

The wall between structural and functional test

Rick Nelson, Chief Editor rnelson@tmworld.com -- Test & Measurement World, 3/1/2008



Enlightened, multidisciplinary engineers may be dismantling the oft-decried wall between design and test, but some of the bricks that made up that wall may have been reassembled into a wall between two test disciplines: structural and functional test. Glenn Woppman, president and CEO of Asset InterTech, encountered that wall when Asset teamed up with International Test Technologies (ITT) in an effort to combine JTAG and CPU emulation test technologies. Efforts to dismantle that wall ultimately helped lead to Asset's December acquisition of ITT.

In a [phone interview I conducted with Woppman and Billy Fenton](#), Asset's chief technologist for CPU emulation and former ITT CEO, Woppman commented that boundary scan has been widely adopted in the communications, networking, and telecom space and in the defense and avionics space. He said Asset originally pursued a partnership with ITT to take advantage of ITT's strength in the computer segment. "When we got our partnership together a few years back, we saw that Billy and ITT were real strong on the Intel architectures, and his tools had and still do have automated test-program generation."

Fenton concurred that 15-year-old ITT has had its main emphasis over the last decade on Intel x86 architectures. "In the earlier years, we were very much focused on the standard PC-type space. But in the last number of years, we've been involved, although still with the Intel x86 architecture, more in the embedded space. We also did support other processor types, which would be more prevalent in the mil-aero-telecoms-type space, and we had some success in those spaces, but certainly the computation space was where we were most successful."

Woppman noted that Asset and ITT share a common background in taking a non-intrusive approach in which test takes place through a JTAG port. The difference, he said, is that while Asset has taken a more structural approach, ITT comes at it from a board functional level. It was their combined efforts to address customer needs that led them to discover the structural/functional test wall.

Fortunately, the wall turned out not to be very high for high-mix, low-volume manufacturers. When the Asset-ITT partnership proposed to engineers at those companies a combination of boundary-scan structural test and emulation functional test, Woppman said, "They tended to get it."

The wall, however, proved to be much higher for high-volume manufacturing. Woppman said that high-volume manufacturers tend to have teams dedicated to structural test only or functional test only, and, he said, if you try to introduce one test discipline to practitioners of the other, "They don't tend to get it."

He said that he expects, however, that the groups will learn to cooperate, and that ultimately Asset, ITT, their customers, and other test vendors can cooperate to develop single test stations. He said that fortunately, "The two groups who say 'I only do structural' and 'I only do functional' are beginning to talk."

