ARM Announces Ground Breaking Embedded Signal Processing Core

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ARM, the industry's leading provider of 16/32-bit embedded RISC microprocessor solutions, announced today at the Embedded Processor Forum in San Jose, Calif., OptimoDETM embedded signal processing core technology optimized for the efficient implementation of domain-specific applications. OptimoDE technology is the first product ARM has developed from the purchase of Adelante Technologies N.V. in July 2003.

"Data Engines are a disruptive technology," said Mike Muller, chief technology officer, ARM. "Today, the processing requirements of consumer applications are outstripping the capabilities of the general-purpose DSP. This is forcing a shift to dedicated logic, which is time-consuming, expensive, and inflexible. OptimoDE cores offer the best industry solution - unprecedented performance but delivered in an ultra-low-power and small-gate-count implementation. OptimoDE Data Engines provide the performance levels of hard-wired dedicated logic with the flexibility associated with a programmable approach."

OptimoDE Data Engine cores employ a VLIW-styled architecture with a fully user-definable data path. Data path configurability enables the designer to completely define and extend the type and number of data path resource units, the data path widths, instruction widths and the number of I/O to the exact requirements of the application domain. Typical instruction lengths vary between 16- and 256-bits. The size and topology of local storage and the level of interconnect are also fully configurable, so each Data Engine can be implemented as efficiently as

possible.

"OptimoDE technology is a groundbreaking approach to increased parallelism in an IP solution," said Will Strauss, president of leading DSP market analysts Forward Concepts. "It certainly addresses the current need for dramatically increased programmable computational power at low power consumption for our portable multimedia future."

"With OptimoDE technology, the low-power volume leader has voted on the need for configurable processor engines, and by doing so, has strengthened the market," added Max Baron, principal analyst, In-Stat/MDR. "OptimoDE technology's integration with the ARM® microprocessor cores and development tools will leverage the infrastructure built by ARM and its third-party Partners. ARM can increase the adoption of data-intensive engines by offering a validated combination that can run both applications and system software."

OptimoDE technology represents industry-leading efficiencies in area, power, and performance. In illustration, a minimal configuration, an OptimoDE Data Engine core can be 9,500 gates, clearly demonstrating the area efficiency of the technology. In applications where the technology is shipping today, such as hearing aids, a fully utilized Data Engine achieves 0.0215 mW/MHz in only 26,200 gates (TSMC 130nm technology). A 128-point complex Fast Fourier Transform (FFT) can be implemented in just 226 clock cycles and represents near-theoretical performance of the algorithm.

OptimoDE Data Engine cores are provided with a framework that incorporates library IP, Data Engine design tools, a C compiler, and a powerful profiling suite that assists designers in determining which functions are best implemented, and in which fashion. The C-based tool environment accelerates time-to-market and empowers designers to easily explore their design space. Simulation models and testbenches are

produced and assist in verifying the integration process. In addition, the OptimoDE framework can be used in combination with existing ARM development tools.

OptimoDE technology includes an AMBATM methodology-compliant configurable sub-system to simplify SoC integration, development and debugging. The Data Engine sub-system aids efficient high bandwidth data and memory access in performance critical applications. OptimoDE technology also supports the ARM DSP Integration Specification to ease the learning curve for designers familiar with working with ARM microprocessor cores and third-party DSPs.
www.arm.com/news/3795.html.

"For our Partners developing consumer electronics," continued Mike Muller, "OptimoDE technology delivers the same benefits they expect from ARM microprocessor cores: reduced time-to-market; leading power, performance, and area; and maximized margins. OptimoDE technology also empowers Partners with what they most want: flexibility to differentiate, and the ability to increase market share and penetrate new markets."

OptimoDE technology is available now from ARM.

See also ARM web-site

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