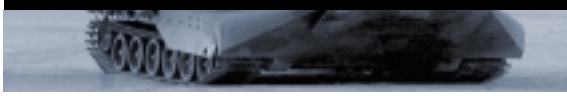

COTS

Editorial

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Still Committed to the Military

With the country's increased defense focus following on the heels of the telecom meltdown, it's no wonder more companies are talking aerospace and military than ever before. But, what's even more laudable are those COTS companies that have always focused on these markets through thick and thin. It really turns my crank to see how well many of them are positioned in today's environment and how they're remaining firmly committed to the military. Here are a few that deserve some special praise, and here's what they're up to in embedded.

Actel—One of the "big five" FPGA companies, I'm constantly getting Actel and Atmel confused (see below). Actel is the "anti-fuse" FPGA company—the one that builds non-volatile programmable logic that grows fuses to connect logic elements sort of like a PROM in reverse. At $134M in revenue (2002) Actel's still small enough to focus on the little things that matter to the military like DSCC MIL-PERF compliance, MIL-STD-883 Class B electricals and Class S-like processing. That's right: Actel makes a conscious business out of targeting defense and space-level, generating nearly a third of the company's revenue in the process.

Supplementing an earlier release of space-qualed anti-fuse FPGAs, the company is one-upping itself with its new ProASIC Plus series of flash-based products. Dubbed the first flash-based FPGA specifically for military applications, the family has densities up to 1M system gates (250,000 ASIC gates), is available in the MIL-STD-883 temperature range of -55°C to +125°C (when was the last time you saw that?), and has built-in security features to prevent the logic from being reverse engineered plus up to 198K bits of on-board RAM. In a page taken from pre-COTS days, the device is even available in hermetic packages if you wish with lot-specific customer-defined qualification tests. Way to go!

Atmel—With revenues over $1.0B, Atmel is a big semiconductor company that derives lots of its revenue from flash memories plus its other diverse product lines. But even at this size, Atmel gets some 25% of its sales from industrial and military. In particular, the ASIC group represents 34% of the company and it's very focused on the defense and military market. Having acquired the Thomson TCS fab in Grenoble, France, Atmel is the provider of numerous legacy Mil-Spec products still popular in existing defense programs. Even better, the company's Colorado Springs, CO, fab represents stateside capability in geometries down to 0.18 micron and Atmel is working with the DoD to turn this into a "trusted fab" for long lifecycle and US-critical devices.

Some of the attributes that make Atmel unique are the company's focus on military from the get-go, plus the technology synergy across multiple product lines. For example, the company can do mixed signal, CMOS, E^2, BiCMOS and SiGe products in architectures ranging from gate arrays to full custom. On the SoC side of the house, Atmel can bring the latest commercial IP—like security chips in IBM laptops, MIPS or ARM RISC CPUs—to aerospace and military systems. Atmel military ASICs are used by Boeing, Northrop-Grumman, General Dynamics, and many other defense primes. Moreover, the company remains firmly committed to the defense market and continues to invest in furthering its position there.

Green Hills Software—Growing at over 40% per year and doubling design wins for the company's Integrity RTOS every twelve months are the results of a rigid focus on target markets like defense. What's so unique about Green Hills is that as a leading software company, it continues to exploit synergies between its product lines while constantly adding features designers want. Everything works together: from compiler to debugger to RTOS, providing cohesive tool suite and in-system capabilities rarely seen. One reason for this is that Green Hills uses its own products to develop its products, further building in those little tricks that make some tools truly elegant.

Take the company's new SuperTrace Probe that includes a 1 Gbyte trace buffer to capture more code at 300 MHz. Does this seem particularly earth-shattering? I mean, why didn't someone else use commodity PC memories to make the developer's life easier—instead of forcing them to nail down software events to nearly infinitesimal time slices? When you add this to the DO-178B Level A-certified Integrity-178B, plus the compiler tricks that optimize and keep on optimizing code for the mil-favorite

PowerPC, plus the other in-development military-focused products they won't let me tell you about yet—it's clear that Green Hills has the best interests of defense users in mind.

International Rectifier—When was the last time you saw a side-brazed 0.6 DIP device? They're still available—and many others as well—from this broadline supplier of power management products. On a recent trip to their headquarters facility in Southern California, I was pleasantly surprised to learn that the company's hi-rel products sector group spans the gambit from hermetic MOSFETS, to linear switching regulators to fully qualified rad-hard devices designed for space.

Like Actel, the company can process devices to MIL-STD-883 and MIL-PRF-38535, and can even go all the way up to JANTX and JANS qualifications. A company doesn't attempt JAN (that's Joint Army Navy, for you new-timers) certification unless it's seriously committed to the military market for the long haul. At the very minimum, processing devices to these tried-and-true military specifications is a comfort level for COTS users that the product will be in phase with 10-year program lifecycles.

NewMonics—Inventor of the PERC Java platform, NewMonics recently announced that they were being acquired by Aonix, a 20-year-old company specializing in "high integrity" software. Like DDC-I only bigger, Aonix specializes in tool suites and software kernels in mission- and safety-critical products in C, C++, and Ada. Pouring PERC into the mix adds Java under their wing with the future plan to bring a real-time, high integrity Java product to markets like military and aerospace. While NewMonics has been targeting Java's "write once, run anywhere" paradigm into network infrastructure, telematics and industrial automation, Aonix has been deepening their focus into transportation, energy and military/aerospace.

The combined company's differentiator is "safety- and mission-critical". Particularly in military/aerospace, Aonix products are used in civil aviation by Boeing and Airbus, and in multiple defense applications ranging from the F-22 Raptor to the F-35 JSF, to airborne UCAVs. The companies have been formal partners for over a year, and have been closely associated ever since their paths first crossed in the J-Consortium where NewMonics' founder Kelvin Nilsen was the editor of the real-time core specification and Aonix was working in the Ada real-time group. Looking ahead, Aonix has the reputation in defense to pull off some interesting product cross-pollination such as an automotive-based telematics product that brings mobile fleet management, moving maps and (consumer) situation awareness to C4I systems managing military situational awareness, logistics and materiel traceability—all on top of safety-critical Ada, C, C++, or Java underpinnings.