ARM Neon Technology Fuels Consumer Electronics Growth With Next-Generation Mobile Multimedia Acceleration

October 4 2004

[ARM](#)

[today launched its new NEON™ technology, a media and signal processing solution designed to accelerate a broad range of applications. The ARM® NEON technology **is targeted for mobile and consumer products that need the flexibility to implement multiple combinations of video encode/decode, 3-D graphics, speech processing, audio decoding, image processing, and baseband functionality**. NEON technology will be implemented in future ARM processors, and will be supported by ARM and third-party tool chains enabling broad industry adoption.](#)

NEON technology is a 64/128-bit SIMD (single instruction multiple data) instruction set that provides standardized acceleration for next generation media and signal processing applications. NEON technology can execute an MP3 audio decoder in less than 10 CPU MHz, and can run the GSM AMR (Adaptive Multi-Rate) speech codec using only 13 CPU MHz. It features a comprehensive instruction set, separate register files, and independent execution hardware. NEON supports 8-, 16-, 32- and 64-bit integer, and single precision floating-point SIMD operations for handling audio/video processing as well as graphics and gaming processing.

"NEON technology benefits everyone from the consumer to the chip designer," said Mike Inglis, executive vice president, Marketing, ARM. "It will deliver to the consumer desktop-quality audio, video, and 3-D graphics using a solution that can be reprogrammed for changing industry standards. NEON technology offers system designers unrivalled flexibility and performance while meeting the exacting power and area constraints of next generation mobile and consumer products."

"We have come to expect ARM to produce these kinds of advancements," said Tony Massimini, chief of technology, micrologic, Semico Research Corporation. "The NEON technology is further evidence that ARM continues to develop enhancements for the ARM core that satisfy the growing demands of the cell phone and digital consumer market."

"Together, TI and ARM are enabling the growth of multimedia applications on handsets, making the cell phone an entertainment device," said Paul Werp, director, Cellular Systems, Texas Instruments. "The NEON technology multimedia capabilities provide a significant boost that can enable more applications to run on the ARM core, both cost- and power-effectively."

"As mobile devices become the primary targets for delivering streaming video, audio, digital photography, and 3-D gaming services to consumers, the need for powerful and reprogrammable, yet efficient processors has grown," said Mike McCourt with FreeScale's wireless group. "Products built upon industry standards accelerate product level support for new content-based features. Freescale, a key ARM Partner and a member of the Khronos group, has been active in driving the OpenMAX initiative and endorsing the NEON technology strategy. These technologies taken together will help drive the expansion of products and services for the mobile market.

NEON technology's diverse instruction set has been designed in

conjunction with vectorizing C compiler technology and will be released with C compiler support for the ARM developer community. The new technology is a target of the OpenMAX APIs being defined by the Khronos group to enable software portability, reuse, and reduced time to market.

NEON technology is designed to complement the ARM OptimoDE™ data engine, and employs a fixed instruction set designed to address a broad range of applications in software running on general purpose processors. OptimoDE data engines implement highly configurable VLIW instructions to deliver exceptional application specific performance. Many applications including next-generation mobile handsets will use both the NEON and OptimoDE technologies to implement outstanding baseband and applications performance.

NEON technology will be implemented in future families of ARM processors. In order to provide for the specific demands of its Partners' highly vertical applications, ARM has created core technologies suited to multiple markets at multiple price and performance points: ARM TrustZone™ technology for data security; Jazelle® technology for Java acceleration; Intelligent Energy Manager for power management; and now the NEON technology and OptimoDE data engines for media and signal processing.