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[Editorial]

Everything That's Dis-Integrated Gets Put Back Together Again

Mark David | ED Online ID #15223 | April 12, 2007

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As electronic design becomes more complex and divides into increasingly esoteric sub-specialties, new opportunities arise for "re-integration" to bring all the outsourcing back together into a logical and efficient development flow. In fact, re-integration was one of the salient themes of this year's Semico Summit.

Electronic Design was pleased to be media sponsor of this year's conference, held last month in Phoenix, and attending gave me a chance to gain the perspective of some of the top executives in the semiconductor market. Since you readers are busy creating tomorrow's technology, I thought I'd recap some of the 40,000-foot perspective

passed down at the summit.

WHAT'S NEXT IN WIRELESS

Behrooz Abdi of Qualcomm CDMA technologies said that the next generation of multimedia phones will process graphics at 4 million triangles per second (the equivalent of the Sony PlayStation 1) and will have as many as 15 different radios inside. Atheros Communications CTO William McFarland agreed that combining wireless solutions like Bluetooth/Wi-Fi via protocol layer crossovers will increase function while reducing overall size and lowering system cost.

But McFarland also predicted that Wi-Fi would continue to dominate wireless, likely winning out in some application areas now targeted by newer niche technologies. For example, Wi-Fi will allow for true mesh networks with 802.11s, giving the technology an advantage in the wide-area networking space, he said. In fact, Semico predicts the number of cities introducing municipal Wi-Fi networks to increase by eightfold by 2010.

"Dis-integrated" design specialization also drives a continued move to fabless manufacturing and consolidation in the high-stakes world of multibillion-dollar foundries. Mentor Graphics' CEO Wally Rhines said manufacturing processes will become less of a differentiator for most chip makers. Going forward, most companies will focus on system architectural innovation and proprietary intellectual property (IP), as well as on implementation efficiencies that can mean higher manufacturing yield, even when utilizing the same foundries as the competition.

Cadence CEO Mike Fister said the dis-aggregation of design into many segments means the EDA

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market has to develop a holistic approach that can cross the entire design flow, particularly for critical areas like power reduction and for verification management. He advocated a "virtual reaggregation" that lets designers leverage outside R&D and manufacturing while building a flow that works across the wider supply chain.

The ratcheting up of system-on-a-chip (SoC) design complexity ensures a continued move to outsourced IP development. Sonics CEO Grant Pierce outlined the cost and time-to-market advantages of outsourcing the interconnect architecture (Sonics' specialty). His statistics showed that outsourced IP can improve design productivity by 25%.

John Bourgojn, CEO of MIPS Technologies, said software design is now 50% of the cost of SoC development and growing, with the number of software developers expanding while the number of hardware designers stays relatively flat. Jack Harding, CEO of eSilicon, said his company's whole focus is on re-aggregation—organizing all the outsourced services that must come together to coordinate today's complex designs.

Actel CEO John East emphasized power design as a unifying factor in a world of shrinking geometries. He pointed to four "breakthroughs" that have helped avert a power density "train wreck": low-K materials, strained silicon, high K (hafnium, still in the lab), and the move to multicore processors. Still, says East, designers haven't cared as much about power as they should. He also said that future design will require a concerted effort around power, or there will be "a lot of trouble."

THE NEW SPACE RACES

Solving these re-integration challenges takes a lot of brainpower, and National Semiconductor CEO Brian Halla's keynote addressed the need to get U.S. government involved in supporting and maintaining national technology leadership.

The "real issues" in the U.S., Halla said, are energy, health care, and security. Technology can solve these issues, he said, suggesting that government must invest in research and technology with the same level of urgency that drove the space race—and spawned the birth of the semiconductor industry.

Meanwhile, no one is doing more for future tech leadership than Dean Kamen and his FIRST robotics competition. I took my kids to see the regional championship in New York City, and they loved it. Kamen has found a great way to bring the drama of sports to an engineering competition.

In this issue's [Industry Techview](#), Ron Schneiderman looks at how electronics companies are supporting the FIRST cause. The national FIRST championships are this week in Atlanta, and our robotics specialist Bill Wong will be there. Tune in to [EngineeringTV.com](#) to see the battling robots—and the young faces of our engineering future.



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