

Embedded Systems Bulletin – April 2009

VDC attended the 2009 Embedded Systems Conference in San Jose on March 31st and April 1st. This bulletin presents a summary of the event.

Embedded Systems Conference (ESC) – Silicon Valley 2009

Despite this year's murky global economic outlook, the 20th Embedded System Conference appeared to be moderately well attended on Tuesday and Wednesday, with a substantial number of exhibitors, fair floor traffic, and a cautiously optimistic murmur emanating from activities on the floor. As result of the weaker economy, few of the vendors we spoke to had expected the conference to offer a large attendance or significant new business opportunities, yet many indicated that they had generated a surprising percentage of quality leads as a result.

Multi-core, virtualization, and security continued to be strong themes among software solution providers. VDC also noted the substantial amount of positioning around test engineering and lifecycle management solutions among the exhibitors.

THE "EMBEDDIES" GO TO:

Best of Show

CriticalBlue announced Prism, a new analysis tool for multi-core programming. Prism allows software developers to analyze legacy serial code bases for concurrency opportunities and also enables them to test for the most efficient parallel configurations, thus limiting some of the risk and time associated with adopting new multi-core hardware architectures and programming methodologies. In times when there is continuing interest and movement to multi-core architectures and available engineering resources are even more critical to successful product development, the value proposition of tools such as Prism appears even more compelling.



Honorable Mention

QNX Software Systems announced that its Neutrino RTOS Secure Kernel v6.4.0 has been certified to the Common Criteria ISO/IEC 15408 Evaluation Assurance Level 4+ (EAL 4+). This marks the first such certification of an RTOS that implements symmetric multiprocessing (SMP) and bound multiprocessing (SMP with application processor affinity). The company also announced that it will extend Neutrino's multi-core solution to support the Intel Xeon processor 5500 (Nehalem) series in an effort to better target next-generation networking devices.

Best Demos

Freescale's booth drew a consistent crowd with its AC Flexis air hockey table that allowed attendees to compete against a robot-arm-controlled competitor built by **Nuvation**. The system combined a vision system and robotic arm controlled by a combination of Freescale's 8-bit MC9S08AC128 and 32-bit ColdFire MCF51AC256 products. Though beatable, the system proved to be a remarkably skilled opponent.

Showcasing its NI Compact Vision System, **National Instruments** exhibited its NI Guitar Hero Challenge. Attendees could face-off against the Cythbot, a robot built by **Cynth Systems** capable of skillfully playing the popular video game. While the use of Guitar Hero to draw a crowd is by no means unique (VDC saw at least two others offering game play at this show alone), NI's exhibit proved to be an interesting twist on the theme while elegantly demonstrated the utility of its products.

WALKING THE FLOOR

With 10 product-related announcements in the month on March alone, **Atmel Corporation** had plenty to talk about at this year's conference. The company's most recent announcements included the introduction of a new family of 0.7V tinyAVR microcontrollers, new products targeting the mobile device market with its AT42QT1040 is based on Atmel's patented QTouch charge-transfer sensing method, and the launch of new solutions around the AVR32 product line supporting digital audio streaming and playback. Surprisingly, the company also hinted that more important announcements would be on the way.

ARM also attended the conference and featured a number of new announcements. The company announced the expansion of its System Generator product with the introduction of two new fast models for the Cortex-A9 MPCore multicore processor and for the Cortex-M3 processor. ARM also announced the Keil Microcontroller Prototyping System (MPS), in which ARM Cortex-M class processors and user-defined peripherals can be prototyped and more easily evaluated. Keil MPS allows the silicon manufacturers to implement a Cortex-M system without needing access to the RTL code. Moreover, since the system is fully configured, the integration and development of additional IP and software can begin sooner.

After having announced their initial partnership last year, **AdaCore** and **Praxis** launched SPARK Pro, which combines the SPARK language and tool set within AdaCore's GNAT Programming Studio IDE. AdaCore also announced that GNAT Pro now supports the Atmel VR 8-bit microcontroller and launched a GNAT-on-MINDSTORMS product to support the LEGO robotic building system as part of their GNAT Academic Program.

Real-time Operating System vendor **ExpressLogic** announced the latest addition to its growing suite of development tools, StackX. This interesting new offering analyzes a program's executable (.elf) file, enabling the calculation of each thread's maximum stack memory requirements, therefore reducing the use of unneeded memory, and solving a critical challenge for developers in determining the appropriate stack size. In addition, the company also released version 5 of its TraceX product, which includes deterministic and undeterministic priority inversions, advanced search facilities, and enhanced integrations with their FileX and NetX solutions.

Green Hills Software announced that their Platform for Secure Networking now supports the RADVISION SIP protocol development suite for Voice and Video over IP solutions. In addition, Green Hills has added virtualization to that platform, allowing Linux to run on the same processor in secure isolation from application functions designated to run on the company's INTEGRITY real-time operating system. The company also announced that Datamax-O'Neil is using INTEGRITY within its microFlash 2te serial and wireless portable thermal printers. **Green Hills Software** also announced that they achieved record sales and earnings in 2008.

Static analysis tool vendor **GrammaTech** announced that version 3.4 of their Code Sonar tool - due to be released later this quarter – will incorporate checks compliant with the Power of 10 coding rules for developing safety-critical code created by Gerard Holzmann, director of NASA/JPL's Laboratory for Reliable Software.

The Rational Software team from **IBM** was also in attendance and highlighted enhancements to its Telelogic Rhapsody software and system modeling tool for developing applications for the Android platform and for the efficient development of applications for multi-core processors.

LDRA announced version 8.0 of their automated test tool suite, which incorporates requirements management, static analysis, dynamic analysis, unit- and system-level test tools. The new release includes speed improvements and enhanced requirements traceability, an advancement that should prove valuable among organizations with highly requirements-driven engineering methodologies.

With the launch of LynxSecure 3.0, **LynuxWorks** will add full virtualization capabilities to its hypervisor solution. These full virtualization capabilities are initially available for Windows operating systems when implemented in conjunction with Intel VT-x and VT-d hardware virtualization technology. In addition, the company also announced that its secure separation kernel had been selected for incorporation as part of the Navy's \$83 million Open Architecture Computing Environment project.

In addition to their recently announced DO-178B solution, static analysis tool vendor **Klocwork** highlighted Klocwork Solo. Offering a limited-time subscription pricing of only \$99 per user, the company is hoping to enhance adoption of their solutions virally, via individual developers, at a time when higher priced licenses for new tools are likely harder to justify. Available for Java, Solo also includes functionality specifically tailored for code developed for the Android platform.

Embedded database vendor **McObject** announced a partnership with **LynuxWorks** in which its eXtremeDB Kernel Mode database has been ported to LynuxWorks' BlueCat Embedded Linux 5.6 operating system. The companies expect that this partnership will be especially beneficial when targeting the medical device industry, in which many OEMs are moving away from proprietary systems toward Linux and other off-the-shelf solutions.

Mentor Graphics did not feature any specifically announcements at the show and the company's name was noticeably absent from its exhibit in favor of the name of its flagship operating system – Nucleus. VDC expects that this branding strategy likely signifies the strength of the Nucleus name in embedded and a deliberate focus on the part of Mentor to draw upon the core technologies that helped establish Mentor (and Accelerated Technology Incorporated) within the embedded software marketplace.

Programming Research (PRQA) announced Management Information System (MIS), a new product designed to articulate metric trending and summaries to development managers. The solution provides the ability to create custom metrics as well as the ability to limit unneeded noise by ignoring the diagnostics for sections of legacy code.

Virtualization solution provider **Open Kernel Labs** was also in attendance and announced that the new Motorola eVoke phone employed their OKL4 software to perform both application and baseband processing on the same processing core. VDC expects that a number of mobile phone manufacturers will be closely tracking the success of the eVoke product, and assess for themselves whether virtualization can help them to offer an enhanced user experience while reducing their hardware bill of material costs in future products.

National Instruments announced a new programming interface for LabVIEW that eases the ability of C/C++ software developers to program NI FPGAs-based hardware. The NI LabVIEW FPGA module abstracts the communication between the FPGA and the general purpose processor so that software developers can avoid using VHDL.

Microsoft featured announcements around its Windows Embedded product line, including the launch of Windows Embedded Server and MSDN Embedded and Windows Embedded Developer Update, a consolidated subscription offering to access the portfolio of Microsoft's embedded operating systems and tools. The Update service includes access to drivers, BSPs, and other technologies from Microsoft's partners.

Embedded Linux solution vendor **MontaVista Software** highlighted several of their recent announcements at the show, including the launch of their embedded Linux developer community, MELD, and their Montabello platform for Mobile Internet Devices (MIDs). An extension of their Mobilinux platform, Montabello includes middleware and applications for power management, fast boot, and connectivity management.

Lantronix's announced the first step in their plan to migrate their secure, embedded networking solutions to Linux as their base platform with the release of their new MatchPort AR Software Development Kit. The move underscores the industry's shift to more powerful processing platforms away from the 16-bit architectures for which the company's Evolution OS had been designed.

Phoenix Technologies demonstrated the new version of their Firmbase environment, which allows firmware-based applications to run at high availability, outside the main operating system. The company offers a quick start Embedded BIOS and HyperSpace, an always connected, instant-on operating environment that can run independently or alongside Windows as a virtualization solution.

Real-Time Innovations (RTI) version 4.4 of their Data Distribution Service (DDS) middleware, that includes the ability to dynamically update communication interfaces at runtime as well as enhanced integration with XML-based applications. The company also noted OGM's recent successful demonstration of the integration of DDS implementations among multiple vendors. RTI also announced that they have integrated their DDS product with Wind River's VxWorks MILS Platform 2.0, and strengthened their partnership with **Aonix** in the process in order to better serve their joint customers going forward.

Virtutech announced the release of Simics 4.2. The new product offers a number of enhancements, including faster performance for complex distributed systems, improved extensibility, more robust support for key industry standards such as Eclipse, System C, and IP-XACT, support for **ENEA's** OSE operating system, features for hierarchical system model representation, and the enablement of hybrid (functional vs. cycle accurate) model simulation.

Other leading embedded systems vendors in attendance at ESC included **American Arium, Altera, Black Duck Software, Birdstep Technology, BSQUARE, CMX Systems, Coverity, Datalight, Electric Cloud, IAR Systems, Lauterbach, Perforce Software, QualiSystems, Segger Microcontroller, Synopsys, Texas Instruments, Wind River Systems**, and many others.

ABOUT VDC RESEARCH GROUP

VDC Research Group (VDC) is a technology market research and strategy consulting firm that advises clients in a number of technology markets including: Automatic Identification and Data Collection, Embedded Hardware and Systems, Embedded Software and Tools, Industrial Automation and Control, Mobile and Wireless, and Power Conversion and Control. Using rigorous primary research and analysis techniques, the firm helps its clients identify, plan for, and capitalize on current and emerging market opportunities. We strive to deliver exceptional value to our clients by leveraging the considerable technical, operational, educational and professional experience of our research and consulting staff. During our nearly four decades of ongoing operation, we have had the pleasure of serving most of the world's leading technology companies, many high-profile start-ups, and numerous blue-chip early and later stage investors. Our products and services consist of research reports, annual research programs, and custom research and consulting services. Founded in 1971, the firm is located in the Boston area. Please visit our Web site at www.vdcresearch.com to learn more.

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Editors:

Steve Balacco, *Director Embedded Software and Tools*, 508.653.9000 x124, sbalacco@vdcresearch.com

Matt Volckmann, *Senior Analyst Embedded Software and Tools*, 508.653.9000 x143, mattv@vdcresearch.com

Chris Rommel, *Analyst Embedded Software and Tools*, 508.653.9000 x123, crommel@vdcresearch.com