ATE and EDA/DFT – No Urge-to Merge – Yet!
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The Final Test Report

Despite the constant complaints of semiconductor makers about the incompetence and greed of their ATE vendors, the bottom line is that – at least for now – chipmakers can still buy a tester which will test the chips it makes. It may take-up more floor space, use more power, have narrower guard-bands and cost more than chipmakers wish – but it is available!

Nevertheless, how much longer adequate testers will be available -- at any cost – is one of the biggest questions facing the semiconductor industry. Lithography is driving the chip industry. Ever smaller feature sizes are allowing the creation of chips which are faster and more complex – with new failure modes – each year. It is pushing not just the ATE industry, but also the EDA/DFT industry, ever closer to their respective limits!

Yes, the era of built-in-self-test (BIST) has already arrived – but only to a limited degree and only for the most advanced and complex chips. But, the direction chip-test is heading is now clear. And, as chip features get smaller, the biggest obstacle, or in my opinion, excuse, for not using it – the percentage of silicon real estate needed for any of the various forms of an on-chip test – becomes less and less of a consideration.

However, what is still missing is the tight relationship between chip designers and test engineers and between EDA/DFT companies and ATE makers required to implement BIST, and thus avoid potential limitations on chipmakers’ abilities to manufacture the devices that the other tools in their arsenal are already making possible.

While there has been a some movement in that direction recently – it has generally been more perfunctory than functional. A couple of ATE makers, and at least one major chipmaker, have taken minor equity positions in LogicVision, the privately-held DFT maker. Credence Systems has established a DFT subsidiary, Fluence Technology, by acquiring a number of small companies. One ATE maker, IMS, seems to have part of the needed model – developing both engineering testers and virtual-test software. It’s on the right track – but its financial engine may be too small to pull its ambitious train of goals up the very steep hills ahead.

Inevitably, I believe that what must occur is the merger of the strong EDA makers with the strongest ATE makers. I don’t believe that EDA makers can develop hardware, nor do I believe ATE makers can develop chip design tools, including DFT, software, on their own.

EDA companies established early-on that they couldn’t develop hardware – not even workstations designed to efficiently run their software. Their attempts to do so led to the demise of many of the pioneering companies. ( Does anyone remember Daisy Systems – once the EDA industry leader ?)

ATE makers have repeatedly proven that if they attempt to move their focus on ‘testers’ to related products, they get into trouble. Even developing DUT handlers – an obvious extension of their tester business – has been a disaster for most who have tried – with the exception of Advantest. And, it’s arguable that while that company has been highly successful in developing handlers, it did so at the cost of losing its worldwide leadership position in ‘testers.’

Interestingly, if you lineup the four leading EDA makers and the four leading ATE makers – on the basis of their ATE revenues, and by extension, resources – you find very substantial equality. So, now the question is; If you accept the assumptions that these two industries must become a single industry – who acquires who?

Clearly, companies such as Agilent, Schlumberger and perhaps even Teradyne, have the financial muscle to acquire a Cadence, Synopsys or Mentor – but do they have the stomach to do so? On the other side – those three EDA companies could potentially takeover the ATE operations of any of the leading ATE makers – with the possible exception of Teradyne and Advantest.

Do you believe that ATE and EDA will, sooner rather than later become a single industry -- and if so, who will the winning companies be?