Freescale redefines performance for mobile entertainment devices

June 7 2005

Consumers to enjoy longer playtime for power-hungry handhelds

Freescale Semiconductor unveiled the i.MX31 and i.MX31L high performance multimedia processors, designed to deliver a rich and long lasting mobile entertainment experience. Based on the ARM11 platform and enhanced with Freescale's Smart Speed technology, the i.MX31 and i.MX31L processors maximize the effective cycles per instruction (eCPI) to create a new benchmark for power-performance mobile entertainment solutions.

OEMs seeking to capitalize on the burgeoning multi-billion dollar mobile entertainment market look for a multimedia processor that can handle intense, power-hungry applications. The processor must also protect high value mobile entertainment content. Consumers demand choices in affordable devices with more complex and sophisticated handheld games, and want to enjoy digital audio and mobile videos on-the-go without fear of the batteries dying too quickly. The i.MX31 processors offer the features for these and other mobile entertainment experiences.

Smart Speed technology with eCPI makes it possible for the efficient 532 MHz i.MX31 applications processors to take advantage of parallelism to operate at the equivalent performance of a 3 GHz processor, yet minimize power consumption. The lower the eCPI, the less demanding an application is on the CPU and the batteries; giving consumers the freedom to enjoy mobile multimedia entertainment like

streaming video and interactive 3D gaming for hours far away from an alternate power source.

"Freescale's Smart Speed technology and eCPI metric demonstrate their commitment and leadership in processor architecture designed to optimize mobile device performance and battery life," said Allen Nogee, Principal Analyst with In-Stat. "Manufacturers and consumers alike reap the benefits with wireless handheld products that deliver crisp video and 3D graphics and exceptional power management for long, long play time."

The i.MX31 processors deploy Freescale's Independent Platform Security Architecture, a combination of hardware and software security features that provide a high level of confidence for carriers, content providers and consumers. The security architecture is one of the most advanced solutions in the industry and can help save millions of dollars caused by such events as loss of services, copyright infringement and identity theft.

"Freescale is energizing the entire mobile entertainment industry by offering a robust, secure platform that truly redefines processor performance," said Franz Fink, senior vice president and general manager of Freescale's Wireless and Mobile Systems Group. "Our i.MX31 processors provide a high octane multimedia engine with exceptional power management techniques for long battery life, a combination that is prized by OEMs designing a new breed of handheld multimedia entertainment devices."

The i.MX31 processors include leading power management, security management and digital rights management, and image processing technology, plus, a vector floating point co-processor and L2 cache. This combination of features satisfies mobile entertainment companies' desire to protect trusted mobile content and respond to "power users" who

require 3D graphics, video play-back, and messaging applications to run simultaneously.

Samples of the i.MX31 and i.MX31L processors are expected to begin shipping to selected customers by the end of June 2005.

Smart Speed Technology

The i.MX31 and i.MX31L leverage Freescale's Smart Speed technology architecture to enable the designer to achieve parallelism resulting in a small amount of eCPI required and very low power consumption. System parallelism is accomplished via the 6x5 Smart Speed crossbar switch that nearly eliminates wait states and enables the processor to drive equivalent performance to processors with clock speeds up to 3 GHz, but without the power consumption penalty that goes with higher operating frequencies. The power and audio performance of Freescale's multimedia platform is complemented by the company's highly integrated Power Management and User Interface (PMUI) ICs.

Increased Security Management and Digital Rights Management

The i.MX31 and i.MX31L security architecture provides carriers with enhanced protection against malicious service attacks, theft of services, configuration protection, and concerns with cloning. For content providers, it is engineered to help block prohibited access to licensed content, thereby helping to protect against unauthorized use and distribution. For consumers, private data is shielded from unauthorized access, helping protect against identify theft.

Stellar Image Processing

For the sustained mobile entertainment experience, wireless handhelds must deliver and display crisp, unwavering video and lifelike 3-D image quality. In addition to on-chip display controllers, the i.MX31 and i.MX31L processors have an on-chip image processing unit (IPU) that delivers up to VGA 30 fps video quality. The IPU is equipped with powerful control and synchronization capabilities to perform tasks with minimal to no involvement of the ARM CPU.

High Speed USB On-The-Go

The i.MX31 and i.MX31L processors integrate High Speed USB On-The-Go port for connection to a PC or PC peripherals without PC involvement, plus a high speed USB host and a full speed USB host for interfacing with peripherals such as WiFi, Bluetooth™ wireless technology and cellular baseband.

The i.MX31 and i.MX31L processors expand upon Freescale's i.MX family including the i.MXS, i.MXL, i.MX1 and i.MX21 processors, all based on ARM9 technology and commercially shipping. The addition of the i.MX31 and i.MX31L processors provide another performance and price point on the roadmap and further enhances Freescale's portfolio of products based on ARM technology.