



A Message from the Chair

The 48th Design and Automation Conference (DAC 2011) concluded successfully with the “Smart Grid and DA Workshop II” in San Diego, California. The workshop consisted of one keynote, three technical sessions, and one breakout session. The keynote was “Grid 2050: A Century of Following the Load,” by Doug Houseman, vice president of technology and innovations, EnerNex Corp.

One potential future scenario that Houseman described for the year of 2050 could have come from science fiction. For more than 100 years, the power industry has been a load-serving industry (“You flip the switch, and we will make more”), but in the next 50 years, the industry will have to be a load-following industry—that is, “If there is more supply, we will have to figure out where best to use it.” Houseman explained how we got where we are today, what changes are occurring to the grid and their impacts, and finally how the design automation community can help in areas such as circuit topology optimization, simulation, profiling, incremental solution, and root-cause analysis.

The workshop’s first technical session was “What Is Changing in the Power Grid and What Are the Challenges?” Christopher Couper, a Distinguished Engineer in IBM’s energy and utilities sector, explained the imminent challenges confronting energy utilities today: outage and fraud management, reliability, availability, stability and safety, and maximizing the value of energy.

Mariesa L. Crow, F. Finley Distinguished Professor of Electrical Engineering and director, Energy Research & Development Center (Missouri University of Science and Technology), presented her views on future energy systems, with a specific focus on technological and societal impact.

The second technical session, titled “Tools for Power Systems: State of the Art and Future Requirements,” featured two prominent speakers from local utility companies. Christopher R. Clarke, of the

Power Systems Studies Group in Southern California Edison’s Advanced Technology Dept., described four selected Southern California Edison smart grid projects that focus on modeling and simulation. William V. Torre, chief engineer of San Diego Gas & Electric Co., explained SDG&E’s experience with centralized and decentralized approaches to distribution automation.

The workshop’s third technical session was for academia researchers to showcase their work on smart grids. Franz Franchetti (Carnegie Mellon University) discussed his research work on “Leveraging Emerging Computer Architectures in Smart Grids,” during which he showed how high-performance computing could be leveraged to solve the “probabilistic power flow” problem for distribution power networks. Ian Hiskens (University of Michigan) discussed “Control-Based Alternatives to Power System Expansion.” In essence, power systems are equipped with extensive networks of sensors and actuators, and a reliable distributed control mechanism is developed to improve the utilization of power system assets.

In contrast to all other speakers in this workshop, Massoud Pedram (University of Southern California) and Yiyu Shi (Missouri University of Science and Technology) are hard-core “DA-rooted” researchers, both of whom have published extensively in the DA area. However, both have recently begun to expand their research scope into smart grid areas. Pedram described his research work on “Demand-Side Load Scheduling Incentivized by Dynamic Energy Prices,” and Shi reported his findings on “Statistical Load Profiling” in which he has extended his earlier work on stochastic current modeling for decap budgeting.

The workshop finale was a roundtable-style breakout session in which speakers and attendees freely exchanged ideas on computational and sociological challenges facing smart grids. The brainstorming session concluded with a number of concrete problem

formulations, such as network reconfiguration, distribution automation, and load modeling, which called for DA researchers' help. Overall, the workshop was particularly well received, so stay tuned for the third one.

David S. Kung
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Message from the Editor

The 18th Electronic Design Processes (EDP) Symposium, held in early April 2011, fosters the free exchange of ideas among the top thinkers, movers, and shakers who focus on how chips and systems are designed in the electronics industry. It provides a forum for this cross-section of the design community to discuss state-of-the-art improvements to electronics design processes and CAD methodologies, rather than on the functions of the individual tools themselves.

For a good overview of the topics discussed at this workshop, be sure to see http://www.garysmitheda.com/read.php?story=iNotes_94. I particularly liked the portion on "Cloud Computing."

Please visit our website at <http://www.datc.info>, which has links to all our phone meeting minutes as well as our Newsletter and many other topics. Please take some time to critique the site; your comments and suggestions are welcome!

Joe Damore
Newsletter Editor

Calendar

3rd Asia Symposium on Quality Electronic Design (ASQED 2011)

19–20 July 2011
Kuala Lumpur, Malaysia
<http://www.asqed.com>

Forum on Specification and Design Languages (FDL 2011)

13–15 September 2011
Oldenburg, Germany
<http://www.ecsi.org/fdl>

2011 Conference on Design and Architectures for Signal and Image Processing (DASIP 2011)

2–4 November 2011
Tampere, Finland
<http://www.ecsi.org/dasip>

44th Annual IEEE/ACM International Symposium on Microarchitecture (MICRO-44)

3–7 December 2011
Porto Alegre, Brazil
<http://www.microarch.org/micro44>

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