A MESSAGE FROM THE CHAIR

As the third quarter of 2007 progresses, the Design Automation Technical Committee is reaching full gear. DATC has refined its mission to focus on technology for design automation techniques in design processes of computer and electronic systems. Our emphasis is on emerging sectors and education, including system-level design, global design, and manufacturability, with increasingly more sustained contributions at leading events and collaboration with leading organizations.

2007 DATC Activities

Our activities in 2007 include our publications, conference contributions, and specific collaborations. Publications include a quarterly newsletter, which is available both online and offline; and an upcoming annual “State of the EDA” article on critical status and trends. Conference contributions include cosponsorship of the International Conference on Microelectronics Systems Education (MSE); cosponsorship of a booth at the Design Automation Conference (DAC); and a planned annual board meeting and tutorial presentation on global electronic system-level design at the International Conference on Computer-Aided Design (ICCAD). Specific collaborations include supporting the development of an IEEE IC design certification program, led by the IEEE Council on Electronic Design Automation (CEDA), with initial focus on the region of China.

DATC Education Commentary and Activities

MSE 07, which DATC cosponsored, reinforced the importance of the IEEE as the global counterbalance to the centrifugal forces of globalization in the microelectronics systems engineering community. Microelectronics systems engineering has become a true systems engineering discipline with nearly stand-alone systems integrated onto a chip or package and incorporating a diverse collection of mixed technologies: traditional CMOS; digital, RF, and high-performance analog devices; microelectromechanical systems (MEMS) sensors and actuators; nanodevices; and even optical and quantum elements. Attendees at MSE 07 came from several parts of the world, including the US, Western and Eastern Europe, Northeast Asia, and Africa. Several attendees expressed the need for some sort of mediating influence beyond the traditional Accreditation Board for Engineering and Technology (ABET) and Bologna curriculum accreditation processes and outside of government funding sources.

Moreover, the education process should extend well beyond the traditional bounds of undergraduate and graduate classrooms and labs, to Web-based and tutorial-delivered continuing education for practicing engineers.

Only the IEEE has membership in every part of the world in both industry and academia, and has an established global network of local communities of interest through its sections and technical-society local chapters. However, as currently constituted, the existing IEEE functions and elements might be inadequate to meet all the requirements of the new global microelectronics industry and microelectronics systems engineering profession in the Global Era. Therefore, the attendees informally proposed an expanded role of the IEEE in the following key areas:

- maintainer of standards;
- global guarantor of quality in education curricula;
- disseminator of industry best practices; and
- guardian and repository of knowledge.

The IEEE needs to expand well beyond its traditional role as the source of global technical standards, to encompass an expanded role as the global guarantor of quality in education curricula, mediating between the ABET and Bologna curriculum and program-accreditation processes. In parallel, the IEEE can help ensure professional integrity by combating a disturbing trend toward increasing plagiarism at the university level and widespread unauthorized copying and dissemination at all levels.

Regarding the proposed role as disseminator of industry best practices, the IEEE already has an established, very well-respected system based on peer-reviewed papers contributed to conferences and submitted for publication in IEEE technical journals and magazines. MSE 07 attendees identified an increased role for the IEEE to collect, codify, and disseminate not just research, but also state-of-the-art industry best practices in microelectronics systems design. Although some of this is already occurring through the local sections (for example, Boston Section’s long-established lecture series on radar) and online through IEEE Web sites, there is no central IEEE-based repository for collecting and disseminating global microelectronics systems best practices in formal technical-currency courses that are accessible to practicing engineers, as well as supplements to in-class lectures in small university engineering departments. Many MSE attendees felt that a valuable IEEE function would be to maintain a process outside the traditional senior-member and Fellow membership grades to recognize specific professional aptitude and mastery of sophisticated state-of-the-art skills.

With the expansion of collaborative microelectronics systems design, an increasing amount of significant work by research teams incorporates practical developments that would be more suitable for live presentations (for example, a system design model or testbench) than publications. The attendees expressed an interest in the IEEE as the guardian and repository for peer-reviewed designs, sample data
for test and evaluation, and working specifications. For example, a team could submit a model with a new implementation of an image-processing algorithm for review and test against an online IEEE “gold standard.” Educators could then use such a repository of sample test data and gold-standard output to assign students design problems for real-world practical systems.

The IEEE Boston Section has recently cooperated with MSE 07 Program Chair Andrzej Rucinski, of the University of New Hampshire (UNH), to organize a successful workshop on FPGA-based systems engineering, with lectures by academia’s Don Bouldin and Andrzej Rucinski and industry’s Pieter Mosterman and C.J. Clark, along with several live-hardware and tool demonstrations. Some of the same material was presented in a graduate course offered to traditional and nontraditional students at UNH and included recorded lectures and a remote laboratory.

Juan-Antonio Carballo
DATC chair

A MESSAGE FROM THE EDITOR

Please e-mail me with any requests you might have for the DATC Web site. You are welcome to share your thoughts and comments in our guestbook there. We are trying very hard to make this technical committee one of the best, and we appreciate any help you can give us. Thanks!

Joe Damore
Editor

CALENDAR

20th Symposium on Integrated Circuits and Systems Design (SBCCI)
3-6 September 2007
Rio de Janeiro
http://www.sbcci.pads.ufrj.br/sbcci/index_sbcci.html

15th Annual IFIP International Conference on Very Large Scale Integration (VLSI-SoC)
15-17 October 2007
Atlanta
http://www.vlisoc2007.gatech.edu

25th IEEE International Conference on Computer Design (ICCD)
7-10 October 2007
Lake Tahoe, California
http://www.iccd-conference.org

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