Hardware-Accelerated Computing Solutions

Software-to-Hardware Tools for an Accelerated World!

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Impulse Software-to-FPGA Solutions

Software tools for FPGA programming
- For embedded and enterprise applications
- Allows programming in standard C language
- Enables hardware acceleration of software

CoDeveloper™ with Impulse C™
- Software-to-hardware compiler
- Optimizes C code for parallelism
- Generates standard FPGA design formats
- Also generates hardware/software interfaces

“We were able to achieve over 60X speedup of Monte-Carlo simulations, with just three months of effort. The Impulse support team has provided timely and relevant help along the way.”

Rishi Khan, Research Engineer
ET International

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Why Use Impulse C?

Reduced application development times
- Faster, more agile application development
- Faster time-to-prototype and reduced risk
- More opportunity for design optimization and experimentation

Reduced project costs
- Reduce or eliminate costly, high-risk hardware design phases
- Get your prototypes working faster in FPGA hardware

Example: image processing for defense/aerospace
- Advanced, embedded image processing algorithm for machine vision
- Customer saved an estimated three developer-months of effort
- Customer was able to try applications never before considered for an FPGA
From Software to FPGA Hardware

C-based design
- Emphasizing iterative methods of programming

Desktop simulation
- Using standard C tools

C-to-FPGA compilation
- VHDL or Verilog

Interactive optimization
- For high performance
Real, Measurable Value

Increased productivity
- Supports agile, software-oriented methods of FPGA programming

Fewer errors
- Through faster time-to-prototype and faster design iteration

Better performance
- More computations per Watt!

“Being able to use C code, work with floating point types, and improve our performance so quickly has changed our way of designing FPGA logic.”

Francesco Ricci, Space Systems Developer
Xiphos Technologies, Inc.

Impulse CoDeveloper™

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A Wide Variety of Applications

Commercial, defense and scientific applications….

**Embedded Systems**
- Avionics
- Secure communications
- Medical devices
- Submersibles
- Automotive
- Audio
- Consumer products
- GPS
- Satellite
- Home automation
- Video processing
- Security cameras
- DVR
- Industrial control
- HDTV
- Ultrasound
- Wafer inspection
- RF
- UAVs
- Network infrastructure
- WiMAX
- Telematics
- PC peripherals
- Robotics
- Game consoles
- Smart weapons
- Real-time systems

**Server-Class Computing**
- Bioinformatics
- Data mining
- Financial modeling
- Test & measurement
- Non-destructive test
- Image processing
- Encryption/decryption
- Market feed handling
- Virtual instruments
- Object recognition
- Threat detection
- RADAR
- Astrophysics
- Oil and gas
- Web search
- Fluid dynamics
- High energy physics
- Protein folding
- Gaming
- Fluid dynamics
- Medical imaging
- Code cracking
- Materials science
- Monte Carlo simulations
- Animation
- Intelligence
- Image rendering
- Geophysics
- Speech analysis
- Arbitrage

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Impulse Customers Include…

- EADS
- Lockheed Martin
- Agilent Technologies

- Panasonic
- Fujitsu
- Sanyo
- NASA Jet Propulsion Laboratory
- General Dynamics

- Hitachi
- Mitsubishi Electric
- AMD
- UBS

- Toshiba
- NEC
- Intel
- Canon

- Sharp
- NEC
- Intel

- Toyota
- Fuji Xerox

- Advantest
- Draper Laboratory

- Northrop Grumman

- Arxan
- Vigilant

- SAIC
- Fukuda Denshi
- MNB Technologies, Inc.
- Applied Signal Technology, Inc.

- National Security Technologies
- Pacific Northwest National Laboratory