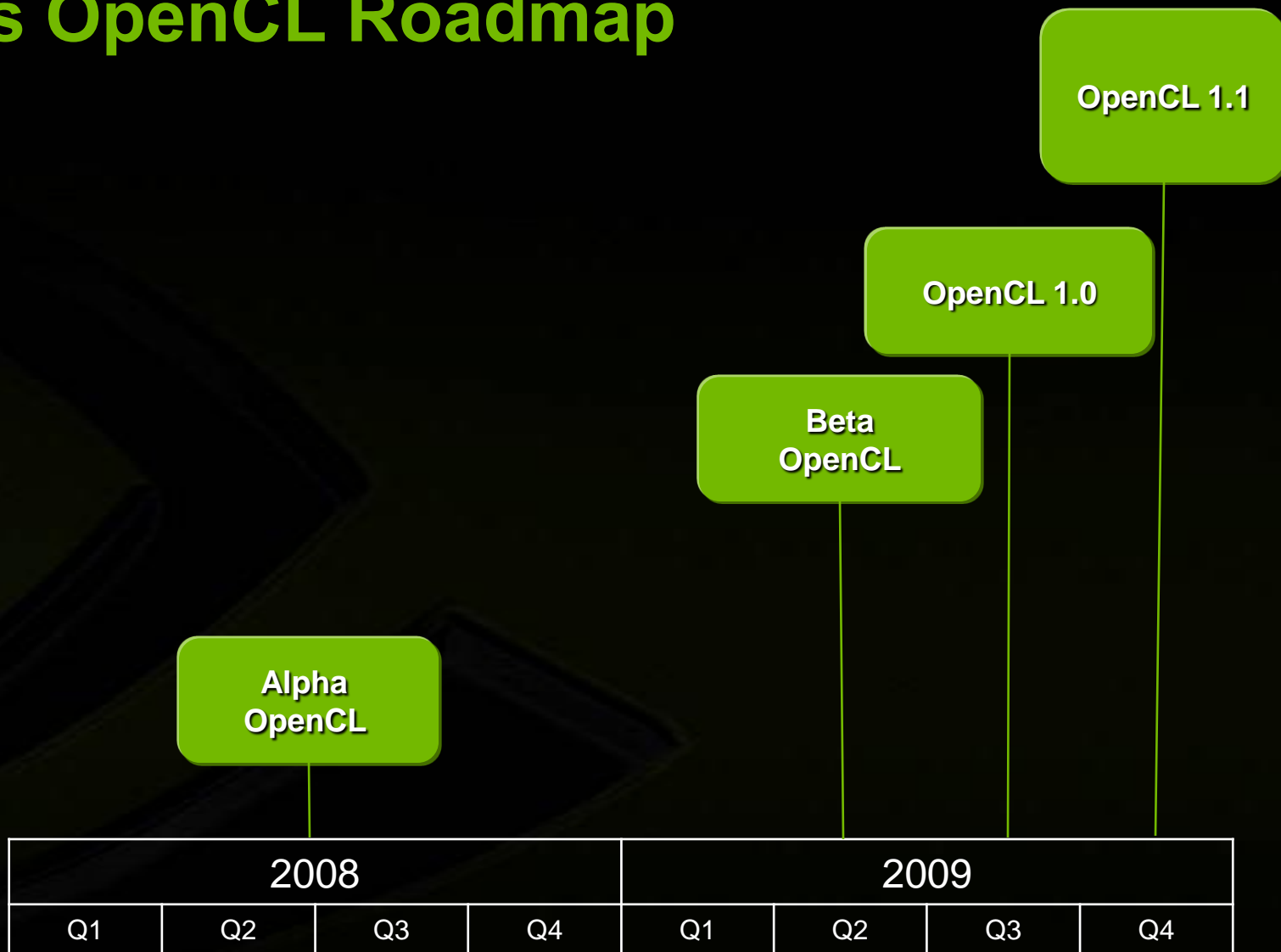
- Zero-copy access to pinned system memory
- Asynchronous memcpy support on Windows Vista
- Texturing from pitch linear memory (i.e. write to texture)
- CUDA Debugger (cudagdb) support for 64-bit Linux
- CUDA OpenGL interop with Texture Objects and FBOs
- Additional counters supported in the CUDA Visual Profiler (cudaprof)
- `__threadfence()` and `__threadfence_block()` (memory fences)

CUDA 2.3



- **CUDA application profiles**
 - allow end-users to configure GPU availability to applications
 - **CUDA Debugger (cudagdb) support for nested variables**
 - **Query GPU connections to find GPUs not already in use**
 - Useful for cluster management
 - **More...**
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- **Note: subject to change**

NVIDIA's OpenCL Roadmap



NVIDIA Professor Partnership



http://www.nvidia.com/page/professor_partnership.html

- **Support faculty research & teaching efforts**
 - Small equipment gifts (1-2 GPUs)
 - Significant discounts on GPU purchases
 - Especially Quadro, Tesla equipment
 - Useful for cost matching
 - Research contracts
 - Small cash grants (typically ~\$25K gifts)
 - Medium-scale equipment donations (10-30 GPUs)
 - **Informal proposals, reviewed quarterly**
 - Focus areas: GPU computing, especially with an educational mission or component
- } **Easy**
- } **Competitive**