A Message from the Chair

The past several years have proved challenging to the semiconductor and chip industry. It seems that the “thousand years of peace” has ended with CMOS scaling, and the four horsemen are upon us—physics has finally caught up with frequency scaling, power is a challenge to the entire spectrum of chip design, the cost of developing future technology nodes is exorbitant, and the bubble created by voodoo economics has finally burst. This has led to consolidation of foundries and design houses, dwindling design starts, and a return to near oligopoly, in which most industry segments are controlled by a handful of powerful companies. The current environment is not conducive to free innovation and unfettered organic growth, and is detrimental to the chip industry, especially the design automation (DA) industry. We need a mechanism to rejuvenate our industry—but how? Perhaps a notable disruption in the past decade—the decline of the hit music culture—can instruct us.

When I was a teenager (an eternity before online music downloads), you could only listen to what the radio stations played. The music industry maintained tight control of what was distributed to the public and purposely created the hype surrounding hit songs. Only a lucky few songs ever entered this exclusive club; therefore, the public’s selection was very limited. Today, thanks to the iPod, you can listen to any song you want—anytime, anyplace—which levels the playing field and expands the market. Traditional radio no longer monopolizes the access channel, so less popular songs and artists have equal opportunity and exposure, and that drives diversity, innovation, and growth. The economics of scarcity is replaced by the economics of abundance—this is exactly the renaissance we are seeking in DA. But where can we find abundance in depression economics?

Although traditional CMOS scaling has ended, dimensional scaling is continuing—a decade from now, a chip will have 50 billion transistors. This abundance of transistors is the catalyst that can shift the paradigm from a focus on a few mainstream products at the head of the demand curve to diversity and variety in its long tail. Today, a handful of processors dominate the embedded, server, games, and mainframe market, because the cost of designing a chip is high. If there are cost-effective and efficient ways to design IP blocks, there could also be a much larger variety of alternatives to augment the mainstream processor designs.

DA is key to providing productivity and efficiency for chip designs. We are not there yet—a lot more research and innovation on silicon compilation are required to enable chips to be designed with almost the same efficiency as writing software applications. Although the economy is on the mend, most EDA companies and organizations are not in the mood for major investments, so where could the necessary innovation come from? Open source EDA tools could be the answer—instead of relying on a small group of DA professionals and academics for R&D, we open it up to the community at large. The phenomenal success of iPhone apps is evidence that the amateurs can create a new market and drive unprecedented growth. The law of large numbers will dictate that some niche ideas will eventually become hits, which will then fuel growth and innovation at the traditional DA industry.

Open source EDA is not a new idea, and many challenges must be met before it can be widely successful. We need a robust infrastructure and platform on which contributors can develop—cloud computing might help, but we need major EDA players to buy in and provide such an infrastructure. EDA applications, like it or not, do not have the kind of aura like that surrounding the iPhone, so attracting contributors is not a slam dunk. Nevertheless, I am toying with the idea of starting an Open Source EDA initiative through the DATC. If anyone is
interested in helping, please contact me (kung@us.ibm.com).

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Message from the Editor

David Kung is continuing to bring a fresh approach to the many areas that are arising as challenges. Let's all join in David's efforts to whatever extent we can to help rekindle the spirit and drive of the DATC.

Please visit our website at http://www.datc.info, which has links to all our phone meeting minutes as well as to our newsletter, along with links to other DATC resources. Add “smartpower” to the above URL to view the announcement for the “DAC Workshop on Synergies between Design Automation and Smart Power Grid” scheduled for 13 June.

Joe Damore
Newsletter Editor

Calendar

21st IEEE International Conference on Application-Specific Systems, Architectures, and Processors (ASAP 2010)
7–9 July 2010
Rennes, Brittany, France
http://asap-conference.org

13th Euromicro Conference on Digital System Design (DSD 2010)
1–3 September 2010
Lille, France
http://www.iuma.ulp.es/dsd10/

23rd Symposium on Integrated Circuits and Systems Design (SBCCI 2010)
6–9 September 2010
São Paulo, Brazil
http://www.sbc.org.br/sbcci

Forum on Specification & Design Languages (FDL 2010)
14–16 September 2010
Southampton, UK
http://ecsi.org/fdl

23rd IEEE International SoC Conference (SOCC 2010)
27–29 September 2010
Las Vegas, Nevada
http://www.ieeesocc.org

IEEE/IFIP VLSI-SoC 2010
27–29 September 2010
Madrid, Spain
http://www.vlsi-soc.com/

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