Bridging the Gap

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The most significant impact resulting from complex system-on-chip (SoC) designs is the need to address the implications of design on the economics of the production value chain. As growing consumer demand for new electronic products creates higher volumes of production, economies of scale would imply reduce incremental costs. Unfortunately, the opposite is true. While EDA tools have reduced design costs, the increased complexity now allows 10's of millions of gates on a design, producing 10,000 dice per 300 mm wafer. Over 25,000 wafers can be produced in a month in a 300 mm fab that costs in excess of 2 billion dollars to build. This, coupled with increased consumer expectation for higher quality in a shorter market window, increases the business risks and therefore costs.

The Gaps
From a business perspective, the costs are directly related to the widening gaps in the steps taken to design and manufacture electronic devices making it less efficient to produce the next SoC.

- Communication. The gap between the design and production phases of an IC causing higher costs to design tests at the required level of quality.
- Cost. The gap between increased design complexity and increased time to test requiring more expensive testers.
- Time. The gap between the first design and the next generation leading to shorter market windows with shorter periods of time to recoup investments.
- Profit. The gap between revenues and expenses as the costs to produce a SoC increases while the average selling price shrinks.

Investments in complex proprietary design and test methodologies, new process technologies, and expensive testers do not appear to be the solution for gaining market share in today’s economy. One must meet consumers needs and do it in the most cost-effective way by finding ways to bridge the gaps in the supply chain AND to do it better, faster, and cheaper than your competition.

DFT Bridges the Gap
Design for Test (DFT) is in the unique position to be the bridge between the design and production phases of SoCs. It has the ability to integrate earlier with EDA design tools to assure better testable designs with reusable components for better productivity. It can work closer with ATE companies to produce tools and techniques to test and analyze production results that reduce escapes and improve throughput. DFT also provides the means to better use the capital investments for ATE. Finally, analyzing requirements from both the design and production viewpoints gives DFT tools the advantage to tailor flexible, cost-effective solutions for both design and production industries.