Boundary-Scan Without Boundaries™

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2Wire Corporation Significantly Reduces Time-to-Market Schedule by Pushing Corelis Boundary-Scan Technology to Its Limits

2WiRE™

"From design change to board fabrication to assembly, the entire process was completed in less than a week, a fact which really impressed our management."

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2Wire, Inc. delivers a full suite of broadband products and services to the residential marketplace. The 2Wire HomePortal™ family of products are the first intelligent residential gateways to integrate the wealth of options available through the Internet and create a complete home data, voice, and entertainment network.

An enormous product development and testing challenge faced 2Wire, a Silicon Valley start-up specializing in producing broadband residential gateways for the consumer market. "We committed to an extremely aggressive time-to-market schedule," says Bill Schimandle, senior test engineer for 2Wire," which required us to develop new strategies in software development, board prototyping, hardware bring up, and production testing".

To answer these technical challenges, 2wire turned to Corelis, an industry leader in JTAG tools and technology. The Corelis boundary-scan test tools allowed 2Wire to quickly debug and bring up target hardware, based on extremely high pin-count BGA packages, without any on-board functional or application code.

With the technical help provided by Corelis' team of engineers, and utilizing Corelis' JTAG emulation technology, 2wire was able to develop a JTAG communications protocol for their on-board processor. The on-board processor included a JTAG debug port, which eliminated the need to place RS-232 capability on the board. The tools developed were then used by software engineers to not only prove basic hardware sanity, but to download code either to the onboard non-volatile memory or directly to the processor's SDRAM.

Using the JTAG on-chip debug capability, streamlined the software team's workload, and allowed them to quickly proceed to developing software on target hardware, instead of the industry standard of modeling first, hardware second.

The next big challenge facing 2Wire was ramping to production in an offshore factory environment. With the constant changes required by rapid prototype development, an ICT program was out of the question if production schedules were to be maintained. The Corelis boundary-scan tools provided the answer again. Bill Schimandle states, "We had a board change forced by FCC compliance testing and we were able to depend on Corelis' engineering team to provide new test vectors for the board while we were in the process of actually building it. Corelis emailed the test vectors to our offshore facility and it was a beautiful thing to see the first board come off the line, pass the new vectors, and successfully boot and run."

"From design change to board fabrication to assembly, the entire process was completed in less than a week, a fact which really impressed our management", adds Bill Schimandle.

Corelis was able to provide support in 2Wire's ASIC development program as well. When the first silicon was received from the vendor, the boundary-scan vectors would not work. The ASIC vendor was unable to resolve the problem, so Corelis took the initiative in assigning an engineer to the project who worked with the vendor and the manufacturer until the problem was resolved.

It turned out to be a problem with the vendors' software, which made assumptions about the ordering of the chain of boundary-scan cells. Corelis was able to point out some cells which were not boundary-scan compliant, and this information was invaluable to the team designing the next generation ASIC.

"It has been an excellent business relationship," concedes Bill Schimandle. "Corelis' willingness to go the extra mile for their customers, both in training and in development, as well as allowing our team access to source code to tweak their toolsets for our custom environment has played a major role in bringing our product to market within the time frame we committed to. I look forward to using Corelis on all of our future products."

About Corelis

Corelis, Inc., a subsidiary of Electronic Warfare Associates, Inc., offers bus analysis tools, embedded test tools, and the industry's broadest line of JTAG/boundary-scan software and hardware products combining exceptional ease-of-use with advanced technical innovation and unmatched customer service. Corelis' development and test tools are used by companies such as Agilent, Dell, IBM, Intel, Microsoft, Lockheed Martin, Rockwell Collins, Hewlett-Packard, Motorola, Qualcomm, Nokia, Panasonic, TI, Ford, Broadcom, Ericsson, and many others. Corelis products are found globally in every industry developing or manufacturing electronic products.

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"We are now using technicians to perform the testing and fault location using the Corelis solution, freeing the Test Engineer to perform more demanding tasks."

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