

## From the EIC



## Twenty years!

■ **WELCOME** to 2003 and the 20th year of *IEEE Design and Test of Computers*! A lot has changed in the past two decades of microelectronics design and test. As devices have scaled down in dimensions, ICs have scaled up in capacity from tens of dies per wafer to tens of thousands of dies per wafer. The semiconductor IC industry has grown almost 20 times to a \$200 billion industry. This industry has also spawned much larger industry segments, from consumer electronics to communications. And a new economic paradigm has emerged, with continually dropping product costs and increasing product capabilities for the same price. The future promises to be even more exciting, as microelectronic chips find their way into increasingly diverse and new domains, from networking and telecommunications to biomedical and biological systems.

And yet it is an industry that is in a constant state of transformation. For instance, the newly born fabless design houses are now a growth segment accounting for more than \$14 billion in revenue and increasing at a fast pace. By some accounts, this new breed of microelectronics design houses could produce as much as half the worldwide IC revenues by the end of this decade. The next 20 years are sure to be exciting—with new players, new capabilities, and new generations of system chips that radically alter how we think of semiconductor chips and where we use them. Yet, the new generations of system chips will actually be building on generations of evolutionary growth in microelectronics. *D&T* hopes to be part of these exciting times and bring you the latest in technology advances.

This issue of *D&T* focuses on application-specific microprocessors—computers specifically targeted for individual applications. Guest editors Alex Orailoglu and Alex Veidenbaum have pulled together a special issue on this theme, covering the latest advances in

compilation, memory customization, and design. The nontheme articles include testing methods for SDRAMs; an all-digital testing technique for phase-locked loops; design techniques for mixed-signal, programmable components; and test sequence generation. In *The Road Ahead*, Andrew Kahng examines error tolerance—an important issue for coming generations of low-nanometer technologies, where complex microsystems must be built out of inherently unreliable devices.

It is my pleasure to welcome Carl Pixley, a noted expert in formal methods, to *D&T*'s editorial board as area editor for design verification and validation. I am also pleased to announce that the IEEE Circuits and Systems Society has agreed to be a copublisher. This copublishing agreement will help *D&T* enter a new era of bringing design and test communities together, and build synergies that the industry must exploit to overcome the looming technology brick walls. I offer my sincere thanks to our *D&T* Alliance Program (DTAP) chair, EIC Emeritus Yervant Zorian, and to Group Managing Editor Janet Wilson, for helping to bring about this agreement. I also thank the leaders at both societies, including our publisher, Angela Burgess, for their moral support and encouragement.

Finally, you will notice some changes to the magazine's format. These changes will let us better use our highly constrained page budgets while enhancing readability. I hope you agree. If you have any suggestions, please do not hesitate to contact me at [gupta@cs.ucsd.edu](mailto:gupta@cs.ucsd.edu).

A handwritten signature in cursive script that reads "Rajesh Gupta".

Rajesh Gupta  
Editor in Chief  
*IEEE Design & Test of Computers*