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Tomorrow's Platform: Multicore, SoCs and IP

By Jessica Davis -- Electronic News, 9/7/2006

After a long career of providing more computing through higher frequency and greater density, the microprocessor is headed for a retirement of sorts.

But far from the traditional retirement, the microprocessor's new role will be more of a career change, as the device continues its work but becomes part of a larger team. That was the message from Grant Pierce, Sonics president and CEO, in a keynote address offered during the Semico Research Forecast event in San Jose Wednesday.

"The processor as we know it -- a single device -- will now become a multiprocessor device," he said. "We will progress from a single processor core, a monolithic device, to Core Duo architecture which has already put dual cores on a chip and will soon move to quad and beyond. We're not going to see the microprocessor go away. We will find instead it learns to play well with others."

That was the strategy behind Intel's Centrino platform, and its ongoing effort to become a platform company rather than a processor company, according to Pierce. Centrino refers to the processor, the chipset and the Wi-Fi adapter, and that's been a \$5 billion business for Intel, Pierce noted.

"The integration of electronics still drives Intel and I would submit to you that it drives the industry today," Pierce said. Today semiconductor suppliers are working together more closely with applications designers, according to Pierce.

"The challenge is not in finding the individual blocks," said Pierce. "The real challenge is how do we integrate all these components to make a system? That's the architectural work that goes into today's products." And all of that needs to happen in an increasingly shrinking time-to-market window.

These forces are changing the relationships between OEMs and semiconductor suppliers who build the chips for them.

"The architectural space and building blocks to create ICs will predominately be the domain of semiconductor suppliers, but not solely their domain," Pierce said. "The OEMs and the systems companies will have IP in the form of hardware functions that they will look to introduce into their designs."

Pierce pointed to the relationship between Nokia and Texas Instruments. Regardless of whether the companies are building modems, application processors or integrating the two down to a single cell phone chip, the amount of design work that is done on-chip by Nokia varies. TI uses a lot of in-house hardware but still outsources a lot of IP, for example, an ARM processor and a graphics processor. And on the other side, Nokia is bringing tremendous amount of software to the party, Pierce said.

Architecture must be shared between the system OEM and the semiconductor supplier, according to Pierce. Platform strategy, he added, is the strategy that is necessary for fast moving markets.

"A platform-based design approach has been adopted by market leaders today and those market leaders are winning," he said. That approach towards a single chip system means that the business IP will continue to grow at a fast clip. Pierce noted that the IP business is growing at nearly double the rate of the overall semiconductor industry growth rate.

"Platform strategy will accelerate that in years to come."