



KPMG ANALYSIS

Market Pressures Link Semiconductor and Consumer Electronics Companies

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By Dave Pelland, Managing Editor, Digital Insider

The growth of consumer electronics and shorter development cycles are causing semiconductor firms to work closely with consumer electronics companies to improve design processes and bring products to market quickly.

"The degree of interdependence of all these technologies is growing rapidly," said Aart de Geus, chairman and CEO of electronic design automation software supplier Synopsys, at the 2008 International Consumer Electronics Show in Las Vegas.

"The quality of collaboration and [maintaining] relationships will actually become the core [competency] going forward," he said. "Any one of these companies acting independently will be unsuccessful, because we are completely interdependent in getting systems to market."

According to an upcoming survey by KPMG, the Global Semiconductor Alliance and the Consumer Electronics Association, consumer electronics (CE) and automotive applications are dislodging computers as the semiconductor industry's primary source of revenue.

Within five years, more than 70 percent of the semiconductor industry's revenue will be derived from consumer electronics, and semiconductor content within consumer electronics devices will grow more than 10 percent annually.

According to the Semiconductor Industry Association, global sales of semiconductors reached \$23.1 billion between January and November of 2007, up 3.4 percent over the same period in 2006.

"Typically the semiconductor industry [has been] driven by computing, and to a lesser extent communications, but that model is changing," said Ron Steger, KPMG's global partner in charge of the semiconductor industry sector. "Clearly, the industry is going more toward CE and automotive applications, which is changing the model for the semiconductor industry."

Early Collaboration

As a result, chip companies are collaborating with consumer electronics firms at the earliest stages of product design. For example, Intel president and CEO Paul Otellini said his company is rolling out energy-efficient processors designed to allow Internet applications (such as online games and enhanced user interfaces) and services to be accessed on set-top boxes, media players and television sets.

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"Packaging several important functions -- such as computing, graphics and audio-video processing -- into a single chip will help devices do more while taking up less space and energy," Otellini said.

Intel is also working with device manufacturers on mobile Internet-access devices expected to reach the market later this year.

The growing reliance in consumer electronics is making it harder for semiconductor firms to bring consumer products to market quickly. The typical product development cycle of CE devices runs about six months shorter than that of their underlying circuitry, which grows more complex as additional features are integrated into chips.

"It's clear for silicon that it's taking longer and longer because of the [increased] functionality that's being laid out," said Rick Cassidy, president of semiconductor foundry TSMC North America. "You're no longer dealing with a straight semiconductor component; you're building a system. The heavy lifting that needs to be done has increased substantially."

Shortened production cycles mean the old approach of designing a chip and then trying to find a market for it is dying out. Instead, chip companies are trying to determine how a consumer device is likely to evolve and develop chip models to evaluate functionality as products are being designed.

"Advanced technology requires such a singular focus on getting it right that you really can't afford to slip up," Cassidy said. "The [integrated circuit] designer has to anticipate systems needs. If [they] get it wrong and have to re-spin that silicon, ouch. [The collaboration] has to be seamless to make this thing work."

Traditionally, computing products typically drove semiconductor innovations (SIA says PC sales typically account for about 40 percent of the semiconductor market) but that's changed.

For instance, many of the components within cell phones, such as the voice processor, as well as imaging and power management chips, are being combined onto single chips that are more efficient to operate but more complex to design and build.

Robert Blake, vice president of advanced market development at programmable logic device manufacturer Altera Corp., said chip producers are working with device manufacturers earlier in the product development cycle to get products to market quickly while still meeting device makers' cost targets.

'You Have to Get It Right'

"As we're building these multi-billion-transistor chips, it takes a long time to do that, and they're very expensive so you have to get it right," Blake said.

Bill Adamec, senior director of the semiconductor technology group for Microsoft, said consumer electronics companies are often willing to use more expensive or existing components if they can get a product into the marketplace sooner.

"It's really a matter of the [semiconductor] company [working with] the CE

manufacturer and understanding its priorities," Adamec said.

In addition, semiconductor companies are systemizing chip design to reuse components in other circuits.

"Design has to become much more disciplined, because when you have complexity growing like crazy, unless you apply discipline you won't get on top of that problem," said Synopsys' de Geus. "And by aligning design flows, you can also start to systematically reuse pieces of design."

Another factor is that the increased complexity of chips in consumer products makes them more expensive to design, but the trendy nature of those devices means their prices are likely to fall quickly. Many have shorter lifespans in the marketplace than traditional computing products.

"Because it's such a competitive environment and things change so rapidly, can your company sustain a value proposition with products in that space?" asked Altera's Blake. "Whatever price points you see in that industry, is there going to be such severe erosion of those price points that you simply can't grow revenue?"

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