Freescale extends product family that pioneered the smartbook category to address additional embedded markets

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Newest members of the i.MX51 family deliver performance, integration and energy efficiency required for industrial, automotive and consumer applications

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AUSTIN, Texas – Nov. 4, 2009 – The Freescale i.MX51 product family that helped establish the fast-growing smartbook category has been expanded to include new processors designed to help customers differentiate and win in automotive, industrial and consumer markets.

The new devices (#) are the i.MX514 and i.MX516 processors for automotive applications and the i.MX512 and i.MX513 processors (#) for industrial and consumer applications. In addition to these new offerings, the previously announced i.MX515 processor is shipping in volume quantities to smartbook manufacturers and is expanding availability to include industrial and additional consumer applications.

To complement the i.MX51 processors, the company also has introduced a power management device, the MC13892, that helps enable smaller, more energy-efficient products that deliver high performance with low power consumption.

"The newest members of the celebrated i.MX51 family deliver compelling blends of features and functionality to meet the stringent requirements of the automotive, industrial and consumer markets," said Bernd Lienhard, vice president and general manager of Freescale's Multimedia Applications Division. "Freescale's long track record of enabling and optimizing the power and performance advantages of ARM technology continues with the introduction of these new devices."

All devices in the i.MX51 family are pin-compatible and based on Freescale's highly optimized implementation of the ARM Cortex™-A8 core. The products integrate five processing engines and deliver a variety of video, graphics and multimedia (#) feature combinations to meet specific market requirements. The i.MX51 family products feature a vast array of connectivity options and support multiple memory types, including DDR2 – an extremely cost-effective technology (#) that can reduce bill of materials up to $3 (USD) per product.

To streamline development and deliver a more comprehensive solution across multiple markets, Freescale offers board support packages (BSPs) for the Linux® OS, Windows® Embedded CE6.0 and the Android™ OS, all optimized for the i.MX51 family.

Building on Freescale's embedded industrial heritage

The latest in a long line of world-class embedded industrial processors from Freescale, the new i.MX512 and i.MX513 devices are designed to meet critical industrial market requirements such as intuitive user interfaces, sophisticated graphics processing and extensive connectivity options.

Both devices deliver 600 MHz performance at industrial temperature ranges, and the i.MX513 additionally incorporates hardware video encode/decode functionality. These processors are included in Freescale's product longevity program, with assured supply for a minimum of 10 years. Seewww.freescale.com/productlongevity (http://www.freescale.com/productlongevity) for details.

Industrial applications for Freescale's i.MX512 and i.MX513 processors include printers, factory automation equipment, medical devices, digital signage, home appliances and human-machine interface technology. The devices are also available in consumer versions, with the core performance enhanced to 800MHz. The consumer versions are ideal for the eBook, IP camera and V2IP media phone markets.

"Sagemcom is working to establish itself as a leader in high added value communicating (#) terminals and especially tablets with multiple Internet (#) applications," said Patrick Sevian, president of Sagemcom. "We have chosen the Freescale i.MX51 family because it offers an exciting solution for the portable multimedia devices market and enables us to create a highly integrated and powerful device with capacity to fulfill market evolution."

New i.MX technology from the automotive processor leader

The i.MX514 and i.MX516 processors are planned for AEC-Q100 qualification and designed for a variety of in-dash and after-market automotive applications. Several automotive OEMs have already selected these processors to deliver multimedia functionality in automobiles that will begin production in 2010.

Delivering 600 MHz performance at automotive temperature ranges, the products are ideal for display-based instrument clusters, navigation, telematics and infotainment platforms, as well as other automotive applications.

The devices include advanced graphics capabilities, and the i.MX516 additionally incorporates a powerful video encode/decode hardware engine to provide rich multimedia experiences for drivers and passengers.

"Freescale extends its leadership in the automotive and industrial markets by delivering the highly integrated and powerful i.MX51 applications processor family," said Romain Saha, business development manager (#) at QNX Software Systems. "The i.MX51 family incorporates dedicated OpenVG™ and OpenGL®-ES hardware acceleration (#) that is vital for popular customer requirements like Adobe Flash. In combination with the QNX Aviage Middleware, customers can easily develop rich multimedia products with highly advanced human-machine interfaces imperative to the automotive infotainment space."

Enablement technologies for comprehensive solutions

By providing comprehensive platform solutions for the i.MX51 family, Freescale boosts customer value and speeds time to market. Optimized BSPs for the Linux OS, Windows Embedded CE6.0 and the Android OS are available for the i.MX51 family directly from Freescale. The Linux BSP is based on the latest 2.6 kernel and includes full support for all peripherals, as well as optimized drivers for the i.MX51's graphics and video hardware accelerators. Built on top of the Linux BSP is support for Debian-based Linux distributions such as GNOME™ and Ubuntu.

In addition to BSP and integrated stacks, Freescale also provides an extensive portfolio of multimedia codecs that are either fully accelerated using the i.MX51's hardware video processing core or highly optimized for the ARM Cortex-A8 processor architecture using the NEON™ instruction set. These codecs include the framework components such as parsers and plugins required by the corresponding BSP. Supported frameworks include DirectShow for Windows Embedded, GStreamer for GNOME™ and the Ubuntu OS, and OpenMAX™ for Android. Optimized graphics middleware for X Window System, OpenGL-ES and OpenVG graphics engines are also provided to enable rich user interfaces and graphics.

Power management IC

A key component of Freescale's system solutions for the i.MX51 family is the MC13892 power management IC, which is included in all i.MX51 family evaluation kits. Integrating a variety of discrete functions into a single device, the MC13892 contributes to reduced size and weight of end products while extending battery life through innovative power management and control features. The device incorporates a battery charging system, four adjustable buck converters for powering the processor core and memory, two boost converters for LCD backlighting, and RGB LED displays along with serial backlighting drivers for display and keypad.

Third-party support

The i.MX51 family is supported by an exceptionally deep ecosystem of enablement solutions from Freescale and third-party partners. In addition to development technologies available from Freescale, the i.MX51 family is also distinguished by module makers, tools, middleware and application support. Among the embedded enablement leaders lined up to support the i.MX51 family are Adeneo, AllGo, ARM, BlueTechnix, Bsquare, Canonical, CodeSourcery, Digi, Eukrea, Genesi, Green Hills, ICytecture, Ka-Ro, Mentor, MontaVista, QNX, Trinity Convergence, TWS and Wind River. See supporting quotes from i.MX ecosystem partners at

http://www.freescale.com/files/pr/imx51partnerquote.html (http://www.freescale.com/files/pr/imx51partnerquote.html)

Availability and pricing

Freescale is now sampling the consumer, industrial and automotive versions of the i.MX51 family, with suggested resale pricing starting at less than $20 (USD) in small quantities. Fully qualified consumer i.MX51 products are shipping in production today, with industrial and automotive qualifications planned for 1Q 2010.

An i.MX51 evaluation kit is available for order now, using part number MCIMX51EVKJ. For less than $700 (USD) suggested resale, the kit ships with pre-loaded software images for both the Windows Embedded CE and Linux operating systems. Additionally, source code for the software is available online now for customers to download.

For more information about Freescale's i.MX51 and MC13892 solutions, visit www.freescale.com/imx51 (http://www.freescale.com/imx51)

About Freescale Semiconductor

Freescale Semiconductor is a global leader in the design and manufacture of embedded semiconductors for the automotive, consumer, industrial and networking markets. The privately held company is based in Austin, Texas, and has design, research and development, manufacturing or sales operations around the world. www.freescale.com (http://www.freescale.com) . Follow us on Twitter (http://twitter.com/freescale) .

Supporting comments from third parties follow

Adeneo Embedded

:"Adeneo Embedded is very excited about the launch of the i.MX51, and proud to collaborate with Freescale on the development, support and maintenance of Windows Embedded CE and Embedded Linux Reference BSPs for the whole i.MX portfolio, from ARM9 to Cortex-A8 based architectures," said Yannick Chammings, CEO of Adeneo Embedded. "Through its complete set of Training, Support and System Integration services around Windows Embedded and Embedded Linux, Adeneo Embedded looks forward to helping OEMs integrate the powerful i.MX51 processor into their design."

AllGo Embedded Systems

:"The i.MX515 processor with its high performance ARM Cortex-A8 core, HD Video and advanced graphics support, provide an excellent platform for developing consumer multimedia and computing intensive products," said K. Srinivasan, CEO of AllGo Embedded Systems. "AllGo is already engaged with OEMs supporting Freescale's i.MX515 based product development. With our knowledge and experience of the i.MX515 platform and our commitment to support multiple embedded middleware options including

Android, Linux and WinCE, our product engineering team is excited to work with potential customers planning to use i.MX515 in their products with advanced multimedia, graphics and HMI feature set."

ARM

:"The extension of the Freescale i.MX51 family of multimedia application processors offers system designers a range of highly integrated Cortex-A8 processor-based SoC solutions for automotive, industrial and consumer applications," said Eric Schorn, vice president of marketing for Processor Division ARM. "With these new ARM Cortex processor-based products, customers will be able to choose an optimized platform with high-performance processing and multimedia capabilities, within a low power consumption envelope and at an integration level that will drive the creation of innovative new end devices."

Bsquare

:"Bsquare is pleased to provide Adobe Flash support for Freescale's i.MX51 family of applications processors which are ideal for the emerging ARM based smartbook category as well as for the growing market for infotainment and in-vehicle systems," said Larry Stapleton, vice president of global sales for Bsquare Corporation. "Now, OEMs can accelerate their time to market using Bsquare's Adobe Flash players on i.MX51 for Windows CE, Linux and Android."

Bluetechnix

:"Bluetechnix is proud to present its highly integrated Single-Board Computer, SBC-i.MX51, based on the announced i.MX51 processors from Freescale. Our complete solution consisting of hardware/software development and support services enables customers to rapidly develop their applications at an astonishingly low price," said Gregor Novak, CEO of Bluetechnix. "The SBC-i.MX51 board offers an exciting solution for powerful multimedia applications and is also qualified for industrial automation control systems."

Cannonical

:"Freescale was the first ARM SoC partner to join Canonical's ARM program. Freescale and Canonical have worked to enable Ubuntu, the world's most popular consumer Linux operating system, on the i.MX51," said Mike Kress, director of ARM Partner Alliances, Cannonical. "Ubuntu 9.04 and Ubuntu 9.10 are both enabled on the i.MX51 platform, allowing OEMs to ship a world class operating system on low-cost, consumer-centric devices and the opportunity to engage with the rapidly growing Ubuntu ecosystem."

CodeSourcery

:"CodeSourcery is proud that Sourcery G++ has been selected by Freescale as a key part of its tools strategy for the i.MX51 family," said Mark Mitchell, chief sourcerer of CodeSourcery. "Sourcery G++ contains features needed by professional C and C++ i.MX51 developers, including compiler and library optimizations for the ARM Cortex-A8 core (including NEON), a GNU/Linux prelinker and library optimizer, and an ARMv7-A instruction set simulator for easy experimentation on the desktop."

Digi International:

"Freescale's i.MX51 application processors deliver high performance, power efficient technology to enable new innovations," said Larry Kraft, senior vice president of global sales and marketing, Digi International. "We offer the industry's first wireless enabled core module based on this processor. It is integrated into our ConnectCore™ Wi-MX51 module designed specifically for wireless multimedia applications with low power requirements. The ConnectCore Wi-MX51 provides the industry's fastest development path for high performance wireless multimedia devices."

Elektrobit

:"The Freescale i.MX51 hardware platform allows us to design high performance demo applications that are capable of running next-generation navigation features, such as satellite imagery on top of digital terrain models, textured city models and shaders to simulate surface reactions like water reflections," said Alexander Asner, product manager for Elektrobit.

Elektrobit:"Our HMI development solution, EB GUIDE Graphics Target Framework (GTF), enables advanced graphics on Freescale hardware. The i.MX51 processor family will be used as a reference platform for the EB GUIDE GTF currently using a Linux operating system. This will allow customers to jump-start their HMI development and benefit from the OpenGL-ES acceleration provided by the Freescale hardware and the EB GUIDE solution," said Thomas Fleischmann, product manager, EB GUIDE at Elektrobit.

Eukréa:

"With the new i.MX51 processor, Freescale adds the Cortex-A8's computing power to an incredible set of peripherals with minimal power consumption." said Eric Bénard, CTO, Eukréa Electromatique. "This gives us a great opportunity to increase the experience level of our customers' embedded platforms. Eukréa's i.MX51 based system on a module allows customers to reduce their time to market by offering an easy-to-integrate, powerful, and full featured core for their new products. Eukréa also offers custom hardware and embedded Linux development services."

Genesi:"We are excited to be entering a new high growth market that capitalizes on our system integration skills and ourwww.cloudcity.me (http://www.cloudcity.me/) offering," said Dave Mothersole, chief technology officer of Genesi USA. "With the i.MX51 at the core, we are bringing a broad range of communication and computing technologies into a series of easy-to-use, consumer-friendly devices."

Green Hills:"The Freescale i.MX51 application processors provide an impressive combination of multimedia and security features, including advanced graphics and ARM® TrustZone™ virtualization," said David Kleidermacher, chief technology officer, Green Hills Software. "Green Hills' INTEGRITY hypervisor and TrustZone solutions for the i.MX51 enable the creation of sophisticated, green, cost-effective, and totally secure consumer and automotive infotainment systems."

ICytecture:

"We are thrilled to be part of the launch of the i.MX51, which will offer exceptional possibilities to our customers looking for a powerful multimedia and graphics engine," said Boris Bobrov, president, ICytecture. "Our i.MX51 Starter Board will offer a flexible development environment and reference platform. With a high level of integration on the board, our ready-to-ship i.MX51 form-factor, industrial-grade CPU/SOM module will help Freescale's customers to get their product to market faster. The i.MX51 Starter Board will be available in Q4 2009 on our website."

Ka-Ro:

"Targeting the smallest form factors, Ka-Ro's Computer-on-Module series' market niche is where high-end integrators achieve their technological leadership. They require the highest flexibility and the fastest time-to-market and continually need new solutions for their mobile analysis tools, their spectrometers, end-of-line testers and information desks. Like no other competitor's product, Freescale's latest processor, the i.MX51, serves this segment ideally," said Ekkehard Meurers, CFO of Ka-Ro. "Its OpenGL®-ES 2.0 and OpenVG™ accelerators, as well as multi-format HD 720p video decoder and D1 video encoder hardware engine, make it the winner in all low power, high performance applications."

Mentor Graphics:"Freescale and Mentor have worked closely together on optimizing the Nucleus Graphics technology for the new i.MX51 processor family," said Glenn Perry, general manager of Mentor Graphics embedded systems division. "Mentor's Nucleus Graphics product is OS-agnostic and provides support for Linux, Android and other commercial operating systems. This helps make the Freescale and Mentor integrated solution ideal for developing visually exciting products for the automotive, consumer, medical and industrial application markets served by this new device family."

MontaVista:"The combination of the Freescale i.MX51 processor and MontaVista Linux 6 provides a high value, commercial quality solution for developers," said Scott Mullarkey, vice president of worldwide business development, MontaVista Software. "Feature compatible with Linux, the i.MX51 Market Specific Distribution (MSD) features additional functionality such as advanced 2D/3D graphic and codec enablement, CAN Stack, and Bluetooth and Wi-Fi utilities to support the powerful multimedia capabilities of the i.MX51."

QNX Software Systems:

"Freescale extends its leadership in the automotive and industrial markets by delivering the highly integrated and powerful i.MX51 applications processor," said Romain Saha, business development manager at QNX Software Systems. "The i.MX51 incorporates dedicated OpenVG and OpenGL ES hardware acceleration that is vital for popular customer requirements like Adobe Flash. In combination with the QNX Aviage Middleware, customers can easily develop rich multimedia products with highly advanced Human Machine Interfaces imperative to the automotive infotainment space."

Trinity Convergence:

"The connected device market continues to evolve, but remains consistent in its demand for rich multimedia playback and communications functionality. The i.MX51 applications processor is well positioned to deliver on all fronts -- from music, movies and YouTube playback to two-way communications including instant messaging and video chat," said David Brown, CTO of Trinity Convergence. "We're actively porting our VeriCall Edge® multimedia software to the i.MX51 in order to offer device manufacturers a comprehensive solution that helps them deliver the next wave of innovative devices faster than ever before."

T.W.S.:"Designing navigation products requires accurate computing with expected rendering on the LCD at lower power consumption. The i.MX51 family provides those cumulative capabilities due to its support of the 800MHz and Graphic hardware acceleration. The 3D Graphic embedded hardware engine in the i.MX51 allows T.W.S. to obtain very good performance, while also running large size displays in intensive graphic applications to meet Marine market requirements. The specific power consumption methodology that Freescale applies on the i.MX51 drove T.W.S. to become extremely competitive and positioned T.W.S. as a leader in our segment," said Dulio Lagomarsini, research and development manager at T.W.S. Srl. "T.W.S. is proud to have worked closely with Freescale on the i.MX51. Their technical support allows T.W.S. to reduce cycle time."

WindRiver:

"Wind River will support Freescale's newest i.MX51 family across its market-leading embedded software portfolio, including VxWorks, Wind River Linux and Wind River Workbench On-Chip Debugging," said Tomas Evensen, chief technology officer, Wind River. "As a long-standing and strategic Freescale partner, Wind River is committed to helping our common customers develop differentiated ARM-based products for a variety of high-growth markets."

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