Why FPGAs........?

[Many questions and a few answers...]
Who we are:

- Core technical team has medical imaging background: built computing systems for Toshiba Medical, Philips Medical, InVision Technologies (now GE).

1 in 5 CT scanners worldwide have an imaging system designed by our team.

XtremeData is now focused on building FPGA-accelerated computing systems for applications such as: Database Analytics, Financial Analytics, Life Sciences and Imaging.
Our Vision

XtremeData’s vision is to build “Accelerated Computing Appliances”

“Appliance”
- Easy installation – “plug and use”
- No disruption to existing process

“Accelerated Computing”
- x86 CPU (“PC”) + FPGA
The FPGA trend...

[Courtesy Altera......Xilinx trend similar]
Idea: build a simple, minimalist board with interfaces to HyperTransport and memory: (Patent Pending)

drop-in replacement for an AMD Opteron with no changes to motherboard!

Dual-socket AMD Opteron Motherboard:

FPGA uses all motherboard resources meant for CPU:
- HyperTransport Links, Memory interface, power supply, heat-sink
- Usable with any AMD Opteron (or future Intel CPU) server
- Mix & match FPGAs, CPUs on quad-socket systems

Our Solution

Usable in rack-mount or high-density “blade” server systems (including ATCA), where plug-in boards are not feasible
In HPC today (and some embedded markets) the dominant choice is x86 + Accelerator

QUESTIONS:

• Why are the x86 CPU vendors (AMD, Intel) supporting Accelerators?

• What are the dominant Accelerator choices: GPU, FPGA....?
QUESTIONS:

➢ “…FFT …involves many non-GPU friendly operations, such as sorting, indexing and bit-wise operations”¹

➢ How “GP” is the GP-GPU…?

➢ Abstraction Layer via CUDA/CTM: whose investment is being protected – the customer’s or GPU vendor’s? Vendor-neutral layer is necessary…..RapidMind, PeakStream....

➢ Power consumption + Physical space: GPU is a “hot brick”….how does it scale?

¹ SPIE 2007, Computational Imaging Keynote: Klaus Mueller, Fang Xu and Neophytos Neophytou
Our 2007 Roadmap...

Memory BW of ~20GB/s, Upto 1M Logic Elements, Upto ~2000 18x18 MULs........ All in one CPU socket!

THANK YOU!

Present at RSSI today:

Ravi Chandran, CEO
Geno Valente, VP Sales & Mktg.
Dr. Nathan Woods, Principal Scientist