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In-Stat Analyst To Discuss ASIC Issues

This represents the first in a continuing series of articles that will address the application-specific IC (ASIC) market, its design methodologies, and the trends and issues associated with its future. As this is my first column to appear in *XCell*, I feel it's only appropriate to take this opportunity to introduce myself to you. I will also highlight changes that have occurred in the semi-custom ASIC market over the past few years, give an overview of the market's future, and include a preview of what you can look forward to in upcoming issues.

To start, I have nearly 40 years of direct experience in the semiconductor industry. The majority of this time has been on the wafer facility and wafer processing side, in both a technical and managerial capacity. My experience spans the entire breadth of semiconductor process technology, from fab layout and implementation through assembly, test, and yield/failure analysis. I have been an analyst with In-Stat for nine years, covering both the memory and ASIC markets. During this time I have maintained my technical awareness through direct industry contact, attending technical conferences, technical consulting for In-Stat, and reading the plethora of technical literature that is available. Prior to In-Stat I was the founder and President of International Semiconductor Technology (IST), a company specializing in semiconductor technology transfers. So much for me.

The semi-custom ASIC market has undergone major change over the last few years. In-Stat defines the semi-custom ASIC market as being represented by the combined worldwide revenues of the following semi-custom design methodology categories:

- Non-Embedded Gate Array
- Embedded Gate Array
- Non-Embedded User Programmable Logic
- Embedded User Programmable Logic
- Standard Cell
- Linear Array

The semi-custom ASIC market (and technology) has undergone two key *paradigm shifts* in recent years. The first was that cell-based technology replaced Dynamic RAM, as the leading-edge technology driver. The second change to occur, and as important as the first, was that cell-based technology replaced array-based technology in the semi-custom ASIC market. These two shifts alone have forever changed the landscape of the semi-custom ASIC market. For instance, have you noticed that the next-generation process technology advances are now coming first from semi-custom ASIC manufacturers, and not the usual DRAM manufacturers? This fact will not change in the future.

The standard cell design methodology, which has trailed the gate array market in revenues for what once seemed like forever, is now more than twice its size. The requirement for high complexity, high density, high performance designs, with mixed-signal capability, is what has caused this shift in market fates.

These factors will all be explored in much greater depth in future issues of this publication. However, there are far more issues than just these that will affect the future semi-custom ASIC market, and this column will explore many of them. Some of the planned topics for future discussion are:

- Packaging (assembly)
- Test
- Intellectual Property (IP)
- Design
- Process technology
- Wafer fabrication
- Materials

Next issue: "Embedded Designs; The Myth, The Reality."

I look forward to our future communiqués, and would welcome your comments and recommendations, as well as your thoughts in general, regarding this column and its future. Please take the opportunity to e-mail me at jerryw@instat.com. ♦